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STRUCTURE OF THE PARTICIPANT DEMOFIGUREICS IN YOUTH CHESS TOURNAMENTS IN RUSSIA

Akimushkin R.V., Gabbazova A.Ya.

Abstract. *The presented study provides an analysis of the dynamics of the contingent of young school-age chess players in the Russian Federation based on research data from 2019 and 2024. The number of qualified chess players was analyzed depending on their age and gender and the percentage of young chess players and female chess players by year of birth was revealed. The research results confirmed the existence of such a phenomenon as the "female constant in chess", which is 23%.*

Keywords: *young qualified chess players, FSHR rating list, age, gender characteristics*

Introduction. Interest in children's chess is growing all over the world. Nowadays when professional chess is undergoing a number of crises related to the development of computer technology and the need to combat cheating, chess as an academic discipline, as a tool for the intellectual and personal development of school-age children is becoming increasingly popular. The lack of a sufficient number of qualified coaches and teachers significantly hinders the introduction of chess into the education system [3]. An analysis of the dynamics of the contingent of young chess players in the Russian Federation over the past 5 years, we assume, will allow us to draw conclusions about changes in the organization of the training system for coaching and teaching staff, about the need to develop retraining and advanced training programs [2].

Purpose of the research. To study and analyze the number and gender structure of young qualified school-age chess players in the Russian Federation.

Methods of the study. Research methodology: statistical analysis of the data of the rating list of the Russian Chess Federation (FSHR).

Results of the study and their discussion. The analysis of the FSHR rating list dated April 1, 2024 [4] suggests that currently there are 349,704 qualified school-age chess players in the Russian Federation, which is twice as many (+107.5%) as in 2019 – 168,514 people [1]. Figure 1 shows the quantitative composition of young chess players differentiated by year of birth, starting in 2017 (6-7 years old) and ending in 2005 (18 years old) – this is the age of students of children's and youth sports schools.

In the Russian Federation there is a steady increase in qualified chess players aged 6 to 13 years inclusive (the peak at 13 years is 39,197 people). From the age of 14 the number of young chess players has been steadily falling from year to year, reaching 12,814 people by the age of 18.

In 2019 the largest number of young qualified school-age chess players was at the age of 10 and amounted to 25,553 people, and the decrease in the number of children playing chess began at the age of 11 [1].

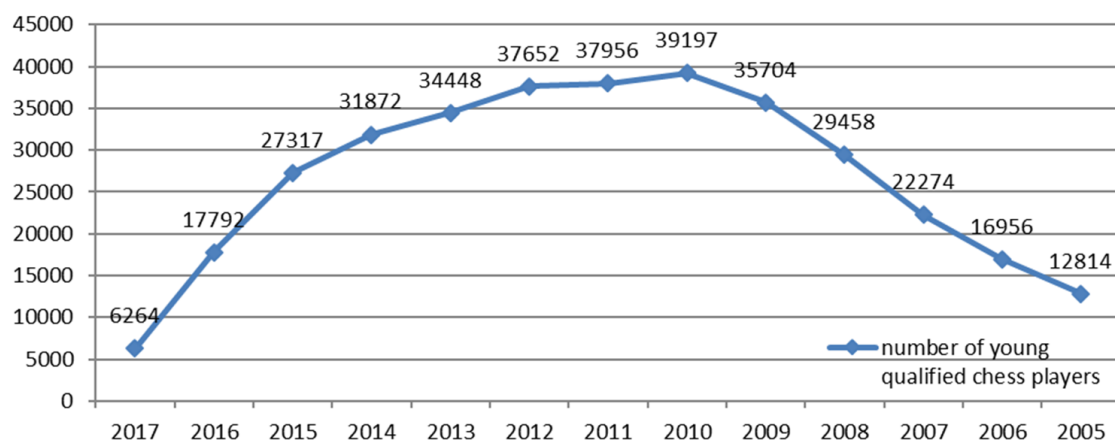


Figure 1. – The number of young qualified chess players in the Russian Federation by year of birth (2017-2005)

Figure 2 shows the percentage of young qualified school-age chess players by age (from 6 to 18 years). According to the data obtained the largest percentage of chess players are children aged 10-14 (53% of the total number of schools), 10% are 9-year-olds, 9% are 8-year-olds, 8% are 7-year-olds, 8% are 15-year-olds, and so on in descending order.

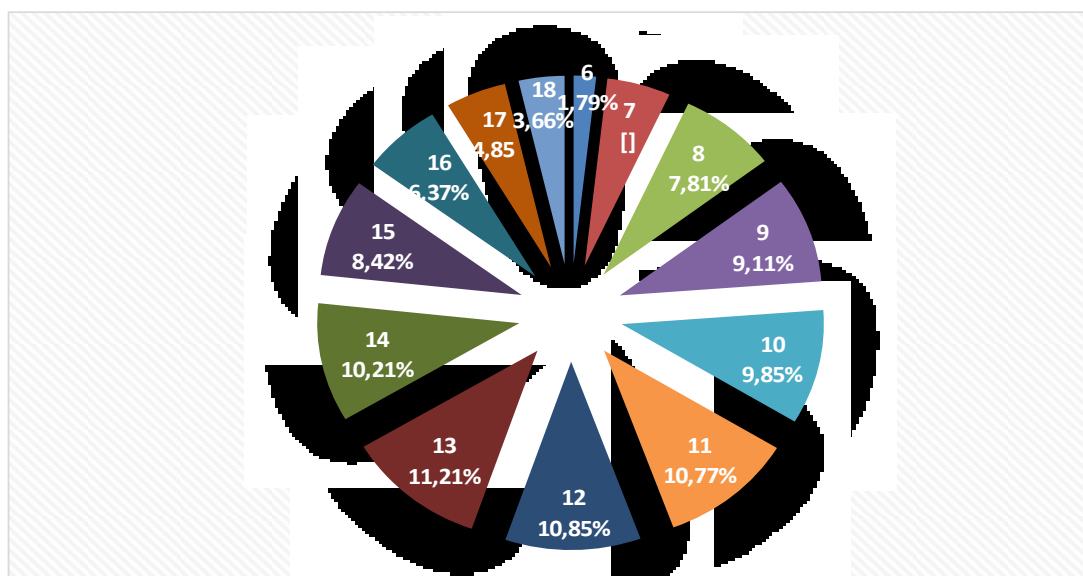


Figure 2. – Percentage of young qualified chess players by age (from 6 to 18 years old)

Thus, the main participants in children's chess competitions are young chess players aged 10 to 14 years (53% of the total number of SKSH).

According to 2019 data the largest percentage of chess players are children aged 9-10 (30% of the total number of schools), 13% are 11-year-olds, 12% are 8-year-olds, 10% are 12-year-olds, and so on in descending order.

The gender composition of the school is interesting. Figure 3 shows a histogram with the number of children by year of birth - boys and girls. The histogram is obtained by splitting the data presented in Figure 1. In general, there are

267,024 boys and 82,680 girls in the Russian Federation.

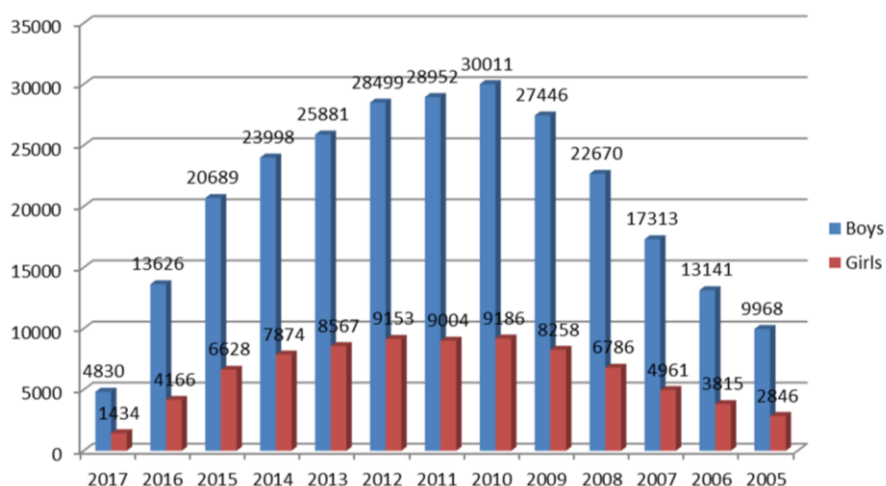


Figure 3. – The number of young qualified chess players and female chess players in the Russian Federation by year of birth (2017-2005)

The analysis of the histogram allows us to conclude that the trend of an increase in the number of chess players aged 10-13 years and a steady decline by the age of 17-18 years has no gender differences, with the only minor discrepancy - the peak in the number of girls playing chess falls at 11 years old, boys - at 13 years old. Both Figures have the shape of a normal Gaussian distribution curve with positive asymmetry.

Figure 4 shows the percentage of young qualified chess players and female chess players by year of birth.



Figure 4. – Percentage ratio of young qualified chess players and female chess players by year of birth

The unique fact that we previously identified that in each age group about 23% of girls are professionally engaged in chess (in total, 23.4% of girls from 6 to 18 years old), has found its new confirmation. We previously called this phenomenon the "female constant in chess."

Conclusions:

1. According to a 2019 study the number of young qualified school-age chess players was just under 169,000. By 2024 this figure had more than doubled, reaching 349,000 people. This indicates an increase in interest in chess among school-age children and a greater availability of chess education in Russia at present.

2. In both "sections" there is the largest number of young chess players aged 8 to 14 years, which indicates that children of this age are the most active participants in children's chess tournaments. The gender composition remains relatively stable: girls make up approximately 23% of the total number of young chess players.

3. The data obtained indicate a steady increase in interest in chess in the Russian education system, which determines the need for training qualified coaches and teachers, mainly through professional development and retraining programs.

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Akimushkin Roman Valer'evich, Senior lecturer of the Department of computer ports, chess and digital technologies, akimushkin.rv@gtsolifk.ru, The Russian university of sport «GTSOLIFK», Russia, Moscow

Gabbazova Asyl Yakupovna – PhD, Associate Professor at The Russian university of sport «GTSOLIFK», Russia, Moscow

СТРУКТУРА КОНТИНГЕНТА ДЕТСКО-ЮНОШЕСКИХ ШАХМАТНЫХ ТУРНИРОВ В РОССИЙСКОЙ ФЕДЕРАЦИИ

Акимушкин Роман Валерьевич – старший преподаватель кафедры компьютерного спорта, шахмат и цифровых технологий, Российский университет спорта «ГЦОЛИФК», Москва, Россия, akimushkin.rv@gtsolifk.ru

Габбазова Асыл Якуповна, к.псх.н., доцент, доцент кафедры компьютерного спорта, шахмат и цифровых технологий, Российский университет спорта «ГЦОЛИФК», Москва, Россия, gabbazova.ay@gtsolifk.ru

Аннотация. В статье проведен анализ динамики контингента юных шахматистов школьного возраста в Российской Федерации на основе данных исследований 2019 и 2024 годов. Проанализировано количество занимающихся квалифицированно шахматами в зависимости от их возраста и пола, выявлен процентный состав юных шахматистов и шахматисток по годам рождения. Результаты исследований подтвердили наличие такого феномена как «женская константа в шахматах».

Ключевые слова: юные квалифицированные шахматисты, рейтинг-лист ФШР, возраст, гендерные особенности

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UDC 796

INFLUENCE OF DYNAMIC BREATHING EXERCISES ON BLOOD COMPOSITION FOR PATIENTS WHO HAVE RECOVERED FROM COVID-19

Al-Sunaa Rami Samer, s/s Tkachenko S.A.

Abstract. *This article deals with the method of complex rehabilitation of middle-aged people who suffered from pneumonia caused by a new coronavirus infection, and also evaluates the improvement of blood composition indicators in this category of patients. The proposed method proved to be highly effective, its result was that as a result of application of the developed method of physical rehabilitation in patients significantly improved blood parameters, which contributes to the improvement of patients' quality of life.*

Keywords: *long-covid, cytometry, physical blood composition, external respiratory function, COVID-19, physical rehabilitation*

Introduction. The effects of COVID-19 coronavirus infection lead to changes in many body systems, namely, it can lead to circulatory dysfunction, including effects such as vascular congestion and hypoxemia. In addition, it can cause increased thrombosis activity in the body, leading to the formation of blood clots, especially in critically ill patients. This can increase the risk of thrombosis such as deep venous and pulmonary embolism. Causes severe inflammation of the lungs and development of pneumonia. It can directly affect blood pumping and gas exchange in the lungs, putting additional strain on the heart and other organs [7].

COVID-19 infection can lead to inflammation of blood vessels, which in turn can cause damage to blood vessel walls. This can affect the functioning of the cardiovascular system, impairing blood flow and leading to serious complications.

The virus can affect the endothelial cells that line the inner surface of blood vessels. This can lead to impaired vascular function and impaired blood flow, especially in the heart, lungs, kidneys, and other organs.

Abnormal coagulation and thrombotic events leading to vascular occlusion are described as major contributors to high mortality rates

The purpose of the study of such parameters as physical properties of blood cells plays an important role in the prevention of late complications, as they play an important role in blood circulation. Accordingly, we hypothesized that a rapid and simple study of these properties would fulfill the need for a rapid diagnosis of the functional state of cells [1, 2, 8].

Methods. We used cytometry to assess various physical properties of blood cells. We identified significant and persistent changes in cell size and mechanical properties in the acute phase and after COVID-19 and assessed the efficacy of rehabilitation measures. These changes may be prognostic for cell functionalities such as oxygen delivery [5, 6, 7].

Thus, our results have implications for the diagnosis and treatment of COVID-19. We were able to prove that Covid-19 infection causes significant changes in the size and stiffness of red and white blood cells, sometimes lasting several months.

These results may help explain why some patients continue to have symptoms long after first infection with the virus (long-term Covid).

Shortness of breath, fatigue and headaches: some patients have to deal with the long-term side effects of a severe Covid-19 infection for six months or even longer. We still don't fully understand post-Covid syndrome, often referred to as long-term Covid. It has become apparent that the disease often impairs blood flow and can lead to dangerous blockages in blood vessels, limiting oxygen transportation in the bloodstream. Blood cells and their physical properties play a key role in each of these phenomena.

With this in mind, we were able to measure significant and long-lasting changes in cells both during and after the acute phase of infection.

Cytometry was used to analyze blood cells.

Using this method, up to 1000 blood cells can be examined per second. The advantage of the method is that it is fast and the cells do not need to be stained with a complicated and time-consuming procedure.

It is hoped that in the future this method can be used as an early warning system to recognize unknown viruses that could potentially cause a new pandemic.

Research design. We studied 14 patients who were between 4 and 8 months in the recovery phase after Covid-19, 6 of whom underwent a rehabilitation course on the basis of the V.P. Avaev State Budgetary Institution "Center for Specialized Medical Care". Dynamec breathing exercises were included in the rehabilitation program. All patients had positive PCR tests for COVID-19. Informed written consent was obtained from all participants.

Result discussion. Their results showed that the size and plasticity of red blood cells varied significantly more in those with the disease than in healthy volunteers. This suggests that the disease damages blood cells and may explain the increased risk of blocked blood vessels and blood clots in the lungs. It may also explain why oxygen supply is impaired in those who have contracted the virus, as this is one of the main tasks performed by red blood cells.

In terms of white blood cells, it was found that lymphocytes in Covid-19 patients showed a significant decrease in stiffness, which may indicate a strong immune response.

The situation was similar with neutrophil granulocytes, another group of white

blood cells responsible for the internal immune response. These cells remained dramatically altered even seven months after acute infection.

We suspect that the immune cell cytoskeleton, which is responsible for determining cellular function, in real time could potentially be used to diagnose Covid-19 and even act as an early warning system in the future to detect as yet unknown viruses that could potentially trigger a new pandemic.

We investigated COVID-19-related changes in the physical phenotype of several cell types found in peripheral blood, namely erythrocytes, lymphocytes, monocytes and neutrophils.

In total, more than 14 blood samples were analyzed, including 8 rehabilitated patients and 6 recovered non-rehabilitated patients.

We found that COVID-19 was associated with a significant decrease in lymphocyte stiffness, an increase in monocyte size, the appearance of smaller and less deformable erythrocytes, and the presence of large, deformable, activated neutrophils. The results are presented in table 1.

Table 1. – Results of blood cell changes

SDvolume	Before	After	Differences		t-criterion	p
			Total	In %		
Lymphocytes	39	38,6	1,6	1,03	3 ($t_{cr.} = 38$)	$\leq 0,01$
Monocytes	70,5	55	15,5	22	6 ($t_{cr.} = 38$)	$\leq 0,01$
Erythrocytes	15	12,3	2,7	18	7,9 ($t_{cr.} = 38$)	$\leq 0,01$
Neutrophils	68,7	63,5	5,2	7,57	49 ($t_{cr.} = 52$)	$\leq 0,05$

Several months after hospital discharge, certain changes did not return to the levels of the control group, indicating a prolonged effect of COVID-19 on the circulatory system.

Conclusions. To date, there has been no systematic evaluation of the effects of COVID-19 on the physical phenotypes of the most common blood cells.

In addition to the biochemical state of blood cells, infectious diseases may also alter their physical properties, including morphologic or mechanical features.

It is known that mechanical properties of cells can act as a marker of disease.

It has been confirmed that DME has a positive effect on cytometry parameters, and thus has a positive impact on preventing the development of complications in the long term after coronavirus infection.

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Al-Sunaa Rami Samer, postgraduate student of the Department of Physical Rehabilitation, Massage and Health-Improving Physical Culture named after I.M. Sarkizova-Serazini, e-mail: rami.al-sunaa@yandex.ru, Russia, Moscow, The Russian university of sports "GTSOLIFK".

Scientific supervisor - Tkachenko Svetlana Anatolievna, Russia, Moscow, The Russian university of sports "GTSOLIFK".

ВЛИЯНИЕ ДИНАМИЧЕСКИХ ДЫХАТЕЛЬНЫХ УПРАЖНЕНИЙ НА СОСТАВ КРОВИ У ПЕРЕБОЛЕВШИХ COVID-19

Аль-Сунаа Рами Самер, аспирант кафедры физической реабилитации, массажа и оздоровительной физической культуры им. И.М. Саркизова-Серазини, e-mail: rami.al-sunaa@yandex.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Ткаченко Светлана Анатольевна, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Аннотация. В данной статье рассматривается метод комплексной реабилитации лиц среднего возраста, перенесших пневмонию, вызванную новой коронавирусной инфекцией, а также оценивается улучшение показателей состава крови у данной категории пациентов. Предложенный метод оказался высокоэффективным, его результатом стало то, что в результате применения разработанного метода физической реабилитации у пациентов значительно улучшились показатели крови, что способствует улучшению качества жизни пациентов.

Ключевые слова: лонг-ковид, цитометрия, физический состав крови, функция внешнего дыхания, COVID-19, физическая реабилитация

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BIOMECHANICAL ANALYSIS OF THE SWING FORWARD COUNTER SALTO FORWARD ELEMENTS IN MEN'S ARTISTIC GYMNASTICS

Alekseeva K.M.

Abstract. *The research presents a comparative biomechanical analysis of techniques for performing swing forward and counter salto forward to horizontal bar in different positions (straddled and layout). The article reviews the technique of the first performer - Xiao Ruizhi - and the recently improved element of American gymnast Ian Gunther, including certain biomechanical characteristics and the main center of mass trajectory.*

Keywords: *men's artistic gymnastics, horizontal bar, counter-salto, biomechanical analysis*

Introduction. The new element was recently introduced during the training of American gymnast Ian Gunther in the horizontal bar routine. In the Code of Points (CoP) a flight with a swing forward counter-salto forward in straddled into a hang (also called Xiao Ruizhi) belongs to group D. In women's artistic gymnastics, this element is called Kim somersault or "counter Kim" in honor of the North Korean gymnast Kim Gwang Guk, who performed it for the first time. The element belongs to group F. At first, Ian successfully performed an original Xiao Ruizhi (a straddled counter salto) 2023 U.S. Core Hydration Classic. And then upgraded to a bent forward somersault. Both are significant increases in difficulty. If we use an analogy in assessing their difficulty, these moves can be given groups D/E and E/F respectively.

Incorporating challenging elements into a routine can enhance an athlete's competitiveness and increase their chances of achieving a high grade. Therefore, analyzing these elements, which could potentially become even more difficult, is relevant. And comparing the current movement technique with that of previous performers can help in developing it rationally.

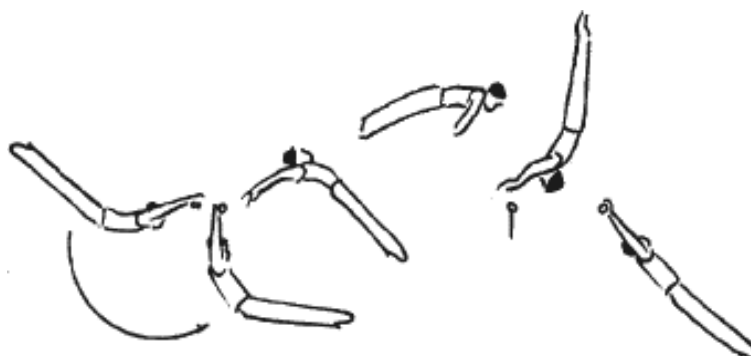


Figure 1. – swing forward counter salto forward in layout position

Purpose. The elements technique comparison at different somersault positions: straddled, layout.

Methods. 1) literary survey 2) video analysis with Kinovea-0.9.5-x64 software.

The founder of the movement is Xiao Ruizhi (China): it is assumed that he performed the element for the first time in 1986, and Vitaly Marinich (Soviet Union) - in 1988 at the European Junior Championships in Avignon. And that is why the name "Marinich" is more common in Europe.

Elements technique analysis, description, comparison. Below are the elements cinematograms, divided by phases with angular characteristics, a comparative analysis was carried out on their basis. Both gymnasts, prior to the first phase of the element, begin with the so-called "Chinese" fall and throw. This one is used, as a rule, when retreating to movements such as "Tkachev's flight" or backflip jumps. Its main feature is sharply exaggerated preparatory actions with bending and subsequent extreme bending of the body, after which the power of the throw and subsequent straightening of the body increases, which "throws" the body into a non-supporting position. The energy saturation of the movement during maxes with go-off into flight

also depends on the technique of combining "throwing" movements with the time of transition into flight. An early transition to flight with a simultaneous active throw is characteristic. Due to this, a steep, but quite spectacular trajectory is formed with a distance from the projectile, and the gymnast can achieve high flights with a very active "twist". This also gives the highest altitude and flight time indicators, but more harmonious technical forms of similar actions are possible, performed at a greater delay during a recession. However, Gunther's technique differs from the original one by more pronounced bending and pulling, creating a more whiplash throwing motion. In the phase of direct sharp bending – the opposite is observed: the bending angle of Xiao Ruizhi is more pronounced, while Ian tries to maintain a straightforward body position, and this is justified by their further actions, and therefore the phase of go-off and separation from the bar is completely unique for each one and requires separate consideration. Early bending before flight provides Xiao Ruizhi with the potential for further abrupt extension (his body is straight during flight), and is more rational and economical for the next bending of the straddled legs in a forward somersault. Gunther doesn't need this, since his main aim is to maintain a straightforward body position and, with dynamic rotation, ensure a greater flight from the bar. And therefore, in the earliest phase of moving away from the bar, the gymnast makes a second "whiplash" movement – from another pronounced deflection switching to a straightened position, which he retains throughout the entire somersault rotation.

The reverse grip in both elements is artificial in deliberate pronation of the hand when gripping the support with the removal of the thumbs, as when gripping from below. But for forward rotations, the grip from below and the reverse grip, as well as the grip from above for backward rotations, are absolutely normal. The movements in this phase are also different between gymnasts. Ian's body is in a more bent position, and he himself comes quite close to the bar, Xiao Ruizhi, on the opposite, makes a grip in a less bent position due to the more distant go-off from the horizontal bar. This difference is explained by the character of the somersault rotation. It is much easier to perform a forward flip of the straddled then layout forward, the latter requires additional efforts in the initial actions and, accordingly, adjustments in the final ones.

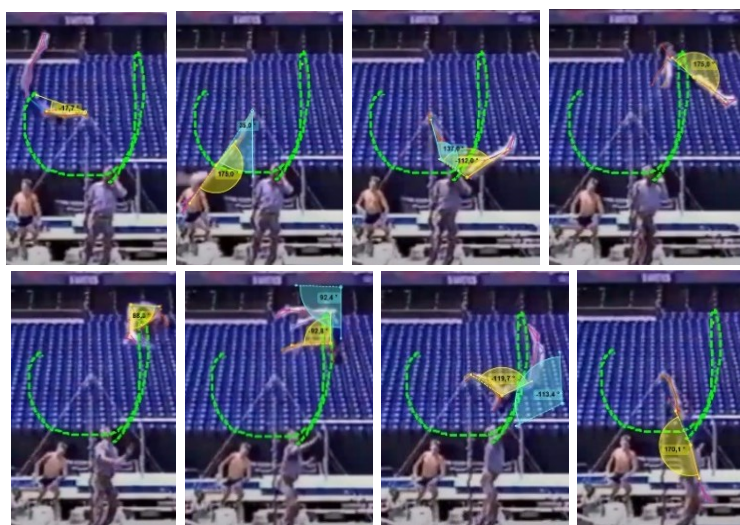


Figure 2. – Cinematogram of Xiao Ruizhi (straddled position)

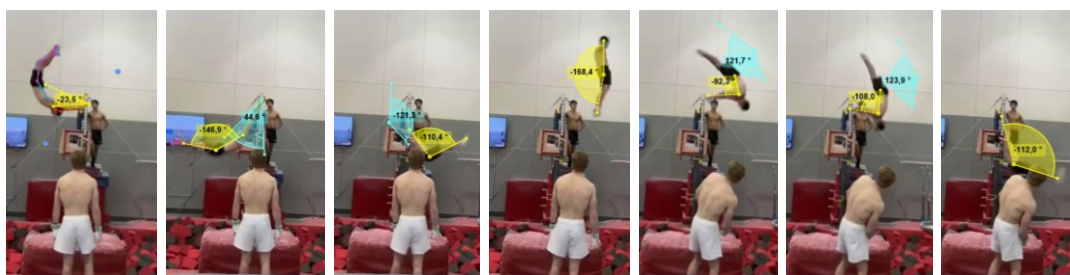


Figure 3. – Cinematogram of Ian Gunther (layout position)

Even the center mass trajectories have differences: Ian's "movement loop" is much wider, but shorter due to the complexity of the body position.



Figure 4. – center mass "movement loop" trajectories

Results discussion. Traditional and promising techniques are very different. Each of them is justified by the character of the somersault rotation. The latter is characterized by a sharper and wider rotation with a significant shift in the center of mass of the athlete. Such a direction of elements is not found in the combinations of gymnasts. The technique of the flight is not fully processed and inevitably creates problems of subsequent binding with other elements: it is difficult to get into a handstand after it and not get a discount for a max between. And the temporary solution has not changed anything much. (Gunther, like Xiao Ruizhi, changes the direction of movement from suspension, swinging up while rising and falling in a stand. At the USA Classic Chicago, Illinois, he performed this release at the beginning of the combination, after which he turned and did a swing.)

Prospects for the development of the element. There are not so many flights to the reverse grip at the moment, except for those in which the flip component is performed with a $180^\circ / 540^\circ$ rotation. And it looks real to perform such a flight with a 180° turn in a straight grip with your hands, but this can also make little difference to its difficulty – no higher than F.) It is known that Gunther is trying to complicate a new flight by adding a 360° turn, which is potentially feasible, and such a flight may well become an element of group F/G. There are other variations of performing a forward swing to the counter-salto: from a stalder or from a turn on the feet (female version). There is also exists a model of a forward swing double salto forward

dismount in the form of a video made as per the certification of the new FIG technique, with a difficulty rating of G. There is no such leap into counter-tempo in gymnastic practice yet, even in the backward direction. To the topic, it's important to mention another counter-directional element, very similar to the Jaeger somersault. It was first performed in 1992 by Jeff Bender: from lifting with a swing back to a salto back onto the bar. Unfortunately, this flight was not performed at international competitions and was no longer used, although it has tremendous potential for further complications.

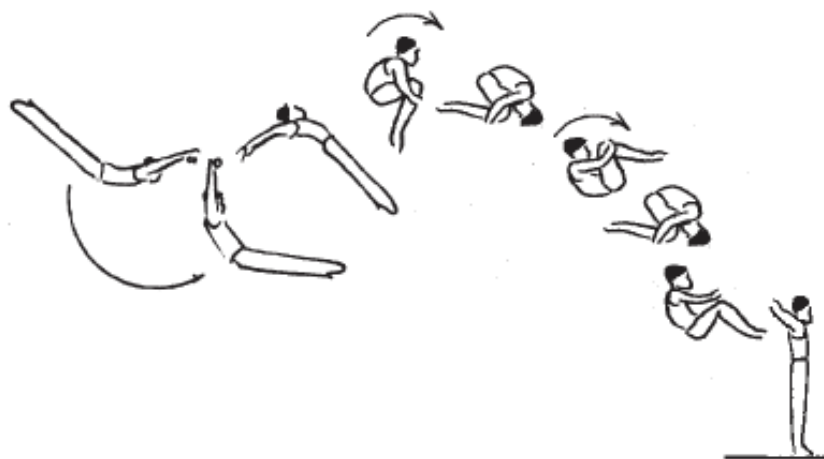


Figure 5. – swing forward double salto forward dismount

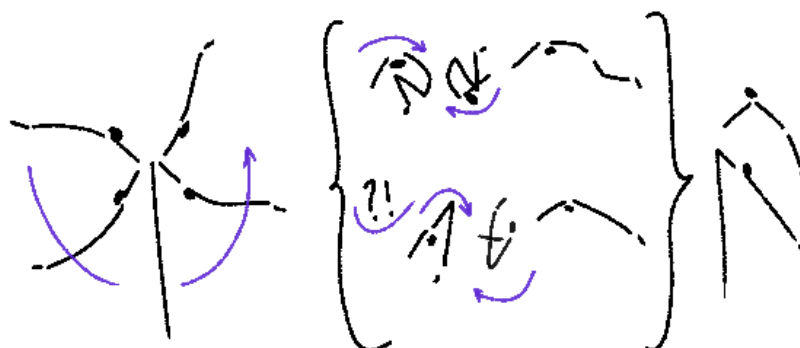


Figure 6. – The variations of swing back salto backward onto the bar

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Alekseeva Ksenia Mikhailovna, Student, Faculty of Master's degree, Chair of Theoretical and methodological grounds of physical education and Sports, usyan2001ksenija@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education the Russian University of Sport «GTSOLIFK».

БИОМЕХАНИЧЕСКИЙ АНАЛИЗ ЭЛЕМЕНТОВ МАХОМ ВПЕРЕД САЛЬТО ВПЕРЕД В МУЖСКОЙ СПОРТИВНОЙ ГИМНАСТИКЕ

Алексеева Ксения Михайловна, студентка, факультет магистерской подготовки, кафедра теоретико-методических основ физической культуры и спорта, usyan2001ksenija@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. В исследовании представлен сравнительный биомеханический анализ техник выполнения перелета махом вперед сальто вперед в вис на перекладине в различных положениях (ноги врозь и прогнувшись). В статье рассматривается техника первого исполнителя - Сяо Руизи - и недавно усовершенствованный элемент от американского гимнаста Яна Гюнтера.

Ключевые слова: мужская спортивная гимнастика, перекладина, контр-сальто, биомеханический анализ

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UDC 798

THE INFLUENCE OF THE “SPASSKAYA TOWER” TOURNAMENT ON THE DEVELOPMENT OF CHILDREN’S SPORT IN THE SPORT DISCIPLINE “DZHIGITOVKA”

Aleshko I.M.

Abstract. *The article examines the importance of image competitions as one of the factors in the development of types of sports. Using the example of the dzhigitovka competitions among children within the framework of the International Military Music Festival "Spasskaya Tower", the analysis of the dynamics of the number of participants in the competition in the period from 2017 to 2021 is carried out. Conclusions are drawn about the short-term positive effects of image competitions, in the absence of a set of measures to train young athletes.*

Keywords: *children's sports, equestrian sports, dzhigitovka, sports development in the regions, Spasskaya Tower festival*

Introduction. One of the significant elements of the intangible motivation of participants in sports competitions is the opportunity to participate in major international competitions such as the Olympic Games, World and European Championships. At the same time, in conditions of geopolitical instability, the opportunities for Russian athletes and judges to participate in international competitions are significantly reduced. And accordingly, there is an increasing the role of prestigious, image-based tournaments such as the "Sambo Cup of the President of the Russian Federation", various competitions for the cup of governors, presidents of sports federations.

In this case, by image sports tournaments we mean a special competition, the prestige of which is ensured by the venue and the prize fund. Also, the high status of the event can be ensured through the participation of senior officials or the use of the names of legendary athletes and coaches. Such tournaments can be either included in the system of sports events according to the level of holding (local, regional, all-Russian, international), or held as a separate sports event.

If the selection of participants, including the competition staff, is based on selection based on the results of regional and all-Russian competitions, in this case, image tournaments can be considered as a form of non-material incentives. An example of such a prestigious equestrian tournament is the competition for the prizes of the Spasskaya Tower Festival, which has been held annually since 2018.

Quite a lot of works in the Russian scientific and methodological literature are devoted to the problems of motivation of sports activity. E.P. Ilyin in his book "Psychology of Sports" examines in sufficient detail the issues of motivation of athletes when choosing sports, the specifics of setting goals, the attention of emotional state and volitional qualities to the results of sports activity. [1] S.V. Ilyinsky revealed significant differences in the motives of athletes depending on the type of sport [2].

In general, it can be assumed that in the case of sports competitions, non-material motivational factors play a much greater role than material rewards. The very atmosphere of a sports competition, collective empathy, and emotional uplift among athletes and fans form special exciting experiences for all participants of the tournament.

The purpose of this article is to assess the impact of image sports events on the development of disciplines in equestrian sports using the example of the discipline "dzhigitovka".

Research methods: analysis of statistics of athletes' participation in competitions, organized included observation.

The Spasskaya Tower Tournament. The Spasskaya Tower Tournament is a part of the International Military Music Festival Spasskaya Tower. The Kremlin Riding School participates in the organization of the event together with the directorate of the music festival. A specialized equestrian arena with artificial turf and stands for spectators is being built on Red Square next to the Festival site for competitions. The symbols of the festival are used on all the attributes of the tournament (commemorative diplomas, gifts to participants, banner badges, decoration of the perimeter of the arena for competitions and stands). The high status of the event is ensured, firstly, by the venue. Red Square is the main square of the

country, which has traditionally been used for events of national importance, such as Victory Parades, sports parades, and state concerts.

The Spasskaya Tower International Military Music Festival traditionally receives wide media coverage, which extends to the Spasskaya Tower tournament. In fact, this sporting event is much more covered in the media than, for example, the Russian Dzhigitovka Championship. The winners of the competitions can see their names on the pages of newspapers, electronic media, become participants in TV stories, news, documentary chronicles, which is also a factor of non-material incentives.

Analysis of the statistics of the participants of the competition This tournament became an important stage in the development of the system of regional competitions in dzhigitovka among children, contributed to increasing interest in the discipline, involving children in sports. Since 2019, regional qualifying competitions have been held to determine the winners and prize-winners who will take part in the competitions on Red Square. This has increased the number and variety of regional competitions in the discipline of "dzhigitovka". The tournament is a children's dzhigitovka competition, which is attended by children aged 7-13 years who have become winners and prize-winners of qualifying competitions in the regions. Table 1 shows statistics on the participation of athletes from the regions in these competitions in the period from 2018 to 2021.

Table 1. – The number of participants in competitions among children in dzhigitovka from the regions

Region/year	2018	2019	2020	2021
Moscow region	5	19	34	13
Volgograd region	7	26	1	46
Voronezh Region	6	4		3
Tver region	1	14	3	4
Novgorod region	1			
Moscow		9	4	21
Saint-Petersburg		14	5	7
Penza region		5		6
Lipetsk region		2	6	3
Leningrad Region			1	
Stavropol Territory				2
Saratov region				10
Perm Region				1
Total:	20	93	54	116
The tournament for the prizes of the Spasskaya Tower Festival	17	20		18

The first dzhigitovka competitions among children for the prizes of the Spasskaya Tower Festival took place in 2018. The invitation to this competition was received by the prize-winners and winners of tournaments among children held within the framework of the 2018 Russian Cup of dzhigitovka and children's dzhigitovka competitions held in the Tver region. At that time, the total number of athletes participating in competitions in jiggig among children did not exceed 20 athletes in Russia.

However, the competitions held within the framework of the Spasskaya Tower Festival on Red Square attracted the attention of many coaches in different regions of Russia. Since the participation of pupils in competitions held in such a significant place as Red Square is a kind of advertising move for coaching, and in the future it makes it possible to attract even more students. And already in 2019, we can observe a serious increase in the participation of children in dzhigitovka competitions. For example, following the results of the past tournaments for children within the framework of All-Russian and regional competitions, the total number of participants increased to 93 athletes in Russia. Due to the growing number of participants in children's competitions, the organizers of the dzhigitovka tournament among children for the prizes of the Spasskaya Tower festival and for the objective selection of the best athletes to join the Red Square, it was decided to hold a qualifying tournament. The qualifying competitions made it possible to identify the best athletes among children and they received an invitation to participate in the finals on Red Square. Also in 2019, there is a tendency to increase the number of regions that have begun to develop dzhigitovka among children (from 5 regions in 2018 to 8 regions in 2019).

In 2020, the COVID-2019 pandemic caused serious difficulties for the competition. Restrictions on holding mass events did not allow holding a tournament for the prizes of the Spasskaya Tower festival on Red Square. In 2021, there was a serious increase in the number of participants in children's competitions to 116 people in Russia. Also, during the 2021 competition season, new regions such as Stavropol, Perm Krai, and Saratov Region have appeared among the participants. Qualifying competitions for the tournament for the prizes of the Spasskaya Tower Festival were also held, in which a record number of athletes took part - 54 people.

Conclusion. In conclusion, I would like to note some contradictions of this tournament. On the one hand, this image event contributes to the popularization of horse riding as a sport, the involvement of children in the training system of equestrian athletes, creates conditions for the development of regional clubs and additional sports events in the regions. Given that the dzhigitovka, in fact, continues the traditions of military training, is based on the culture and traditions of the indigenous peoples of Russia, the holding of the Spasskaya Tower tournament correlates with the goals of the strategy for the development of physical culture and sports in the Russian Federation [3, 4].

However, it should be noted that a surge of interest in children's dzhigitovka was observed in the first years of the tournament. There has been an increase in the number of participants in the regions. If there were 17 athletes in 2018, then in 2021 the number of participants increased to 116 athletes. Then this interest began to decline, which can be observed by a decrease in the number of participants. This is largely due to the lack of a general comprehensive system of sports training in children's and youth equestrian sports. One of the key problems for such a discipline as dzhigitovka is the lack of a system for assigning children's and youth sports categories. Thus, even a very popular and prestigious competition cannot become the basis for the development of a sports discipline without other elements necessary for the preparation of an athlete and the conduct of competitions.

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Aleshko Irina Mikhailovna, undergraduate student, irina.maltsevahh@gmail.com, Federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK".

ВЛИЯНИЕ ТУРНИРА «СПАССКАЯ БАШНЯ» НА РАЗВИТИЕ ДЕТСКОГО СПОРТА В ДИСЦИПЛИНЕ «ДЖИГИТОВКА»

Алешко Ирина Михайловна, магистр, irina.maltsevahh@gmail.com Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматривается значимость проведения имиджевых соревнований, как одного из факторов развития отдельных видов спорта. На примере соревнований по джигитовке среди детей в рамках Международного Военно-Музыкального Фестиваля «Спасская Башня» проводится анализ динамики числа участников соревнований в период с 2017 по 2021 гг. Делаются выводы о краткосрочных позитивных эффектах имиджевых соревнований, при отсутствии комплекса мер по подготовке юных спортсменов.

Ключевые слова: детский спорт, конный спорт, джигитовка, развитие спорта в регионах, фестиваль «Спасская башня»

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ANALYZING YOUTH AWARENESS OF SPORTS VOLUNTEERING

Alyoshina A.A., s/s Kachulina N.N.

Abstract. *The article is devoted to the actual direction of volunteering development as sports volunteering. The article presents the results of sociological research devoted to the awareness of young people about sports volunteering, their understanding of the essence of sports volunteering, the main directions of its development, its distinctive features from event volunteering. The ways of popularization of sports volunteering among youth are suggested.*

Keywords: *sports volunteering, volunteer activity, youth, physical education and sports events*

Introduction. At present, volunteer activity is one of the most important resources for the development of the country both in social, economic and cultural aspects. The development of volunteer activity is important both for society as a whole and for the volunteers themselves. In accordance with the "Concept of Volunteerism (Volunteering) Development in the Russian Federation until 2025" – "Assistance to the development of volunteer activity is included among the priority directions of social and youth policy of the Russian Federation" [1].

The purpose of the research: obtaining sociological information about the awareness of young people about the essence of sports volunteering and its distinctive features young people about the essence of sports volunteering and its distinctive features.

The object of the study: awareness of young people about sports volunteering.

The subject: sports volunteering in the understanding of students of RUS "GTSOLIFC" and Financial University under the Government of the Russian Federation.

Methods. To determine the awareness of young people about the essence of sports volunteering and its distinctive features, we conducted a sociological survey. The survey involved 124 students studying undergraduate, graduate and postgraduate programs from two Russian universities: RUS "GTSOLIFC" (57.4%) and the Financial University under the Government of the Russian Federation (42.6%). 90% of respondents were aged 18 to 25 years old.

The results of the study and their discussion. One of the directions of volunteer activity in Russia is sports volunteering. At present, sports volunteering is being formed as a separate institution in the volunteer movement and as a separate element in the organization of sports and mass events. The activity of sports volunteers should provide not only participation in event sports activities, but also other vectors of development of this direction. For example, "volunteer assistance in physical culture and recreation" to citizens with different age and health status, assistance in the preservation and development of sports infrastructure objects [2]. For modern youth "one of the most significant positions of joining volunteer organizations and movements is both public and personal interest" [3].

The Department of Public Administration and Youth Policy conducted a sociological survey from November 2023 to January 2024, the purpose of which was to obtain information about the awareness of young people about sports volunteering.

The main part of the survey contained questions about the interviewees' experience in volunteering, their personal understanding of the specifics of sports volunteering, its differences from event volunteering, as well as the mechanisms of its support from the state.

As a result, we found out that 93% of the interviewees are involved in volunteering, in particular, event volunteering and sports volunteering 36%.

In order to understand whether there is a difference between these two seemingly identical types of volunteering, the respondents were asked what they put in the concept of "sports volunteering".

The majority of students answered that sports volunteering is one of the types of volunteering activities related to organizing and conducting sports events (74%).

Figure 1 shows that respondents still see the difference between sports and event volunteering in the need for specific skills, prior training and special conditions.

We were also interested in the question of whether sports volunteers need special training. The results of the survey showed that 85% of respondents believe that it is necessary.

Survey participants believe that a sports volunteer should have the following specialized skills:

- teamwork skills;
- communication skills;
- organization;
- self-discipline;
- initiative;
- leadership skills.

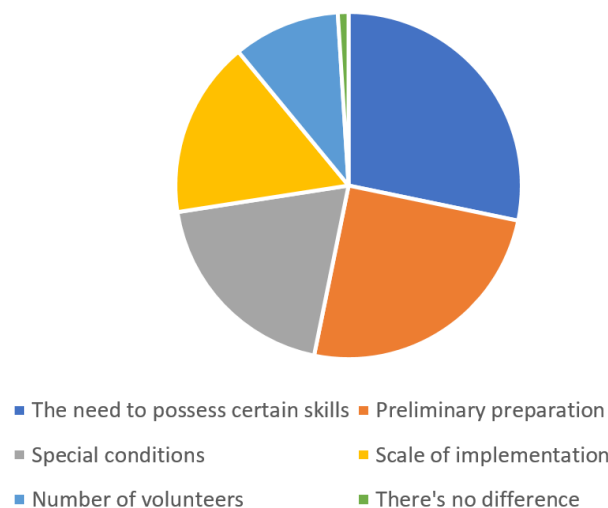


Figure 1. – Distribution of answers to the question "How do you think sports volunteering differs from event volunteering"

Sports volunteering includes many types of activities, but the most relevant to our respondents are:

– Organizing sports and physical education classes and competitions. Every sportsman can try himself as a coach: share his knowledge and skills, get acquainted

with new people, gain experience in this activity in order to develop in this sphere of coaching in the future (39.6%).

- Outreach activities – an opportunity to share their knowledge about sports volunteering, to act as a speaker at sports events, thus performing 2 functions: to popularize this movement and develop their oratorical skills, ability to speak in public and improvise (27,3%).

To the next question "What do you think could be done to popularize sports volunteering?" students answered that the most effective of the proposed options are:

- Involving prominent athletes as sports volunteers (23.1%);
- Creation of a sports volunteering center on the basis of a public organization (20.9%).

Conclusions. The analysis of the obtained data showed that most young people understand the essence of sports volunteering, participation in the organization and conduct of sports events of various levels and scales. In order to successfully conduct physical culture and sports events and competitions it is necessary to prepare for them in advance: to undergo training to master certain skills and abilities that will be useful for successful work, as well as communication with participants and other organizers. One of the most important skills identified by the respondents is the ability to work in a team. Organization, initiative, leadership, and discipline are also considered important.

Volunteer activity in the field of sports volunteering includes a wide range of possible functions, but the most popular remain: organizing and conducting physical culture and sports events and educational activities. Sports volunteers aim to promote this movement: they are ready to tell about it to all interested people, share their experience, interesting moments and events in social networks, to attract as many people as possible to this cause. In this regard, students note that the creation of a sports volunteering center on the basis of a public organization is the best way to promote this type of volunteer activity. Firstly, it is a platform for obtaining the necessary skills, support from like-minded people, self-development and socialization. Secondly, it is an opportunity to develop this movement by inviting famous athletes. Sports volunteers are an economic asset for sports events, because when doing sports volunteering a person is immersed in the event, in a positive environment, performs socially useful tasks, developing their skills and abilities in practice, so it is so important to popularize this type of volunteer activity.

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Alyoshina Alexandra Alekseevna, student of the Department of Public Administration and Youth Policy, sasha-aleshina@list.ru, Russia, Moscow, Federal State Budgetary educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Scientific supervisor - Kachulina Natalia, Russia, Moscow, Federal State Budgetary educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

АНАЛИЗ ИНФОРМИРОВАННОСТИ МОЛОДЕЖИ О СПОРТИВНОМ ВОЛОНТЕРСТВЕ

Алешина Александра Алексеевна, студентка кафедры Государственного управления и молодёжной политики, sasha-aleshina@list.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Качулина Наталья Николаевна, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Статья посвященная актуальному направлению развития волонтерства, как спортивное волонтерство. Приводятся результаты социологического исследования посвященного осведомленности молодежи о спортивном волонтерстве, пониманию его сущности спортивного волонтерства, основных направлениях его развития, его отличительных особенностей от событийного. Предлагаются пути популяризации спортивного волонтерства среди молодежи.

Ключевые слова: спортивное волонтерство, добровольческая деятельность, молодежь, физкультурно-спортивные мероприятия

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UDC 796

PHYSICAL REHABILITATION OF PATIENTS AFTER SPINAL CORD INJURY OF THE THORACIC SPINE IN THE RESIDUAL PERIOD

Andreev V.N., Pereverzeva N.A., s/s Dobrynina L.A.

Abstract. *In this article, modern means and forms of physical rehabilitation are discussed, as well as, their crucial importance in restoring functional independence after spinal cord injury of the thoracic spine.*

Keywords: *physical rehabilitation, restoration of functional independence, spinal cord injury, therapeutic gymnastics*

Introduction. Spinal cord injuries are becoming an increasingly common reason for seeking medical help. The injuries are various: from bruises to severe fractures accompanied by spinal cord damage, which completely determines the further life of the injured person.

Spinal cord injury (SCI) is one of the most complicated diseases today. Although the frequency of occurrence of spinal cord injury is not the highest among other injuries and diseases, however, due to the severity of the consequences and high level of disability, spinal cord injury has special social significance and belongs to one of the most severe types of injuries [1, 2, 3].

Nowadays, unified generally accepted, scientifically substantiated methodological approaches to the assessment of rehabilitation capabilities of patients with the consequences of severe spinal cord injury, allowing to make an optimal choice of tactics for motor rehabilitation using modern technologies of rehabilitation medicine, have not been developed. That is why motor rehabilitation of patients who have suffered from PSMT remains a difficult problem and requires more detailed study [4].

The aim of the study was to improve cardiovascular, musculoskeletal, and functional independence for patients with spinal cord injury.

Methods. To solve the problems of physical rehabilitation, and to confirm the effectiveness of the applied means and forms of physical rehabilitation, the following research methods were used: pedagogical experiment; study and analysis of scientific and methodological literature in the sphere of physical rehabilitation; visual assessment of motor activity; assessment of cardiovascular system (Ruffier test); assessment of functional independence (FIM scale).

In our work with literature sources and scientific publications, special attention was paid to the study of modern means and methods of physical rehabilitation for people with PCMT at the level of the thoracic spine. According to the scientific literature on the subject of our study, the etiology, pathogenesis, clinical Figure, modern classifications, risk factors of the pathology under study, restoration of lost functions and features of social adaptation were studied.

Research design. The study was conducted at the rehabilitation center – JSC “Preodolenie”, Moscow in three stages.

For the pedagogical experiment one group was formed, which included 10 men in the age range from 27 to 38 with an injury in the thoracic spine, specifically with a partial lesion of the spinal cord (not a complete break) Th9-Th 11, the duration of injury was from 3 to 4 years.

In terms of motor level, the patients were a homogeneous group: they could not walk, had no voluntary active movements in the lower extremities, and did not have full control over the lumbar and abdominal muscles. They moved in a wheelchair. They could not walk; they could not hold a standing position except with the help of an instructor or support on their hands. They could only move from sitting to standing independently with support or with the help of an instructor. At the beginning of classes, they were practically unable to hold the standing position stably.

The group was engaged in physical rehabilitation program developed by us. The sessions were realized 5 times a week, the duration of the experiment was 5 weeks.

The physical rehabilitation program included 3 periods: introductory (7 days),

main (21 days) and final (7 days).

The introductory period had a duration of 7 days and its main task was to prepare the trainee for the upcoming physical activity. This period included therapeutic gymnastics, therapeutic massage, hydrokinesotherapy.

The main period was 21 days long; physiotherapy, mechanotherapy and functional-spatial rehabilitation were added to the means and forms of physical rehabilitation from the introductory period. The number and volume of exercises in therapeutic gymnastics increased.

The final period of the physical rehabilitation program was characterized by the finishing of individual methods of training and preparation for the transition to the self-training at home. During this period, the range of applied physical exercises was expanded and the new learned skills were consolidated.

Results of the research. To find out the effectiveness of the physical rehabilitation program developed by us, a pedagogical experiment with the use of special test samples was conducted. Using the Ruffier test, where the main evaluation criterion is the time of heart rate normalization after push-ups from the wheelchair, the result was recorded in seconds.

The average improvement was 7.2 seconds. Ruffier test results improved by 9 percent, indicating a good level of adaptation to exercise in patients with PSMT in the residual period.

FIM scale scores improved. Mobility improved by 11%, motor activity by 38%, and maintenance increased by 12.6%, which proves a good result of working with patients with PSMT in the residual period of rehabilitation. We achieved this level through therapeutic gymnastics, mechanotherapy, therapeutic massage, functional-spatial rehabilitation and hydrokinesotherapy.

Conclusions. Based on all the results of the research, the program selected for these patients was successful. All patients adapted to the changes due to PSMT, learned to move independently and overcome difficulties with a wheelchair, and learned the technique of transfer. Patients had improved muscle tone and exercise tolerance. The group is fully prepared to continue the training process and is able to live independently with minimal assistance from outsiders.

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Andreev Valentin Nikolaevich, 1st year postgraduate student of Department of physical rehabilitation, massage and health physical culture named after I.M. Sarkizov-Serazini, valentin.99.99@list.ru, Russia, Moscow; Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK»

Pereverzeva Natalia Aleksandrovna, Candidate of Physical Sciences, Associate Professor, Department of FR, I.M. Sarkizov-Serazini MiOFK, Russia, Moscow; Federal State Budgetary Educational Institution of Higher Education «Russian university of sport «GTSOLIFK».

Scientific supervisor – Dobrynina Lyudmila Aleksandrovna, Russia, Moscow; Federal State budget educational institution of higher education «The Russian university of sport «GTSOLIFK»

ФИЗИЧЕСКАЯ РЕАБИЛИТАЦИЯ ЛИЦ ПОСЛЕ ПОЗВОНОЧНО-СПИНОМОЗГОВОЙ ТРАВМЫ ГРУДНОГО ОТДЕЛА ПОЗВОНОЧНИКА В РЕЗИДУАЛЬНОМ ПЕРИОДЕ

Андреев Валентин Николаевич, аспирант 1 курса кафедры ФР, МиОФК им. И.М. Саркизова-Серазини valentin.99.99@list.ru; Россия, Москва; Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Переверзева Наталья Александровна, к.ф.н., доцент кафедры ФР, МиОФК им. И.М. Саркизова-Серазини, Россия, Москва; Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Добрынина Людмила Александровна, Россия, Москва; Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье рассматриваются современные средства и формы физической реабилитации, а также, их решающее значение в восстановлении функциональной независимости после позвоночно-спинномозговой травмы грудного отдела позвоночника.

Ключевые слова: физическая реабилитация, восстановление функциональной независимости, позвоночно-спинномозговая травма, лечебная гимнастика

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UDC 796

SPORT ACTIVITY INFLUENCE ON ADOLESCENTS' CHOICE OF COPING STRATEGIES AND THEIR AGGRESSIVE BEHAVIOR

Andreeva M.M.

Abstract. *This work is aimed at studying the coping strategies of adolescents. It was researched the differences in coping process methods of adolescence, who are involved and are not involved in sport. And also, it was studying the connection between sport activity and adolescence aggressive behavior.*

Keywords: *coping strategies, coping process, adolescence aggression, self-regulation style*

Introduction. *Coping behavior (coping strategies) is one of the major and currently debated research issue. This is due to the increase in stressful situations*

both in everyday life and in sport of high achievements. The choice of coping strategies depends on person's abilities and resources. One of the most powerful resources is sport.

The most personal qualities are formed during adolescence. Emotional balance, sensitivity and imbalance, impetuosity in the manifestation of reactions, all this is typical for adolescents. In addition, it is natural for them to resolve conflict situations by using verbal and physical aggression, since other methods and options are not sufficiently developed.

It is known that development of coping strategies is affected by personal characteristics, coping resources, locus of control, life experience, environment and examples, methods of upbringing (not only in the family, but also in educational institutions and sports activities).

Purpose of this work. Studying of the coping process strategies of adolescents who are involved and are not involved in sport, and comparison the level of aggression in these two groups.

Methods:

1. Buss-Perry Aggression Questionnaire, BPAQ for diagnosing the level of aggression;
2. The Coping Strategy Indicator (CSI; Amirkhan).

We hypothesized the two studied groups will use different coping strategies in their live situations; we guess that sport has a positive effect on the manifestation of teenage aggression, reducing them.

Experiment design: the study was conducted on the basis of Municipal Educational Institution Secondary School No. 8 in Mytishchi. To study aggression and coping strategies of adolescents who do sports, we have 60 students (grades 8-9): 32 girls and 28 boys aged 13-15 years old. The study of adolescent athletes' coping strategies involved 52 teenagers from the "Children of Water" swimming club in Mytishchi, 28 girls and 24 boys aged 13-15 years old, who regularly take part in competitions.

Results discussion. During the study, the following results were obtained:

When studying the level of aggression of adolescents who are not involved in sports, it was revealed that 10.00% of students have a high level of aggression, 71.67% have an average level of aggression, and 18.33% have a low level of aggression (table 1).

Table 1. – Level of aggression of adolescence non athletes (Bass-Perry technique)

	Physical aggression, %	Anger, %	Hostility, %	Overall level of aggression, %
High level of aggression	3,33	13,33	26,67	10,00
Average level of aggression	56,67	51,67	68,33	71,67
Low level of aggression	40,00	35,00	5,00	18,33

Studying the level of aggression of adolescent athletes, we have got that 3.92% of students have a high level of aggression, 29.41% have an average level of aggression, and 66.67% have a low level of aggression (table 2).

Table 2. – Level of aggression of adolescent athletes (Bass-Perry technique)

	Physical aggression, %	Anger, %	Hostility, %	Overall level of aggression, %
High level of aggression	1,96	7,84	15,69	3,92
Average level of aggression	41,18	58,82	80,39	29,41
Low level of aggression	56,86	33,33	3,92	66,67

To compare two samples, the statistical nonparametric Mann-Whitney U test was used. The results are presented in table 3.

Table 3. – Comparison of samples for differences in aggression levels.

	U	Significance level
Overall level of aggression	1249,5	p<0,05
Physical aggression	1101	P<0,01
Anger	1383,5	p>0,05
Hostility	1349,5	p>0,05

The results obtained indicate that adolescent athletes differ from their peers who are not involved in sport in terms of the level of physical aggression. At the same time, anger and hostility do not differ significantly.

When diagnosing the coping strategies of adolescents who are not involved in sport, the following data were obtained: adolescents use all strategies, with the “problem solving” and “avoidance” strategies being used equally (table 4).

Table 4. – Methods of overcoming behavior (Amirkhan method) of adolescent non athletes

Level	Problem solving	Seeking social support	Avoiding
High	51,67	30,00	41,67
Average	43,33	43,33	56,67
Low	5,00	26,67	1,67

When diagnosing the coping strategies of adolescent athletes, data was obtained indicating that adolescent athletes more often use the “problem resolution” strategy and much less often the “avoidance” strategy (table 5).

Table 5. – Methods of overcoming behavior (Amirkhan method) of adolescent athletes

Level	Problem solving	Seeking social support	Avoiding
High	78,43	62,75	13,73
Average	21,57	37,25	64,71
Low	0,00	0,00	21,57

A comparison of two samples on the choice of coping strategies revealed that adolescents who play sports are significantly less likely to choose the “avoidance” strategy when faced with difficult life situations than their peers who are not involved in sports (table 6).

Table 6. – Comparison of samples by ways of overcoming difficult life situations

	U	Significance level
Problem solving	1379	p>0,05
Seeking social support	1268.5	p>0,05
Avoiding	1118	p<0,01

Conclusions:

1. As a result of the study, we can say that adolescent athletes are less likely to show physical aggression towards others.

2. Adolescent athletes are much less likely to resort to non-adaptive coping strategies, such as “avoidance” in difficult life situations, preferring to use the strategies of “problem resolution” and “seeking social support.” While teenagers who do not do sports use “avoidance” strategies much more often.

This reserch can be continued to study the influence of sport not only on aggressive behavior, but also on ways to overcome difficult life situations.

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Andreeva Malika Musaevna – Postgraduate Student of the Department of Psychology, Philosophy and Sociology at the Russian university of sport «GTSOLIFK», Moscow, Russia.

ВЛИЯНИЕ СПОРТИВНОЙ ДЕЯТЕЛЬНОСТИ НА ВЫБОР КОПИНГ-СТРАТЕГИЙ В ПОДРОСТКОВОМ ВОЗРАСТЕ И ПРОЯВЛЕНИЯ АГРЕССИИ.

Андреева Малика Мусаевна, Аспирант кафедры психологии, философии и социологии, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», Россия, Москва, Andreeva.malika@gmail.com

Аннотация. Данная работа направлена на изучение копинг-стратегий подростков. Были исследованы различия в выборе способов преодолевающего поведение у подростков, которые занимаются спортом и не занимаются спортом. А также, влияние спортивной деятельности на проявление агрессивного поведения в подростковом возрасте.

Ключевые слова: копинг-стратегии, процесс совладания, подростковая агрессия, стиль саморегуляции

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UDC 796

AN INDICATOR OF THE ENERGY STRUCTURE OF PHYSIOLOGICAL COSTS BASED ON MEASURING THE PULSE AMOUNTS OF WORK AND RECOVERY

Anshakov N.I., Tambovtseva R.V., Kozlov A.V., Sonkin V.D.

Abstract. *The purpose of the study is to search for a simple, informative indicator of the energy structure of physiological costs when performing cyclic work of varying intensity.*

18 road and BMX cyclists (Bicycle MotoX) (1 category, KMS, age -25.5 ± 7.6 years, weight -72.1 ± 9.2 kg, $VO_{2max} - 56.6 \pm 11.00$ ml/min/kg), in different days performed a series of maximum power exercises on a bicycle ergometer for a fixed duration of 10, 30, 60, 120, 360 s. Heart rate, oxygen consumption, and blood lactate concentration were measured. The relative contribution of anaerobic processes ($AnCO_2$) in the overall energy supply of work was calculated based on the volumes of oxygen consumed during work and recovery. A similar indicator ($AnCPA$) was calculated based on the pulse sums of work and recovery.

The pulsometric indicator $AnCPA$ is closely linearly interrelated with $AnCO_2$ ($r^2=0.97$), exercise power ($r^2=0.85$, the nature of the relationship is logarithmic) and the rate of lactate accumulation in the blood ($r^2=0.98$, the nature of the relationship is exponential).

The results of the study make it possible to use the proposed heart rate indicator to assess the structure of exercise energy consumption, and on this basis, to determine the direction of the cyclic training load.

Keywords: *limit cyclic exercises, intensity of energy consumption, heart rate indicators, athletes cyclists*

Introduction. In sports practice, in order to use adequate methods of training impact, accurate, correct methods of evaluating the performance characteristics of an athlete are necessary [1]. The orientation of an athlete's training adaptation depends on the contributions to the energy supply of the mechanisms generating ATP, the value of which depends primarily on the intensity and duration of the exercise [2-5]. This means that in order to comply with the target orientation of the exercise, correction of the intensity and duration of work is required, which can be based on the physiological and biochemical parameters of the athlete's condition. Currently, informative markers for controlling the orientation of the training process are changes in the concentration of lactate in the blood and the amount of oxygen consumed during work and recovery in the athlete in standard and maximum exercises [3,6]. These methods of monitoring the athlete's condition require the use of complex gasometric equipment and invasive intervention, which is practically impossible in routine training practice. Meanwhile, the widespread use of wearable heart rate recorders allows you to obtain a large amount of personal information about the dynamics of an athlete's functional state.

Purpose of the research. The purpose of our study is to find an easy-to-use pulsometric indicator of the energy structure of physiological costs when performing cyclic work of varying intensity.

Methodology. The experimental work was carried out on the basis of GKU “TSTISK” Moskomsport (Moscow). The study involved 18 cyclists – BMX (Bicycle MotoX) and road riders (1st class, CMS, age – $25,5 \pm 7,6$ years, weight – $72,1 \pm 9,2$ kg).

Previously, to determine the maximum functional parameters, the athletes performed a ramp test on the Lode Excalibur sport bicycle ergometer (Netherlands): the initial power was 60 watts, then the power smoothly increased, at a speed of 15 watts/min, the pedal speed was 70-75 revolutions per minute.

Athletes, with an interval of 1-2 days between tests, consistently performed a series of maximum exercises on the Lode Excalibur Sport bicycle ergometer (Netherlands) with maximum power and a fixed duration of 10, 30, 60, 120, 360 seconds. The maximum exercises lasting 10 and 30 seconds were performed by athletes in the “full” mode, exercises lasting 60, 120, 360 seconds were performed with the setting to show the highest performance that was available to them according to the state of health at the time of testing.

Before each test, the athletes performed a standard warm-up on a bicycle ergometer (with a power of 1 W/kg, lasting 5 minutes), after completing the warm-up, the athlete remained “in the saddle” (5 minutes), at which time the pre-start level of functional indicators was recorded. Functional indicators were also recorded during the performance of work and during the recovery process, during which the subject remained in the sitting position on the bicycle ergometer for 10 minutes.

Heart rate and gasometric load characteristics were recorded using a Cosmed Qark gas analyzer (Italy), which was The data was averaged in five-second intervals.

The lactate concentration in capillary blood was determined by an automatic Biosen C-Line analyzer (EKF-diagnostic GmbH., Germany) immediately before the exercise, immediately after the end, and then for 3,5,7,10 minutes of recovery. The maximum concentration of lactate in the blood (La_{max}) was usually fixed at the third or fifth minute of recovery.

Statistical data analysis was performed using the R environment (version 3.5.1) and MS Excel. Linear and nonlinear regression analysis was used to determine the strength and nature of the relationship between the indicators of ergometric and physiological parameters of physical activity.

Calculated indicators:

PLO_2 is the pre-launch oxygen consumption level in a state of relative rest before the start (l/min).

OR is the oxygen demand of the exercise (L), calculated as the sum of oxygen intake (OS) and oxygen debt (OD):

$$OR = OS + OD \text{ (f. 1), where}$$

OS – oxygen intake (l) – the volume of oxygen consumed above the pre-start level, calculated during the exercise;

OD – oxygen duty of the exercise (l) – the amount of oxygen consumed above the pre-start level, calculated for 10 minutes of recovery.

AnCO₂ – the contribution of anaerobic processes to the overall energy supply of the work was calculated by oxygen consumption as the ratio of oxygen debt to oxygen demand:

$$\text{AnCO}_2 = \text{OD} / \text{OR} \text{ (f. 2).}$$

VLa is the rate of lactate accumulation (mmol/l/min), calculated as the ratio of the fixed maximum lactate concentration (La_{max}) to the duration of work in the exercise (t_e):

$$\text{VLa} = \text{La}_{\text{max}} / t_e \text{ (f. 3).}$$

Heart rate is the pre-start heart rate level in a state of relative rest before the start (beats /min).

PR is a pulse request, calculated as the pulse sum of work and recovery above the pre-start level:

$$\text{PR} = \text{PAw} + \text{PAr} \text{ (f. 4), where}$$

PAw is the pulse sum (beats) above the pre-start level, calculated during the work in the exercise;

PAr is the pulse amount (beats) above the pre-start level, calculated in 5 minutes of recovery.

AnC_{PA} – the contribution of anaerobic processes to the overall energy supply of the work was calculated by the pulse amounts of work (PAw) and recovery (PAr):

$$\text{AnC}_{\text{PA}} = \text{PAr} / (\text{PAw} + \text{PAr}) \text{ (f. 5).}$$

In our study, in many cases the heart rate was restored much longer than 5 minutes after the end of work, but the fastest changes in heart rate after the end of the load were completed by the fifth minute of recovery, so the amount of pulse debt was calculated in 5 minutes.

If the athlete's heart rate and/or O₂ consumption stabilized at the pre-start level earlier than 5 minutes in terms of heart rate dynamics or 10 minutes in terms of O₂ consumption dynamics, then oxygen and pulse debt was calculated for the real recovery time.

Oxygen volumes and pulse amounts were calculated as the product of average values and estimated time from measured data in MS Excel.

Results of the research. Table 1 presents the average group anthropometric and maximum functional parameters of the subjects (n = 18) obtained in the ramp test on a bicycle ergometer.

Table 1. – Anthropometric indicators and maximum functional indicators of athletes based on the results of the ramp test and the MAM test (M ± σ)

Age, years	Body weight, kg	Body length, cm	VO _{2rel} , ml/min/g	HR _{max} , bpm	W _{maxrel} , W/kg	MAM, W/kg
25,5 ± 7,6	72,1 ± 9,2	179 ± 9	56,6 ± 11	189 ± 9	4,76 ± 0,6	12,7 ± 1,2

Designations: VO_{2rel} – maximum oxygen consumption; HR_{max} – maximum heart rate; W_{maxrel} – relative maximum power in VO_{2max} mode, MAM – maximum anaerobic power.

Ergometric and physiological indicators calculated by pulse sums, by the volume of O₂ consumed and the concentration of lactate in the blood in extreme exercises are presented in table 2.

Table 2. – Ergometric and physiological parameters of the study ($M \pm \sigma$) obtained in limit exercises

Indicators	Duration of the exercise, s				
	10	30	60	120	360
$W_{av,rel}$, W/kg	10,4±0,9	9,8±0,8	7,9±0,6	6,3±0,7	4,9±0,8
AnCO ₂ , %	97±1	89±6	74±6	55±5	26±3
AnC _{PA} , %	95±2	88±5	77±4	61±5	32±4
L _{max} , mmol/l	7,02±1,8	14,7±2,5	16,1±2,4	15,8±2,4	14,4±2,6
VLa, mmol/l/min	32,0±8,6	21,9±5,8	13,0±1,6	6,5±1,3	1,93±0,5

Designations: L_{max} is the maximum lactate concentration; VLa is the rate of lactate accumulation.

Table 2 shows: with a decrease in the maximum load capacity, the relative anaerobic contribution to the total energy supply of the work, calculated by the amount of oxygen consumed and by pulse amounts, decreases along with a decrease in the VLa.

Using individual data obtained in a series of limit exercises, a Figure was constructed (Fig. 1) demonstrating the interdependence of VLa and AnC_{PA} in exercises corresponding to the range of loads of strenuous muscular activity.

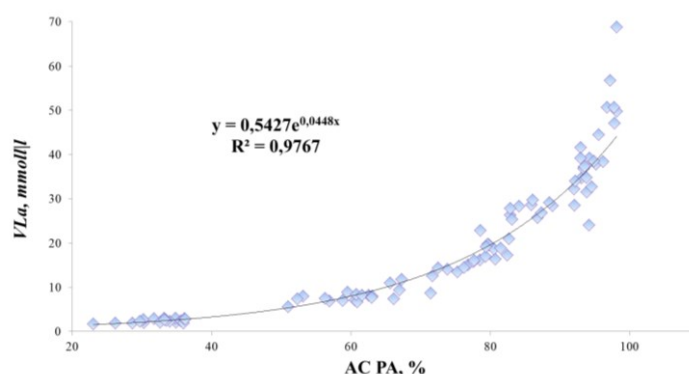


Figure 1. – The dependence of quantities AnCO₂ and the AnC_{PA} in the load range from the power approximately corresponding to the VO_{2max} to the MAM (n=90).

Table 3 presents the results of a regression analysis characterizing the dependence of the Full-face and AnVO₂ indicators on each other, as well as on the mechanical power of the exercise and VLa in limit exercises.

Table 3. – Coefficients of determination of regression analysis of the relationship between AnCO₂, AnC_{PA} and indicators characterizing the intensity of exercise in the range of loads from AnT to MAM (n=90)

Indicators	AnCO ₂	W _{maxrel} , W/kg	VLa
AnCO ₂	1,00	0,73*	0,97**
AnC _{PA}	0,97	0,85*	0,98**

*The logarithmic nature of the dependence;

** Exponential nature of dependence

In limit exercises of different duration, the indicators of the structure of physiological costs, calculated both by pulse amounts and oxygen consumption, are closely interrelated with each other, as well as with the power of exercise and the rate of lactate accumulation (table 3).

Probably, the high level of interrelation of these characteristics of an athlete's performance is due to the fact that heart rate is an expression of both regulatory and metabolic components of the process of energy-vegetative provision of strenuous muscular activity. And also by the fact that the ratio of the amounts of oxygen intake, oxygen debt and their derivatives in the form of corresponding pulse amounts depends on the degree of involvement in the work of various energy supply mechanisms, which depends primarily on the intensity and duration of exercises [7].

Conclusions 1. The heart rate indicator of AnC_{PA} is closely linearly interrelated with a similar gasometric indicator ($r^2 = 0,97$), exercise power ($r^2 = 0,85$, the nature of the relationship is logarithmic) and the rate of lactate accumulation in the blood ($r^2 = 0,98$, the nature of the relationship is exponential).

2. The results of the study make it possible to use the proposed pulsometric indicator to assess the structure of energy supply when performing physical work of a cyclic nature, and on this basis use AnC_{PA} to control the orientation of the training load.

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Anshakov Nikolai Ivanovich, 2st year postgraduate student, anshakov.nikolya@mail.ru, Department of Biochemistry and Bioenergetics of Sports, The Russian University of Sport «GTSOLIFK», Moscow, Russia. No. 4 Sirenevyy Blvd. Moscow Russia 105122

Tambovtseva Ritta Viktorovna, Professor, Doctor of Biological Sciences, ritta7@mail.ru, The Russian University of Sport «GTSOLIFK», Moscow, Russia.

Kozlov Andrei Vladimirovich, postgraduate student, 89165363085a@mail.ru, Department of Biochemistry and Bioenergetics of Sports, The Russian University of Sport «GTSOLIFK», Moscow, Russia. No. 4 Sirenevyy Blvd. Moscow Russia 105122

Sonkin Valentin Dmitrievich, Professor, Doctor of Biological Sciences, sonkin@mail.ru, The Russian university of sport «GTSOLIFK», Moscow, Russia

ПОКАЗАТЕЛЬ ЭНЕРГЕТИЧЕСКОЙ СТРУКТУРЫ ФИЗИОЛОГИЧЕСКИХ ЗАТРАТ, ОСНОВАННЫЙ НА ИЗМЕРЕНИИ ПУЛЬСОВЫХ СУММ РАБОТЫ И ВОССТАНОВЛЕНИЯ

Аншаков Николай Иванович, аспирант 2-го года обучения, anshakov.nikolya@mail.ru, кафедра биохимии и биоэнергетики спорта, Российский университет спорта "ГЦОЛИФК", Москва, Россия. Сиреневый бульвар, д. 4. Москва Россия 105122

Тамбовцева Ритта Викторовна, профессор, доктор биологических наук, ritta7@mail.ru, Российский университет спорта "ГЦОЛИФК", Москва, Россия. Сиреневый бульвар, д. 4, Москва, Россия, 105122. Москва Россия 105122

Козлов Андрей Владимирович, аспирант, 89165363085a@mail.ru, кафедра биохимии и биоэнергетики спорта, Российский спортивный университет "ГЦОЛИФК", Москва, Россия. Сиреневый бульвар, д. 4. Москва Россия 105122

Сонькин Валентин Дмитриевич, профессор, доктор биологических наук, sonkin@mail.ru, Российский университет спорта "ГЦОЛИФК", Москва, Россия. Сиреневый бульвар, дом 4, Москва, Россия 105122. Москва Россия 105122

Аннотация. Цель исследования – поиск простого, информативного показателя энергетической структуры физиологических затрат при выполнении циклической работы различной интенсивности.

18 велосипедистов – шоссейников и ВМХ (Bicycle MotoX) (1 разряд, КМС, возраст – 25.5 ± 7.6 лет, вес – 72.1 ± 9.2 кг, МПК – 56.6 ± 11.00 мл/мин/кг), выполняли на велоэргометре в разные дни серию упражнений предельной мощности при фиксированной продолжительности 10, 30, 60, 120, 360 с. Измеряли ЧСС, потребление кислорода, концентрацию лактата в крови. Относительный вклад анаэробных процессов (AnV_{O_2}) в общем энергообеспечении работы рассчитывался по объемам потребленного кислорода во время работы и восстановления. Аналогичный показатель ($AnV_{ПС}$), рассчитывался по пульсовым суммам работы и восстановления.

Пульсометрический показатель $AnV_{ПС}$ тесно линейно взаимосвязан с AnV_{O_2} ($r^2=0.97$), мощностью упражнения ($r^2=0.85$, характер взаимосвязи логарифмический) и скоростью накопления лактата в крови ($r^2=0.98$, характер взаимосвязи экспоненциальный).

Результаты исследования позволяют использовать предложенный пульсометрический показатель для оценки структуры энергозатрат упражнения, и на этой основе – определения направленности циклической тренировочной нагрузки.

Ключевые слова: предельные циклические упражнения, интенсивность энергозатрат, пульсометрические показатели, спортсмены велосипедисты

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ANALYSIS OF THE EFFECTIVENESS OF TEACHING CHESS IN SCHOOLS

Antonova N.P.

Abstract. *An excursion into the development of chess at school is presented in this article, it is presented the methodological recommendations for parents and coaches at the initial stage of education, contributing to the progress pupils in the process of learning chess.*

Keywords: *chess, teaching chess at school, methodological recommendations for parents and coaches*

Introduction. Chess is a necessary activity for the formation of one's own intelligence – during the game, not only memory, logical thinking and attention naturally develop, but also imagination.

It is noted in the International Chess Federation (FIDE) report that today more than 25 million children play chess in schools around the world, fifteen million of them are in India, five million are in China. There are more than ninety thousand teachers teaching children, so there is an acute shortage of teachers teaching chess to children in schools [3].

The **purpose** of our study is to study the specifics of teaching chess in schools and develop practical recommendations for coaches and parents on working with beginner's chess players.

Methods. Analysis and generalization of literary sources; pedagogical supervision.

Discussion. More than 78 countries have developed qualification programs for teaching chess at schools. In some of them, such as in Israel, chess is an optional subject. In many countries, chess is becoming part of the compulsory curriculum. It remains an urgent question who should teach chess children in schools, a sport coaches or a specialist teacher who has been retrained in this specialization. Nevertheless, a coach or teacher must know the basics of pedagogy, psychology, and physiology for teaching children in schools. As it was correctly noted at the international scientific and practical conference "Chess education is an important resource of the world education system." Khanty-Mansiysk, June 10-13, 2013, that children need to be taught an important skill that will be useful in life – the development of the ability to act "in the mind" and the formation of children's need for creative self-expression through chess [1, c. 35-36].

Armenia became the first country where the basics of the game were taught in secondary schools as part of an academic rather than a sports subject. The program was introduced in 2011, and in 2012 chess became a separate discipline at the Armenian State Pedagogical University. A few years later, a specialized bachelor's degree program appeared, and a Chess Research Center was opened. As teachers from Armenia noted, decent parental support and family conditions for preparing students for lessons are also among the priorities and key factors for the successful introduction of chess into school curricula: This area needs to be analyzed more deeply in order to understand the ways and possibilities of schools to improve the

quality of education [2]. Children who receive constructive help from their parents at home get much more out of playing than those who do not. Based on the study of methodological and scientific literature, generalization of the experience of highly qualified coaches and personal coaching experience, we have developed the following methodological recommendations for parents so that children can make qualitative progress in chess.

During the game. 1. When you first sit down to play with your child, play only with the king and pawns against your child's full army of pieces. If your child beats you, add a knight in the next game. Keep reporting the pieces until you find the level that will ensure equal play. 2. Make deliberate mistakes to see if your child will notice or not. (You can try to say Oh, no! My last move was a mistake or I made a mistake! in order to give him a hint. 3. When reaching the winning position, turn the board over so that your child takes your winning position. 4. Give the child the opportunity to turn the board over a certain number of times in each game. 5. Talk about the course of the game, explaining your moves and giving children the opportunity to explain their moves. For example: "You can say: "I'm bringing out a knight," because it's good to develop pieces and knights at the beginning of the game. "I attacked your queen!"; what piece do you think you should bring out? "Think about what your next move is."

Chess is becoming more dynamic every year, there is not much time to think about it. The following recommendations are that the child should see and count first of all at the chessboard when the opponent makes moves. It is necessary to instill this mindset to the child from the very first lessons in chess.

Attack, defense and threat. These concepts are the cornerstone of chess logic. Until a child learns them, he will not be able to learn how to play chess well. Children can learn to see threats by playing for example a simple tic-tac-toe game.

Here are some ideas on how to consolidate these concepts when a parent is playing chess with their child:

1) When you create a THREAT say "Do you see what I'm threatening"? 2) When your child poses a threat, say, I see you attacking my bishop. Great job! 3) When your child is about to make a move, say: Make sure you put the piece on a safe square. 4) It is necessary to make accidental mistakes (deliberately) putting the piece where it can be captured. 5) Teach children to check (CHECKS, CAPTURES, THREATS) first of all during the game.

Conclusion. To summarize the above-mentioned recommendations results of this research, we can conclude that:

1. Chess as an academic discipline is mainly considered as a positive factor in the personal development of students.

2. The level of education of parents is one of the frequently occurring contextual factors influencing the adequate introduction of chess in schools.

3. Decent support from parents and family conditions for preparing students for lessons are also among the priorities and key factors for the successful introduction of chess into school curricula. This area needs to be analyzed more deeply in order to understand the ways and possibilities of schools to improve the quality of education.

4. The pedagogical impact of teachers and their attitude towards education for all are also essential for effective learning.

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Antonova Nadezhda Pavlovna – Lecturer of the Department of Theory and Methodology of Computer Sports, Chess and Digital Technologies of the Russian University of Sport «GTSOLIFK»; address: No 4 Sireneviy Blvd Russia, Moscow, E-mail: a_nadezhda88@mail.ru

АНАЛИЗ ЭФФЕКТИВНОСТИ ПРЕПОДАВАНИЯ ШАХМАТ В ШКОЛАХ

Антонова Надежда Павловна – преподаватель кафедры теории и методики компьютерного спорта, шахмат и цифровых технологий РУС «ГЦОЛИФК»; E-mail: a_nadezhda88@mail.ru, Москва, Россия

Аннотация. В статье представлен экскурс развития шахмат в школах, представлены методические рекомендации для родителей и тренеров на начальном этапе обучения, способствующие прогрессу младших школьников в процессе обучения шахматам.

Ключевые слова: шахматы, обучение шахмат в школе, методические рекомендации для родителей и тренеров

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MORPHOFUNCTIONAL FEATURES OF SWIMMERS OF DIFFERENT SPECIALIZATIONS

Astakhov N.S., Chebotareva I.V.

Abstract. *The article is devoted to the study of morphofunctional features of swimmers, depending on their specialization. The differences and characteristic features of morphofunctional*

indicators of athletes specializing in different swimming strokes are revealed. Taking into account these indicators can be used for the selection and individualization of swimming training.

Keywords: swimming, physique, morphofunctional features, swimming strokes

Relevance. It is known that each sport has its own effect on the physique of athletes. In addition, there are differences within specialization, the definition of which largely depends on the initial somatotype of the individual [2]. In a number of sports, morphofunctional features can be constraints in achieving high athletic performance [1, 2, 3]. The study of morphological and functional indicators makes it possible to determine the level of physical development of athletes and its effect on the manifestation of physical qualities [4]. Taking into account these features help to maximize the potential of each athlete and build the training process more effectively.

The purpose of the study. Identification of morphofunctional features of swimmers of different specializations.

Research methods. The study involved swimmers aged 18-20 years in the number of 40 people specializing in freestyle, backstroke, breaststroke and butterfly and having sports qualifications from the 1st category to the master of sports.

The following research methods were used in the work: 1. Analysis of scientific and methodological literature 2. Anthropometry 3. Methods of mathematical statistics.

The results of the study and the discussion. A comparison of the main indicators of physical development of different specializations swimmers revealed that backstroke significantly exceed representatives of other specializations in body length (table 1).

Table 1. – The main indicators of physical development of swimmers of different specializations

Indicators	Butterfly swimmers (n=10)	Backstroke swimmers (n=10)	Breaststroke swimmers (n=10)	Freestyle swimmers (n=10)
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
Body length, cm	179,1 $\pm$ 2,9	185,3 $\pm$ 3,2	177,3 $\pm$ 2,5	179,2 $\pm$ 2,9
Body weight, kg	79,5 $\pm$ 3,8	83,7 $\pm$ 3,1	72,3 $\pm$ 4,1	71,0 $\pm$ 2,9
Chest circumference, cm	97,8 $\pm$ 4,5	93 $\pm$ 3,6	92,5 $\pm$ 4,1	98,5 $\pm$ 5,2
Broca Index, c.u.	0,4	1,6	5	8,2

Butterfly swimmers and freestyle swimmers have approximately the same indicators, and breaststroke swimmers are the shortest.

Backstroke (83,7 kg) and butterfly (79,5 kg) swimmers have got the highest body weight, and breaststroke swimmers (72,3 kg) and freestyle swimmers (71,0 kg) – the lowest. As for the chest circumference, the freestyle and butterfly swimmers are superior (98,5 cm and 97,8 cm, respectively). Backstroke and breaststroke swimmers showed lower indices (93,0 cm and 92,5 cm).

The Broca index is one of the indicators reflecting the buoyancy of athletes – the higher this indicator, the better the buoyancy of the athlete's body. Among swimmers of different specializations, the highest values were found in freestyle (8,2) and breaststroke (5,0) swimmers, backstroke (1,6) and butterfly (0,4) swimmers had

lower values. The results of the analysis of the circumference of the body of swimmers of different specializations are presented in Table 2.

The highest values of hip girth (60,3 cm) and shoulder girth (36,0 cm) are observed in butterfly, which is explained by the increased load on the muscular system of swimmers. The differences in hip circumference among freestyle, backstroke and breaststroke swimmers are insignificant. In terms of forearm girth, representatives of the three swimming strokes have approximately the same values. Freestyle swimmers are slightly inferior to them. As for the circumference of the shin, backstroke swimmers have a higher value (39,5 cm), in freestyle stroke this indicator is lower (36,4 cm). The intermediate position between them is occupied by butterfly and breaststroke swimmers.

Table 2. – Circumference body sizes of different specializations swimmers

Indicators	Butterfly swimmers (n=10)	Backstroke swimmers (n=10)	Breaststroke swimmers (n=10)	Freestyle swimmers (n=10)
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
Shoulder girth, cm	36,0 $\pm$ 1,0	35,5 $\pm$ 0,8	34,5 $\pm$ 0,7	35 $\pm$ 0,4
Forearm girth, cm	28,0 $\pm$ 0,8	28,0 $\pm$ 1,2	27,9 $\pm$ 1,1	27,0 $\pm$ 0,6
Hip girth, cm	60,3 $\pm$ 4,1	57,3 $\pm$ 1,2	57,3 $\pm$ 1,6	57,3 $\pm$ 1,3
Shin girth, cm	38,8 $\pm$ 1,1	39,0 $\pm$ 0,5	37,0 $\pm$ 1,2	36,4 $\pm$ 1,3

The analysis of the body weight components of the tested swimmers showed that backstroke swimmers (55,3 %) significantly outperform those specializing in butterfly (47,5 %) and breaststroke (44,1 %) in terms of muscle tissue (table 3).

Table 3. – Body weight composition of different specializations swimmers

Indicators	Butterfly swimmers (n=10)	Backstroke swimmers (n=10)	Breaststroke swimmers (n=10)	Freestyle swimmers (n=10)
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
Muscle component, %	47,5 $\pm$ 1,2	55,1 $\pm$ 1,1	44,1 $\pm$ 2,6	53,2 $\pm$ 2,5
Bone component, %	25,9 $\pm$ 0,8	25,7 $\pm$ 0,2	26,9 $\pm$ 0,2	27,9 $\pm$ 0,5
Fat component, %	13,9 $\pm$ 1,8	10,6 $\pm$ 2,2	17,7 $\pm$ 0,9	16,1 $\pm$ 1,9

There is a slight difference in this indicator between backstroke swimmers and freestyle swimmers (53,2%), which is due to the similar technique characteristic of these swimming strokes.

Differences in the size of the bone component in body weight among representatives of different specializations are not significant, but freestyle swimmers' indicator is slightly higher (27,9%). This is due to the fact that children with «light» bones are selected for swimming, which positively affects the hydrodynamic qualities of a swimmer.

A comparison of the indicators of adipose tissue allowed us to establish that breaststroke swimmers have a higher content of adipose tissue than other

specializations of 17,7%. A little less for freestyle swimmers – 16,1%, for butterfly swimmers – 13,9%, for backstroke swimmers the lowest value is 10,6%. This is confirmed by the data on the Brocka index (table 1), which is the highest for freestyle and breaststroke swimmers. The fat component helps to increase the buoyancy of the swimmer's body.

The study of functional indicators allows us to state that the value of the vital capacity of the lungs of butterfly swimmers (5,8 liters) is slightly higher than in other athletes (table 4).

Table 4. – Functional indicators of different specializations swimmers

Indicators	Butterfly swimmers (n=10)	Backstroke swimmers (n=10)	Breaststroke swimmers (n=10)	Freestyle swimmers (n=10)
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
Vital capacity of the lungs, l	$5,8 \pm 0,9$	$5,4 \pm 1,2$	$5,5 \pm 0,9$	$5,4 \pm 1,8$
Life index, ml/kg	$72,8 \pm 2,3$	$64,5 \pm 3,1$	$76,1 \pm 2,9$	$76,1 \pm 2,5$
Chest tour, cm	$4,0 \pm 0,9$	$7,0 \pm 0,9$	$7,0 \pm 1,1$	$5,5 \pm 0,9$
Shoulder tour, cm	$2,0 \pm 0,2$	$2,0 \pm 0,2$	$2,0 \pm 0,1$	$2,0 \pm 0,2$

The differences of vital capacity of the lungs between the other specializations are insignificant. The highest values of the life index, indirectly characterizing performance, were noted in swimmers specializing in breaststroke and freestyle (76,1 ml/kg), the lowest – in butterfly (72,8 ml/kg) and backstroke (64,5 ml/kg) swimmers.

Backstroke and breaststroke swimmers have the highest chest excursion rates (7,0 cm). Lower values are found in freestyle (5,5 cm) and butterfly (4,0 cm) swimmers. There were no differences in shoulder excursion indicators.

Conclusion (conclusions). As a result of the conducted research, the features of morphofunctional indicators among swimmers of different specialization were revealed. This is due to both the specifics of swimming technique and the selection of athletes in each specialization. It was revealed that butterfly swimmers are characterized by a relatively higher body mass index, a relatively low Broca index and fat component, and have larger girth sizes of the shoulder and hip than representatives of other strokes. Backstroke swimmers have the highest body length, muscle component and body weight, low values of vital index and adipose tissue. Breaststroke swimmers, unlike butterfly and backstroke swimmers, are characterized by high indicators of the vital index and fat component. At the same time, athletes of this specialization are the shortest and have a low weight compared to representatives of other swimming methods. The distinctive features of athletes specializing in freestyle stroke are high body length, chest circumference, Broca index, bone and muscle components of body weight.

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Astakhov N.S., 1st year graduate student; e-mail: zidane130201@mail.ru The Russian university of sports «GTSOLIFK», Moscow, Russia,

Chebotareva I.V., PhD, Associate Professor; e-mail iracheb2001@mail.ru The Russian university of sports (GTSOLIFK), Moscow, Russia

МОРФОФУНКЦИОНАЛЬНЫЕ ОСОБЕННОСТИ ПЛОВЦОВ РАЗНЫХ СПЕЦИАЛИЗАЦИЙ

Астахов Н.С., магистрант 1 года обучения; e-mail: zidane130201@mail.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Чеботарева И.В., к.п.н., доцент; e-mail: iracheb2001@mail.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. Изучение морфологических показателей позволяет определить уровень физического развития спортсменов и его влияние на проявление физических качеств. Учет этих особенностей помогает максимально раскрыть потенциал каждого спортсмена и более эффективно построить тренировочный процесс. Целью данного исследования было изучение морфологических особенностей пловцов-кролистов и пловцов-бассистов.

Ключевые слова: плавание, морфологические особенности пловцов

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UDC 37.013

ANALYSIS OF UNIVERSITY STUDENTS' COMPETENCIES IN THE FIELD OF VOLLEYBALL RULES

Atsuta K.A.

Abstract. *The purpose of this study is a comprehensive assessment of the level of knowledge of the rules of volleyball among university students. The methods of questioning, statistical and comparative analysis were used in the work. 100 students from various faculties took part in the*

survey. The results obtained indicate an insufficient level of knowledge – only 30% of the respondents demonstrated a satisfactory result. To solve this problem, a set of educational activities and stimulation of practical volleyball classes are proposed.

Keywords: volleyball, rules, students, survey, statistical analysis, educational activities

Introduction. Volleyball is one of the most dynamic and spectacular sports. This team game is very popular all over the world and has been included in the Olympic Games program since 1964. [1] For a successful game of volleyball, a high level of physical fitness, coherence of actions of all players, quick reaction and, of course, deep knowledge of the rules are necessary. [2]

In the absence of minimal knowledge of the rules of the game, this can negatively affect the game in interaction with your team and the opposing team. This can manifest itself in making mistakes in handling the ball and playing at the net, which will lead to the loss of the ball or a score by the opponent. Ignorance of the rules can lead to conflicts between players and referees, as well as misunderstandings between team members. Also, the game density will decrease if the player constantly makes mistakes and interrupts the game. And the most important disadvantage of the lack of volleyball knowledge is an increase in injuries, when a player does not know that according to the rules it is forbidden to land on the opponent's side with most of his foot, then he exposes himself and all players at the net to increased danger by making erroneous actions when landing on the opponent's side. Therefore, it is important to take time to study and understand the volleyball rules in order to avoid the above disadvantages [4].

A review of the literature has shown that currently there are not enough works devoted to the analysis of knowledge of the rules of volleyball among students. At the same time, introducing students to sports and popularizing team games is an important task. [1] This determined the relevance of this study.

The purpose of the work is to assess the level of knowledge of the basic rules of volleyball among students of the classical university.

Methods. The study used a survey where it was necessary to choose one answer out of four.

Organization of the research. The study was conducted using a questionnaire method followed by statistical processing of the results. The survey was attended by 100 students of 1-3 courses of various faculties aged 18 to 20 years. The gender composition of the sample is 50% of boys and 50% of girls.

The questionnaire included 9 questions on the knowledge of the basic rules of volleyball: the number of players, touches of the ball, the height of the net, etc. The survey was conducted anonymously.

Based on the results, the percentage of correct answers for each question was calculated. In addition, all respondents were divided into 3 levels of knowledge: high (8-10 points), medium (5-7) and low (0-4).

The results of the study and their discussion. As the results of the survey showed, the vast majority of the surveyed students (70%) demonstrated a low level of knowledge of the rules of volleyball. Only 30% of the respondents had an average level (5-7 points). There were no students with a high level of knowledge of the rules (8-10 points).

A more detailed analysis of the answers to individual questions is presented in table 1. As you can see, the lowest percentage of correct answers was obtained for parameters such as the height of the grid, the rules for blocking and replacing players.

Table 1. – Results of the student survey

Question	The proportion of correct answers
Maximum number of players in a team	30%
The number of touches of the ball by one team	50%
Height of the grid	10%
The number of games in the match	20%
Rules of submission	30%
Rules for receiving the ball	35%
Blocking rules	15%
Replacement of players	15%
The size of the site	25%

The data obtained indicate a clear lack of knowledge of the rules of the game among students. This can have a negative impact on students' involvement in volleyball and the organization of competitions.

Conclusion. Thus, the conducted research demonstrated that the majority of university students (70%) have a low level of knowledge of the basic rules of volleyball. Only 30% of the respondents showed satisfactory results.

The data obtained indicate the need to develop a system of measures to raise awareness among students about the rules of this popular sports game.

As the main areas of work, we can offer:

- The introduction of an educational module on the study of the rules of volleyball in the framework of the discipline "Physical culture";
- Development of optional courses and seminars for those who want to expand their knowledge of volleyball;
- Conducting open trainings and master classes by invited specialists and players;
- Organization of student competitions and tournaments under the guidance of experienced judges;
- Encouraging independent volleyball practice and learning the rules;
- Involving students in judging university competitions.

The implementation of these measures will contribute to the formation of a strong interest in volleyball and increase the overall level of functional readiness of students.

In addition, in order to obtain more representative data, it is advisable to expand the study sample and include students from other universities in the region. This will allow us to identify common patterns and develop a universal program to optimize the learning process of volleyball rules.

Thus, the conducted research opens up prospects for further work in the field of improving physical culture and sports training of students, taking into account the popularization of such a mass sport as volleyball.

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Атсута Константин Андреевич, teacher, akonst96@ya.ru, Russia, Moscow, Moscow State University of Geodesy and Cartography «МИИГАиК». Postgraduate, Russia, Moscow, Russian university of sports «ГЦОЛИФК».

АНАЛИЗ КОМПЕТЕНЦИЙ СТУДЕНТОВ УНИВЕРСИТЕТА В ОБЛАСТИ ПРАВИЛ ВОЛЕЙБОЛА

Ацута Константин Андреевич, преподаватель, akonst96@ya.ru, Россия, Москва, Московский государственный университет геодезии и картографии «МИИГАиК». Аспирант, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Цель данного исследования – комплексная оценка уровня знаний правил волейбола среди студентов университета. В работе применялись методы анкетирования, статистического и сравнительного анализа. В опросе приняли участие 100 студентов различных факультетов. Полученные результаты свидетельствуют о недостаточном уровне знаний - только 30% респондентов продемонстрировали удовлетворительный результат. Для решения данной проблемы предлагается комплекс образовательных мероприятий и стимулирование практических занятий волейболом.

Ключевые слова: волейбол, правила, студенты, анкетирование, статистический анализ, образовательные мероприятия

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PRACTICAL APPLICATION OF SPORT ANALYSIS IN FOOTBALL TACTICS AND PSYCHOLOGICAL ASPECTS INFLUENCING THE GAME STATE

Babaev D.E.

Abstract. *The article discusses of game state and its subjective perception by players and spectators of the danger of shots on goal. The study tested the success of players in implementing scoring chances with different game state (loss, draw, win) and the perception of these actions by the audience.*

Keywords: *football analysis, big-chance, xG-model, shot conversion, game state, cognitive distortions*

Introduction. The idea for this article came from reading Daniel Kahneman's book 'Thinking, fast and slow' [1]. Specifically, when considering the topic 'Goals as reference point'.

There is a reference to the research by University of Pennsylvania economists Devin Pope and Morin Schweitzer: they analyzed more than 2.5 putts - these are golfer's strokes after which the ball goes directly in to the hole - and found that athletes perform better on the last strokes of 'par play' (par is the number of strokes for which a player must complete a hole by regulation) to avoid 'bogey' (one extra stroke) rather than 'birdie' (one stroke less than the limit).

The study and its result fall within the framework of the 'Perspective Theory' developed by Kahneman and Amos Tversky: some blows with the same objective value will be subjectively perceived differently [2]. Everything is decided by a predetermined starting point, which in this case can be formulated as 'non-defeat'. A miss at a 'birdie' is only a lost profit, the situation does not cancel the fact that everyone stays in their own way. A miss at the risk of taking one more shot than necessary is a defeat, a loss of the balance that existed before the shot. A more significant mobilization of efforts in a potentially losing situation than in a potentially winning one is a vivid example of a behavioral anomaly called 'loss aversion' (described within the framework 'Prospect Theory'), which can be illustrated by a 'monetary' example: a person who suddenly loses \$100 will lose more units of utility than the person who unexpectedly finds this amount of money will gain.

A hypothesis based on evolutionary mechanism has been proposed as an explanation for this asymmetry: if an organism reacts more strongly to a threat than to a pleasant prospect, the chance of its continued survival are higher.

Football, as we understand, is not devoid of situations similar to possibility of exceeding the limit or underestimating the number of kicks in a game. I decided to check how players conversion their big-chances at different game state:

- when the team is losing (a chance to return to the assumed starting point);
- playing a draw (a chance to move away from the starting point towards a pleasant prospect);
- already leading (improving a favourable position)

The purpose of my research was to study the behaviour of players in various

game situations and the influence on the result of the subjective perception of a game moment in football, as well as to study the expectations and prediction of the result by spectators who observe a big-chance in the game. The objective of the research was a statistical analysis of 7892 big-chances in the game.

What is big-chance?

Answering the question mentioned above I've got more interesting answer than the answer I have wanted to get firstly. To begin with, people, who are watching football match, sort shots into 'dangerous' and 'non-threatening'. People react more emotionally when a player misses a goal in one moment, while inaccurate blows in other situations are everyday. Probably, the spectator mentioned in the example above think the same way, as a pre-shot expected goals model (pre-shot xG). In other words, pre-shot xG counts the danger of the situation on its conditions, not on its final result. However, many people still think as a LaLiga broadcast statistic: mix up the threat from conditions and result of the shot.

Luckily, to identify average threat of spectator's 'big-chance', I do not have survey and teach a lot of people to think as a xG-model. It's funny, but I can get big profit using 'big-chance' markers, invented more than 10 years ago in the sport statistical company Opta [3]. According to it, big-chance - is a situation, where reasonable to expect, that player scores a goal. Usually this is a situation, where a player is face to face with the goalkeeper or the player shoots from close range or a ball pas a direct way to the goal or a shooting player does not have significant pressure. Penalty is always a big-chance.

As we can see, the way of finding out big-chances is quiet ancient. In some cases, it is useless (analyst in football clubs do not rely on it), in others - harmful (some media rely on it, unfortunately).

In my research I ask the question: "how dangerous blow is to be for the human view to consider it a big chance?" Excluding penalties, only 39,8% out of 7,892 big-chances were scored. So, the probability of success in situation, that operator of company Opta concedes as a big-chance, is lower than successful result in tossing a coin.

Methods used in my research: data analysis using statistical metrics (xG, G/xG, xG2/xG), experiment and survey. As an experiment, I conducted a survey on Telegram-channel 'Матэ в бомбиле', where the video with Darwin Nunez's three 'big-chances' was shown. The Uruguayan has scored only one of them, although their xG was a bit lower than 1, according to Statsbomb's model (even lower - according to Understat and Wyscout models opinion).

So, Nunez demonstrated overperformance on this short sample. However, 48% of the respondents think that Darwin could score more than one goal, if there were a player of their favourite team on Darwin's place, they would be disappointed that conversion. It should be mentioned that the respondents took part in a survey may be called more experienced than average football fan.

Probably, someone ignored the offer not to think as xG-model and didn't rely on the 'fast thinking' answering this question. On the other hand, 48% conceded that he had not scored enough. Anyway, this is a significant result even with these remarks.

Hypothesis. So, there is a hypothesis that a *person overrates threat of some kinds of shots* - people feel ('it must be goal') and remember ('there must be a lot of

goals') these moments binary.

These is a logical question: why do experienced people identify big-chances like those? To find out the answer of this question we should paraphrase the question and ask it like that: why do people highlight as a big-chance not only moments in obvious situations, where the goals are really possible (as I see, 0.5 can be taken as an reference point) and where they are unlikely.

Results. It is a good idea to look at cognitive distortions and a term 'starting point', but in a certain meaning. According to xG-model from Wyscout [4], the shots out of all numbers of I have chosen (128 318 without penalties) have threat less 0.1xG, 93,4% - less 0.35xG.

The reference point 0.35xG was not chosen accidentally. Some years ago, Mark Taylor gave this reference point for big-chances in his articles, which is close to the number I have got.

Also, I should mention that the model from Wyscout refers to the category 'naive' it means that we do not take into account the pressure on a player, interference on the path of the ball on the goalkeeper's position. However, I am not sure that this model: a) gives into human subjective assessments of 'truthfulness' on the big sample; b) has a completely different distribution comparing with other more advanced models. This model is still used by many football clubs all around the World considering it as a 'quite high-quality' for some tasks (but it does not mean that it is the best).

Coming back to the results I have got, we can see that shots with probability to score over 10% we consider as quite rare events, with probability 35% and more - as very rare. Perhaps, making a decision we change the question: instead of 'is it a good moment?', a man asks themselves 'how often do we have moments with the same threat?'. After getting affirmative answer we clarify this moment as 'good'. So, watching football match people get used to that most of the moments are low-quality, but different moments are taking as special. Average low-quality shot - is a starting point with which we compare all chances in match.

It should be mentioned that 'evolutionary factor' which refers to football that every year average shot distance is decreasing, the average threat is increasing. Consequently, 15 years ago when data-science was integrated worse than now, the basic characteristics of average shot were much worse. For some people the view of the average shot from the past might be more subjectively actual than in present time.

As a result of the above mentioned I considered that game state has to be checked by three categories of non-penalty shots: 1) all shots; 2) shots with 35% probability and more ('big-chance by Mark Taylor', orient since which spectators could see big-chance here); 3) shots which 50% probability and more ('shot could be scored more than missed').

Influence of game state on shot conversion.

In total, I have observed 128 305 shots which were taken exactly from domestic championships matches. The play-off matches weren't observed to escape the situations when teams have to score mere despite of winning or drawing because they still losing in the aggregated score.

Further more, game state was observed by me in more detailing way: more

general categories ‘the team is winning’ and ‘the team is losing’ were divided into smaller ones – ‘winning/loosing with 1 goal’; ‘winning/losing with 2 goals’; ‘winning/loosing with 3 and more goals’.

The checking was done by with help of metrics ‘G/xG’ (ratio of actual to expected goals, according to characteristics of shot before it) and ‘xG2/xG’: xG2 is the same as xG metric, which accesses not only circumstances but the result of the shot (shot end coordinates). It is also known as xGOT, PSxG – are versions from other providers.

The first one can see – is that the approach given in golf from the book ‘Thinking: fast and slow’ does not work here. If we take all shots when the shooting team is winning, teams get more dangerous shot in average (xG/Sh is 0.13 again 0.11 when game state is ‘drawing’ or ‘loosing’). They convert better pre-shot characteristics in to threat in post-shot, turn more effectively post-shot and pre-shot into the goals.



Figure 1. – Influence of game state on the implementation of chances

Draw and winning back have comparable average xG/shot, there is less difference in conversion between getting pre-shot in to post-shot. However, finally difference to positive ending persists.

Similarly correlates game state in considering separately ‘Taylor’s big-chances’ and shots with 0.5xG and more. The only exception is that average xG/shot in draw is lower than in defeating for category of shots with xG more than 0.35. The difference between rates in general is less important comparing with the sample where all shots are.

From the all above mentioned moments the moment with rising average xG/shot in winning situation intuitively understood. Team, as a rule, in these situations move likely leave territory opponent teams attack riskily and less think about rest-defence. As a result, there are more chances to do a counter-attack, where the average xG/shot is higher. In our case the goal in addition to direct execution and objective external conditions is also influenced by the factor of the opponent team’s resistance.

The more controlled moment is the control of the territory. It seems possible to claim that sensitivity of the team to unpleasant score in potential ‘loss’ illustrates

through the fact of benefits of losing team over the ones which has benefits in the field tild – 56% against 44% (data of the matches La Liga, EPLand Serie A in the season 2022-2023). Intuitively clear moment, which in losing situation does not influence on the conversion of shots into goals.

The second Figure gives quite little new information we notice again higher conversion xG and post-shot into goals in winning situation. It is interesting to notice the difference between samples with $0.35+xG$ and $0.5+G$ from the sample of all shots. Such goals were better converted into goals relatively xG when team lose one or two goals better than they lose three goals.

Paradox of ‘zone of big-chances’.



Figure 2. – Influence of game state on the implementation of chances

Analyzing the Figures above one can see that points which mean shots with $0.35xG$ and more, and $0.5xG$ and more are grouped more closely than points which characterize all shots Moreover, these groups are located down to the left.

It is should be mentioned that 0.89 goals per $1xG$ out of all sample, although for shots with 0.25 to $0.5xG$ (77.7% out of all shots are more than $0.25xG$ - it is the core of what we call big-chances, 9.5% out of all sample) this ratio goes down sharply up to 0.8% .

It is interesting to see the difference of people’s view of finalization – the difference between the described above things for Alvaro Morata who played for Chetsea one and a half of the season and for Atletico during season 2022 - 2023. In EPL there are 24.5% of shots from the category mentioned-above out of shots, but during the season 2022-2023 there are 18.8% (which is lower than average percentage in the sample from the season 2017-2018). However, the difference in conversion of the shots is huge – from 0.77 to 1.1 G/xG . Of course, we do not have make any decisions based on those figures (short sample for one player). However, there is an opinion that the connection between the strongest shot finalization in Morata’s career and Atletico’s intention to avoid making crosses (consequently, passes to Alvaro and his team-mates for shots made by head – their average conversion is lower than the shots made by feet) during season 2022-2023 is the place to be.

Conclusion. The project ‘Football in numbers’ was doing the research where there was proved that coaches tend to give a place in the starting XI players who realized big-chances better in the recent past. Spectators tend to love players who realized big-chances well ‘in their opinion’ and sceptically refer to the ones who do not have these achievements.

It is not a secret for a long time that receiving passes, finding opportunities for a shot I mean finalization in general and actions out of finalization on the high level give more useful information about the player’s level than just the shots. It seems to be a good idea to add in finalizations mark more detailed information about typology of shots.

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Babaev Daniil Evgenievich, student of the faculty of sports, e-mail: azertyubabaev@yandex.ru, Russia, Krasnodar, Federal State Budget Educational Institution of Higher Education ‘Kuban State University of Physical Education, Sport and Tourism’.

ПРАКТИЧЕСКОЕ ПРИМЕНЕНИЕ СПОРТИВНОГО АНАЛИЗА В ФУТБОЛЬНОЙ ТАКТИКЕ И ПСИХОЛОГИЧЕСКИЕ АСПЕКТЫ, ВЛИЯЮЩИЕ НА ХОД МАТЧА

Бабаев Даниил Евгеньевич, студент факультета спорта, e-mail: azertyubabaev@yandex.ru, Россия, Краснодар, Федеральное государственное бюджетное образовательное учреждение высшего образования ‘Кубанский государственный университет физической культуры, спорта и туризма’.

Аннотация. В статье рассматривается ход футбольного матча и его субъективного восприятия игроками и зрителями опасности ударов по воротам. В исследовании проверялась успешность реализации голевых моментов игроками при разном счёте (проигрыш, ничья, выигрыш) и восприятие этих действий зрителями.

Ключевые слова: футбольный анализ, ‘биг-шанс’ (явный голевой момент), xG-модель, счет матча, когнитивные искажения

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INNOVATIVE TECHNOLOGIES IN LANGUAGE TEACHING AT SPORT UNIVERSITY: A FOCUS ON LINGUISTIC DISCIPLINES

Babel T.A.

Abstract. *This article explores the application of innovative technologies in language teaching in sports universities, with a specific focus on linguistic disciplines. Drawing on current research and best practices, the article discusses the benefits of using innovative technologies for language learning, such as increasing student motivation and engagement, providing personalized learning experiences, and enhancing language skills development. It provides examples of innovative technologies, including language learning apps, gamification tools, virtual and augmented reality, and social media, and describes how they can be integrated into language teaching practices in sports universities.*

Keywords: *innovative technologies, teaching, sports university, linguistic disciplines, language learning, student motivation, personalized learning, language skills development, collaboration, communication, language learning apps, gamification tools, virtual and augmented reality, social media, evaluation of effectiveness, learning analytics, assessment of results, resources, planning*

Introduction. In recent years, innovative technologies have been transforming various aspects of education, including language teaching. In sports universities, where students need to acquire language skills for international communication and academic purposes, the use of innovative technologies can offer new opportunities to enhance language learning experiences and outcomes.

Despite the potential benefits, language teaching in sports universities faces several challenges, such as limited time and resources, diverse student backgrounds and learning styles, and the need to balance language learning with sports training and competition. In this context, innovative technologies can provide flexible and interactive learning environments that can adapt to students' needs and preferences, foster their engagement and motivation, and support their language skills development.

This article aims to explore the application of innovative technologies in the teaching of linguistics disciplines in sports universities. Specifically, it will discuss the benefits of using innovative technologies in language teaching, provide examples of different types of technologies that can be used, discuss how to effectively implement these technologies in language teaching, and examine methods for evaluating their effectiveness. By doing so, this article seeks to provide insights and practical recommendations for instructors and institutions who are interested in incorporating innovative technologies into their language teaching practices in sports universities.

Benefits of innovative technologies in language teaching. Incorporating innovative technologies into language teaching in sports universities can bring various benefits for students and instructors. These benefits include:

- 1 Increasing engagement and motivation: Innovative technologies can provide students with interactive and engaging learning experiences that stimulate their interest and motivation. For example, gamification tools such as language learning apps that use game-like features and rewards can make language learning more fun

and engaging for students.

2 Providing personalized learning experiences: Innovative technologies can enable instructors to design language learning activities that meet the individual needs and preferences of each student. For instance, online platforms that use adaptive learning algorithms can provide personalized language learning paths based on students' performance and learning goals.

3 Enhancing language skills development: Innovative technologies can offer students opportunities to practice and develop different language skills, such as listening, speaking, reading, and writing. For example, virtual and augmented reality technologies can simulate real-life situations in which students can practice their language skills in a safe and controlled environment.

4 Facilitating collaboration and communication: Innovative technologies can promote communication and collaboration among students and with instructors, which can enhance language learning outcomes. For instance, social media and online platforms can enable students to interact and exchange ideas with their peers and instructors in real-time.

These benefits can be particularly relevant in the context of sports universities, where students often have busy schedules and may require flexible and personalized learning experiences. Moreover, innovative technologies can help students develop language skills that are essential for their future careers as sports professionals, such as communication skills and intercultural competence.

Examples of innovative technologies for language teaching in sports universities. Sports universities can benefit greatly from incorporating innovative technologies into language teaching. Here are some examples of innovative technologies that can be used for language teaching in sports universities:

1. Language learning apps: There are many language learning apps available that can help students improve their language skills. Some popular examples include Duolingo, Memrise, and Babbel. These apps typically use a combination of audio, video, and interactive exercises to help students learn new vocabulary, grammar, and pronunciation.

2. Gamification tools: Gamification involves incorporating game elements into language learning to make it more engaging and motivating for students. For example, Kahoot! is a popular gamification tool that allows instructors to create interactive quizzes and games that students can play in class or at home.

3. Virtual and augmented reality: Virtual and augmented reality can provide students with immersive language learning experiences. For example, students can use virtual reality to explore different parts of the world and practice their language skills in a realistic setting. Augmented reality can also be used to create interactive language learning experiences, such as scanning QR codes to reveal vocabulary words or grammar rules.

4. Social media and online platforms: Social media and online platforms can be used to facilitate communication and collaboration among students and between students and instructors. For example, instructors can use Facebook groups or Slack channels to share resources, answer questions, and provide feedback to students. Online platforms like Zoom or Microsoft Teams can also be used for virtual language classes and video conferencing.

Instructors can combine different innovative technologies to create a comprehensive language learning experience for students. For example, they can use language learning apps to provide students with self-paced learning opportunities, gamification tools to create interactive language learning activities, and virtual and augmented reality to provide students with immersive language learning experiences. The use of social media and online platforms can also help instructors create a collaborative and communicative learning environment.

Evaluation and assessment of innovative technologies in language teaching in sports universities. Incorporating innovative technologies in language teaching in sports universities can provide numerous benefits, such as increased engagement, motivation, and personalized learning experiences. However, it is crucial to evaluate the effectiveness and impact of these technologies to ensure that they are meeting the desired learning outcomes and improving language skills development.

To evaluate the effectiveness of innovative technologies, instructors and institutions can use various methods and tools, such as surveys and questionnaires, language proficiency tests, and usage analytics and learning analytics. Surveys and questionnaires can provide insights into students' perceptions of the technologies, their level of engagement, and their learning outcomes. Language proficiency tests can measure students' language skills development over time, while usage analytics and learning analytics can provide data on how students are using the technologies and their performance.

The evaluation results can be used to make informed decisions about the use of innovative technologies in language teaching, such as determining which technologies are most effective for specific language learning outcomes or identifying areas for improvement. Instructors and institutions can also use the results to adjust their teaching practices and improve the effectiveness of their language teaching.

In conclusion, evaluation and assessment are critical components of incorporating innovative technologies in language teaching in sports universities. By regularly evaluating the effectiveness and impact of these technologies, instructors and institutions can ensure that they are providing high-quality language teaching that meets the needs of their students and prepares them for success in their academic and professional careers.

Conclusion. In conclusion, incorporating innovative technologies in language teaching can bring many benefits to sports universities, where students are often highly motivated and focused on their sports activities. By using language learning apps, gamification tools, virtual and augmented reality, and social media and online platforms, instructors can create engaging and interactive language learning experiences that cater to students' needs and preferences. However, implementing innovative technologies in language teaching requires careful planning and consideration of various factors, such as learning objectives, resources, and infrastructure. It is also crucial to evaluate the effectiveness of innovative technologies in language teaching to ensure that they are meeting the intended learning outcomes. With the increasing availability and accessibility of innovative technologies, there is great potential for sports universities to enhance their language teaching practices and better prepare students for global communication and cultural exchange. Further research and exploration of innovative technologies in language

teaching in sports universities are needed to fully realize this potential.

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Babel T.A., senior lecturer, the Russian University of Sport (GTSOLIFK), e-mail: tbabel@yandex.ru, Russia, Moscow

ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ В ОБУЧЕНИИ ИНОСТРАННЫМ ЯЗЫКАМ В СПОРТИВНОМ УНИВЕРСИТЕТЕ

Бабель Т.А., ст. преподаватель, Российский Университет Спорта «ГЦОЛИФК», tbabel@yandex.ru, Россия, Москва

Аннотация. В статье представлено исследование современных цифровых технологий и их применения в области обучения иностранным языкам в высшей школе. В ней представлена важность цифровых технологий для интенсификации преподавания иностранного языка и выделены цифровые инструменты, которые могут быть использованы преподавателями и студентами во время смешанных, он-лайн и офф-лайн занятий, чтобы повысить мотивацию студентов и сделать процесс обучения более эффективным.

Ключевые слова: инновационные технологии, обучение, иностранные языки, спортивный университет, коммуникация, мотивация студентов, интернет-источник, смешанное обучение

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UDC 796

TRAINING OF DRONE PILOTS AT THE RUSSIAN UNIVERSITY OF SPORT «GTSOLIFK»

Balashev V.K., s/s Novoselov M.A.

***Abstract.** The article presents an analysis of foreign experience in the training of drone operators, as well as the results of the activities of the Russian university of sports "GTSOLIFK" on training in the control of unmanned aircraft in Russia, including sports drones. The prospects for training drone pilots within the framework of sports training in the sport "Drone (Unmanned*

Aircraft) Races" are considered.

Keywords: UAS, unmanned aerial vehicles, drone, drone racing, sports

Introduction. Unmanned aircraft are currently actively developing and finding their application in various industries. Therefore, this area is one of the priority areas for the development of the state (both the development of drones and the training of personnel).

The purpose of the study is to identify the state of development of drone control personnel training based on a theoretical analysis of information sources and cases of training UAS operators.

Methodology and organization of the study. The scientific work was carried out in the period from September 2023 to March 2024.

Results of the study and their discussion. According to research, by 2030, the total drone market will reach \$54.6 billion, and the market itself is divided into functional segments such as hardware (drone assembly), software (drone programming) and service implementation (drone control).

The results of the analysis of the training of drone operators abroad are presented in Table 1.

The Russian UAS market is growing rapidly. According to a study by the Aeronext Association, in 2023 it increased by 129% compared to 2022, reaching 33.7 billion rubles. In the civilian sector, the UAS market grew by 35% year-on-year to almost 20 billion rubles [1]. However, the main problem remains an acute shortage of personnel for drone control, and, if we talk about sports, then the lack of qualified coaches with specialized education.

Table 1. – Comparative analysis of drone control abroad

	United States	Canada	Great Britain	India	Kazakhstan
UAS Monitoring Body	Federal Aviation Administration (FAA)	Ministry of Transport	Civil Aviation Authority (CAA)	General Civil Aviation Authority of India (DGCA)	Aviation Administration of Kazakhstan
Registration BVU	Sure	Sure	Sure	Sure	Sure
Presence of the pilot BVU certificate	Sure	Sure	Sure	Sure	Sure
Age	From the age of 16	from the age of 14	From 18 years old	From 18 years old	From 18 years old
Theoretical training	Sure	Sure	Sure	Sure	Sure
Practical training	Upon obtaining an advanced level certificate	Upon obtaining an advanced level certificate	Upon obtaining an advanced level certificate	Sure	Sure
Cost	up to 75	from 300	from 400	from 500	from 900
Duration of training	1 to 5 days	1 to 7 days	1 to 7 days	from 1 to 21 days	from 2 days

Findings. The need for UAS training is increasing. Addressing this issue and the issue of UAS sportization, the Russian Ministry of Sport has recognized a new sport of "drone (unmanned aircraft) racing" [2]. The emergence of this sport is closely related to the training of drone pilots, which includes the acquisition of high technical skills in controlling drones [3]. Drone races encourage participants to improve their skills and also contribute to the development of new drone technologies and equipment.

In 2024, the Russian university of sports "GTSOLIFK" opened enrollment for the educational program "Sports training in the sport "Drone (Unmanned Aircraft) Racing". Pedagogical Activities in the Field of Physical Culture and Sports" within the framework of the direction 49.03.04 "Sports" (bachelor's degree), including state-funded places.

The educational program is based on the principles of sports training, the experience of drone racers of the all-Russian level, as well as the experience of training under the additional professional development program "Modern technologies for sports training of external pilots of FPV drones".

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Balashev Vladimir Kirillovich, 4th year student of the Department of T&M of cycling, triathlon and golf, ya.vovabalashev2002@gmail.com, Russia, Moscow, Federal state budgetary educational institution of higher education Russian university of sport "GTSOLIFK".

Supervisor - Novoselov Mikhail Alekseevich, Russia, Moscow, Federal state budgetary educational institution of higher education russian university of sport "GTSOLIFK".

ПОДГОТОВКА ПИЛОТОВ ДРОНОВ В РУС «ГЦОЛИФК»

Балашев Владимир Кириллович, студент 4 курса кафедры ТиМ велосипедного спорта, триатлона и гольфа, ya.vovabalashev2002@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Новоселов Михаил Алексеевич, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования Российский университет спорта «ГЦОЛИФК»

Аннотация. В статье представлен анализ зарубежного опыта по подготовке операторов дронов, также представлены результаты деятельности Российского университета спорта «ГЦОЛИФК» по обучению управлению беспилотными воздушными судами в России, включая спортивные дроны. Рассмотрены перспективы подготовки

пилотов дронов в рамках спортивной подготовки по виду спорта «Гонки дронов (беспилотных воздушных судов)».

Ключевые слова: БАС, беспилотные воздушные суда, дрон, гонки дронов, спорт

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UDC 796

PHYSICAL ACTIVITY, SLEEPING AND EATING HABITS DURING THE COVID-19 PANDEMIC: A CASE STUDY IN SERBIA

Banjac B.

Abstract. *The COVID-19 pandemic has changed the daily life of students, including lockdowns and the shift to online education and classes. The sample consisted of university students who took part in semi-structured interviews. This study contributes to understanding changes in the basic segments of students' everyday lives, such as patterns of physical activity, sleeping, and eating habits during the first and second waves of the pandemic.*

Keywords: *physical activity, sleeping habits, eating habits, COVID-19 pandemic, students, changes, daily life*

Introduction. The COVID-19 pandemic has led to extreme consequences. Although modern society is characterized by transience and constant change [1], the pandemic has brought about additional and obvious changes to students' daily lives [2]. Physical activity has many benefits for the individual and helps to cope [3]. However, the enforced measures to stop the virus had a negative impact on physical activity levels and sleep quality [4], which can be associated with eating behavior [5]. This study aimed to determine the potential changes in the student population's physical activity, sleep, and eating habits during the COVID-19 pandemic.

Methods. This cross-sectional study was conducted among 23 students (n = 11 males, 48% and n = 12 females, 52%) from the University of Novi Sad, Serbia, in 2022. 13 (56.5%) of them were sports science students (SSG), while the others were from different fields such as humanities, medicine, etc. (OSG). The data was collected using semi-structured interviews. In addition, it was part of the research project “Everyday life of students in the extraordinary social circumstances of the Covid-19 pandemic”.

Results and discussion. Most students reported that their level of physical activity had decreased (47.8%) or increased (30.4%) during the COVID-19

pandemic. Students from both groups (SSG and OSG) gave similar responses. However, it was found that sports science students in 53.8% reported lower levels of physical activity than before the pandemic, which was only the case for 40% of other science students. This means that sports science students were unable to keep their exercise routine. The literature shows that students from sports science were more active during the pandemic [5].

“In the first wave, I was the most active because I had the most time. When I started my master’s degree online... I was also active, but less so.” (S13)

“...when they first started locking us down, I trained a bit... maybe for about 10 days, and then I completely stopped.” (S7)

In addition, eating habits improved in terms of quality and variety by 74%. The students spoke of healthier food and ate more regularly. There were no big differences between the two groups.

“I regularly cooked, especially during that period when I was at home” (S17).

“Well, fast food has decreased in the lockdown (laughter)” (S8).

Moreover, 52.2% of students’ sleeping habits have improved. They have more quality and longer sleeping hours. However, 21.7% of the students changed from day to night as they were awake at night and slept during the day.

“And more qualitatively... During that period, I was able to get better quality sleep” (S19).

“I totally messed up my sleep. I even exchanged day for night” (S4).

Conclusion. This research examined how students experienced and adapted to the COVID-19 pandemic as an extraordinary social situation. They were forced to adapt many of their daily behaviors and habits to cope with the new situation. Therefore, this study contributes to understanding the changes in the basic areas of the students' everyday lives.

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Banjac Brigita, PhD, Research Assistant at the Sports Management and Sociology Lab, Faculty of Sport and Physical Education, University of Novi Sad (UNS FSFV), Novi Sad, Serbia, brigitabanjac@uns.ac.rs

ФИЗИЧЕСКАЯ АКТИВНОСТЬ, РЕЖИМ СНА И ПИТАНИЯ ВО ВРЕМЯ ПАНДЕМИИ COVID-19: ТЕМАТИЧЕСКОЕ ИССЛЕДОВАНИЕ В СЕРБИИ

Бригита Баньяк, доктор философии, научный сотрудник лаборатории спортивного менеджмента и социологии факультета спорта и физического воспитания Университета Нови-Сада (UNS FSFV), Нови-Сад, Сербия, brigitabanjac@uns.ac.rs

Аннотация. Пандемия COVID-19 изменила повседневную жизнь студентов, включая карантин и переход к онлайн-обучению. Выборка состояла из студентов университетов, которые приняли участие в полуструктурированных интервью. Это исследование способствует пониманию изменений в основных сферах повседневной жизни учащихся, таких как физическая активность, режим сна и пищевые привычки, произошедших во время первой и второй волн пандемии.

Ключевые слова: физическая активность, привычки сна, привычки питания, пандемия COVID-19, студенты, перемены, повседневная жизнь

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THE INFLUENCE OF SKI TRAINING IN THE PREPARATORY PERIOD OF A MACROCYCLE ON THE ATHLETIC PERFORMANCE OF QUALIFIED TRIATHLETES

Belmesova A.D.

***Abstract.** The goal of the research was to determine the effect of ski training in the preparatory period of the macrocycle on the performance indicators of qualified triathletes. The analysis of the training diaries of 34 studied athletes aged 17-20 years was carried out. The athletes*

were qualified from the 1st sports category to elite athletes. Ski trainings in the number of 600 km have a significant impact on the improvement of aerobic capacity.

Keywords: ski, qualified triathletes, a period of the macrocycle, aerobic capacity

Introduction. Triathlon has become a popular sport these days. The popularity of this sport creates great interest in a research of the factors that determine the high level of athletic performance. This question is relevant for highly qualified athletes. In order to achieve a high level of athletic performance in triathlon, it is essential to have good endurance. At the moment, there are no reserches on the effect of ski training on the athletic performance of a triathlete. Skiers have excellent endurance. Therefore, it is important to understand how ski training affects athletic performance in triathlon. [5].

Goal. The goal of the research was to determine the effect of ski training in the preparatory period of the macrocycle on the performance indicators of qualified triathletes.

Methods. The following methods of scientific inquiry were employed:

1. analysis of documentary records;
2. pedagogical assessment;
3. pedagogical experiment;
4. techniques of mathematical statistics.

Research design. The determination of the overall aerobic performance of triathletes was carried out by means of stepergometry (an abbreviated Harvard step test with a one-time 5-minute load) and the calculation indicators of the physical performance – PWC150. The study was conducted on the basis of the "Sports School No. 1" of the Solnechnogorsk city district from December 2023 to February 2024. The study included 34 athletes aged between 17 and 22 years with sports qualifications from the 1st sports category to the elite athletes [2].

Results discussion. Step-ergometry (a 5-minute Harvard step test) was conducted to assess the overall aerobic fitness level of the triathletes in question. The results are presented in table below.

Based on the data collected, it can be inferred that the level of functional fitness of athletes in the control and experimental groups was similar prior to the commencement of the study. No statistically significant differences were observed between the groups in any of the analyzed indicators ($p=0.05$).

The average peak work capacity (PWC150) for athletes from both groups was 246 W, which indicates a high level of physical fitness.

Table 1. – The results of stepergometry of qualified triathletes of the control and experimental groups before and after the experiment ($\bar{X} \pm \sigma$)

Indicator	PWC150 (W)	CCR res. (beats/min)	CCR max (beats/min)	$\text{VO}_{2\text{abs.}}$ (l/min)	$\text{VO}_{2\text{rel.}}$ (ml/min/kg)
<i>The control group</i>					
before	244±2,48	72±1,02	135±1,36	4,76±1,02	53,94±1,84
after	248±2,44	72±1,03	132±1,41	4,84±1,09	54,07±1,79
Δ	4	0	3	0,08	0,13
P	>0,05	>0,05	>0,05	>0,05	>0,05

Table 1 (continued)

Indicator	PWC150 (W)	CCR res. (beats/min)	CCR max (beats/min)	VO _{2abs.} (l/min)	VO _{2rel.} (ml/min/kg)
<i>The experimental group</i>					
before	248±2,36	71±0,95	133±1,31	4,81±1,04	54,14±1,93
after	271±2,36	69±0,95	124±1,31	5,48±1,04	59,43±1,93
Δ	23	0	0	0,67	5,29
P	<0,05	<0,05	<0,05	<0,05	<0,05

Athletes with such a PWC150 value are able to perform prolonged muscle work of moderate intensities (60-70% of maximal oxygen consumption) for tens of minutes.

The average value is VO_{2rel.} in athletes of both groups, it was 54 ml/min/kg, which also corresponds to a high level of functional fitness, including the ability to utilize oxygen in an amount sufficient to perform long-term muscle work of moderate intensity. The athletes' CCR res. and CCR max of both groups were within the normal range.

Based on the initial pedagogical assessment of qualified triathletes, their overall aerobic capacity was found to be at a similar (relatively high) level.

The table presents the results of a repeated step-ergometry test (5-minute Harvard Step Test), conducted three months following the conclusion of the preparatory phase, which included ski training for the athletes in the control group, at moderate intensity levels.

Based on the data presented in the table, it can be concluded that there were significant differences between the control and experimental groups in terms of PWC150, VO_{2abs.} and VO_{2rel.} indices after the experiment. Significant differences were not observed between the two groups in terms of CCR res. and CCR max indices the after the experiment. These findings suggest that ski training had a positive impact on the overall aerobic capacity of the triathletes in the experimental group, as indicated by the improved PWC150 values.

The increase in functional fitness indicators in the experimental group, compared to the control group, can be attributed to the following factors:

1. ski training is an aerobic activity that promotes the development of endurance and increases the efficiency of oxygen-based energy production;
2. the varying intensity of ski training contributes to the activation of adaptive mechanisms in the athlete's body;
3. ski training engages all muscle groups, promoting overall fitness and improved performance at different triathlon distances.

These findings suggest that ski training could be incorporated into the training regimen of qualified triathletes in order to enhance their functional fitness and enhance their performance in competition [3,4].

The obtained results of the study suggest that ski training could be incorporated into the training regimen of elite triathletes in order to enhance their overall fitness and performance in competitions [1].

Conclusions:

1. The use of ski training by qualified triathletes during the preparatory period

of the annual macrocycle leads to a statistically significant improvement ($p=0.05$) in the overall aerobic capacity of athletes.

2. Ski training helps to increase the power of the work that an athlete can do in 5 minutes, as well as increase the efficiency of aerobic energy supply.

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Belmesova Aleksandra Dmitrievna, Master student; e-mail: Lodka45678910@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport «GTSOLIFK».

ВЛИЯНИЕ ЛЫЖНОЙ ТРЕНИРОВКИ В ПОДГОТОВИТЕЛЬНОМ ПЕРИОДЕ ГОДИЧНОГО ЦИКЛА НА ФУНКЦИОНАЛЬНУЮ ПОДГОТОВЛЕННОСТЬ КВАЛИФИЦИРОВАННЫХ ТРИАТЛЕТОВ

Бельмесова Алескандра Дмитриевна, магистрант, e-mail: Lodka45678910@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Целью исследования было определить влияние лыжной подготовки в подготовительном периоде макроцикла на показатели результативности квалифицированных триатлонистов. Был проведен анализ тренировочных дневников 34 обследованных спортсменов в возрасте 17-20 лет. Спортсмены прошли квалификацию от 1-го спортивного разряда до элитных спортсменов. Лыжные тренировки в количестве 600 км оказывают значительное влияние на улучшение аэробных возможностей.

Ключевые слова. лыжи, квалифицированные триатлонисты, период макроцикла, аэробные возможности

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COMPARATIVE ANALYSIS OF SAILORS' MANEUVERS, PERFORMING IN THE ILCA 6 YACHT CLASS, ON THE STARTING LINE

Bereza E.I., Zakhryamina L.N.

Abstract. *The article is devoted to the analysis of the competitive activity of athletes sailing the ILCA 6 yacht class. For the first time in the theory and methodology of sailing a classification of pre-start technical and tactical maneuvers (TTM) of racers was developed. A comparative analysis of the pre-start maneuvers of five start-leaders and five start-outsiders in certain races was carried out and the specific gravity of TTM of various types was calculated. A risk map of taking the start in different zones of the starting line was developed, and a risk inclination of racers of both groups was assessed.*

Keywords: *sailing, technical and tactical maneuvers, classification, starting line*

Introduction. The start is an aid to the implementation of the strategic plan for the entire sailing race (the opportunity to go in the right direction). Therefore, the chosen place at the start and the position of the yacht relative to the fleet at the time of the starting signal largely determines the outcome of the race. It is necessary to perform a number of technical and tactical actions during the five-minute starting procedure in order to take an optimal tactical position on the starting line. The issue of planning, organization and control of technical and tactical training at the starting line for sailors, competing in the ILCA 6 yacht class, as well as the composition and ratio of planned training facilities, remains relevant to this day. Taking into account all the above, we have developed a classification of technical and tactical maneuvers (TTM) at the start of sailors competing in this class, and a risk map of taking the start in various zones of the starting line.

Objective. To conduct a comparative analysis of technical and tactical maneuvers during the starting procedure of sailors, performing in the ILCA 6 yacht class.

Methods. Literature survey; pedagogical observation (analysis of the track recordings); methods of mathematical statistics (MS Excel).

Research design. Based on GPS track recordings (online platform sapsailing.com) a comparative analysis of the pre-start maneuvers of sailors-racers, who are in the top 100 of the world ranking (as of 08.01.2024) in this class of yachts, in 10 races at major international regattas in 2023 in various wind conditions (6-24 knots) was carried out. The number of racers in the fleet ranged from 39 to 52 people. The maneuvers of the leading sailors, who started in a particular race in the top five, and the maneuvers of outsiders (racers who left the start in the last five, false starts were not included) were studied. The maneuvers performed from the moment of the "Warning" signal (Class flag, 5 minutes before the start) to the moment of the "Start is open" signal were taken into account.

Discussion. Based on the analysis of scientific and methodological literature and our own practical experience, a list of technical maneuvers used before the start was compiled: tacks (turn against the wind), jibe (turn downwind), bearing away (sail removal to leeward), "Crabbing" (sail removal to leeward with repetitive movements windward rudder to move the yacht higher upwind), luffing (bringing the boat against the wind).

The above maneuvers in various situations on the starting line can solve differentiated tactical tasks: holding the current position, determining the advantageous side of the line, attacking/defensive maneuvers against opponents, and changing position, aimed at taking advantage of changes in wind conditions.

The data is presented in the form of averages and standard deviation of pre-start maneuvers of the leaders and outsiders of the fleet in three wind ranges (light wind – <8 knots, average wind – 9-15 knots, strong wind – >16 knots). The significance level was set at $p < 0.05$. The specific gravity (%) of specific maneuvers was calculated.

As a result of the analysis, it was revealed that the average number of pre-start maneuvers performed by the leader-fleet in a light wind is 38.5% (16 ± 1.6 and 10 ± 2.1) more than that of outsiders, 36% (17 ± 2.5 and 11 ± 1.2) more in an average wind and 53% (19 ± 1.7 and 9 ± 2.1) more in strong winds. This distribution may be explained by the fact that as the wind increases, the outsiders group feels insecure in maneuvering, fearing an over keel, and thereby reducing the number of maneuvers to a minimum.

It was found that the most frequently performed pre-start technical and tactical maneuvers of the leaders in any wind range is to hold a position on the line – 6 ± 1 . (37%) in a light wind, 7 ± 2 units (41%) – in the average wind, 10 ± 2 units (52%) – in strong winds. It should be noted, that this type of maneuvers is the most difficult in technical execution relative to the rest, since it requires the athlete to accurately and timely perform a combination of complex sequential maneuvers. Comparing the number of maneuvers performed to hold the position of leaders and outsiders, it can be concluded that the latter are on average 51% less likely to perform maneuvers of this kind (3 ± 1.8 – in a light wind, 4 ± 1.2 – in an average wind and 4 ± 1.1 – in a strong wind), which is likely, due to a low level of technical skills. It is worth noting that outsiders, on average, perform 67% more defensive maneuvers than leaders, and the latter, in turn, on the contrary, are much more likely (by 78%) to go on the attack. Perhaps the reason for this is also a low level of technical skill and a fear of "attacking" more experienced rivals. Table 1 shows a comparison of the average number and nature of maneuvers performed during the pre-start procedure in different wind ranges for leaders and outsiders.

Table 1. – Comparison of the average number and nature of maneuvers performed during the pre-start procedure in different wind ranges for leaders and outsiders

Technical and tactical action	Sailors' group	Range of wind		
		<8 knots	9-15 knots	>16 knots
Displacement	Leaders	$2 \pm 1,2$	3 ± 1	$4 \pm 1,1$
	Outsiders	$1 \pm 0,4$	2 ± 1	$2 \pm 1,2$
Defensive maneuvers	Leaders	$1 \pm 0,5$	$1 \pm 0,5$	$1 \pm 0,2$
	Outsiders	$4 \pm 2,3$	$3 \pm 1,3$	2 ± 1
Attacking maneuvers	Leaders	$4 \pm 1,2$	$3 \pm 1,1$	2 ± 1
	Outsiders	$1 \pm 0,3$	$1 \pm 0,5$	0
Holding position	Leaders	6 ± 1	7 ± 2	10 ± 2
	Outsiders	$3 \pm 1,8$	$4 \pm 1,2$	$4 \pm 1,1$
Determining the beneficial side	Leaders	3 ± 1	3 ± 1	$2 \pm 1,2$
	Outsiders	$1 \pm 0,3$	$1 \pm 0,1$	$1 \pm 0,2$
Total maneuvers:	Leaders	$16 \pm 1,6$	$17 \pm 2,5$	$19 \pm 1,7$
	Outsiders	$10 \pm 2,1$	$11 \pm 1,2$	$9 \pm 2,1$

It should be noted that the success of taking the start is determined not only by tactical positioning relative to the nearest rivals, but also by the starting position in the strategic planning of the route relative to the ends of the line, the first mark and the wind. At almost every start, there is a favorable side of the line, which is determined depending on the distance of the ends to the first mark (one of the ends may be geometrically closer to the sign, respectively, and the length of the path traveled is shortened) or depending on the benefit in relation to the wind (wind strength or direction). In the case when one of the ends is closer to the first mark, it is known that the nonequivalence of the line, expressed as a percentage, and the greater the nonequivalence, the more favorable the end is. Therefore, the closer the racers start to the favorable end, the more likely it is to win the first leg of the race. However, it should be borne in mind that most of the fleet will be concentrated on the favorable side of the line in an attempt to win the start, which increases the risk of not starting in an optimal tactical position, since this requires a high level of technical skill. Sometimes athletes prefer to take a guaranteed start with maximum speed and with a "clear wind", but away from the favorable end.

In an attempt to figure out how much the leaders and outsiders of the fleet are inclined to take risks on the starting line, we have created the risk map for taking off in various zones of the starting line with its possible location relative to the wind and the first mark (Figure 1). The red color indicates favorable zones with an increased risk of finding (from 5 to 10% of the line length from the favorable end or from the opposite end), orange color – the zone next to the favorable end of the line (from 11 to 20% of the line length from the favorable end or from the opposite end), the risk is above average, blue – zones with medium-risk zones located from 20 to 35% of the line length from the favorable end (or from the opposite end) and green are low-risk zones (the largest part of the line, 40-80% to the favorable end).

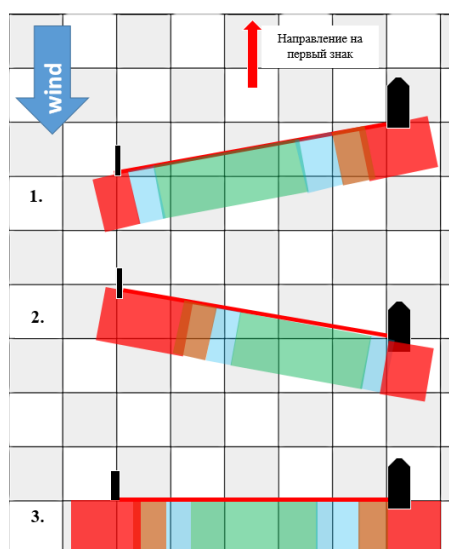


Figure 1. – Risk map of taking the start in different zones of the starting line with its possible location relative to the first mark

It has been established that the leaders of the fleet are much less inclined to take start from the riskiest zone, unlike outsiders. In the red zone, close to the

favorable end, the leaders started in 10% of cases (5 times) compared to outsiders – 40% (20 times). Most often (30 times, 60%), the leaders were in the orange zone, in turn, outsiders in this zone started in 10% of cases (5 times). It should be tacking in to consideration, that the leaders, having a higher level of technical and tactical preparedness, much prefer to take a reliable start close to the favorable side and from a large crowding of boats, distributing all forces over the distance, unlike outsiders, who more often seek to win the race from the start.

Conclusions. Based on the conducted research, it can be concluded, that the most common technical and tactical maneuvers of the fleet leaders are holding a position on the line and attacking maneuvers. Outsiders are two times less likely to perform maneuvers, related to holding a position, and more often perform defensive maneuvers. Therefore, it is necessary to integrate exercises aimed at holding a position on the starting line into the practice of technical and tactical training of sailors, who have a low level of technical preparedness.

As for the chosen position at the start, it was found that leaders more often choose conservative tactics, starting near the favorable end of the line, which is most often the optimal solution for the successful completion of the race.

The developed classification of technical and tactical pre-start maneuvers of sailors performing in the ILCA 6 yacht class, the developed risk map of taking the start in various zones of the starting line and the results obtained from the analysis of competitive activity of racers will allow in the future to develop a methodology for improving and comprehensive control of technical and tactical skills at the start of sailors of various levels of preparedness.

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Bereza Ekaterina Ivanovna – postgraduate student of the Department of Theory and Methodology of Rowing and Sailing named after A.F. Komarov, of the Russian University of Sport «GTSOLIFK», Moscow, Russia, katebereza.sailing@mail.ru

Zakhryamina Lilia Nikolaevna, Ph.D., Associate professor of the Department of Theory and Methodology of Rowing and Sailing named after A.F. Komarov., of the Russian University of Sport «GTSOLIFK», Moscow, Russia, zakhryamina_liliya@mail.ru

**СПРАВНИТЕЛЬНЫЙ АНАЛИЗ ПРЕДСТАРТОВЫХ ДЕЙСТВИЙ ЯХТСМЕНОВ,
ВЫСТУПАЮЩИХ В КЛАССЕ ЯХТ «ILCA 6»**

Бережа Екатерина Ивановна – аспирантка кафедры теории и методики гребного и парусного спорта имени А.Ф. Комарова, Российский Университет Спорта «ГЦОЛИФК», Москва, Россия, katebereza.sailing@mail.ru

Захрямина Лилия Николаевна – к.п.н., доцент кафедры теории и методики гребного и парусного спорта им. А.Ф. Комарова, Российский университет спорта «ГЦОЛИФК», Москва, Россия, zakhryamina_liliya@mail.ru

Аннотация. Статья посвящена анализу соревновательной деятельности яхтсменов, выступающих в классе яхт «ILCA 6», на основе которого впервые в теории и методике парусного спорта была разработана классификация предстартовых технико-тактических действий (ТТД) гонщиков. Проведен сравнительный анализ предстартовых действий лидеров – гонщиков, ушедших со старта в первой пятёрке, и аутсайдеров – гонщиков, ушедших со старта в последней пятёрке, в конкретных гонках и рассчитан удельный вес ТТД различного характера. Разработана карта риска взятия старта в различных зонах стартовой линии, с помощью которой была проведена оценка склонности к риску гонщиков обеих групп.

Ключевые слова: парусный спорт, технико-тактическое действие, классификация, стартовая линия

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UDC 796

STUDY OF THE IMPACT OF VISUAL FEEDBACK ON VERTICAL POSITION CONTROL USING DIFFUSION ANALYSIS OF STABILOGRAMS IN PROFESSIONAL ATHLETES

Berezin V.S., s/s Melnikov A.A.

Abstract. The study of the activity of mechanisms regulating vertical posture using BFB using the method of diffusion analysis of stabilograms was carried out on athletes with different levels of visual BFB. Seven stabiloFigureic tests with gradually increasing feedback scales were used. Assessment of postural regulation activity was carried out using Hurst indices. With a maximum increase in feedback, it was revealed that the Hurst index in the zone of antipersistent behavior decreased less significantly and remained in the zone of chaotic fluctuations of the center of pressure, which may indicate a decrease in feedback mechanisms under conditions of a significant increase in visual BFB. Thus, more efficient postural regulation with increased visual feedback is associated with less activity of feedback-based mechanisms.

Keywords: vertical posture, stabiloFigurey, visual biofeedback, athletes, diffusion analysis of stabilograms

Introduction (Relevance). High performance in sports, especially in technically complex disciplines, depends on mastery of motor skills and the ability to maintain balance in an upright position. Training in various sports improves the regulation of vertical posture [6], but the mechanisms of postural adaptation have not yet been fully studied, which makes the study of physiological mechanisms for improving postural balance an urgent problem.

In a static vertical position, the oscillations of the center of pressure are described as random Brownian motion, in which the movements can be correlated in certain time intervals. These relationships, according to Collins J.J. and De Luca C.J., present control mechanisms: direct (open loop) and reverse (closed loop) posture regulation [3]. Diffusion analysis of stabilograms allows one to determine two correlation coefficients, known as Hurst exponents [3, 7]. Thus, the values of the Hurst exponent indicate the activity of control: the closer H_p and H_{ap} are to 0.5, the less active the mechanisms are, and fluctuations in the center of pressure become random.

The use of visual feedback in postural tests increases the available visual information about the movement of the center of pressure, strengthens the feedback mechanism and improves the stability of the vertical posture [7].

The purpose /aim/objective/goal of our study is. The purpose of this study was to study the activity of the mechanisms of regulation of vertical posture based on direct and feedback using the method of diffusion analysis of the stabilogram in postural tests with different levels of increase in visual biofeedback (BFB) in athletes with different degrees of motor-coordinating readiness, as well as control group of persons.

Methods. The study involved 41 athletes aged 18 to 22 years. The "Sport" group included 19 athletes involved in martial arts and sports games, with a high level of physical fitness (more than 5 hours of training per week). The «Control» group consisted of 16 athletes involved in chess and e-sports. The groups were balanced by age and anthropometric data, which makes the study results comparable.

The assessment of the regulation of vertical posture using visual feedback of various scales was carried out using the stabiloFigureic complex «Stabilan – 01» from ZAO OKB «Rhythm» and the software tests «StabiloFigureic Test» and «Target». All tests lasted 40 seconds and were carried out in one session with an interval of 30 seconds between them. The obtained stabilograms in the sagittal plane were analyzed by the method of diffusion analysis of stabilograms, which is based on the dependence: $\Delta D^2 \approx \Delta t 2H$, where ΔD is the distance between two moving points separated over a period of time Δt ; H is the Hurst exponent, which is in the range $0 < H < 1$ [1, 3, 7].

Research design. Participants stood in a normal upright position, with their arms hanging freely at their sides and their feet spread apart in a European style. The sequence of tests was as follows:

1. Normal vertical stance with eyes open (OE, 40 sec) and eyes closed (CE, 40 sec). In the OE test, the subject looks at a black circle on a white background monitor screen.

2. Stand with OE, the subject looks at the target (white background, black target) in which there is a red marker (the size of the marker is 1/2 of the central circle of the target), reflecting the natural movements of the central nervous system associated with normal human oscillations. The subject is given the command to keep the OCD marker in the center of the target (scale 1/1).

3. Same as test 2, but the scale of marker displacement is increased by 2 times, that is, the distance of marker displacement-OCD increases by 2 times (scale 1/2).

4. Same as test 2, but the marker displacement scale is increased by 4 times (scale 1/4).
5. Same as test 2, but the marker displacement scale is increased by 8 times (scale 1/8).
6. Same as test 2, but the marker displacement scale is increased by 16 times (scale 1/16).
7. Same as test 2, but the marker displacement scale is increased by 32 times (scale 1/32).

Statistics. The following methodology was used for statistical analysis: mean values and their 95% confidence intervals are presented in Figures. Changes in Hurst scores across tests across different magnitudes of visual feedback compared to no-feedback conditions were assessed using a paired Wilcoxon test within each group and using a Mann-Whitney test for comparisons between the Sport and Control groups. All calculations were carried out using «Statistica V12» software from «StatSoft».

Results. The sagittal Hp, which characterizes the open loop mechanism (or feedforward regulation), increased in all ranges of visual BFB in both groups compared to the OE conditions without BFB (Fig. 1). However, across all BFB scales, there were no differences in Hp between groups. The Hap indicator, which characterizes the activity of the closed loop mechanism (or feedback regulation), decreased in both groups when using visual biofeedback at all scales of BFB enhancement. However, with a maximum increase in visual BFB of 32 times, Hap decreased less in athletes compared to OE and became significantly greater than in the control group. This may indicate that the activity of feedback regulation at maximum BFB gain in athletes was less, that is, GCP fluctuations were less correlated and more random than in posturally less stable subjects.

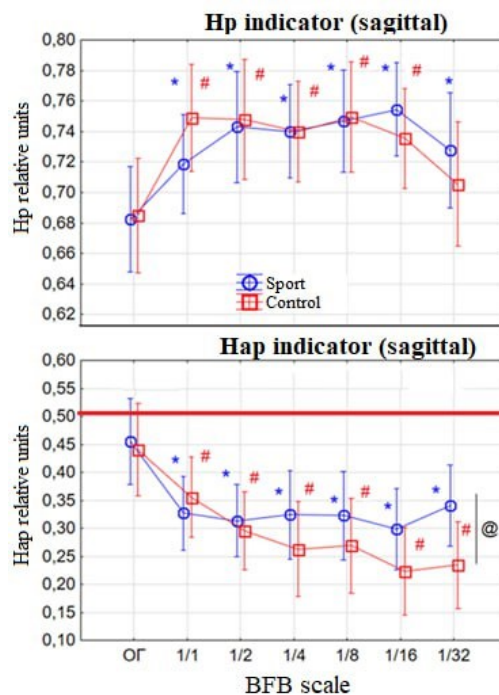


Figure 1. – Hurst indices in the sagittal plane in the persistent (Hp) and antipersistent (Hap) zones. The red line highlights the value $H = 0.5$. */# - $p < 0.05$ compared to the “OE” conditions in the “Sport” / “Control” group, respectively. @ - $p < 0.05$ between the “Sport” and “Control” groups.

Discussion. The main goal of our work was to test the assumption that in athletes with increased postural regulation of GCP oscillations under conditions of enhanced visual BFB, GCP oscillations will be more chaotic and uncorrelated, which will be expressed in a smaller increase in the Hurst index in persistent GCP behavior and a smaller decrease in the Hurst index in the antipersistent zone behavior. Our results partially confirmed this assumption. In the sagittal plane, the decrease in Hap at a maximum scale of BFB = 1/32 was less significant in athletes, indicating more chaotic fluctuations of GCP.

It is possible that athletes with high postural regulation may exhibit less tension or suppression of multiple postural regulation mechanisms that function through feedback, including visuomotor, vestibulomotor, and proprioceptive-motor reflexes. In other words, these athletes can more quickly suppress excessive muscle contractions, maintaining a more relaxed state in the face of complex sensory load that arises from differences between visual and somatosensory information flows about body movements. It is possible that these athletes with smaller decreases in Hap have more efficient sensory-motor integration.

Conclusions. Athletes who have greater control over their normal posture when visual feedback increases (at 1/32 scale) and sensory conflict occurs are able to maintain a more stable upright posture by effectively reducing the activity of feedback-based mechanisms.

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Berezin Vladislav Sergeevich, postgraduate student of Physiology Department, vlad129bs@gmail.com, Russia, Moscow, The Russian university of sport «GTSOLIFK».

Scientific supervisor – Melnikov Andrey Alexandrovich, Russia, Moscow, The Russian university of sport «GTSOLIFK».

**ИССЛЕДОВАНИЕ ВОЗДЕЙСТВИЯ ЗРИТЕЛЬНОЙ ОБРАТНОЙ СВЯЗИ НА КОНТРОЛЬ
ВЕРТИКАЛЬНОГО ПОЛОЖЕНИЯ С ИСПОЛЬЗОВАНИЕМ ДИФФУЗНОГО АНАЛИЗА
СТАБИЛОГРАММ У ПРОФЕССИОНАЛЬНЫХ СПОРТСМЕНОВ**

Березин Владислав Сергеевич, аспирант кафедры физиологии, vlad129bs@gmail.com,

Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Мельников Андрей Александрович, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Аннотация. Исследование активности механизмов регуляции вертикальной позы с применением БОС методом диффузионного анализа стабилотраграмм проводилось на спортсменах с различным уровнем усиления зрительной БОС. Семь стабильнографических тестов с постепенным увеличением масштаба обратной связи использовались. Оценка активности регуляции позы осуществлялась с использованием показателей Херста. При максимальном усилении обратной связи выявлено, что показатель Херста в зоне антиперсисистентного поведения снижался менее значительно и оставался в зоне хаотичных колебаний центра давления, что может указывать на снижение механизмов обратной связи в условиях существенного усиления зрительной БОС. Таким образом, более эффективная регуляция позы при увеличенной зрительной обратной связи связана с меньшей активностью механизмов на основе обратной связи.

Ключевые слова: вертикальная поза, стабильнография, зрительная биологическая обратная связь, спортсмены, диффузионный анализ стабилотраграмм

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UDC 796

A COMPETENCE-BASED APPROACH TO THE PROFESSIONAL TRAINING OF AN EDUCATIONAL ADVISER ON UPBRINGING AND INTERACTION WITH CHILDREN'S PUBLIC ASSOCIATIONS

Berezovskaya M.V.

Abstract. The paper discusses the essence of the new position of an educational adviser, its relevance for educational system enhancement and considers the key job functions, missions and responsibilities. In addition to the above, the study outlines the necessary skills and educational background required to obtain the position and successfully retain it as well as the pros and cons of introducing a new position into practice.

Keywords: education, educational adviser, education system, interaction, skills, practice, specialist, expertise, competencies, relevance

Introduction. The professional growth of the adviser on education and the development of his competencies are related to the need to meet current requirements in the field of education and upbringing, as well as the need to improve the quality of the educational process and promote the harmonious development of children and youth, including physical development.

Goal. The purpose of the study is to determine the effectiveness of the educational adviser and identify ways to improve his competence.

Methods. The research is based on the use of general scientific methods,

including analysis and description.

Discussion of the results. At the moment, few comprehensive analytical studies have been conducted on the topic, since the period of introduction of the position of «adviser to the director of education and interaction with children's public associations» (hereinafter referred to as the educational adviser), from September 2021 to April 2024 is relatively short.

The effectiveness of the advisers' work is confirmed by the «Analytical Report on the activities of advisers in the Tyumen region», which notes an increase in the number of children participating in projects of the Russian School Movement (hereinafter referred to as the RSM). In addition, there is an increase in activity in four municipalities [1].

In 2023, an «Analysis of the potential and difficulties in developing the professional competence of an education adviser» was conducted. As part of this work, a survey of current advisers was carried out. Teachers who have become of an educational advisers emphasize the positive results of their work and the significant strengthening of ties with students and the parent committee. It is also worth noting that the least respondents chose options related to the development of the school self-government system, and the interaction between classroom teachers and school administration [2]. The aggregated survey results are shown in table 1.

Table 1. – The impact of the introduction of the position on the organization of work at school

№	%	The answer chosen by the respondents
1	21,1	«Contributed to an increase in the number of students involved in various forms of activity»
2	19	«Contributed to improving the quality of educational work at school as a whole»
3	8-12	«Contributed to improving the quality of school-wide educational activities» «Development of interaction between children and teachers / school administration» «Development of the activities of the school children's public organization» «Increased the opportunities for students to participate in urban, regional, all- national projects and events» «Strengthening the interaction of the school with children's and youth organizations» «Development of self-government school system» «Development of interaction between classroom teachers and school administration»
4	<8	«Development of self-government school system» «Development of interaction between classroom teachers and school administration» «None of the above»

In the study of A.V. Kislyakova, A.V. Shcherbakov, S.V. Buravova, a survey of managers and teaching staff was conducted. The performance evaluation criteria are based on the specific responsibilities of the parenting adviser and include participation in work processes. The employee's activity served as an indicator of the effectiveness of his/her work. According to the data obtained, the authors concluded that all respondents rated the level of activity in performing the duties of advisers as medium or high. The least activity was shown by the advisers in «organizing parent-teacher meetings and attracting parents to participate in educational events at school» [3].

Based on the reports made by the educational advisers themselves, it can be

concluded that at least 20 events of various cultural and educational topics are held throughout the year, most often they are guided by plans in the selection of events: «Days of Unified Actions» of the all-Russian public-state movement of children and youth «Movement of the first», or plans of other public associations. Of all the events, only a small part is devoted to sports topics, and in some reports, it is completely absent. Based on this, it can be concluded that the main directions contribute to the spiritual and moral, general intellectual, general cultural development of children, and little affect the sports and wellness aspect.

The research results show that about half of the respondents rate their level of competence as satisfactory, while the rest consider it insufficient. In their opinion, the education adviser lacks skills in organizing interactions with parents, colleagues, children's public associations, as well as knowledge of methods of involving children in the activities of a children's and youth public organization.

The core competencies of the parenting adviser are based on the standard «Specialist in the field of education ». In it, the main activity of advisers consists of 7 generalized labor functions related to the organization of activities in an educational organization (educational, social). And the main purpose of the activity is «The organization and implementation of the educational process for the purpose of spiritual, moral, intellectual, physical development and positive socialization of students based on the formation of their experience of socially and personally significant activities, support for their social initiatives and consideration of individual needs». The standard specifies the necessary skills and knowledge that are necessary to perform the tasks of a parenting adviser [4].

Conclusions. Currently, there is a positive trend in the performance indicators of educational adviser, analytical studies confirm that they fulfill the main purpose of their activities, as well as functional responsibilities.

There is a need to study in more detail the sports and wellness aspect of the work of the adviser on education, to collect information about sports public associations and possible problems in organizing interaction with them. To clarify the reasons for such a small number of events dedicated to physical culture.

Advisers feel the need to improve their competencies. To improve them, they can focus on individual categories or functions of work, depending on their needs, focusing on the standard «Specialist in the field of education»:

1. Improvement of pedagogical skills. The ability to establish contact with children and adolescents, the ability to motivate students to participate in various activities.

2. Improvement of managerial qualities. To possess leadership qualities and skills in planning and organizing events, communication skills for interacting with colleagues, students, and parents.

3. Development of knowledge about the work of public organizations. To analyze some information about the structure, goals, tasks, resources and processes for more productive interaction with them.

4. Improvement of knowledge in the field of psychology. Age psychology. Psychology of educational process.

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Berezovskaya Maria Valeryevna - Postgraduate student Postgraduate student of the Department of Public Administration and Youth Policy Federal State Budgetary Educational Institution of Higher Education «Russian University of Sport «GTSOLIFK» 105122, Russia, Moscow

КОМПЕТЕНТНОСТНЫЙ ПОДХОД В ПРОФЕССИОНАЛЬНОЙ ПОДГОТОВКЕ СОВЕТНИКА ПО ВОСПИТАНИЮ И ВЗАИМОДЕЙСТВИЮ С ДЕТСКИМИ ОБЩЕСТВЕННЫМИ ОБЪЕДИНЕНИЯМИ

Березовская Мария Валерьевна - Аспирант кафедры государственного управления и молодежной политики ФГБОУ высшего образования «Российский Университет Спорта «ГЦОЛИФК» 105122, Россия, Москва, berezowskaya.masha@yandex.ru

Аннотация. В статье обсуждается суть новой должности советника по вопросам воспитания, ее значимость для совершенствования образовательной системы, а также рассматриваются ключевые должностные функции, миссии и обязанности. В дополнение к вышесказанному, в исследовании описываются необходимые навыки и образование, необходимые для получения должности и успешного удержания ее, а также плюсы и минусы внедрения новой должности на практике.

Ключевые слова: образование, советник по вопросам воспитания, система образования, взаимодействие, навыки, практика, специалист, компетенция, профессиональное качество, актуальность

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REGIONAL VERIFICATION OF HIGH-SKILLED POWERLIFTERS

Berinov B.D., s/s Smirnov V.E.

Abstract. Within the framework of the present study, a verification analysis of elite powerlifters: Masters of Sports of Russia (MS) and Masters of Sports of Russia of International Class (MSMK), by territory was carried out. The article presents the confirmed number of elite athletes according to the official orders of the Ministry of Sport of the Russian Federation.

Keywords: powerlifting, bench press, qualified powerlifter, Master of Sports of Russia, Master of Sports of Russia International Class

Introduction. Powerlifting is a weightlifting sport involving three competitive exercises: shoulder squats, bench press and deadlift. B.I. Sheiko, P.S. Gorulev, E.R. Rumyantseva, R.A. Tsedov noted that in recent years, there has been a significant increase in the number of highly qualified powerlifters. This is primarily due to the increase in the results in this sport. [3] We believe that verification analysis of elite powerlifters by region is of great interest, which allows us to objectively assess the involvement of the population in power lifting. We research elite athletes to see which region has more of them. The aim of the study was to conduct a regional verification analysis of elite power lifting athletes.

Objectives of the study:

1. Determine in which region Masters of Sport of Russia (MS) and Masters of Sport of Russia International Class (MSMK) prevail.
2. Determine in which region the total number of representatives of elite powerlifters prevails.
3. Determine which region has the smallest number of elite powerlifters.

The **research method** used was content analysis of the website msrinfo.ru, which presents highly qualified athletes in accordance with the official orders of the Ministry of Sport of the Russian Federation.

Results and discussion. With the help of the website msrinfo.ru you can find out statistics and analysis of officially registered sports in Russia. On the site you can find out the number of: Masters of Sports of Russia (MS) [1] , Masters of Sports of Russia of International Class (MSMK) [2]. According to the msrinfo.ru website,

there are 1119 (MS) and 125 (MSMK) MS and MSMK powerlifters in all regions, respectively. The data by federal districts are presented in Table 1. Number of elite powerlifters by districts.

Table 1. – Number of elite powerlifters by county

District	MS	MSMK	Total
CFA	804	12	816
NWFD	564	17	581
SFO	187	4	191
NCFD	64	0	64
UrFO	349	14	363
OFA	594	21	615
SFO	607	26	633
DFO	335	14	349
Total	3504	108	3612

The following **results** were obtained as a result of our study:

Central Federal District (CFD). This district is distinguished by the largest number of representatives. This district also has the largest number of Masters of Sport of Russia (MS) and Masters of Sport of Russia International Class (MSMK).

North-Western Federal District (NWFD). This district is the leader in terms of the total number of representatives, as well as the number of Masters of Sports of Russia (MS) and Masters of Sports of Russia International Class (MSMK). Southern Federal District (SFD). The represented federal district has an average number of Masters of Sports of Russia (MS) and Masters of Sports of Russia International Class (MSMK). North Caucasus Federal District (NCFD). This federal district is distinguished by the smallest number of representatives as a whole. It also has the smallest number of Masters of Sport of Russia (MS) and Masters of Sport of Russia International Class (MSMK). Urals Federal District (UrFO). This district is the leader in terms of the total number of representatives, as well as the number of Masters of Sports of Russia (MS), Masters of Sports of Russia International Class (MSMK). Volga Federal District (Volga Federal District). The Volga Federal District has an average number of Masters of Sports of Russia (MS) and Masters of Sports of Russia International Class (MSMK). Siberian Federal District (SFD). This district is the leader in terms of the total number of representatives, as well as the number of Masters of Sports of Russia (MS), Masters of Sports of Russia International Class (MSMK). Far Eastern Federal District (FEFD). The Far Eastern Federal District has an average number of representatives of Masters of Sport of Russia (MS) and Masters of Sport of Russia International Class (MSMK) compared to the other federal districts.

Based on the above, the following **conclusions** can be drawn:

1. The largest number of Masters of Sport of Russia (MS) is represented in the Central Federal District (CFD) – 804. The Siberian Federal District (SFD) has the largest number of Masters of Sport of Russia International Class (MSMK) – 26.

2. The Central Federal District (CFD) has the largest total number of representatives – 817.

3. The North Caucasus Federal District (NCFD) has the lowest total number of representatives of elite powerlifter athletes - 64.

Thus, despite the fact that representatives are present in all regions, there is a clear territorial separation in the CFD. It is quite possible that this trend is related to the population size in this federal district.

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Berinov Boris Dmitrievich - Master's student of the 1st year of A.S. Medvedev Weightlifting Department, berinovb@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian University of Sport «GTSOLIFK».

Scientific supervisor – Smirnov Vyacheslav Evgenyevich - Ph.D. of Pedagogic Sciences, Associate Professor of A.S. Medvedev department of weightlifting sports smirnov-rgufk@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

РЕГИОНАЛЬНАЯ ВЕРИФИКАЦИЯ ПАУЭРЛИФТЕРОВ ВЫСОКОЙ КВАЛИФИКАЦИИ

Беринов Борис Дмитриевич, магистрант 1 курса кафедры тяжелой атлетики имени А.С. Медведева, berinovb@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский спортивный университет «ГЦОЛИФК».

Научный руководитель – Смирнов Вячеслав Евгеньевич кандидат педагогических наук, доцент кафедры тяжелоатлетических видов спорта им. А.С. Медведева smirnov-rgufk@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В рамках настоящего исследования был проведен верификационный анализ спортсменов-пауэрлифтеров высокой квалификации: мастеров спорта России (МС) и мастеров спорта России международного класса (МСМК), по регионам. В статье представлено подтвержденное количество спортсменов высокой квалификации в соответствии с официальными приказами Министерства спорта Российской Федерации.

Ключевые слова: пауэрлифтинг, жиму лежа, квалифицированные пауэрлифтеры, мастер спорта России, мастер спорта России международного класса

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UDC 796

PHYSICAL REHABILITATION OF ATHLETES AFTER ARTHROSCOPIC AUTOPLASTY OF THE ANTERIOR CRUCIATE LIGAMENT AT THE STAGE OF SPORTS REHABILITATION

Bogachev D.E.

Abstract. *This article discusses the program of physical rehabilitation of athletes after arthroscopic autoplasty of the anterior cruciate ligament. The following means and forms of physical rehabilitation were used in the program: morning hygienic gymnastics, therapeutic exercises, hydrokinesotherapy, self-study, therapeutic massage, plyometric training.*

Keywords: *physical rehabilitation, cruciate ligament, athletes, arthroscopic autoplasty*

Introduction. Arthroscopic autoplasty of the anterior cruciate ligament (ACL) is a high-tech endoscopic operation to remove a damaged ligament and replace it with a graft. Arthroscopic autoplasty is currently one of the most effective and minimally invasive orthopedic surgical interventions from a clinical point of view [1].

ACL injury is one of the most common types of injuries of the musculoskeletal system (MOA) in athletes. After analyzing the studies on this pathology, we can conclude that this damage is 20.3% of all pathologies of the musculoskeletal system. The most common ACL injury occurs in athletes who are engaged in martial arts (from 20.1 to 55.6%), in sports games (33.11%) and complex coordination sports (18.36%) [2].

As a result of the lack of rehabilitation and preventive measures, the risk of developing instability of the knee joint increases, which can cause the early development of gonarthrosis, arthritis, bursitis and other diseases. Physical exercises (PhE), due to the mechanism of therapeutic action, play a leading role in the process of athletes with ACL injury recovery.

Objective. Improving the effectiveness of physical rehabilitation of athletes after arthroscopic autoplasty of the anterior cruciate ligament at the stage of sports rehabilitation.

Methods. Research methods: analysis of literary sources; goniometry; anthropometry; special motor and functional tests: "Stork", "30 m run", "Static-dynamic balance", "Long jump"; pedagogical experiment; methods of mathematical statistics were used.

Discussion. The study was conducted from May 2023 to November 2023 at the Center for Sports Medicine of the FMBA of Russia with the participation of 6 athletes aged 18 to 25 years after arthroscopic autoplasty of the PC. The chosen sport of the participants was: football – 3 people; basketball – 2 people; lawn tennis – 1 person.

The program of physical rehabilitation (PR) in the conditions of the center was designed for 18 weeks and included 3 periods:

- functional (from 6th to 14th weeks (8 weeks));
- pre-workout (from 14th to 20th weeks (6 weeks));
- training (from 20th to 24th weeks (4 weeks)).

General tasks of the Physical Rehabilitation: restoration of the full range of motion in the knee joint; restoration of the athlete's general performance and preservation of his fitness; improvement of coordination abilities; restoration of motor skills, skills and actions in the chosen sport; formation of a mood for his return to sports activities.

In the functional period, morning hygienic gymnastics (MHG) was carried out daily, in the morning, 5-7 minutes before breakfast, the total number of exercises was 7-10. General developmental exercises (GDE) for the muscles of the neck, upper extremities (UE), lower extremities (LE), back and trunk were included. Therapeutic gymnastics (ThG) classes were held 4 times a week for 60 minutes, with the slow pace in a diseased limb, slow and medium in a healthy one, i.e.: standing, sitting on a chair, standing on one leg. The LH complex included movements in the VC and LV joints; isometric tension of the muscles of the thigh, abdomen, buttocks; exercises for coordination of movements, for relaxation, with objects, power FU, active and passive for stretching muscles and FU for restoring the step pattern. Hydrokinesitherapy (HkT) classes were held 2 times a week, for 45-60 minutes, in a 25-m pool with a water temperature of 28-32 °C. Special exercises (SE) were used: active movements in the lower limb, imitation exercises, movements, swings, as well as coordination exercises, with water level in the pool up to the shoulder joint. Self-study (S-S) was carried out daily and included the implementation of a set of special exercises compiled by a specialist in exercise therapy. Therapeutic massage (ThM) - 16 sessions of 15-20 minutes was done 2 times per week. The operated joint was not massaged, the muscles and ligaments of the NK, as well as the back were massaged, and the patella was mobilized separately.

In the pre-training period, the duration of the MHG session was increased to 7-10 minutes. ThG was carried out 4 times a week for 90 minutes, the rate in the operated limb increased to the average. PhE was added on unstable platforms, light machines (to restore reaction and movement accuracy), TRX suspension systems, imitation of sports exercises and with elements of sports games, as well as exercises on simulators and running at a slow pace on a treadmill. One of the features of our PR program was plyometrics, which was held 2 times a week for 45 minutes. The following SE were included in the program of these trainings: on balancing pads, side jumps, on BOSU, high jumps, long jumps forward and backward, exercises with elements of sports games, using a coordination ladder and barriers. Therapeutic swimming (front crawl, backstroke, as well as swimming with fins) was actively used in the hydrokinesotherapy, imitation plyometric exercises in water were also used for their further use in training, as well as speed and resistance exercises.

In the training period, the duration of MHG was 10-15 minutes. ThG classes were held for 90 minutes 3 times a week. The rate of PhE execution in the operated limb increased to a fast one. Added PhE of a speed-strength nature, for the

development of general and special endurance, athletics PhE, running with a change of direction, as well as strength exercises on block simulators, SE performed in different planes using knocking factors, rotational movements in the frontal plane. In plyometric training, with the duration up to 60 minutes, pace of PhE performance was medium and fast, the emphasis was on exercises typical for the chosen type of athletes' activity. Jumps on BOSU, PhE with closed eyes, confusing factors, difficult-coordinating PhE in different planes, as well as PhE with elements of sports games were also used. At the end of the lesson, stretching and MR for 15 minutes were mandatory.

Results. As a result of the experiment, the effectiveness of the developed program of physical rehabilitation of athletes after arthroscopic autoplasty of the ACL at the stage of sports rehabilitation was reliably proven.

Table 1 shows the results of instrumental testing before and after Physical Rehabilitation.

Table 1. – Results of an instrumental study of athletes

Indicator, unit of change		Before FR	After FR	Difference		t-cr. Student test. (tcr.= 4,03)	p
				In abs. un.	In %		
Goniometry (deg)	Extension	178+0,4	180+0	2,3	1,3	13,6	≤0,01
	Flexion	61,1+1,5	46,2+2,0	14,9	32,3	17,2	≤0,01
Anthropometry of the 4th head of the thigh muscle (cm)		43,6+0,3	47,1+0,3	3,4	7,3	24,5	≤0,01

Table 2 shows the results of motor and functional tests at the end of period 2 and after FR.

Table 2. – Results of motor and functional tests of athletes

Indicator, unit of change	At the end of the 2nd period FR	After FR	Difference		t-cr. Student test. (tcr.= 4,03)	p
			In abs. un.	In abs. un.		
Test for "Static-dynamic balance" (qty)	5,2+0,8	3,5+0,8	1,7	47,6	7,9	≤0,01
The "Stork" test (sec)	39,8+1,4	49,0+1,2	9,6	19,4	16	≤0,01
30 m Running test (sec)	5,3+0,4	4,4+0,3	0,9	20,1	7,4	≤0,01
Long Jump test (cm)	172,8+6,7	219,7+9,4	46,8	21,3	24,3	≤0,01

Conclusions:

1. A physical rehabilitation program has been developed for athletes after arthroscopic autoplasty of the anterior cruciate ligament at the stage of sports rehabilitation, which includes three periods: functional (8 weeks); pre-workout (6 weeks) and training (4 weeks).

2. In a pedagogical experiment, the effectiveness of the developed Physical Rehabilitation program has been proven. There was a significant improvement ($p \leq 0.01$) in goniometry, anthropometry of the 4th chapter of the thigh muscle, tests

"Stork", "Running 30 m.", "Long jump" and the test for "Static-dynamic balance" in athletes after arthroscopic autoplasty of the ACL at the stage of sports rehabilitation.

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*Bogachev Dmitry Evgenievych Master student of Russian university of sports «GTSOLIFK»;
Address: 4, Sireneviy Blvd, Russia, Moscow, E-mail: mitya.boga4ev@yandex.ru*

ФИЗИЧЕСКАЯ РЕАБИЛИТАЦИЯ СПОРТСМЕНОВ ПОСЛЕ АРТРОСКОПИЧЕСКОЙ АУТОПЛАСТИКИ ПЕРЕДНЕЙ КРЕСТООБРАЗНОЙ СВЯЗКИ НА ЭТАПЕ СПОРТИВНОЙ РЕАБИЛИТАЦИИ

*Богачев Дмитрий Евгеньевич, магистрант, E-mail: mitya.boga4ev@yandex.ru,
Российский университет спорта «ГЦОЛИФК», Москва, Россия*

Аннотация. В данной статье рассматривается программа физической реабилитации спортсменов после артроскопической аутопластики передней крестообразной связки. В программе применялись следующие средства и формы физической реабилитации: утренняя гигиеническая гимнастика, занятия лечебной гимнастикой, гидрокинезотерапия, самостоятельные занятия, лечебный массаж, плиометрическая тренировка.

Ключевые слова: физическая реабилитация, крестообразная связка, спортсмены, артроскопическая аутопластика

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PROMISING DIRECTIONS FOR THE DEVELOPMENT OF KAYAKING AND CANOEING IN THE RUSSIAN FEDERATION

Bondarev M.M.

Abstract. The article is devoted to the analysis of the results of the performance of the Russian national team in kayaking and canoeing at international competitions. The results of

international competitions of the Russian national team in different classes such as kayak and canoe have been reviewed and presented in the article, as well as the main promising directions for the development of kayaking and canoeing in the Russian Federation have been identified.

Keywords: promising directions of development, kayaking, canoeing, World Championships; Europe Championship; Games of the XXX Olympiad of 2012 in London; World Cup; World Championship

Introduction. Currently, kayaking and canoeing in the Russian Federation is becoming an increasingly relevant and important area of research due to the growing interest in this sport among both professional athletes and amateurs [2, 3]. This interest is driven not only by the potential for athletic performance, but also by the wide range of opportunities for physical activity [1]. The data presented in the article allows to draw conclusions about the prospects for the development of rowing in Russia and to identify directions for further research and practical applications. This study is an important contribution to the understanding of current trends and opportunities in the development of kayaking and canoeing based on the results of competitions.

The research purpose is to determine promising directions for the development of kayaking and canoeing in the Russian Federation.

Methods: analysis of scientific and methodological literature, comparative method, special historical methods.

Discussion. Based on competition protocols [4], as well as ranking of places, the analysis of medal rate at international competitions was conducted.

Figure 1 shows the number of medals won by the Russian national kayaking and canoeing team at international competitions (2021 World Championship, 2018, 2021 European Championship, the Games of the XXX Olympiad of 2012 in London, 2020 World Cup, 2021 World Championship between two classes «kayak» and «canoe»).

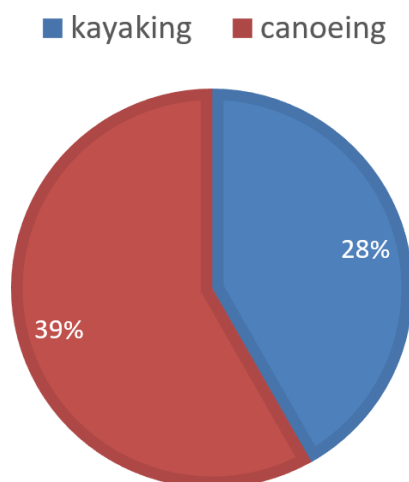


Figure 1. – Number of medals won by the Russian national kayaking and canoeing team at international competitions (2021 World Championship, 2018, 2021 European Championship, the Games of the XXX Olympiad of 2012 in London, 2020 World Cup, 2021 World Championship)

As can be seen from the data presented in Figure 1, the total number of medals won by the Russian national team at the 2021 World Championships, 2018, 2021

European Championship, the Games of the XXX Olympiad of 2012 in London, 2020 World Cup, 2021 World Championships is more in «canoe» class than in «kayak» class, which indicates greater competition, a larger number of competition participants in the «kayak» class, as well as weaker training of kayakers.

Conclusions. Thus, based on the analysis of the results of international competitions in kayaking and canoeing, it is possible to conclude that the number of places won in the «kayak» class is significantly less than in the «canoe» class, which indicates the need to use new approaches to the training of athletes - kayakers.

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Bondarev Mikhail Mikhailovich, 4th year bachelor student, Department of Rowing and Sailing named after. A.F. Komarov, mischa.bondarev2015@gmail.com, Russia, Moscow, Russian University of Sport «GTSOLIFK».

ПЕРСПЕКТИВНЫЕ НАПРАВЛЕНИЯ РАЗВИТИЯ ГРЕБЛИ НА БАЙДАРКАХ И КАНОЭ В РФ

Бондарев Михаил Михайлович, бакалавр 4 курса, кафедра гребного и парусного спорта им. А.Ф. Комарова, mischa.bondarev2015@gmail.com, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Статья посвящена анализу результатов выступления сборной команды Российской Федерации по гребле на байдарках и каноэ на международных соревнованиях. В статье рассмотрены и предоставлены результаты международных соревнований сборной РФ в разных классах таких как байдарка и каноэ, а также определены основные перспективные направления развития гребли на байдарках и каноэ в Российской Федерации.

Ключевые слова: перспективные направления развития, гребля на байдарках, гребля на каноэ, Первенство мира 2021 г; Чемпионат Европы 2018,2021 г; Игры XXX Олимпиады 2012 года в г. Лондоне; Кубок мира 2020 г; Чемпионат мира 2021 г.

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THE INFLUENCE OF THE GAME METHOD ON STUDENTS IN THE SYSTEM OF PHYSICAL EDUCATION

Borisova D.R., Litvinov S.V.

Abstract. *This article analyzes the scientific literature on the influence of the game method on students in the system of physical education. The characteristic of the game method used on the subject of "Physical culture" is given. The influence of the game method on the development of physical qualities, the formation of motivation for physical education and the upbringing of moral and volitional qualities is considered.*

Keywords: *game method, physical education, physical qualities, physical culture*

Introduction. In physical education lessons, teachers use various methods of teaching exercises in the educational process, such as a strictly regulated method, a game method and a competitive one. Throughout all academic years from grades 1 to 11, the most popular and appropriate method is gaming. The game method is a way of teaching students, which includes game activities. It can be used in lessons with elementary school, middle school and high school, it is interesting for each age category, since the means of the game method are different.

The game method in physical education lessons is characterized by:

- Creates prerequisites for the development of all physical qualities: endurance, flexibility, agility, speed, strength;
- Educates moral and volitional qualities;
- The game form of the lesson or exercise may include a competitive nature;
- Improves cognitive functions and mental activity of students;
- Increases cognitive interest in physical education and sports;
- Makes it easier and more interesting to convey information to students and teach them the necessary elements of technique and exercises;
- Carries out all types of education depending on the nature of the game: physical, mental, patriotic, moral, aesthetic and labor;
- Versatility in use in confined and large spaces;
- Used both with and without sports equipment;
- Limited regulation of student workload;
- Requires compliance with the rules and conditions when applying;
- Has a positive effect on the emotional background of students.

The gaming method is endowed with a large number of positive characteristics that are worth considering in detail.

The purpose of this study is to identify the influence of the game method on students in the physical education system by analyzing the works of researchers.

To achieve this goal, you need to solve the following **tasks**:

1. Give a general description of the game method.
2. To analyze the works of researchers on this topic.
3. To draw a conclusion on the application of the game method in the system of physical education.

Research methods. In our study, we are using the analysis of scientific literature.

The results of the study and their discussion. *The influence of the game method on the development of physical qualities.* In her scientific work, Avilova I.A. conducted a study on the influence of outdoor games on the development of physical qualities of students. The experimental group conducted classes using outdoor games and game exercises that teach the technique of performing movements used in tennis. It was found that the use of the game method in the classroom contributed to a greater extent to the development of physical qualities and increased physical fitness of students than classes that were conducted in the usual form. The game method also affects the level of physical fitness of students, helps strengthen the respiratory and cardiovascular systems and affects the adaptive capabilities of the body [1].

In the study of Tomilin K.G. and Popandopulo I.R., the influence of the game method on the development of high-speed and high-speed strength qualities was considered. The experimental group studied according to a modified program in the classroom, and the control group studied according to the usual one. It was experimentally proved that the program, which included 4 types of different relay races, had a greater impact on the development of speed and speed-strength qualities. In addition, a pedagogical observation was carried out, which emphasized that the game form of the lesson helped to overcome the monotony in the classroom and improve the activity of children [5].

Snigur M.E., Vlasov V.V., Vlasov N.V., in their study studied the development of physical qualities of students with intellectual disabilities based on the game method. Two groups were created. The control group was engaged in the traditional method of developing physical qualities used in physical education lessons. Lessons were developed for the experimental group, in which plot-based, outdoor games of varying intensity and orientation, with elements of novelty, were used in all parts. The researchers proved that the use of the game method influenced the development of physical qualities of students with intellectual disabilities [4].

Formation of motivation for physical education through the game method. In her research, Plaksina E.V. studied the formation of positive motivation for physical education among college students. During the research, it was revealed by the survey method that students prefer a physical education lesson when the teacher uses game and competitive methods. At the end of the semester, there was a positive trend in motivation indicators when using these methods, compared with last semester. This experiment showed that students like the use of game forms in the classroom, and their desire to engage in physical education increases [3].

Education of moral and volitional qualities in physical education lessons using the game method. In a scientific article: "Education of moral and volitional qualities of adolescents in physical education lessons and in training activities", Osipova L.V.,

Glotov K.I., Suntsova M.I., Guch N.S. and Degtyareva V.N. are confident that the forms of the game method, such as outdoor and sports games, provide more opportunities for the formation of purposefulness, determination, perseverance and discipline among students. Since there is individual work in games, in which you need to show personal qualities, and teamwork, where the team captain must be able to lead the game process and his team members [2].

Conclusion. Based on the above, it can be concluded that the use of the game method in the system of physical education has a diverse effect on students. There are enough game forms that can be used for various purposes. The use of the game method in the system of physical education contributes to the development of physical qualities, the upbringing of moral and volitional qualities, the socialization of students, and it can also help to increase the level of motivation for physical education and the level of social activity of students. Physical education teachers and other professionals working in the field of physical education and sports should be aware of this method and apply it to effectively conduct the educational process.

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Borisova Diana Rustamovna, 1st year student of the Department of Pedagogy, ms.olya.borisova.1974@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK"

Litvinov Sergey Vladimirovich, professor of the Department of Foreign Languages and Linguistics, litvinov.sv@gtsolifk.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian university of sports «GTSOLIFK».

ВЛИЯНИЕ ИГРОВОГО МЕТОДА НА УЧАЩИХСЯ В СИСТЕМЕ ФИЗИЧЕСКОГО ВОСПИТАНИЯ

*Борисова Диана Рустамовна, студент I курса кафедры Педагогике
ms.olya.borisova.1974@mail.ru, Россия, Москва, «Российский университет спорта «ГЦОЛИФК»*

Литвинов Сергей Владимирович, доктор исторических наук, профессор кафедры иностранных языков и лингвистики, litvinov.sv@gtsolifk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье проведен анализ научной литературы по теме влияния игрового метода на обучающихся в системе физического воспитания. Дана характеристика игрового метода, применяемого на предмете «Физическая культура». Рассмотрено влияние игрового метода на развитие физических качеств, формирование мотивации к занятиям физической культурой и воспитание морально-волевых качеств.

Ключевые слова: игровой метод, физическое воспитание, физические качества, физическая культура

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THE FRONTAL PROJECTION AREA AS A FACTOR IMPACTING CYCLISTS' SPORTS RESULTS

Borodavkin A.Y., Kazakov A.Y.

Abstract. The article explores the optimization of frontal projection area and the enhancement of cyclists' sports results. As a result of the pedagogical experiment, a significant decrease in the frontal plane area value was recorded along and positive dynamics in the indicators of sporting proficiency in the experimental group.

Keywords: cyclists' posture, aerodynamics in cycling, frontal projection area

Introduction. The frontal projection area and its optimization directly influence aerodynamic resistance [4,5]. It is simultaneously one of the most limiting and potentially impactful factors, crucial for achieving high results. In cycling every

second counts, improving aerodynamic efficiency becomes a priority and can make the difference between victory and defeat [3]. Even minor changes in a cyclist's posture can have a significant effect on the level of aerodynamic resistance [1,2]. This confirms the need for further research in this area and provides new perspectives for enhancing athletes' performance.

Research object: cyclists' posture technique.

Research subject: the influence of frontal projection area on cyclists' sports results.

Research aim: the aim of the research is to develop a technique for cyclists' posture aimed at optimizing the frontal projection area and enhancing cyclists' sporting results.

Scientific novelty of the research lies in substantiating the fact that an individualized approach to adjusting the angle of brake levers, height of installation, and width of the handlebars influences the optimization of frontal projection area and the improvement of sporting results.

Research methods. The data registration was performed using the hardware-software complex 'Virtual aerotunnel', which consisted of a webcam, a tripod for its installation in front of the cyclist, a chroma key, and a system of tripods for its installation. Data collection involved video recording in the frontal plane and assessing the frontal resistance area of the cyclist-bicycle system, subtracting the chroma key background. The obtained results were processed using specialized software with the construction of a mathematical model. The assessment of sporting proficiency was carried out through pedagogical testing at the "Krylatskoe" cycle track in a control race over a distance of 2 kilometers.

Organization. The research involved 40 participants, who were divided into control (CG) and experimental (EG) group, each consisting of 20 individuals, homogeneous in their structure (table 1).

Table 1. – General characteristics of participants

№	Parameters	X ± m	
		CG	EG
1.	Gender	M	M
2.	Age, years	43 ± 1.7	40.7 ± 1.2
3.	Experience, months	34.6 ± 2.8	32.9 ± 3.0
4.	Body weight, kg	82.7 ± 1.6	83.4 ± 2.7
5.	Body length, cm	181.2 ± 1.3	181.1 ± 1.6
6.	Leg length, cm	85.3 ± 1.0	85.7 ± 1.1

Pedagogical testing was conducted during 2 kilometers control race to assess the level of sporting results. Subsequently, no corrections were made to the parameters under consideration in the control group, and training continued without intervention. In the experimental group, a technology for optimizing the frontal projection area was used, based on the analysis of data from the "Virtual aerotunnel" system. Corrections were made to the studied parameters based on this analysis. After the corrections, a repeat pedagogical testing was conducted to assess the dynamics in the level of sporting results.

Research results and analysis. Using methods of mathematical statistics, a

comparative analysis of data was conducted between the indicators of the control and experimental groups. Additionally, an assessment of the changes in the frontal projection area of the cyclist-bicycle system and the dynamics of sporting proficiency level the influence of position on bike parameter corrections was performed.

Table 2. – Frontal projection area of athletes in the control and experimental groups during the pedagogical experiment

№	Parameter	KG Pre test	EG Pre test	KG Post test	EG Post test	Change in % CG	Change in % EG	Significance of difference
1.	S frontal area m ²	0.3437 ± 0.0104	0.3411 ± 0.0096	0.3406 ± 0.0110	0.3136 ± 0.0081	-0.9	-8.8	t = 1.98 at p < 0.05

Based on the results of the research, statistically significant changes in the frontal projection area were recorded in the experimental group (t=1.98 at p<0.05). Meanwhile, in the control group, statistically significant changes in the values of the parameters under consideration were not found.

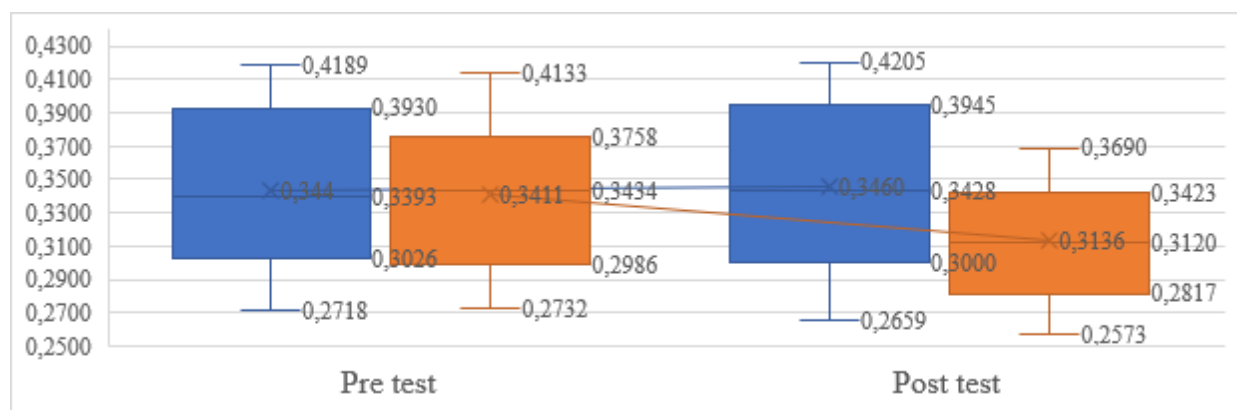


Figure 1. – Dynamics of changes in the frontal projection area among participants in the control and experimental groups as a result of the test (m²)

As a result of the pedagogical experiment, a statistically significant decrease (t = 2.2 at p < 0.05) in the frontal projection area was observed in the experimental group, amounting to 0.027 m². No significant changes were found in the control group (Figure 1). The differences of 0.032 m² between the control and experimental groups after the experiment are statistically significant (t = 1.98 at p < 0.05). It can be concluded that the changes in the angle of brake levers, width and height of the handlebars significantly lead to a reduction in the frontal resistance area.

Table 3. – Assessment of level of sporting results the implementation of the experimental training technology

Parameter	Pre test		Post test		Change in %		Significance of difference
	KG	EG	KG	EG	KG	EG	
t distance, sec	188.3±5.3	183.4±4.0	188.6±5.7	174.0±3.6	0.2	-5.4	t=2.2 at p<0.05

In the final results of the research, statistically significant (at $p < 0.05$) changes in the time to cover the distance were recorded in the experimental group.

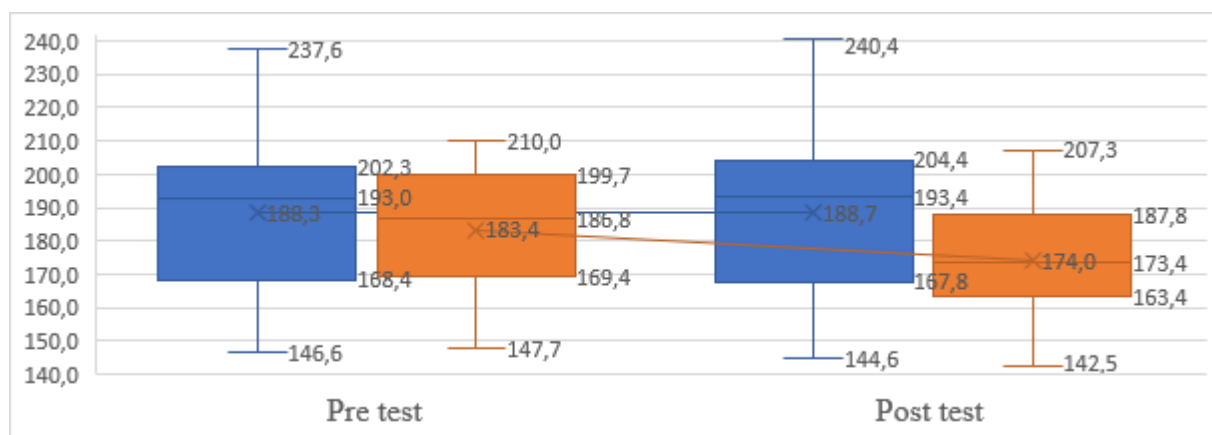


Figure 2. – Dynamics of changes in the time to cover the 2 km distance (seconds) among participants in the control and experimental groups as a result of the pedagogical experiment

As a result of the pedagogical experiment, a statistically significant decrease ($t = 1.74$ at $p < 0.05$) in the time to cover the distance in the control race was observed in the experimental group after the experiment, amounting to 9.4 seconds. No significant changes were found in the control group (see Figure 2). The differences of 14.6 seconds between the control and experimental groups after the experiment are statistically significant ($t = 2.2$ at $p < 0.05$). Therefore, it can be concluded that changing the angle brake levers, width and height of the handlebars significantly leads to reduction in the time to cover the distance and is correlated with the level of sporting results.

In the final analysis of the conducted research a middle correlation ($r = 0.5$) was found between the time to complete the 2-kilometer control race and the frontal projection area.

Conclusion. The significant decrease ($t = 2.2$ at $p < 0.05$) in the time to cover the distance indicates an improvement in the level of sporting results, and therefore, the effectiveness of the proposed technique for cyclists' posture.

The reduction in frontal resistance area improved the sporting results of the participants. An individualized approach to adjusting the angle, width, and height of the handlebars proved to be effective and yields positive results.

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Borodavkin Aleksandr Yurievich, Alex@bikefit.ru, Moscow, Russia, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

Kazakov Aleksandr Yurievich, Moscow, Russia, Moscow Financial-Juridical Academy.

ПЛОЩАДЬ ФРОНТАЛЬНОЙ ПРОЕКЦИИ КАК ФАКТОР, ВЛИЯЮЩИЙ НА УРОВЕНЬ СПОРТИВНОГО МАСТЕРСТВА ВЕЛОСИПЕДИСТОВ-ГОНЩИКОВ

Бородавкин Александр Юрьевич, alex@bikefit.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Казаков Александр Юрьевич, Россия, Москва, Московский финансово-юридический университет.

Аннотация. Статья рассматривает вопросы оптимизации площади фронтальной проекции и повышения уровня спортивного мастерства велосипедистов-гонщиков. В итоге педагогического эксперимента зафиксировано достоверное снижение значения площади фронтальной плоскости и положительная динамика показателей спортивного мастерства в экспериментальной группе.

Ключевые слова: техника посадки велосипедистов, площадь фронтальной проекции, аэродинамика в велоспорте

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METHOD FOR EVALUATING SWIMMING TECHNIQUE OF 7-9 YEAR-OLD CHILDREN ENGAGED IN SWIMMING AT A FITNESS CLUB

Buzovsky V.A., Levchenkova T.V.

Abstract. *The aim of this study is to develop and justify a methodology for evaluating the swimming technique of 7-9 year-old children swimming freestyle segments of 25 meters in a fitness club setting. This article highlights the importance of developing coordination abilities in children aged 7 to 9 through swimming activities in a fitness club. The article emphasizes the importance of using modern techniques and approaches to developing coordination abilities in children engaged in swimming at a fitness club, as well as the necessity of developing a system for evaluating swimming technique to monitor progress and correct motor skills.*

Keywords: *coordination abilities, swimming, physical exercises, motor skills, children's fitness*

Introduction (Relevance). Coordination abilities play a fundamental role in the successful mastery of physical exercises, including swimming. These skills influence the speed and quality of mastering sports techniques, as well as the ability to apply them in various situations. It is important to understand that coordination abilities not only improve performance but also enrich motor experience, which is a key aspect of physical development.

It is known that swimming contributes to the development of coordination abilities, especially in children aged 7 to 9 years old. This age range is noted as a sensitive period for the development of coordination abilities by many authors [2, 3]. Additionally, swimming promotes the development of balance. In the water, children are forced to maintain balance, which helps them better understand the relationship between their movements. This improves their swimming technique.

An important aspect of developing coordination abilities during swimming is the development of spatial perception. Children learn to assess distances, depth, and orient themselves in three-dimensional space. This contributes to improving coordination and understanding spatial characteristics. The use of specific exercises applicable to swimming can significantly enhance children's movement coordination and prepare them for successful practice in this sport [5].

Today, there are new methodologies and approaches to developing coordination abilities in children aged 7 to 9 years old that require testing in the context of health swimming training in fitness clubs. It is important to note that modern children's fitness club activities usually do not involve competitions. However, for a more rational

In particular, the development of a swimming technique assessment system can be very beneficial. Assessing swimming technique allows not only to track a child's progress but also to help them adjust their motor skills for more effective and safer workouts.

Thus, the integration of new methodologies and approaches to developing coordination abilities, as well as the development of a swimming technique assessment system, can significantly enrich training programs for children in fitness clubs, making them more effective. The aim of this study is to develop and justify a

methodology for evaluating the swimming of 25-meter segments by children aged 7 to 9 years old engaged in swimming at a fitness club.

In our study, we conducted an analysis of swimming technique and identified common errors that are often encountered in children's swimming. To ensure the accuracy of our conclusions, we conducted an expert survey of leading coaches and developed a scale for evaluating the swimming technique of 25-meter freestyle segments in children aged 7 to 9 engaged in health swimming. The expert survey was consulted with experienced professionals whose expertise and knowledge contributed to a deeper understanding of this issue. Among the experts were 5 coaches with at least 21 years of experience, including 3 coaches with the highest category and 2 honored coaches of Russia.

Methods. We identified the main errors encountered in swimming in children aged 7 to 9 years old and proposed an evaluation method. Below is a list of errors that were taken into account when evaluating freestyle swimming in children aged 7 to 9 years old:

Arm Movement: Minor: Wide (narrow) entry of arms into the water. Significant: Overly long (short) stroke, lack of high elbow during stroke. Major: Absence of the finishing phase of the stroke, lack of gliding phase, arm collapse during inhalation.

Breathing: Minor: Inhalation through the nose, head rotation between breaths. Significant: Lack of rhythm, excessively long inhalation. Major: Lifting the head forward to breathe, failure to exhale into the water.

Body Position: Minor: Too frequent (infrequent) breaths. Significant: Chin pressing against the chest, lack of rhythm. Major: Incorrect body position (sagging), swimming zigzags or with a tilt to the side, raised head, sagging legs during inhalation.

It is advisable to assess swimming technique with a 25-meter segment at the beginning of sessions and subsequently every 8-10 sessions, provided that children attend sessions at least twice a week.

Below are the results of the expert survey on the compliance of the errors mentioned by us during swimming of 25-meter freestyle segments.

Table 1. – Expert survey results on the assessment of swimming technique for a 25-meter freestyle segment

	Matches	Partially Matches	Does Not Match
Minor	100%	0%	0%
Significant	75%	25%	0%
Major	75%	25%	0%

Results. The presented results indicate that the experts agreement with the methodology we proposed for assessing swimming technique in children aged 7-9 years old who are engaged in fitness club activities. The calculated coefficient of concordance, $W=0.84$, suggests a high degree of consensus among the experts' opinions.

In the study, the following results were obtained: the relationship between swimming speed and technique is a key aspect for achieving results and improving the overall effectiveness of swimming technique in children aged 7-9 years old, as

evidenced by correlation coefficients equal to $R=0.8523$ $R=0.8523$.

Conclusion: swimming speed and technique are inseparably linked and play an important role in swimming. Proper technique allows the swimmer to use their efforts most efficiently, minimizes water resistance, and improves movement mechanics. This, in turn, leads to increased speed in the water. Incorporating our assessment table will enable fitness club trainers and instructors to better monitor the teaching process.

However, it is important to remember that developing and maintaining good technique requires time, perseverance, and practice. It is necessary to work on strength, coordination, breath control, and other aspects of swimming to achieve optimal technique.

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Buzovskiy Vsevolod, master's student in the field of training 49.04.01 "Pedagogical Education" with a specialization in "Physical Education," Email: buzukinn1@gmail.com. The Russian University of Sport «GTSOLIFK», Moscow, Russia.

Levchenkova Tatiana, Head of the Department, Doctor of Pedagogical Sciences, Professor, The Russian University of Sport «GTSOLIFK», Moscow, Russia.

МЕТОДИКА ОЦЕНКИ ТЕХНИКИ ПЛАВАНИЯ КРОЛЕМ НА ГРУДИ У ДЕТЕЙ 7-9 ЛЕТ, ЗАНИМАЮЩИХСЯ В ФИТНЕС-КЛУБЕ

Бужовский Всеволод Александрович, студент магистр, направление подготовки 49.04.01 «Педагогическое образование», профиль подготовки «Физическая культура», sifon.seva@yandex.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Левченкова Татьяна, заведующая кафедрой, доктор педагогических наук, профессор, Российский университет спорта «ГЦОЛИФК»), Москва, Россия.

Аннотация. Цель данного исследования – разработать и обосновать методику оценки техники проплывания отрезков 25 метров способом кроль на груди детьми 7-9 лет, занимающихся плаванием в условиях фитнес клуба.

Данная статья показывает важность развития координационных способностей у детей в возрасте от 7 до 9 лет, через занятия плаванием в фитнес-клубе. Отмечается важность использования современных методик и подходов к развитию координационных способностей у детей, занимающихся плаванием в фитнес-клубе, а также необходимость разработки системы оценки техники плавания для отслеживания прогресса и коррекции двигательных навыков.

Ключевые слова координационные способности, плавание, физические упражнения, моторные навыки, детский фитнес

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UDC 796

THE ROLE OF PHYSICAL CULTURE AND HEALTH-IMPROVING ACTIVITIES OF YOUTH

Chaika S.E., Kachulina N.N.

Abstract. This article explores the importance of physical activity for the health and well-being of young people. The authors analyze the impact of physical activity on the physical and mental health of youth, their socialization, prevention of dependencies, and formation of a healthy lifestyle. The article considers various aspects of the influence of physical culture and health-improving activities on the lives of young people.

Keywords: physical culture and health-improving activities, youth, healthy lifestyle, physical activity, education, motivation

Introduction. The health status of the population is an important element of

societal well-being. The issue of youth health and its improvement is one of the priorities in the activities of the government. The social significance of this issue is evidenced by the fact that a decrease in youth health indicators negatively affects the quality of future employment. Therefore, particular attention should be paid to the factors influencing the health of youth as a special social group. Physical culture and health-improving activities of youth are of great importance for maintaining and strengthening health, developing physical abilities, forming a healthy lifestyle, and preventing various diseases. Additionally, they contribute to increasing the physical activity of young people and fostering a habit of regular physical exercise.

Main Part. Physical culture and health-improving activities are forms of human activity aimed at shaping a full-fledged healthy individual, activities aimed at improving physical condition and health. Physical culture and health-improving activities are consciously regulated motor activity of a person aimed at developing and improving one's own health and treating it carefully [1]. The effectiveness of physical culture activities is associated with the formation of motivations for a healthy lifestyle, the acquisition of a certain level of knowledge, and, specifically, with the implementation of motor and health-improving activities.

The goal of physical culture and health-improving activities is to ensure the health and well-being of the population, to form a healthy lifestyle, to improve the quality of life, and to prolong active life.

The main objectives of physical culture and health-improving activities include the following:

- Strengthening individual health, ensuring proper physical development, and improving the functional capabilities of the body.

- Optimal development of motor qualities and formation of skills and abilities, strengthening the body, increasing endurance, strength, flexibility, and coordination of movements, as well as prevention of various diseases.

- Promoting harmonious physical development, intellectual, physical, and mental performance improvement, enhancing blood circulation and oxygenation in the brain, which positively affects brain function, mental activity, and memory. Engaging in physical culture helps improve psychological well-being, cope with stress, enhance self-esteem, develop willpower, and perseverance.

- Cultivating moral and volitional qualities.

- Fostering an interest in organized and independent physical exercise [3].

The lack of physical activity can lead to growth retardation in children and adolescents, deterioration of health and physical fitness, and weakened immunity. Unfortunately, numerous data indicate that the educational environment is one of the strongest factors contributing to deviations in the health and development of children today.

Let's consider the main reason for the absence of physical culture and health-promoting activities in the lives of young people – motivation. To motivate a person to a certain action or behavior, it is necessary to understand what is most important to them. People prioritize their values and choose the most important and significant ones for themselves. Value systems are divided into declarative (values that a person talks about) and real [2].

V.I. Stolyarov identifies three main groups of motives of youth for engaging in

physical culture and health-promoting activities:

- Health strengthening and physical perfection;
- Sports achievements (only 2% of the population are motivated by sports achievements);
- Recreation (entertainment and relaxation) [4].
- Let's analyze each one in more detail.

Health Strengthening and Physical Improvement. The strongest motivation for young people to engage in sports is improving health and preventing diseases. An active lifestyle, including sports activities, helps strengthen the cardiovascular system, improve metabolism, increase endurance, and enhance the body's resistance to various diseases. The beneficial effects of physical exercises on the body have been known for a long time and are beyond doubt. Currently, it can be considered from two interrelated directions:

- forming a healthy lifestyle and reducing the likelihood of diseases;
- therapeutic effect of physical exercises in certain types of diseases.

Sports Achievements. This type of motivation is based on a person's desire to improve their own sporting achievements. The entire history of mankind, the process of evolution, has been built on the spirit of competition, on the competitive spirit of relationships. The desire to achieve a certain level of sports performance, to win in competitions against opponents, is one of the powerful regulators and significant motivations for active participation in physical exercises.

Recreation. Physical exercises with a group of like-minded people, for example, in a karate club, are one of the important motivators for promoting a healthy lifestyle and physical activity. Joint physical and health-promoting activities can help improve communication between social and gender groups.

Additionally, engaging in physical and health-promoting activities has a positive impact on the mental well-being of adolescents. Physical activity promotes the release of endorphins – hormones of happiness, which improve mood, reduce stress, help combat depression, and enhance overall mental well-being.

Conclusions. Today, the life of society sets important tasks in the field of training, upbringing and education of the new generation. The state needs healthy, enterprising, brave, disciplined, courageous, literate people who would be ready to learn, work for its benefit and, if necessary, stand up for its defense.

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Chaika Semyon Evgenievich, master's student of the Department of Public Administration and Youth Policy, senya_chayka@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Kachulina Natalia Nikolaevna, senior lecturer, student of the Department of Public Administration and Youth Policy, nik.ifk@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK"

РОЛЬ ФИЗКУЛЬТУРНО-ОЗДОРОВИТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ В ЖИЗНИ МОЛОДЁЖИ

Чайка Семен Евгеньевич, магистрант кафедры Государственного управления и молодёжной политики, senya_chayka@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Качулина Наталья Николаевна, старший преподаватель студент кафедры Государственного управления и молодёжной политики, nik.ifk@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. В данной статье исследуется важность физической активности для здоровья и благополучия молодых людей. Авторы анализируют влияние физической активности на физическое и психическое здоровье молодёжи, их социализацию, профилактику зависимостей и формирование здорового образа жизни. В статье рассматриваются различные аспекты влияния физкультурно-оздоровительной деятельности на жизнь молодёжи.

Ключевые слова: физкультурно-оздоровительная деятельность, молодёжь, здоровый образ жизни, физическая активность, воспитание, мотивация

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DYNAMICS OF THE FUNCTIONAL STATE OF PARALYMPIC ATHLETES USING A WHEELCHAIR, DEPENDING ON THE SELECTED NUTRITION STRATEGY

Chemodanova K.S.

Abstract. *Sports nutrition, dynamically developing, is of decisive importance in the training system of highly qualified athletes, since the improvement of sports performance, injury prevention*

and sports longevity depend on a correctly selected nutrition strategy. Particular attention should be paid to the diet of athletes with disabilities, due to their increased risk of developing nutrient deficiencies associated with both intense physical activity and the nature of health conditions. An analysis of the diet of wheelchair athletes showed a lack of balanced nutrition, its monotony and insufficient calorie content. The proposed correction of the diet with the introduction of natural dietary supplements has shown high efficiency in expanding the functional capabilities of the body.

Keywords: *wheelchair athletes, nutrition, functional state, recovery process, training process*

The relevance of research. In the modern system of sports training, the issue of nutrition occupies a central place in the training system of highly qualified athletes, since the improvement of sports performance, the prevention of injuries and diseases, and the preservation of athlete health. Athletes with disabilities are in special physiological conditions, which creates and determines additional needs for nutrients, including proteins and essential microelements (vitamins, minerals, etc.). However, everyday nutrition does not provide the body with sufficient quantities of all necessary elements and does not guarantee their correct ratio [2].

Violation of mineral metabolism leads to the development of myositis ossificans and osteoporosis. These changes are interconnected and play a decisive role in the individual characteristics of the process of sports training and competitive activity of athletes using wheelchairs. Such specificity of sports activities of Paralympic athletes requires an individual approach when assessing the adequacy and correction of energy balance, as well as special requirements for training and nutrition.

Lesions of the spinal cord are characterized by a whole complex of complex morphofunctional changes in both the central and peripheral nervous systems. This is accompanied by disorders of internal organs and their systems, forming a complex set of pathological processes [1]. Disorders of the functioning of some organs and systems not directly affected by trauma create a wide range of pathological conditions. In paretic muscles, the metabolism of fats and carbohydrates is disrupted, which negatively affects their mechanical properties - extensibility and ability to contract, which leads to rigidity [3].

However, issues related to the optimal diet for athletes with traumatic spinal cord disease who use a wheelchair, and its impact on their training process and condition, have not yet received sufficient research attention and require further research and discussion. A current analysis of modern research by domestic and foreign authors shows that experts clearly do not realize the significance of this problem, and work in this area is carried out only by a few researchers, without touching on all aspects of the problem. At the same time, many unresolved issues in this area remain and require in-depth research and analysis [4,5].

The **purpose** of the work is to study the nutritional status of Paralympic athletes using a wheelchair and to justify the use of special food products for its correction.

Methods. For the purposes of this study, we selected 20 athletes with traumatic spinal cord disease involved in wheelchair fencing. The study monitored their diet and training over a 10-month training period. During the research, methods were used to assess the morpho-functional state of disabled athletes.

Results. Nutritional strategy for elite Paralympic athletes is an important aspect of their training. Correction of nutritional status is aimed at achieving an optimal metabolic background, expanding the functional capabilities of the body,

increasing general and special performance, as well as accelerating recovery processes after intense physical activity. Adaptation of the diet for Paralympic athletes is based on the individual needs of each athlete and takes into account the characteristics of their condition and sports activity.

When conducting a detailed analysis of the athletes' 7-day menu, it was revealed that the structure of the diet is not optimal in terms of the composition of food products. Namely, was discovered an unbalanced distribution of average daily calorie content, both in a week and throughout the day during meals. Additionally, were revealed an excessive consumption of fats, sugars and lack of variety in the menu. Diet did not correlate with anthropometric parameters and gender of Paralympic athletes. It is also worth noting that the use of specialized food products or dietary supplements to improve nutritional quality was not provided.

When organizing rational nutrition for highly qualified Paralympic athletes, we used an individual approach, taking into account the sports-medical class of the athlete, the characteristics of concomitant diseases, the level of rehabilitation potential, the nature of autonomic reactions, the energy orientation of the load and the stage of the training cycle. At the same time, by regulating the diet, calorie content and nutritional balance of the main ingredients, a targeted effect was carried out on the metabolic background of the body in order to create optimal internal environmental conditions for the implementation of muscle activity with high athletic results. Particular attention was paid to active hydration based on the use of water with an enriched mineral composition to maintain water-salt balance during competitions, since athletes lose a very significant amount of fluid due to prolonged overheating, exceeding similar losses in other sports, and thirst may not adequately reflect the needs for fluid in an athlete with traumatic spinal cord disease. In addition, to increase the recovery rate, we used beekeeping products - honey and beebread, containing proteins, carbohydrates, enzymes (including catalase and peroxidase), phenolic compounds (antioxidants), hormone-like substances, nucleic acids, vitamins C, E, K and all B vitamins, electrolytes, microelements (Mg, Ca, Fe, Na). To activate the mechanisms of energy production during competitions in the breaks between fights, we used natural colloidal dispersed solutions (milk and lactic acidophilic products). This effectively influenced the increase in the level of performance of Paralympians in the experimental group (table 1).

Table 1. – Comparison of indicators of the morphofunctional state of athletes with TSCD in the EG (n=10) and CG (n=10) after the experiment

Indicators	EG after			CG after			U
	Me	25%	75%	Me	25%	75%	
height [cm]	171	165,3	173,8	175	165	184	40
Body mass [kg]	64,5	53	68,5	65,5	49	77	44,5
CE [cm]	5	4	6	2,25	1,5	3	2
LEF [ml]	4100	3200	4800	3200	2500	3775	22,5
Stange test (sec)	38	33	41	39	34	43	5
Endurance coefficient [a.u.]	25	23	30	28	25	31	5
Varicard [a.u.]	4	2,75	5	7	6	8	1,5

When studying morphofunctional indicators in the experimental group after the pedagogical experiment, significant positive dynamics of chest excursion from 3 cm to 5 cm, as well as vital lung capacity from 3250 ml to 4100 ml were discovered. The heart rate variability indicator (PARS value) during the pedagogical experiment significantly improved from 6 conventional units (premorbid state) to 4 conventional units and came very close to the border of the physiological norm.

In the control group, no significant improvements in morphofunctional indicators were found after the experiment. As a result of the pedagogical experiment, the endurance coefficient indicator in the experimental group significantly ($p < 0.05$) decreased from 29 to 25 points, which indicates an improvement in physical performance.

Conclusions. Athletes with disabilities have similar dietary habits to the general population, but they face an increased risk of nutritional deficiencies due to existing health conditions, level of rehabilitation capacity, and due to the intensive consumption of nutrients during training and competition. Individual nutritional diets, developed taking into account the specific needs and characteristics of Paralympic athletes using a wheelchair, play an extremely important role in ensuring their adaptation to intense physical and psychological stress during training and competitions. These diets strictly take into account the nosological group, manifestations of concomitant diseases and complications, the level of rehabilitation potential, which makes it possible to effectively optimize recovery processes after exercise and prevent the development of further pathological conditions, which, in turn, helps to maintain rehabilitation potential, improve athletic performance and prolong a sports career Paralympic athletes with traumatic spinal cord disease.

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Chemodanova Ksenia Sergeevna, 3rd year student, 0341403@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education «Russian Biotechnological University (BIOTECHE)».

*ДИНАМИКА ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ СПОРТСМЕНОВ-ПАРАЛИМПИЙЦЕВ,
ПОЛЬЗУЮЩИХСЯ КОЛЯСКОЙ, В ЗАВИСИМОСТИ ОТ ПОДОБРАННОЙ
СТРАТЕГИИ ПИТАНИЯ*

Чемоданова Ксения Сергеевна, студентка 3 курса, 0341403@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский биотехнологический университет (РОСБИОТЕХ)».

Аннотация. Спортивное питание, динамично развиваясь, имеет решающее значение в системе подготовки высококвалифицированных спортсменов, так как от правильно подобранной стратегии питания зависит повышение спортивных результатов, профилактика травм и спортивное долголетие. Особое внимание необходимо уделять рациону спортсменов с инвалидностью, в связи с повышенным риском развития у них дефицита нутриентов, связанного как с интенсивными физическими нагрузками, так и с характером отклонений в состоянии здоровья. Анализ диеты спортсменов на коляске показал отсутствие сбалансированности питания, его однообразие и недостаточную калорийность. Предложенная коррекция пищевого рациона с введением в него природных БАД показала высокую эффективность в расширении функциональных возможностей организма.

Ключевые слова: спортсмены-колясочники, питание, функциональное состояние, процесс восстановления, тренировочный процесс

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TECHNICAL TRAINING OF ELITE SAMBISTS

Chmel A.F., Tabakov S.E.

Abstract. *This study presents the results of a survey of athletes of various qualifications on the topic of technical training of elite sambo wrestlers.*

Key words: *questionnaire, sambo, elite athletes*

Introduction. Organization of the training process for qualified sambo wrestlers is a key element in the successful preparation of athletes for competitions. This process requires careful planning, an individual approach and a systematic approach to ensure that athletes are at an optimal level of preparedness and achieve high results. In this study, we will consider the main aspects of the technical training of qualified sambo wrestlers and the key principles that should be taken into account to achieve high sports results.

Purpose of the study: to evaluate the relationship between the technical training of qualified sambo wrestlers and their opponents.

Research methods: questionnaire.

Data on the process of technical training of 50 athletes of various ages and qualifications were analyzed. Mostly the athletes had the rank of candidate master of sports and master of sports (83.3%). Half of the respondents had 11-15 years of sports experience (53%).

The study was conducted at the Russian university of sports in April 2024. The questionnaire consisted of 20 questions. The questions included information about the research problem.

Research results and discussion. Half of the athletes study their opponents, but only the main ones (50%), slightly fewer athletes study absolutely all their opponents (46.7%).

Respondents noted that the most significant factors when analyzing opponents are: in the first place - technical readiness (129 points), in second place – tactical readiness (117 points), in third place - physical readiness (115 points).

Most respondents, when analyzing the technical preparation of opponents, record the following information: effective technical actions in a standing position (20), effective technical actions in a prone position (19), all used technical actions in a standing position (19) and technical actions in a prone position (18).

During wrestling, athletes use the following technical actions (fig. 1) in a standing position: foot sweep (20), shoulder throw (16), thigh reap (15), Inside ankle hook (15) and big circle throw (14).

According to the respondents, the greatest danger for them during fights are the following technical actions in a standing position: leg takedown (15), suplex (10) and shoulder throw (10).

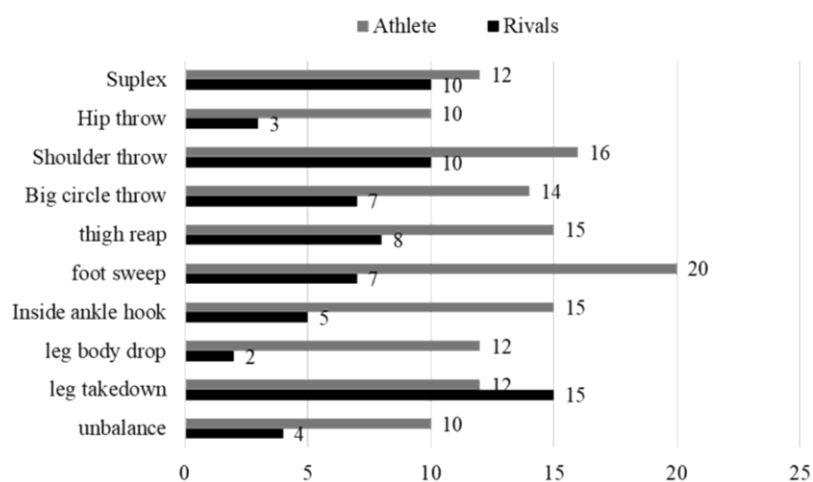


Figure 1. – Technical actions in a standing position performed by the interviewed athletes and throws by opponents that pose the greatest danger

Thus, we can conclude that the greatest danger for athletes is caused by throws that athletes do not perform themselves during a competitive match.

During a competitive fight, respondents most often use arm lever (27) and hold down (25) in a prone position (fig. 2). Only 8 respondents use knee lever during wrestling.

The greatest danger, according to respondents, during competitions (fig. 2) is knee lever (20).

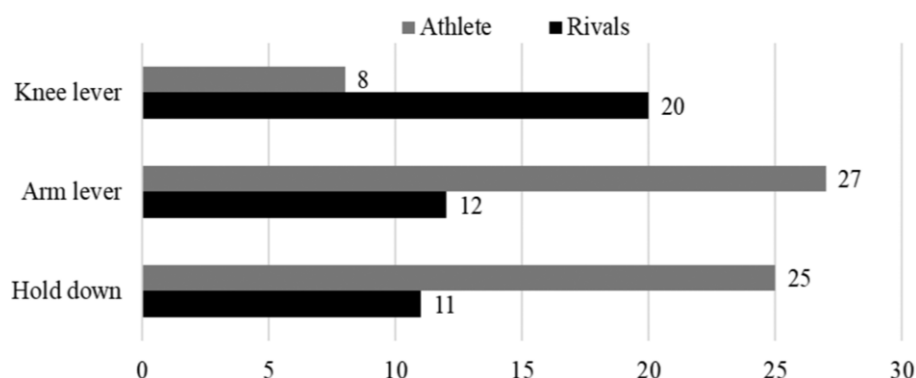


Figure 2. – Technical actions in a prone position performed by athletes and opponents' techniques that pose the greatest danger

We assume that this is due to the fact that athletes do not perform these techniques during competitions, so they have not developed the skill of defense.

Conclusions:

1. Half of the athletes study their opponents, but only the main ones (50%), the other part of the athletes (46.7%) study absolutely all of their opponents.
2. According to respondents, the most significant factors when analyzing opponents are: in the first place - technical readiness (129 points), in second place – tactical readiness (117 points), in third place - physical readiness (115 points).
3. According to respondents, the greatest danger during competitions comes from technical actions that athletes do not perform themselves during a competitive match.

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Chmel Andrey Fedorovich, 1-year master's student of Russian University of Sport "GTSOLIFK", Moscow, Russia, achmel@list.ru

Tabakov Sergey Evgenievich, Candidate of Pedagogical Sciences, Professor, Russian University of Sport (RUS «GTSOLIFK»), Moscow, Russia, samboskif@mail.ru

ТЕХНИЧЕСКАЯ ПОДГОТОВКА КВАЛИФИЦИРОВАННЫХ САМБИСТОВ

Чмель Андрей Федорович, магистрант 1 курса кафедры теории и методики единоборств, achmel@list.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Табаков Сергей Евгеньевич, кандидат педагогических наук, профессор кафедры теории и методики единоборств, samboskif@mail.ru, Россия, Москва, «Российский университет спорта «ГЦОЛИФК»

Аннотация. В данном исследовании представлены результаты опроса спортсменов разной квалификации по теме технической подготовки квалифицированных самбистов.

Ключевые слова: анкетный опрос, самбо, квалифицированные спортсмены

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THE STRUCTURE OF COMPETITIVE PROGRAMS IN SYNCHRONIZED FIGURE SKATING FOR THE 2022/2023-2023/2024 SEASON

Danitskaya V.A.

Abstract. The article presents data characterizing the features of constructing short competitive programs in synchronized figure skating for the sports seasons 2022/2023-2023/2024.

Key words: competitive program, figure skating, synchronized skating

Introduction. Synchronized skating is a sport that requires participants to have not only high physical fitness but also the ability to work as a team. All elements of the competitive program are performed synchronously by 12-16 skaters simultaneously. The coordination complexity of the competitive program is determined by the technical rules of the International Skating Union for the current sports season. When composing the competitive program, the leading and defining factor should be the choice of optimal sequencing of elements and their placement on the ice [3].

This study aims at determining the structural features of the short program of the world's and Russia's top adult teams from 2022 to 2024 to enhance the training system for specialists in synchronized skating

Research design and methods. In this study, we examined algorithms for constructing short programs for adult synchronized skaters. We analyzed a new judging system of the ISU, which has set a new direction for the development trends in synchronized skating. The obtained data can serve as a basis for studying the technique of executing synchronized skating elements and increasing coordination complexity.

The short program in synchronized skating consists of a prescribed set of elements, clearly outlined in Communication No. 2471 [1]. In the short program, a team must perform 5 mandatory elements. We created tables for recording the elements of the short program, reflecting the elements and the level of coordination complexity. The study was conducted using video recordings and official protocols

with results of the 5 top teams at the World Championship and the 5 top teams at the Russian Championship.

The research results were summarized and analyzed, allowing for the formulation of conclusions.

Results discussion. As a result of the conducted research, modern requirements for short programs of teams competing in synchronized skating and current approaches to program construction have been identified, led to the following results:

1. At the 58th Congress of the International Skating Union (ISU), a new edition of the Technical Rules for Synchronized Skating was officially approved. According to the new rules, three components are now evaluated for the program: composition, presentation, and skating skills. To promote this discipline of figure skating, a decision was made to create a new subgroup "Elite 12" in the Senior age category. The ISU aims to contribute to the development of synchronized skating through this subgroup and hopes to attract the attention of the International Olympic Committee to potentially include synchronized skating in the Olympic Games program. The well-balanced composition of the short program for the 2022/2023 season consists of five elements: no-hold element, movement element, whip intersection, twizzle element, and artistic element. The well-balanced composition of the short program for the 2023/2024 season consists of five elements: no-hold element, twizzle element, angled intersection, movement element, and artistic element.

2. Analysis of the coordination complexity of elements in the competitive programs of the world's and Russia's top teams in the Master of Sports category in the sports seasons 2022-2023 and 2023-2024 revealed that each sports season, the composition of a well-balanced short and free program changes in accordance with ISU rules. According to the new evaluation criteria for structural elements, the highest level of complexity in the short program in synchronized skating is most challenging to achieve when performing elements such as: intersection (I+pi) 70%, pivot-block (PB) 70%, twizzle element (TwE) 70%.

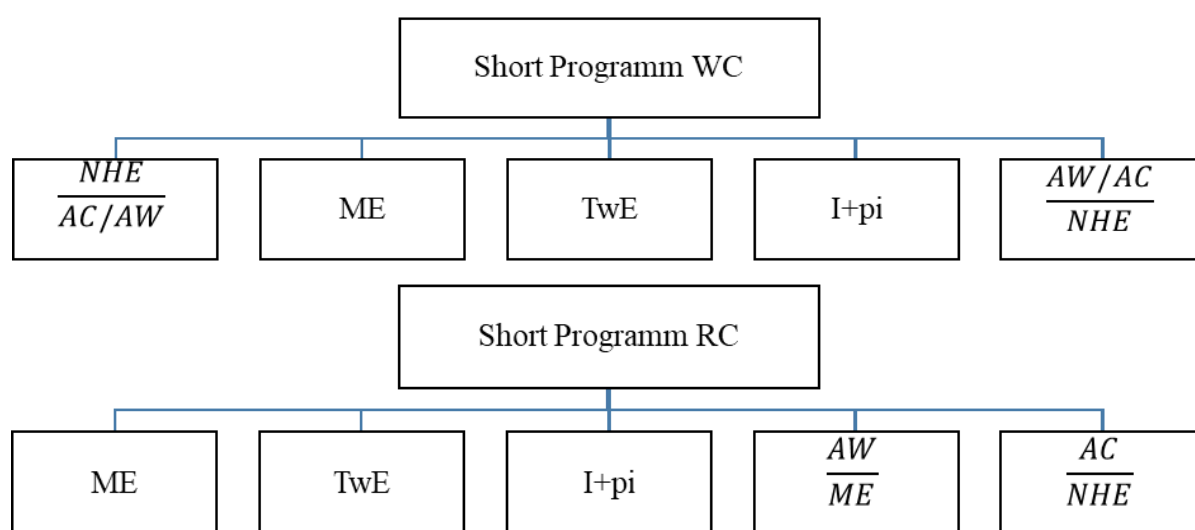


Figure 1. – Structure of the most commonly used sequence in short programs of teams at the World Championships and Russian Championships in the 2022-2023 season.

Conclusions. The changing trends in competitive programs are determined by the rules of the International Skating Union (ISU). In order to achieve their maximum potential and compete for medals, each team must demonstrate their technical maximum. It should be emphasized that choosing the optimal sequence of elements, their rational placement on the ice, along with skillful selection and editing of the musical accompaniment, increases the stability of element execution and their quality. Ultimately, this significantly enhances the expressiveness and aesthetic level of the competitive program [2].

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Danitskaya V.A., 1-st year master student of Department of Theory and Methods of speed skating, figure skating and curling, RUS «GTSOLIFK», Moscow, Russia

СТРУКТУРА СОРЕВНОВАТЕЛЬНЫХ ПРОГРАММ В СИНХРОННОМ ФИГУРНОМ КАТАНИИ В СЕЗОНЕ 2022/2023-2023/2024

Даницкая Валерия Алексеевна, магистрант 1-го курса кафедры теории и методики конькобежного спорта, фигурного катания на коньках и керлинга РУС «ГЦОЛИФК», e-mail – lera.danitskaya@gmail.com, Россия, Москва

Аннотация. В статье представлены данные, характеризующие особенности построения коротких соревновательных программ в синхронном фигурном катании на спортивные сезоны 2022/2023-2023/2024.

Ключевые слова: соревновательная программа, фигурное катание, синхронное катание на коньках

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THE INFLUENCE OF CLASSES ON THE DEVELOPMENT OF SMALL CHILDREN WITH INTELLECTUAL DISABILITIES ON THE FORMATION OF THEIR PSYCHOLOGICAL AND PEDAGOGICAL STATUS

Demkova A.A., Rubtsova N.O.

Abstract. *The article discusses the results of a pedagogical experiment aimed at the development and experimental verification of a methodology in order to identify the positive effect of exercises for the development of fine motor skills in children with intellectual disabilities on the psychological and pedagogical status. Corrective exercises and exercises for the education of physical qualities were also applied for the comprehensive and harmonious development of a child with this pathology. The results of the conducted testing before and after the experiment prove the effectiveness of the technique on the psychological and pedagogical status of the students.*

Keywords: *mental retardation, intellectual disabilities, psychological and pedagogical features, psychomotor skills, small (manual) motorboat*

Introduction. According to the World Health Organization, as well as a number of domestic and foreign authors, the prevalence of mental retardation in the population ranges from 1 to 3% of the population. In recent years, the prevalence of mental retardation among the population of the Russian Federation has been about 0.6% [2].

Children with a mild degree of mental retardation are characterized by volitional disorders: lack of independence, inability to direct their actions and overcome the slightest obstacles, which negatively affects educational activities. There are violations in manipulative activities with small objects, self-service skills suffer, as a result, there is an inability to work, in this regard, the psychological and pedagogical status of the child is reduced.

In children with mental retardation, the level of development of fine motor skills determines the possibilities of cognitive activity and significantly affects the effectiveness of learning. The development of fine motor skills, as the main condition for the implementation of cognitive activity, provides opportunities for successful learning [1].

Intellectual and mental development occurs actively during adaptive physical education, therefore, by increasing mental activity with the help of exercises to correct manual motor defects in a child with this nosology, it is possible to develop perception, logical thinking, attention, imagination, memory, speech [3]. Taking into account the above-mentioned features of a child with intellectual disabilities, first of all it is necessary to focus on psychomotor development, which will contribute to the socialization and further integration of the child into society.

The **purpose** of our study is to evaluate the effectiveness of the influence of fine motor skills development classes on the change in the psychological and pedagogical status of children with mental retardation.

Methods. Analysis of scientific and methodological literature, pedagogical observation, pedagogical testing (tests to assess the level of development of fine motor skills, assessment of psychological and pedagogical characteristics), pedagogical experiment, methods of mathematical statistics.

Discussion. The study was conducted on the basis of the State Educational Institution of the city of Moscow of the Special Comprehensive boarding School No. 102. The study involved 20 students (boys and girls aged 7-12 years) with mental retardation, 10 children each in the control and experimental groups. The duration of classes in each group was 40 minutes.

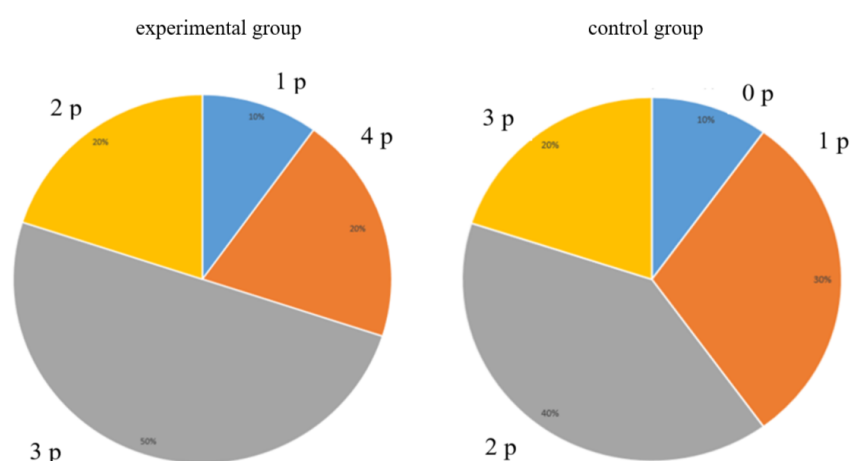
Classes in the experimental group were conducted 2 times a week for 6 months according to the developed methodology. The control group studied 2 times a week according to the Adapted work program of adaptive physical education for children with mental retardation (intellectual disabilities) approved on the basis of the school.

The content of the experimental methodology included: outdoor games, correctional and developmental exercises (prevention of posture disorders, flat feet, breathing exercises), special exercises for the education of physical qualities (walking and running with overcoming the simplest obstacles, throwing a small ball, grouping, rolling, crawling and walking on a gymnastic bench, climbing a gymnastic wall), exercises for the development of fine motor skills (finger exercises, exercises with objects, exercises with balls, exercises for the development of household skills (tying shoelaces, buttoning and unbuttoning of buttons and zippers).

According to the results of the ascertaining experiment, it can be concluded that the subjects of the control and experimental groups did not significantly differ in all the studied indicators, which indicates the correct selection of the study groups.

The assessment (according to the point system) of the psychological and pedagogical profile took place during the "take the ball" test. The level of mental development of children with intellectual disabilities aged 7-12 years corresponds to the normotypic children of 4-5 years of age. Children with mental retardation could only do a separate simple part of the task on their own, which was estimated at 2 points, which indicates a pronounced lag in children with intellectual disabilities from the pedagogical side.

Results.



Figures 1, 2. – The percentage ratio of the results of the psychological and pedagogical characteristics of children with mental retardation in the control (n=10) and experimental groups (n=10) after the experiment.

The data in figure 1 indicate that all the children of the experimental group

coped with the task. We also see that 20% of children completed the task on their own, making minor mistakes (4 points), which indicates that the intellectual abilities of children with Down syndrome approached the level of development of healthy children 4-5 years old. According to the indicators of figure 2, it can be said that the children of the control group have minor positive changes in their psychological and pedagogical status, but 10% of the children did not understand the meaning of the task and did not complete it (0 points), and only 20% of the children of this group completed the task with the help of verbal prompts from the teacher (3 points), which says about the severe lag in intellectual development.

Table 1. – Dynamics of the level of development of fine motor skills of children with Down syndrome in the experimental (EG) (n=10) and control (n=10) groups (KG) after the experiment

№	Test name	EG after			KG after			U*
		25%	Me	75%	25%	Me	75%	
1.	"Take the ball" (score)	6	6	6	4	4	5	11,5*
2.	"Buttoning with both hands" (score)	6,25	7	8	3,25	4	4,75	3*
3.	"Unbuttoning buttons with both hands" (score)	5,25	6	6,75	3,25	4	4,75	5,5*
4.	"Moving worms" (score)	5,25	6	7	3	4,5	5	15,5*
5.	Thumb versus fingers (score)	4,25	5,5	6,75	3	3,5	4,75	23*

**The differences are significant: U kr. =27 at $p \leq 0.05$*

According to Table 1, it can be noted that the children of the experimental group had significant changes in the indicators of the level of development of manual motor skills. Children have become better at performing subtle finger movements, both in the classroom and in everyday life and educational activities. This is due to the fact that in the preparatory and final parts of the developed methodology, we selected exercises and games specifically for the correction and development of fine motor skills. The improvement of the results according to these indicators also indicates the positive effect of the experimental technique on the psychomotor skills of children with mental retardation. We also noticed minor improvements in the level of fine motor skills of children in the control group.

Conclusions:

1. As a result of the analysis of literary sources on the research problem, the peculiarities of the development of the psychomotor profile of children with mental retardation and the lag in the level of development from healthy children have been revealed, which requires a special approach to the organization of the process.

2. After applying the experimental technique, psychomotor indicators improved due to the inclusion of a block of corrective exercises and a block of exercises for the development of large and small motor skills in classes, which indicates the development of physical and higher mental functions (at a significance level of $p < 0.05$), social and educational skills also significantly improved (at a significance level of $p < 0.05$), which contributed to the stimulation of the

development of higher mental functions.

3. The analysis of the results of the pedagogical experiment also showed that the students of the experimental group significantly approached the level of development of normotypic peers in terms of the studied indicators, which indicates the effectiveness of the experimental methodology.

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Demkova Anna Aleksandrovna, 1st year magistrate of the Department of Theory and Methodology of Adaptive Physical Culture, e-mail: anyadem00@mail.ru, Russia, Moscow, Federal State Budgetary Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

Rubtsova Natalia Olegovna, PhD, Professor, Head of the Department of Theory and Methodology of Adaptive Physical Culture, e-mail: afk_rgufk@mail.ru, Russia, Moscow, Federal State Budgetary Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

ВЛИЯНИЕ ЗАНЯТИЙ ПО РАЗВИТИЮ МЕЛКОЙ У РЕБЕНКА С НАРУШЕНИЕМ ИНТЕЛЛЕКТА НА ФОРМИРОВАНИЕ ЕГО ПСИХОЛОГО-ПЕДАГОГИЧЕСКОГО СТАТУСА

Демкова Анна Александровна, магистрант I курса кафедры теории и методики адаптивной физической культуры, anyadem00@mail.ru, Россия, Москва, «Российский университет спорта «ГЦОЛИФК»).

Рубцова Наталия Олеговна, к.п.н., профессор, заведующая кафедрой теории и методики адаптивной физической культуры, afk_rgufk@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматриваются результаты педагогического эксперимента, направленного на разработку и экспериментальную проверку методики с целью выявления положительного влияния упражнений по развитию мелкой моторики у детей с интеллектуальными нарушениями на их психолого-педагогический статус. Также были применены коррекционные упражнения и упражнения на воспитание физических качеств для всестороннего и гармоничного развития ребенка с данной патологией. Результаты педагогического эксперимента доказывают эффективность методики на психолого-педагогический статус занимающихся.

Ключевые слова: умственная отсталость, интеллектуальные нарушения, психолого-педагогические особенности, психомоторика, мелкая (мануальная) моторика

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COMPARATIVE ANALYSIS OF THE ELIPSE AREA AND AVERAGE VELOCITY OF CENTER OF PRESSURE OSCILLATIONS IN A SINGLE-LEG STANCE FOR ATHLETES OF DIFFERENT SPECIALTIES

Diter V.U.

Abstract. *This article presents the results of studies on static and semi-dynamic balance indices during an upright stance held by athletes. The tests were conducted on a stable platform with opened and closed eyes in a single-leg stance. It has been found that football players exhibit a smaller Ellipse Area and Average Velocity of center of pressure movement when performing a test on the see-saw, compared to basketball players ($P < 0,05$). However, indicators of static balance are nearly identical for both sports.*

Keywords: *Ellipse Area, Average Velocity, stabilometry, athletes*

Relevance. Modern sports place high demands on the athlete's vertical stability. This depends on factors such as body weight, height, body composition, and others. Equilibrium can be categorized into three types: static, semi-dynamic, and dynamic. There has been a lot of research done on athlete balance, but at the same time, no one has compared athletes of different sports: those who work with their arms, and those who work with their legs. Therefore, we decided to compare the stability indices of athletes in sport games, such as football players who use their low limbs, and basketball players who use their upper limbs.

Aim. To identify differences in static and semi-dynamic balance indices in athletes of different sports.

Methods: stabilometry, methods of mathematical statistics.

Study design: The study involved 23 football players and 25 basketball players. The tests were conducted on a stable platform while standing on one leg with eyes opened and closed, using fixed support and a see-saw. Indices of the Ellipse Area and Average Velocity of the center of pressure (COP) were recorded.

Results. The study found that the indicators of static balance (Ellipse Area and Average Velocity of oscillations of COP) were similar for football and basketball players.

When performing a standing position on the right leg, with eyes opened, the Ellipse Area is smaller for footballers than it is for basketball players. For footballers, it is $9.35 \pm 3.16 \text{ cm}^2$; for basketball players, it is between $10.9 \pm 5.14 \text{ cm}^2$. The same test, with closed eyes, showed no differences between these groups: Ellipse Area was

48.26 ± 54.46 cm² for football players and 54.15 ± 66.52 cm² for basketball players. The Average Velocity of COP oscillation when performing a standing on the right leg with eyes opened for football players was 8.40 ± 1.15 cm/s, and for basketball players, it was 8.25 ± 1.50 cm/s. With closed eyes, the Average Velocity is slightly lower among football players (13.57 ± 3.95 cm/s) compared to basketball players (14.49 ± 6.06 cm/s).

The semi-dynamic balance was found to be better in football players compared to basketball players. Differences were revealed when standing on the right leg while closed eyes on a see-saw in the frontal plane. Ellipse Area was 56.60 ± 44.08 cm² for football players and 87.63 ± 80.48 cm² in basketball players (P = 0.006). Romberg coefficients were 6.03 ± 5.28 y.e. and 7.43 ± 5 y.e. The Average Velocity COP (center of pressure) oscillation rate is lower for football players compared to basketball players (19.38 ± 6.41 cm/s for football players, 24.77 ± 6.89 cm/s for basketball players; P=0.019). The Romberg coefficients are 1.92 ± 0.6 y.e. and 2.47 ± 0.55 y.e., respectively.

Table 1. – Indicators of semi-dynamic balance in athletes

SEMI-DYNAMIC BALANCE			
	Football players	Basketball players	Validity
Ellipse Area CE (closed eyes)	56,60±44,08 cm ²	87,63±80,48 cm ²	P=0,006
Romberg coefficients (closed eyes/open eyes)	6,03±5,28 ед.	7,43±5,74 ед.	P=0,079
Average Velocity CE (closed eyes)	19,38±6,41 cm/c	24,77±6,89 cm/c	P=0,019
Romberg coefficients (closed eyes/open eyes)	1,92±0,6 ед.	2,47±0,55 ед.	P=0,003

The results suggest a connection between the type of sports activity and the ability to maintain body balance.

Conclusions:

1. The type of sports activity has an impact on balance performance.
2. Football players who use more of leg muscles during activity have higher semi-dynamic balance scores compared to basketball players.

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Diter Vladilena Urievna, vditer@bk.ru, Russia, Moscow, Federal State Budgetary educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

**СРАВНИТЕЛЬНЫЙ АНАЛИЗ ПЛОЩАДИ И СРЕДНЕЙ СКОРОСТИ КОЛЕБАНИЙ
ОБЩЕГО ЦЕНТРА ДАВЛЕНИЯ В МОНООПОРНОЙ СТОЙКЕ У СПОРТСМЕНОВ РАЗНЫХ
СПЕЦИАЛЬНОСТЕЙ**

Дитер Владилена Юрьевна, vditer@bk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье представлены результаты анализа показателей статического и полудинамического равновесия при удержании вертикальной позы у спортсменов. Тесты выполнялись на стабиллоплатформе с открытыми и закрытыми глазами в моноопорной стойке. Установлено, что площадь и средняя скорость колебаний общего центра давления при выполнении теста на пресс-папье с закрытыми глазами меньше у футболистов, чем у баскетболистов ($P < 0,05$). Показатели статического равновесия практически одинаковы у футболистов и баскетболистов.

Ключевые слова: площадь колебаний, средняя скорость колебаний, стабиллометрия, спортсмены

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**DEVELOPING A NEW VISION FOR MASS AND HIGH PERFORMANCE
SPORT INTEGRATION USING THE CASE OF INDIAN
SPORT PROGRAM 'KHELO INDIA'**

Smolianov Peter, Dolmatova Tamara, Star Shaun

Abstract. *The governments all over the world pay increasing attention to the policy of mass sport participation and popularization of physical education and sports. India, as a fast developing economic power and a member of the BRICS with a population of more than 1.4 billion people, does not lag behind global trends and also actively implements a policy aimed to increase the physical*

activity of the population within the framework of the key national state program "Khelo India".

The Khelo India program deserves a special consideration, because unlike other national programs, it is aimed simultaneously at the development of both mass sports and high-performance sports through a system of integrated national competitions – national games. In addition, it promotes mass participation in both indigenous sports and Olympic sports.

The annual Youth Games, University Games and Winter National Games make it possible not only to involve school and university students in sports, but also serve as a platform for searching and selecting talented sports reserves, who are subsequently selected to undergo sports training programs in public sports schools and academies also operating under the auspices of the Khelo India program.

Thus, the program serves as an effective tool for the integration of mass and elite sports, providing a comprehensive approach to the development of sports in India, which requires monitoring and analysis as good practice within the international experience of integrating mass sports and high-performance sports programs.

Keywords: *mass participation, national program, physical activity and sports in India*

Introduction. Increasing the level of physical activity of population and grass roots sports has been a priority of national governmental policy of the many states for several decades.

The study of this experience in such an actively developing country, the power of the South Asian region, a member of the BRICS association, as India, with a population of approximately 1.4 billion people, which is the most populous country in the world today, surpassing China according to the latest data, deserves a special attention.

According to a report by Fitbit, India is the least-active country among the 18 countries in the study, including the US, the UK, Japan and Singapore, walking an average of 6,533 steps daily [1]. While this data is a cause of concern, recent Indian government reform provides an active national policy on popularization of physical activity and mass participation. For instance, since 2016, the national federal program "Khelo India" has been initiated [2, 3]. Khelo India literally means, Play India, and is the National Program for Development of Sports.

To study the existing relationship between mass and elite sport within this program, we analyzed the current documents of "Khelo India" program as well as the documents and policies practiced at the regional level on the example of the Indian state of Haryana.

Being one of the youngest national sport programs aimed at the integrated simultaneous development of mass participation and high performance sport in India, it seems to be an interesting case of using a holistic approach for development of a national sport system.

Discussion. Khelo India is an umbrella program aimed at the sports development at the local level through the search and selection of talented athletes, organization and conduct of sports events and modernization of sports infrastructure. The program was launched in 2016-2017 on the initiative of Prime Minister Narendra Modi after the merger of two programs – the program dedicated to the development of Urban Sports Infrastructure Scheme and the National Sports Talent Search System Program. The "Khelo India" program is periodically updated and supplemented with various events. The last revision of the program took place in 2021, and adopted for the period from 2021 to 2026.

The national program "Khelo India" is aimed at achieving two goals at once, the development of both mass participations and the high-performance sports through increasing the competitiveness of Indian athletes [4].

The "Khelo India" program includes 5 main areas: creation and modernization of sports infrastructure, support for sports training centers and sports academies, promotion of inclusion through sports, development of a system of sports competitions, which is aimed at organization of annual national "Khelo India" games - Youth Games, University Games and Winter Games; search and selection of talented athletes; and training of coaching staff.

Khelo India Youth Games are national-level sports competitions that are held annually in January and February with more than 5,000 athletes from 36 states and union territories of India, who compete in 26 sports. In the 2024 iteration of the Khelo India Youth Games, held in Tamil Nadu, the sports ranged from indigenous sports such as gatka, kabaddi, kalaripayattu, kho kho, mallakhamb, and thang-ta, to Olympic sports such as archery, athletics, badminton, basketball, boxing, cycling (road and track), fencing, football, gymnastics, hockey, judo, shooting, swimming, table tennis, tennis, volleyball and weightlifting.

There are two categories of participants in the competition: school students under the age of 17; and college and higher education students under the age of 21 who represent their state or district. According to the selection rules for the 2024 Games, all residents of India who meet these criteria could register to participate in the games, but before the competition, qualifying stages are held, at which the best athletes from among the registered participants are selected.

Other major competitions held at the national level under the Khelo India program are the University Games organized by the Ministry of Youth Affairs and Sports of India in conjunction with the Association of Universities of India, the Sports Authority of India, the Indian Olympic Committee and national sports federations.

Established in 2020, the Khelo India University Games are aimed to identify and train talented student athletes aged from 18 to 25 to participate in international competitions, including the Asian and Olympic Games. The Games are annually attended by about 4,000 athletes from more than 200 universities from across the country competing in 20 different disciplines, including traditional ethnic sports such as mallahamba and yogasana.

Another type of national integrated competition supported under the Khelo India program is the Winter Games. These are national sports games among athletes of winter sports. The third Games held in February 2023 in Gulmarg, Jammu and Kashmir were attended by more than 1,500 athletes from 32 states and union territories of India, who competed in 11 sports, including alpine skiing, curling, bobsleigh, skeleton, snowshoeing, cross-country skiing, snowboarding, ski mountaineering, speed skating, hockey and bandy.

In addition to promoting mass participation and high performance in sport, it has been argued that Khelo India School Games and Khelo India University Games "may be an opportunity to promote anti-doping education to school and university students", given the concerns with anti-doping within Indian elite sport [5].

In addition to these three comprehensive national competitions, the

Government of India, within the framework of the Khelo India program, since 2019 has carried out other initiatives aimed at mass sport participation including bike rides, marathons and indigenous games. In October 2019, as part of the program, an eco-race "Plogging" (plogging is a type of physical activity, running combined with garbage collection) was held throughout India, which was attended by about 1.9 million young people from 55,945 rural youth clubs, 45 representatives of federal and regional authorities [6].

Another notable initiative was the Cycleton bike ride in 2020, the main purpose of which was to introduce residents to physical activity and sports in everyday life: 1.3 million young people from 601 districts took part in the bike ride [7]. The 5-kilometer bike marathon was attended by national leaders including The Minister of State for Youth and Sports of the Government of India, the Chief Minister of Goa, the CEO of Nehru Yuva Kendra Sangathan (the organization managing a network of youth clubs in rural areas) and other high-ranking officials. The Cycleton can be organized at the state level, as well as by groups of cyclists, schools, colleges, organizations, councils, panchayats, corporations, societies, residents' associations, non-governmental organizations, special interest groups and other organizations through an application on the website.

Within the framework of the Healthy India program, in January 2020, walking competitions, marathons and races under the banner of "Beti Bachao - Beti Padhao", which literally translated means "Save the Daughter, Educate the Daughter", which were designed to empower girls and women in India, as well as to draw attention to the problem of the gender imbalance (about 105 males for every 100 females in India) that has led to a range of social and economic problems, including an increase in violence against women, child marriage, and human trafficking [7]. District youth clubs held sports walking events, a marathon and races, after which women athletes were awarded with the active participation of national youth volunteers and leaders of youth clubs. Almost a million people from rural youth clubs from 589 districts took part. It is also worth noting that in October 2021, the "Freedom Run 2.0" (Fit India Freedom Run 2.0) was held dedicated to the 75th anniversary of India's independence, from August 13 to October 2, 2021, a total of 9 races were organized. The races were held in 64,699 rural settlements in 744 districts across the country, attended by 5.7 million young people and residents of India [7].

In 2017, the Technical Support and Capacity Building Services Fund (TSCBS) was established as part of the program, whose main function is to attract Indian specialists, international experts and consultants, as well as conduct national information and advertising campaigns. The fund with a budget of 300 million rupees is managed by the Ministry of Youth Affairs and Sports of India [8].

Generally, the activity within the "Khelo India" program is not limited to holding only the three largest sporting tournaments in the country, but is aimed at building the entire calendar of sports competitions to improve the skills of athletes and popularize sports among the population including fans, spectators and volunteers at these tournaments.

Conclusions. The success of the program is determined not only by its scale, but also by a well-coordinated system of multi-level management and financing that

should be highlighted separately.

In general, the national umbrella program "Khelo India" has sufficient flexibility in terms of financing, including the redistribution of government allocations between the directions and objectives of the program as necessary. The Government of India has increased the estimate by more than 65%, from \$6 billion rupees in fiscal year 2023 to 10.4 billion rupees in fiscal year 2024 [9].

Thus, "Khelo India" is one of the key national programs for the development of sports in India. Thanks to the continuous support from the Government, the program endeavors to strengthen and develop the country's sports culture both at the grassroots level, in the segment of mass participation in physical activity and sports, and in the field of high-performance sports. Its flexibility and at the same time multicomponent character allows it to reach many segments of the Indian population, including children and adolescents, women, and people with disabilities, involving them in systematic physical activity and sports, as well as providing them with opportunities to develop a sports career and maintain a healthy lifestyle starting from school age. At the same time, the program contributes to the foundation for a system of searching and selecting a talented sports reserve for high-performance sports, creating opportunities for training highly qualified Indian athletes capable of defending the honor of the country at major international sports competitions.

The analysis of the "Khelo India" program allows to formulate a new vision and a comprehensive approach in understanding integrated development of mass and high performance sport on the example of sport in India.

In order to further understand and possibly borrow successful features of the Indian model of integration of mass and high-performance sport, the study should be continued and results could be analyzed in comparison with other national sport programs. To this end, it is important that a comprehensive research agenda be conducted, wherein primary research on the successes (and areas of improvement) of the "Khelo India" program be analyzed. While there is no date that the Indian case study is a useful point of comparison for other jurisdictions by way of mass participation in sport, there is plenty that Indian policy makers can learn from other jurisdictions in terms of reform and implementation of such policies as well.

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Smolianov Peter, PhD, Professor psmolianov@salemstate.edu Sport and Movement Science Department, Salem State University, Salem, MA, USA

Dolmatova Tamara, PhD, leading researcher, Dolmatova.t.v@vniifk.ru Federal Science Center of Physical Culture and Sport (VNIIFK), Moscow, Russia

Star Shaun, PhD, Professor, Associate Dean, sstar@jgu.edu.in Jindal Global Law School, O.P. Jindal Global University, Sonipat, Haryana, India

ИЗУЧЕНИЕ НОВЫХ ПОДХОДОВ К ИНТЕГРАЦИИ МАССОВОГО СПОРТА И СПОРТА ВЫСШИХ ДОСТИЖЕНИЙ НА ПРИМЕРЕ ИНДИЙСКОЙ НАЦИОНАЛЬНОЙ ГОСУДАРСТВЕННОЙ ПРОГРАММЫ «КЕЛО ИНДИЯ»

Смольянов Петр, д-р наук, профессор департамент спортивной науки, Государственный университет Салем, г. Салем, Массачусетс, США

Долматова Тамара Владимировна, канд. полит. наук, ведущий научный сотрудник, ФГБУ «Федеральный научный центр физической культуры и спорта» (ФГБУ ФНЦ ВНИИФК), Москва, Россия.

Стар Шон, д-р наук, профессор Международной школы права Джиндал, Международный университет Джиндал, г. Сонипат, штат Харьяна, Индия

Аннотация. Правительства многих современных государств уделяют важное внимание политике вовлечения населения в занятия физической культурой и спортом. Индия как активная развивающаяся экономическая держава и член БРИКС с населением в более чем 1,5 млрд человек не отстает от общемировых трендов и также активно реализует политику по повышению двигательной активности населения в рамках ключевой национальной государственной программы «Кело Индия».

Программа «Кело Индия» заслуживает особого внимания, т.к. в отличие от других национальных программ направлена одновременно на развитие как массового спорта, так и спорта высших достижений через проведение системы комплексных национальных соревнований – национальных игр.

Проводимые ежегодно школьные, студенческие и зимние национальные игры позволяют не только вовлекать в занятия спортом учащихся школ и студентов вузов, но и служат площадкой для поиска и отбора талантливого спортивного резерва, которые в дальнейшем приглашаются для прохождения программ спортивной подготовки в государственных спортивных школах и академиях, действующих также под эгидой программы «Кело Индия».

Таким образом, данная программа служит эффективным инструментом для

интеграции массового и элитного спорта, обеспечивая интегрированный подход к развитию спорта в Индии, что заслуживает дальнейшего пристального внимания в качестве примера для изучения международного опыта интеграции программ массового спорта и спорта высших достижений.

Ключевые слова: массовое участие, национальная программа, физическая активность и спорт в Индии

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THE IMPACT OF EDUCATIONAL PROGRAMMES ON INCREASING CULTURAL AWARENESS OF TOURISTS

Dovgilevich P.R.

Abstract. The impact of educational programmes on increasing cultural awareness of tourists is a crucial aspect of sustainable tourism development. This article explores the role of educational initiatives in enhancing tourists' understanding and appreciation of local cultures, traditions, and heritage. By analyzing the effectiveness of various educational programmes, such as guided tours, cultural workshops, and interactive experiences, this research aims to highlight the importance of cultural education in promoting responsible and respectful tourism practices. The findings emphasize the positive influence of educational initiatives on tourists' attitudes and behaviors, ultimately contributing to a more enriching and authentic travel experience for both visitors and host communities.

Keywords: *educational programmes, tourism, professional development, staff development, cultural awareness*

Introduction. Cultural awareness and appreciation play a significant role in sustainable tourism development, as they foster mutual understanding and respect between tourists and host communities. Educational programmes have emerged as a key tool in enhancing tourists' knowledge of local cultures, traditions, and heritage. This article explores the impact of educational initiatives on increasing cultural awareness among tourists, highlighting their role in promoting responsible and respectful travel practices. By examining the effectiveness of various educational programmes, this research aims to shed light on the importance of cultural education in creating more enriching and authentic travel experiences for both visitors and local residents.

The purpose of the study is to examine the impact of educational programmes on increasing cultural awareness among tourists in the context of sustainable tourism development.

Objectives of the study department of tourism, consisting of tourists or visitors and tourism students.

Methods and organization of the research is an online survey included 20 travellers who are studying or have studied in the hospitality and tourism industry.

The results of the study and their discussion the survey was conducted on a Likert scale, where the respondent indicated the extent to which they agree or disagree with the statements, where 1 – Yes and 2 – No.

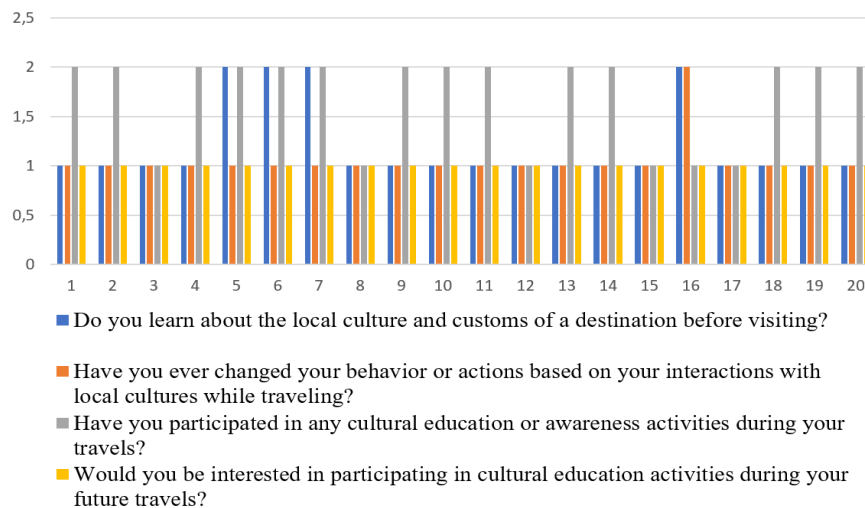


Figure 1. – Results of research. «The impact of educational programmes on increasing cultural awareness of tourists»

The study aimed to assess the impact of cultural education and awareness on travelers' experiences and behaviors. The results showed that participants who engaged in cultural education activities during their travels reported a more fulfilling and enriching experience compared to those who did not. These participants were more likely to show respect for local customs and traditions, leading to positive interactions with host communities. Furthermore, the study found that understanding and respecting local cultures were crucial for sustainable tourism development.

Participants who valued cultural awareness were more likely to support local businesses, participate in cultural activities, and contribute positively to the preservation of local heritage. Overall, the study underscored the benefits of cultural education for both tourists and host communities, emphasizing its role in creating meaningful and authentic travel experiences while contributing to the preservation and promotion of local cultures.

Conclusion. Cultural education plays a vital role in creating meaningful and authentic travel experiences that benefit both tourists and host communities. By valuing and respecting local cultures, travelers can enrich their journeys while making a positive impact on the destinations they visit.

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Dovgilevich Polina Romanovna, pdovgilevic@gmail.com Lecturer, Department of Foreign Languages and Country Studies, Russian International Academy of Tourism (RIAT), Russia, Khimki.

ВЛИЯНИЕ ОБРАЗОВАТЕЛЬНЫХ ПРОГРАММ НА ПОВЫШЕНИЕ КУЛЬТУРНОЙ ОСВЕДОМЛЕННОСТИ ТУРИСТОВ

Довгилевич Полина Романовна, pdovgilevic@gmail.com. Преподаватель кафедры иностранных языков и страноведения, Российская международная академия туризма (РМАТ), Россия, Химки.

Аннотация. Влияние образовательных программ на повышение культурной осведомленности туристов – важнейший аспект устойчивого развития туризма. В этой статье исследуется роль образовательных инициатив в повышении понимания и оценки туристами местных культур, традиций и наследия. Анализируя эффективность различных образовательных программ, таких как экскурсии, культурные семинары и интерактивный опыт, данное исследование призвано подчеркнуть важность культурного образования в продвижении ответственной и уважительной практики туризма. Полученные результаты подчеркивают положительное влияние образовательных инициатив на отношение и поведение туристов, что в конечном итоге способствует более насыщенному и аутентичному опыту путешествий как для туристов, так и для принимающих сообществ.

Ключевые слова: образовательные программы, туризм, профессиональное развитие, повышение квалификации персонала, культурная осведомленность

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UDC 612.886

ELECTROENCEPHALOFigureic FEATURES OF THE REGULATION OF VERTICAL POSTURE IN THE CONDITIONS OF VISUAL FEEDBACK IN ATHLETES

Dronenko M.V., Melnikov A.A., Berezin V.S., Zonov A.A.

Abstract. *Research work on the relationship between the parameters of postural regulation in conditions of visual feedback (VFB) of different amplification scales with alpha-, beta- and theta-brain activity during postural tasks in wrestlers. The regulation of posture in the tests with VFB was determined using stabilometry, electroencephaloFigureic brain activity was recorded using a 6-channel headset "NeuroPlay-6C". The power of alpha and theta rhythms did not differ between the wrestlers and the control during the tests with VFB. Higher stability of posture in the tests with VFB in wrestlers combined with a reduced beta-rhythm power. On the contrary, a deterioration of the regulation of posture with an increase in the VFB scale is combined with an increase in the power of the beta-rhythm.*

Keywords: *postural stability, stabilometry, electroencephaloFigurey, beta-rhythm*

Relevance. Many studies have shown that the regulation of vertical posture in athletes of various sports is increased. For example, we have previously showed increased stability of vertical posture with closed eyes in young athletes involved in shooting, gymnastics, football, and wrestling [1]. Moreover, the advantages in regulating the vertical posture are higher in poses with more difficult standing conditions: with closed eyes, against the background of fatigue, or in a mono-support stance. Previously, we found that wrestlers are able to integrate visual sensory information more effectively in order to stabilize the pose in conditions of visual feedback (VFB) with a large scale (1/32) amplification of fluctuations in the total center of pressure displayed on the monitor screen. On the contrary, untrained individuals were unable to maintain posture stability in the conditions of VFB and showed a sharply increased area of BCD fluctuations [2]. We assume that this feature of posture regulation under conditions of visual interference in wrestlers may be associated with a more effective integration of visual information with other sensory streams (proprioceptive, tactile, and vestibular) in the postural regulation system, as evidenced by many authors [3, 4].

ElectroencephaloFigureic (EEG) indicators of brain neuron activity during postural tasks can make some contribution to the understanding of sensorimotor

integration in postural-resistant athletes. A decrease in alpha power usually indicates a general activation or decrease in cortical inhibition in order to process incoming information [5].

In addition to the alpha rhythm, a connection with postural stability was found for the theta rhythm [5]. It was found that individuals with higher balance scores, that is, with reduced oscillations of the moving platform, were characterized by lower cortical theta power in the central frontal and central parietal lobes of the brain. It is assumed that the increase in theta activity in the frontal and parietal cortex reflects the active process of detecting motor and cognitive errors or increasing concentration [5]. On the other hand, in contrast, better results in experienced golfers are associated with higher theta power of the EEG signal along the mid-frontal line and higher parietal alpha power (10-12.5 Hz) compared to beginners.

Associations of postural stabilization and slowing down of voluntary movements were found with an increase in beta rhythm power. However, we did not find any studies that would analyze the relationship between postural stability under conditions of visual feedback (VFB) of different scales and electroencephalographic brain parameters in athletes.

The purpose of the work is to research the connection between postural regulation indicators under conditions of visual feedback (VFB) of different scales of amplification of the general center of pressure displayed on the monitor screen with alpha, beta and theta brain activity during postural tasks in wrestlers.

Methods of research:

1. *Assessment of the regulation of vertical posture under conditions of visual feedback with different scales of increasing oscillations of the general center of pressure on the monitor screen.* The stability of the vertical posture was determined using the indicator - the area of oscillations of the general center of pressure (OCP, Socp), which was determined on the stabilographic hardware and software complex "Stabilan - 01", JSC OKB "Rhythm" and the software test "Target".

2. *Registration of alpha, beta and theta EEG rhythms.* The EEG signal was recorded using a wireless stretchable tape headset "NeuroPlay-6C" with built-in dry electrodes (Neuroassistive technologies) along 6 leads: O1, O2, T3, T4, Fp1, Fp2. The signal recording frequency was 125 Hz, bandwidth: 0-40 Hz. The lead circuit is monopolar, in accordance with the "10-20%" system, the reference electrode was located on the left ear. Spectral power ($\mu V^2/Hz$) of alpha (PW alpha, 8-14 Hz), beta (PW-beta, 14-35 Hz) and theta (PW-theta, 4-8 Hz) rhythms was calculated in the NeuroPlayPro 1.10 application. Recordings with visually absent artifacts were used for analysis.

3. *Statistics.* Results are presented as arithmetic mean (M) $\pm$ 95% confidence interval (95% Cond.Int.). Changes in the studied indicators in tests at different scales of biofeedback relative to OG conditions in individual groups were assessed using the paired Wilcoxon test. Comparisons between the "Fighters" and "Control" groups were carried out using the Mann-Whitney test. Differences in the dynamics of changes in indicators with an increase in the scale of the VFB between groups were determined using two-factor analysis for repeated measures (ANOVA). The analysis was performed in the Statistica V12 program (StatSoft).

Study design. Healthy competitive athletes specializing in various types of wrestling and martial arts with a current weekly training load of 12 ± 5 hours (group “Wrestlers”, $n=16$, age: 22 ± 4 years) and not competitive athletes involved in e-sports or who have not trained in any sport for more than 3 years (group “Control”, $n=14$, age: 22 ± 2 years). The groups did not differ in body length (179 ± 11 cm and 176 ± 12 cm) and body weight (73 ± 15 kg and 76 ± 17 kg).

All tests had a duration of 40 seconds and were performed in one session with a time interval of 30 seconds between tests. The subject was in a normal vertical stance, his arms hung freely along the body, his feet were parallel, at a distance equal to the clinical base of the body. The sequence of tests was as follows: Stand with eyes open (OG, 40 sec) and eyes closed (ZG, 40 sec). In the OG test, the subject looked at a black circle on a white background of the monitor screen; Stand with VFB with a scale of movement of the OCD marker equal to 1/1 (VFB 1/1); Rack with VFB with a 2-fold increased scale (VFB 1/2); with 4 times increased scale (VFB 1/4); of 8 times (VFB 1/8); of 16 times (VFB 1/16); of 32 times (VFB 1/32); Rack with VFB with an of 64 times (VFB 1/64).

Results. Dynamics of PW-alpha in postural tests with VFB in wrestlers. PW-alpha did not differ between groups in all tests in leads O1, T3, Fp1, Fp2, T4 and O2. However, although ANOVA did not reveal differences in the dynamics of PW-alpha in all leads between the groups, in the control group in lead O2 a decrease in PW-alpha was detected in tests with VFB 1/1, VFB 1/2, VFB 1/4, VFB 1/8 and VFB 1/64 compared to PW-alpha in the OG test (fig. 1). On the contrary, in the group of wrestlers in tests with visual feedback, the PW-alpha depression was not significant compared to the OG test. Similar intergroup relationships were found in leads Fp1 and Fp2, but without statistical differences.

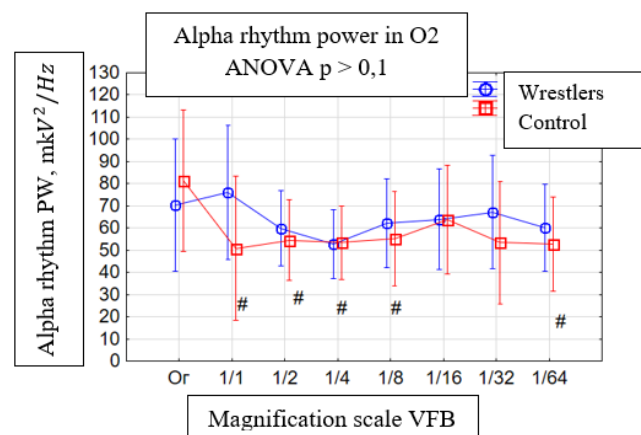


Figure 1. – Dynamics of PW-alpha in the O2 lead in tests with visual feedback (VFB) of increasing gain scale in the “Fighters” and “Control” groups. # - $p < 0.05$ compared with the OG according to the paired Wilcoxon test in the group

Dynamics of PW-beta in postural tests with OCP in wrestlers. In the stance with OG, no differences between groups in PW-beta were found in all leads. Significant differences in the dynamics of PW-beta between groups were revealed in leads Fp1 (ANOVA $p < 0.01$. Fig. 2) and Fp2 (ANOVA $p < 0.05$). The main difference was an

increase in PW-beta in Fp1 in the frontal areas in the control group and, on the contrary, there were no changes in the wrestlers group, and in VFB1/4-1/8-1/16 a downward trend was revealed. A similar Figure was found in lead Fp2, but less significant. In other leads: T3, T4 and O1, O2, no intergroup differences were detected. However, in lead O1, wrestlers had less PW-beta in almost all tests with VFB.

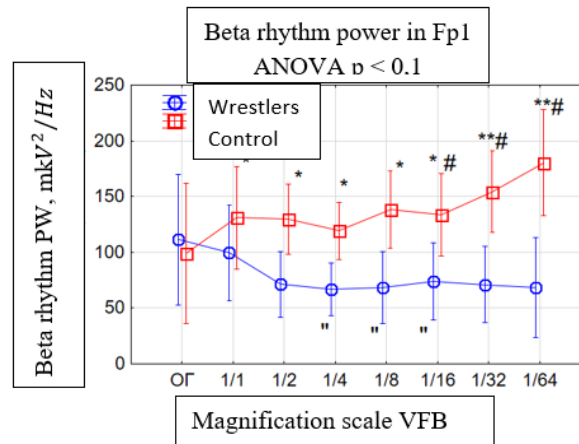


Figure 2. – Beta rhythm power in lead Fp1 in tests with visual feedback (VFE) of increasing scale of gain in the “Fighters” and “Control” groups. */ - $p < 0.05/0.01$ compared to Control. “/# - $p < 0.1 / 0.05$ compared with OG according to the paired Wilcoxon test in the group**

Dynamics of PW-thetas in postural tests with VFB in wrestlers. With an increase in the scale of VFB, there was a decrease in power in leads Fp1 (fig. 3) and Fp2. However, there were no intergroup differences in the dynamics, as well as in the level of PW-theta in tests with VFB ($p < 0.1$. fig. 3).

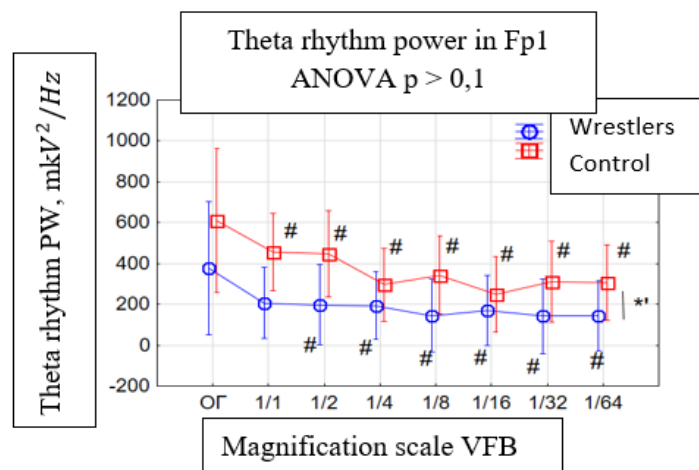


Figure 3. – Power of the theta rhythm (PW-theta) in lead Fp1 in tests with visual feedback (VFB) of increasing scale of gain in the “Fighters” and “Control” groups. *’ - $p < 0.09$ compared to Control. # - $p < 0.05$ compared with OG according to the paired Wilcoxon test in the group

Dynamics of OCP in postural tests with VFB in wrestlers. In the wrestlers in the test with OG, as well as in all tests with VFB (1/1 – 1/64), OCP was lower ($p < 0.05$ -

0.01) compared to the control (Fig. 4). In response to the presentation of VFB with a natural amplitude (VFB1/1) of the OCP oscillations, there was a decrease in OCP ($p < 0.05$) in the “Control” group, as well as in the “Wrestlers”. However, with an increase in the scale of VFB, OCP in the “Control” group did not differ from the OG condition, but increased greatly at the scale of VFB1/64. On the contrary, for wrestlers, OCP in tests with VFB (1/1-1/64) was always lower than in the test with OG.

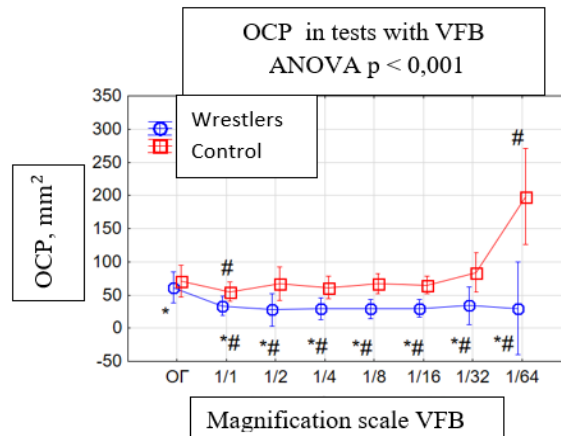


Figure 4. – Dynamics of Socf in tests with visual feedback (VFE) of increasing scale of gain in the “Fighters” and “Control” groups. * - $p < 0.05$ compared to Control. # - $p < 0.05$ compared with OG according to the paired Wilcoxon test in the group

Discussion. *PW alpha during visual feedback tests in wrestlers.* During cognitive or motor activity, PW alpha decreases and decreases the greater the difficulty of the task to be solved. Consequently, the decrease in PW-alpha that we found in leads O1 and O2 during tests with VFB compared to the test with only OG and looking at a stationary target in the control group indicates a significant excitation of the frontal cortex for processing incoming information and generating more effective postural corrections, which is consistent with other literature data [3, 5]. However, we did not find any significant differences in the level of alpha depression between the groups in tests with VFB.

PW theta during visual feedback tests in wrestlers. We did not find a strong connection between high postural stability during VFB and the level of PW-theta. When presented with VFB, PW-theta gradually decreased with increasing scale of VFB, and in the most difficult test, VFB1/64, PW-theta in wrestlers was insignificantly lower ($p < 0.1$) than in controls. These findings are consistent with work [5], which showed that more posturally stable individuals showed less frontal and parietal PW theta.

PW-beta during visual feedback tests in wrestlers. Although PW-beta did not differ between groups in the OG stance conditions, the power of the beta rhythm in Fp1,2 increased in the control and remained slightly reduced ($p < 0.1$) in wrestlers during tests with an increasing scale of VFB (in particular, at VFB 1/4, 1/8, 1/16). These differences in PW-beta may partly explain the differences in postural regulation between wrestlers and control subjects in the VFB tests. An increase in

PW-beta in Fp1,2 in the control group, together with an increase in the area of OCP oscillations, indicates an increasing difficulty in regulating posture during large-scale OCP and the activation of postural stabilization mechanisms due to extensive and inadequate tensions of the postural muscles. On the contrary, in wrestlers, a slight decrease in PW-beta, together with an increase in postural stability, indicates a high efficiency of sensorimotor processes in ensuring balance during VFB and a smaller, but more adequate activation of postural muscles. However, to elucidate the mechanisms of the connection between postural and EEG features in wrestlers, additional research is needed, taking into account the resulting movement artifacts.

Conclusion. Wrestlers group wrestlers have effective regulation of vertical posture when visual feedback is used. On the contrary, in ordinary control group, postural stability in tests with a large scale of VFB amplification decreases. The high efficiency of posture regulation in wrestlers under conditions of VFB was combined with a tendency towards a decrease in the electroencephalic power of the beta rhythm in the frontal zones of the cortex; on the contrary, a violation of posture regulation was combined with an increase in PW-beta in Fp1,2.

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Dronenko M.V., undergraduate student of department of physiology, dronenkom@gmail.com

Melnikov A.A., professor, meln1974@yandex.ru, The Russian University of Sport «GTSOLIFK», Moscow, Russia

Berezin V.S. postgraduate student of department of physiology, tb_bogdanova@bk.ru, The Russian University of Sport «GTSOLIFK», Moscow, Russia

Zonov A.A., psychophysiological, a.zonov@neurobotics.ru Neuroassistive Technologies LLC, Moscow, Russia

ЭЛЕКТРОЭНЦЕФАЛОГРАФИЧЕСКИЕ ОСОБЕННОСТИ РЕГУЛЯЦИИ ВЕРТИКАЛЬНОЙ ПОЗЫ В УСЛОВИЯХ ЗРИТЕЛЬНОЙ ОБРАТНОЙ СВЯЗИ У СПОРТСМЕНОВ

Дроненко М.В., магистрант, dronenkom@gmail.com, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Мельников А.А., д.б.н., профессор, meln1974@yandex.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Березин В.С. аспирант, tb_bogdanova@bk.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Зонов А.А., психофизиолог, a.zonov@neurobotics.ru, ООО «Нейроботикс» г. Зеленоград, Россия

Аннотация. Цель работы – исследовать связь показателей регуляции позы в условиях зрительной обратной связи (ЗОС) разного масштаба усиления с альфа-, бета- и тета-активностью мозга во время постуральных заданий у борцов. Регуляцию позы в тестах со ЗОС определяли с помощью стабилломерии, электроэнцефалографическую активность мозга регистрировали с помощью 6-канальной гарнитуры «NeuroPlay-6С». Мощности альфа- и тета-ритмов во время тестов со ЗОС не различались между борцами и контролем. У борцов высокая устойчивость позы в тестах со ЗОС сочеталась с пониженной мощностью бета-ритма. Напротив, нарушение регуляции позы при увеличении масштаба ЗОС сочетается с повышением мощности бета-ритма.

Ключевые слова: постуральная устойчивость, стабиллометрия, электроэнцефалография, бета-ритм

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RETROSPECTIVE ANALYSIS OF COMPETITION ACTIVITY IN HAMMER THROWING IN THE RUSSIAN FEDERATION (ON THE EXAMPLE OF MEN)

Dungerov I.D.

Abstract. The article analyzes some parameters and indicators that allow characterizing the competitive activity of hammer throwers in modern Russia (1993-2023 years). The presented analysis allows us to create an idea of the trends in the development of male hammer throwing over several decades.

Keywords: *Olympic Games, World, European and Russian Championships, Unified All-Russian Sports Classification, Russian athletes, Track & Field*

Introduction. The Russian, primarily Soviet, school of hammer throwing, has a rich history of successful entry into the international arena. Over the years, its representatives have won the Olympic Games, World and European Championships, as well as set world and European records [1].

Research design. In hammer throwing, a "grandmaster" sports result is considered to be 80 meters or more. In the history of Russia (taking into account the period of the USSR), 14 people achieved such a result. At the same time, this list includes track and field athletes who set world records in different years. It should be noted that the current record of the world, Europe and Russia belongs to Yuri Sedykh, who heads the list (table 1).

Table 1. – The strongest hammer throwers of the Russian Federation

№	Sport result,m	Name & Surname of the athlete	Date & Place Establish	Date Birth	Number of years
1	86,74 (RR)	Sedykh Y.	17.07.1986, Stuttgart	23.01.1958	28
2	83,44	Nikulin I.	06.06.1992, Seville	14.08.1960	32
3	83,43	Zagornyy A.	10.02.2002, Sochi	31.05.1978	24
4	82,62	Kirmasov S.	30.05.1998, Bryansk	25.03.1970	27
5	82,54	Sidorenko V.	13.05.1992, Krasnodar	01.05.1961	30
6	82,28	Konovalov I.	10.08.2003, Tula	04.03.1971	32
7	82,18	Sedykh Y.	19.06.1992, Dreuch	11.06.1955	36
8	82,16	Litvinov S. N.	13.06.1993, Moscow	23.01.1958	35
9	81,70	Seleznev A.	22.05.1993, Sochi	25.01.1964	29
10	81,56	Gavrilov S.	16.06.1996, Rostov-on-Don	22.05.1970	25
11	81,26	Khersontsev V.	03.07.2001, Bryansk	08.07.1974	27
12	81,17	Pronkin V.	13.02.2022, Sochi	15.01.1994	28
13	80,98	Litvinov S.S.	13.06.2012, Moscow	27.01.1986	26
14	80,71	Ikonnikov K.	05.07.2012, Cheboksary	05.03.1984	28
15	80,00	Vinichenko I.	11.02.2007, Sochi	11.04.1984	23

Note to Table 1: R.R. – Russian record, number of years – the total number of years when the specified sports result was achieved.

As follows from the presented data, 47% of the results were shown in the 20th century, another – 53% in the 21st century. Most of the results were achieved by the athletes at competitions within the country (with the exception of Y. Sedykh and I. Nikulin).

The range of hammer throwers ranges from 23 to 36 years. This confirms that this type of athletics is under the control not only of young, but also of "aged" athletes.

Based on the results of the competitive activity of Soviet hammer throwers, it can be stated that they won 39 medals at the Olympic Games (6g+5s+5b medals), at the World Championships (3g+3s) and at the European Championships (8g+6s+4b), 8 medals won sportsmen in the from RSFSR.

Table 2. – Chronology of performances of Russian hammer throwers at major international competitions

№	Name & Surname of the athlete	Year	Sports result, m	Place	Number of years
<i>Olympic Games</i>					
1	Konovalov I.	1996	78,72	6	25
2	Sidorenko V.	1996	74,68	12	35
3	Khersontsev V.	1996	74,48	14	22
4	Konovalov I.	2000	78,56	5	29
5	Sidorenko V.	2000	74,72	21	39
6	Zagornyy A.	2000	74,63	22	22
7	Konovalov I.	2004	76,36	12	33
8	Kirmasov I.	2004	75,83	16	34
9	Voronkin Y.	2004	73,47	24	25
10	Ikonnikov K.	2008	72,33	21	24
11	Vinichenko I.	2008	72,05	22	24
12	Ikonnikov K.	2012	77,86	5	28
13	Zagornyy A.	2012	72,05	22	34
14	Pronkin V.	2020	76,72	8	26
<i>World Championship</i>					
1	Sidorenko V.	1993	78,86	5	32
2	Seleznev V.	1993	78,58	6	29
3	Litvinov S.N.	1993	78,56	7	35
4	Konovalov I.	1995	76,50	7	24
5	Seleznev V.	1995	76,18	8	31
6	Sidorenko V.	1995	71,78	23	34
7	Sidorenko V.	1997	80,76	3	36
8	Konovalov I.	1997	78,68	6	26
9	Khersontsev V.	1997	77,42	7	23
10	Khersontsev V.	1999	76,96	8	25
11	Konovalov I.	1999	75,63	10	28
12	Sidorenko V.	1999	74,85	17	39
13	Konovalov I.	2001	80,27	3	30
14	Sidorenko V.	2001	74,50	21	41
15	Kirmasov S.	2001	75,79	15	31
16	Konovalov I.	2003	78,55	6	32
17	Kirmasov S.	2003	74,17	20	33
18	Zagornyy A.	2003	73,30	22	25
19	Konovalov I.	2005	78,59	5	34
20	Khersontsev V.	2005	77,59	7	31
21	Zagornyy A.	2007	70,94	25	29
22	Zagornyy A.	2009	78,09	3	31
23	Litvinov S. S.	2011	74,80	15	25
24	Korolev A.	2013	69,69	25	31
25	Pronkin V.	2017	78,16	2	23
26	Sokirskiy A.	2017	77,50	5	32
27	Korotovskiy E.	2019	75,14	12	27
28	Lukyanov D.	2019	73,47	19	31

Table 2 (continued)

№	Name & Surname of the athlete	Year	Sports result, m	Place	Number of years
<i>European Championship</i>					
1	Sidorenko V.	1994	81,10	1	33
2	Nikulin I.	1994	78,38	4	34
3	Konovalov I.	1998	76,11	9	27
4	Sidorenko V.	1998	75,60	13	37
5	Kirmasov S.	1998	74,50	18	28
6	Zagornyy A.	2002	77,01	11	24
7	Konovalov I.	2002	76,79	20	31
8	Khersontsev V.	2002	77,00	16	28
9	Khersontsev V.	2006	73,24	15	32
10	Vinichenko I.	2010	74,31	8	26
11	Zagornyy A.	2012	77,40	2	34
12	Pozdnyakov A.	2012	71,79	18	25
13	Lukyanov D.	2018	71,71	12	30
14	Sokirskiy A.	2018	72,97	14	33

Note to Table 2: Number of years – the total number of years when the specified sports result was achieved.

If we pay attention to the achievements of the hammers throwers of Russia, then it is worth talking about the successes that fall on the world and European Championships – 6 medals (1g+2s+3b). It follows that during the 30th years of modern history, what was created during the Soviet period has been lost. Against this background, there was also a decrease in sports results, especially during the period of suspension of the All-Russian Athletics Federation from international competitions (November 2015 year – March 2023 year). Based on the data presented in Table 3, it follows that from year to year the average results of hammer throwers who performed at the Russian Championships tend to decrease. The best average result at the championships was registered in 1997 years ($r = 75,16\text{m}$, with $n = 15$), the lowest in 2022 years ($r = 63,17\text{ m}$, with $n = 13$). During the modern period of Russia, the UASC has changed 8 times.

Table 3. – Parameters and indicators of competitive activity of hammer throwers based on the results of the Russian Championships 1993-2023 years

№	Data						
	Year	Quantity Participants	Standards MSIC-MS-CMS	Average Result, m	Champion result, m	Name and Surname of the Champion	Number of years
1	1993	13	5-3-2	72,64	82,00	Litvinov S.N.	35
2	1994	12	4-8-0	72,47	78,94	Nikulin I.	34
3	1995	14	4-8-2	72,54	78,12	Konovalov I.	24
4	1996	16	6-6-3	71,63	80,48	Khersontsev V.	22
5	1997	15	6-6-3	75,16	80,28	Sidorenko V.	37
6	1998	16	4-12-0	72,41	81,79	Kirmasov S.	28

Table 3 (continued)

№	Data						
	Year	Quantity Participants	Standards MSIC-MS-CMS	Average Result, m	Champion result, m	Name and Surname of the Champion	Number of years
7	1999	13	5-4-3	70,77	80,51	Konovalov I.	28
8	2000	14	5-6-2	73,25	81,75	Sidorenko V.	40
9	2001	12	5-3-3	72,96	80,07	Kirmasov S.	31
10	2002	11	3-3-4	68,94	81,81	Konovalov I.	31
11	2003	12	4-4-4	70,55	82,28	Konovalov I.	32
11	2004	17	5-2-9	68,38	79,33	Konovalov I.	33
12	2005	14	3-6-4	69,80	78,76	Konovalov I.	34
13	2006	13	4-4-4	70,63	77,08	Khersontsev V.	32
14	2007	15	1-10-3	68,90	77,90	Zagornyy A.	29
15	2008	15	5-7-1	70,93	79,04	Ikonnikov K.	24
16	2009	13	2-4-6	68,38	80,00	Zagornyy A.	31
17	2010	13	0-6-7	67,62	76,56	Vinichenko I.	26
18	2011	14	2-6-5	69,91	79,04	Ikonnikov K.	27
19	2012	14	2-7-4	69,31	80,71	Ikonnikov K.	28
20	2013	9	1-5-0	70,08	77,77	Litvinov S.S.	27
21	2014	8	0-5-3	69,84	74,28	Korolev A.	32
22	2015	18	0-10-4	72,07	76,01	Litvinov S.S.	29
23	2016	17	1-11-5	69,69	77,67	Litvinov S.S.	30
24	2017	13	1-9-3	71,40	79,32	Pronkin V.	23
25	2018	11	0-7-4	70,43	74,74	Lukyanov D.	30
26	2019	11	1-6-3	68,76	77,17	Korotovskiy E.	27
27	2020	10	0-5-3	68,33	75,83	Pronkin V.	26
28	2021	12	0-7-3	67,71	75,25	Romanov A.	27
29	2022	13	1-4-3	63,17	77,37	Pronkin V.	28
30	2023	9	1-3-3	66,00	77,59	Pronkin V.	29

Note to Table 3. Number of years of the champion of Russia – the total number of years when achieving the specified sports result is indicated, MSIC – master of sport of international class, MS – master of sport, CMS – candidate of master of sports.

At the same time, the standard of the MSIC was amended four times, and the standard of the MS-CMS was amended twice (table 4). With the standard of MSIC – 76,00m-75,00m (1993-2006 y.), this result was achieved by four people (on average) at the Russian Championships.

Further, with the increase in the MSIC standard to 77,00 m (2006-2017y.), the level of performance decreased. Despite the reduction of this standard to 76,00 m (2018-2021y.), and then to 75,05 m (in 2023y.), almost nothing has changed.

Table 4. – Standards of the Unified All-Russian Sports Classification

№	Years	Sports titles (MSIC, MS) and categories (CMS, I, II, III) standards (m)					
		MSIC	MS	CMS	I	II	III
1	1993	76,00	69,00	63,00	56,00	47,50	39,00
2	1994-1996	75,00	67,00	60,00	54,00	46,50	38,50
3	1997-2000	75,00	67,00	60,00	54,00	46,50	38,50
4	2001-2004	75,00	67,00	60,00	54,00	46,50	38,50
5	2005	75,00	67,00	60,00	54,00	46,50	38,50
6	2006-2009	77,00	67,00	60,00	54,00	48,00	42,00
7	2010-2013	77,00	67,00	60,00	54,00	48,00	42,00
8	2014-2017	77,00	67,00	60,00	54,00	48,00	42,00
9	2018-2021	76,00	67,00	60,00	54,00	48,00	42,00
10	2022-2025	75,04	67,50	59,00	51,00	44,00	38,00

Note to table 4: In 1993y., the UASC (all-union) of 1988-1992y. was used, in 2005y., the UASC (all-Russian) of 2001-2004y. was used.

In turn, the results of the MS level, after lowering the standard from 69.00 to 67.00 m (1994y.), initially increased, and then tended to deteriorate (tables 3, 4).

Conclusion. In the modern history of athletics in Russia, hammer throwing, where the factor of technical skill plays a great role, there is a tendency to deterioration of sports results. This is especially noticeable during the period of suspension of Russian athletes from participation in international competitions. At present, it is necessary to accumulate the achievements of the Soviet school of hammer throwing in the planning and organization of the training process, which can create a prerequisite for improving sports performance.

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Dungerov Ivan Dmitrievich, student of the Department of Theory and Methodology of Athletics named after N.G. Ozolin, ivan1999@dungerov.ru, Russia, Moscow, Federal State Budgetary Institution of Higher Education "Russian University of Sport "GTSOLIFC".

РЕТРОСПЕКТИВНЫЙ АНАЛИЗ СОРЕВНОВАТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ В МЕТАНИИ МОЛОТА В РОССИЙСКОЙ ФЕДЕРАЦИИ (НА ПРИМЕРЕ МУЖЧИН)

Дунгеров Иван Дмитриевич, студент кафедры теории и методики лёгкой атлетики им. Н.Г. Озолина, ivan1999@dungerov.ru, Россия, Москва, Федеральное Государственное Бюджетное Учреждение Высшего Образования «Российский Университет Спорта «ГЦОЛИФК».

Аннотация. В статье проведён анализ некоторых параметров и показателей,

позволяющих охарактеризовать соревновательную деятельность метателей молота, в современной России (1993-2023 гг.). Представленный анализ позволяет создать представление о тенденциях развития метания молота мужчин на протяжении нескольких десятков лет.

Ключевые слова: Олимпийские игры, чемпионат мира, Европы и России, Единая Всероссийская Спортивная Классификация, российские спортсмены, лёгкая атлетика

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UDC 796.61

MODERN TESTING OF PHYSICAL ABILITIES OF YOUNG BMX RIDERS

Dyshakov A.S., Medvedev V.G.

Abstract. During the current and stage-by-stage pedagogical control of the level of motor fitness of young BMX cyclists, it is proposed to use six test tasks: 1) starting action; 2) acceleration of 15 meters on the go on an inclined straight line; 3) acceleration 20 meters from a standstill on a horizontal line; 4) acceleration of 20 meters on the go on a horizontal line; 5) overcoming an obstacle of 20 meters on the move; 6) overcoming a turn of 20 meters on the move.

Keywords: cycling, BMX races, the federal standard of sports training, sports school programs, test tasks, regulatory requirements, control of the level of motor fitness

Introduction. The structure of competitive activity in BMX-racing involves overcoming a specialized BMX track at the highest possible velocity. BMX track includes a starting hill, straight sections, obstacles and turns (fig. 1).

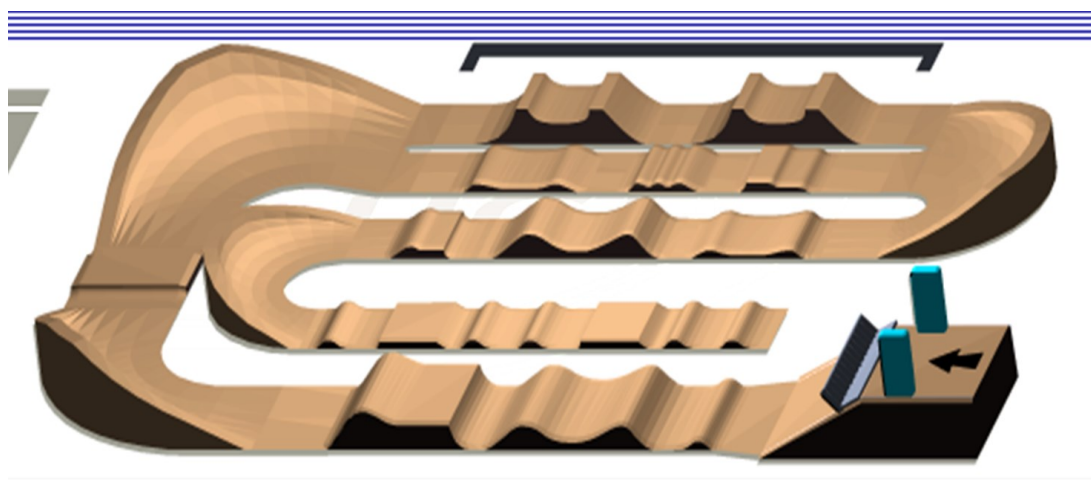


Figure 1. – Typical model of a BMX racing track [1]

Taking into account the early age of the beginning of BMX racing cycling – 7

years old and the specifics of competitive activity, pedagogical control of athletes' motor fitness plays an important role in the training of young cyclists. The test tasks for monitoring the level of fitness of BMX riders are presented in the Federal Standard of Sports Training by sport (cycling), in the programs of sports schools, as well as motor tasks used in the practice of the sport to control the level for athletes. The motor tasks presented in the above-mentioned regulatory documents do not take into account the specifics of competitive activities and structural elements of BMX tracks and do not meet the requirements for tests: informative values, reliability, standard, and the availability of assessment system. Considering that there are no standardized requirements for the length and profile of the distance for BMX tracks, an urgent task is to develop specialized means for controlling the level of motor fitness of athletes in BMX races [2].

Methods. Subjects were 259 BMX riders' total 225 males, 34 females, belonging to the beginner 196 people, nonelite 63 people. Descriptive subject data are displayed in table 1.

Table 1. – Descriptive data (mean±SD) of subjects (males n=225, females n=34)

Gender	Age [y]	Body weight [kg]	Height [m]
Male	11 ± 3.7	46±17.3	1.50±0.18
Female	11 ± 3.2	47±13.9	1.50±0.14

All subjects performed six motor tasks (4 attempts each): 1) starting motion; 2) inclined straight line acceleration of 15 m distance (start from dynamic); 3) horizontal straight acceleration of 20 m distance (start from static); 4) horizontal straight acceleration of 20 m distance (start from dynamic); 5) overcoming an obstacle of 20 m (start from dynamic); 6) overcoming a turn of 20 m (start from dynamic).

Assessment of the level of special physical preparedness of the subjects was carried out for three days: 1st day - horizontal straight acceleration of 20 meters distance (start from static / dynamic), 2nd day - starting motion, inclined straight line acceleration of 15 m distance (start from dynamic), 3rd day - overcoming an obstacle and turn of 20 m (start from dynamic). All motor tasks were performed after a preliminary warm-up for 15 minutes of riding on BMX track. Subjects performed each subsequent attempt at an average interval of 5 minutes.

To assess the duration of the starting motion, lateral video shooting using a Panasonic HC-V770 camera (shooting frequency 59 Hz) and Sony handycam (shooting frequency 25 Hz) was carried out. The duration of the starting motion was determined using the MPC-HC software. The duration of the motor task was calculated from the moment the first light and sound signal was given (red traffic light signal) to the intersection of the line of the upper edge of the starting gate (after their complete drop) by the front wheel of the bicycle (fig. 2).

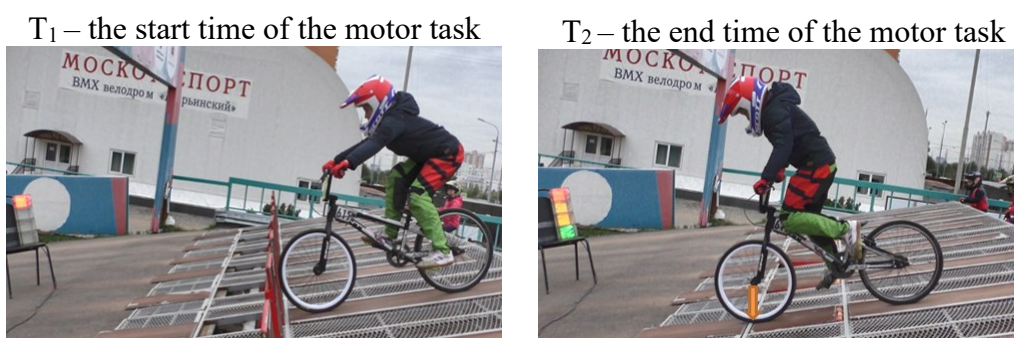


Figure 2. – Assessment the duration of the starting motion

Muscle Lab opt couplers were used to measure the duration of motor tasks: inclined straight line acceleration of 15 meters distance, horizontal straight acceleration of 20 meters distance, overcoming an obstacle and turn of 20 meters (fig. 3).

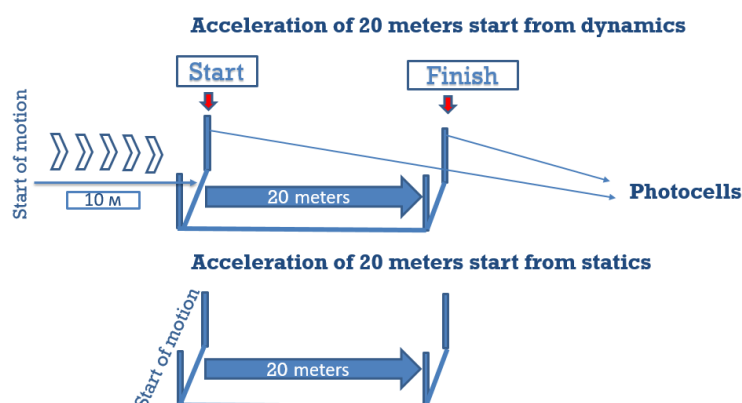


Figure 3. – Assessment the duration of the motor tasks: horizontal straight acceleration of 20 meters distance (start from dynamic / static)

Based on the results obtained, regression equations were calculated for each of the motor tasks and regulatory requirements were developed to control the motor fitness of young BMX riders, of various qualifications and gender (table 2,3).

Table 2. – Standards values of the level of special physical preparedness for male BMX riders

Motor task	Standard - duration no more [s]						
	beginner	1 st	2 nd	3 rd	4 th	5 th	6 th
Starting motion (s)	1,85	1,82	1,73	1,69	1,62	1,57	1,52
Inclined straight line acceleration of 15 m distance (start from dynamic) (s)	1,75	1,73	1,71	1,7	1,64	1,62	1,6
Horizontal straight acceleration of 20 m distance (start from static) (s)	4,1	3,9	3,75	3,6	3,5	3,3	3,12
Acceleration of 20 m on the go on a horizontal line (start from dynamic) (s)	2,9	2,8	2,7	2,6	2,5	2,4	2,3
Overcoming an obstacle of 20 m (start from dynamic) (s)	2,5	2,4	2,33	2,3	2,22	2,13	2,11
Overcoming a turn of 20 m (start from dynamic) (s)	3,3	3,23	3,13	3,1	3,02	2,93	2,9

Table 3. – Standards values of the level of special physical preparedness for female BMX riders

Motor task	Standard - duration no more [s]						
	beginner	1 st	2 nd	3 rd	4 th	5 th	6 th
Starting motion (s)	1,9	1,85	1,79	1,74	1,69	1,65	1,59
Inclined straight line acceleration of 15 m distance (start from dynamic) (s)	1,77	1,76	1,75	1,73	1,72	1,7	1,67
Horizontal straight acceleration of 20 m distance (start from static) (s)	4,2	4,03	3,91	3,8	3,63	3,52	3,42
Acceleration of 20 m on the go on a horizontal line (start from dynamic) (s)	2,95	2,9	2,8	2,71	2,64	2,53	2,45
Overcoming an obstacle of 20 m (start from dynamic) (s)	2,55	2,52	2,43	2,4	2,24	2,2	2,12
Overcoming a turn of 20 m (start from dynamic) (s)	3,32	3,3	3,28	3,26	3,24	3,22	3,2

The standard values of the duration of motor tasks presented in Tables 2 and 3 correspond to the following stages of long-term sports training: without a category beginner, 1st, 2nd – the stage of beginner training. From the 3th to 6th – the training stage (the stage of sports specialization).

Conclusion. The standard values presented in Tables 2 and 3 can be used as transfer normative when athletes move from one qualifying stage to another (table 4) and as one of the test tasks in the stage-by-stage control of the level of special physical preparedness of BMX riders.

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Dyshakov Aleksey Sergeevich, PhD, Associate Professor at the Department of Theory and Methods of Cycling, Triathlon and Golf, d.a85@mail.ru.

Medvedev Vladimir Gennadyevich, PhD, Associate Professor, head of sport biomechanics lab in research institute of sports and sport medicine, biomechanics@bk.ru, Russia, Moscow, «The Russian University of Sport «GTSOLIFK».

СОВРЕМЕННЫЕ СРЕДСТВА КОНТРОЛЯ ДВИГАТЕЛЬНОЙ ПОДГОТОВЛЕННОСТИ ЮНЫХ ВЕЛОГОНЩИКОВ ВМХ

Дышаков Алексей Сергеевич, к.п.н., доцент кафедры ТуМ Велосипедного спорта, триатлона и гольфа, d.a85@mail.ru, Россия, г. Москва, Сиреневый бульвар, д.4, «Российский университет спорта «ГЦОЛИФК»»,

Медведев Владимир Геннадьевич, к.п.н., доцент, заведующий лабораторией биомеханики спорта научно-исследовательского института спорта и спортивной медицины, biomechanics@bk.ru, Россия, Москва, «Российский университет спорта «ГЦОЛИФК»».

Аннотация. При проведении текущего и этапного педагогического контроля уровня двигательной подготовленности юных велогонщиков ВМХ предлагается использовать шесть тестовых заданий: 1) Преодоление горизонтального участка 20 м с места; 2) Преодоление горизонтального участка 20 м с ходу; 3) Выполнение стартового действия; 4) Преодоление наклонного участка 15 м с ходу; 5) Преодоление препятствия 20 м с ходу; 6) Преодоление виража 20 м с ходу.

Ключевые слова: велосипедный спорт ВМХ, федеральный стандарт спортивной подготовки, программы спортивных школ, тестовые задания, контроль уровня двигательной подготовленности

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UDC 796

PR-PROMOTION OF THE TOURISM SECTOR AS PART OF THE COMMUNICATION STRATEGY OF TERRITORIAL BRANDING (USING THE EXAMPLE OF THE REPUBLIC OF KALMYKIA)

Epishina D.S., s/s Dzigua D.V.

Abstract. The article explores the potential of territorial branding and presents the main tools for promoting a territory's brand and providing examples of successful implementations in different regions.

Keywords: territorial branding, PR promotion, communication strategy, tourism

The **relevance** of the article is determined by the active process of globalization contributes to the growth of competition between countries, cities and regions for the most important resources that determine the level of well-being of the territory for living, recreation, and work. One of the most relevant methods of increasing the competitiveness of a location is territorial cultural branding.

The **purpose** of the study is to identify optimal PR technologies for forming the communication strategy for territory branding.

In Russian practice, the growth of interest in regional brands is inextricably linked to the national policy of developing domestic tourism, realizing the potential of the regions to improve the well-being of the country's population¹. The presence of a well-formed brand of the territory shows the uniqueness and accessibility of the tourist offer, contributes to an increase in the tourist flow.

The most important technology of territorial branding, along with the creation of the semantic core of the brand and its visual identifiers, is PR promotion. It helps to increase awareness of the resources and capabilities of this area. The basis of PR promotion is communication between the brand and consumers, which can form profitable consumer behavior.

The high degree of digitalization of modern society and the decrease in the effectiveness of traditional methods of influencing the individual and society determine the relevant tools used in territorial branding. The development of these tools requires an understanding of their synergistic effect and connection with the key communication idea and objectives of territorial branding.

Well-designed promotion tools allow you to achieve goals related to the improvement of the tourism sector. Event PR, as one of the most common ways to attract tourists, is implemented in Nizhny Novgorod in the format of the dance championship «Volga Champ». Since 2020, the project has become part of a major campaign to form a new brand of the city dedicated to its eight hundred anniversary. The championship, which has visual identifiers easily associated with the city, in January 2024 attracted more than 5,000 tourists [1]. Another example of successful application of event PR is holding «Future Games» in Kazan. Thanks to the competent PR-promotion in social networks and media, the use of media persons (blogger Vlad A4, Artem Dzyuba and others), the tournament, combining sports and digital, attracted to the region 300 thousand guests from 100 countries [2]. «Future Games» – a great contribution to the formation of the image of Kazan, already known location for large-scale events, as an innovative and modern region.

Using empirical research methods and based on global experience in territorial branding, modern models of tools for PR-promotion of the tourism sector were selected. The Republic of Kalmykia was selected as the target of the strategy development.

The implementation of tools is a multi-stage process that depends on the timing of the tourist season, the calendar of existing events and the speed of formation of the region's image capital.

The main tools of promotion were chosen: influencing-marketing, event PR, content-marketing, media relations, contextual advertising.

¹ Resolution of the Government of the Russian Federation from 24.12.2021 N 2439 (ed. of 14.07.2023) «On the approval of the state program of the Russian Federation «Development of tourism»; the national project «Tourism and hospitality industry».

The first stage of PR-promotion, the implementation of which is planned in the first year: influencing-marketing, content-marketing, contextual advertising, media relations, stimulation of UGC-content.

At the second stage of PR-promotion it is planned to support the execution of already used tools and implementation of event PR. The planned duration of the phase is two years. For example, it is planned to hold a cycling festival «On the roads of Kalmykia» on May 31 – the day of cycling in Russia. The festival involves the participation of well-known sportsmen and sports journalists, as well as all those wishing to any level of training. The use of sports event PR will allow to launch an information campaign in the media - to create positive information about the region, to attract tourist flows of athletes and sports enthusiasts, to create an image of the Republic as a sports center.

The third stage of the promotion involves the creation of a long-term communication strategy of the brand based on existing tools and accumulated image capital.

We should look at some of the promotional tools. The market for influence marketing is growing rapidly, indicating the relevance of this type of marketing. The collaboration between the brand of the Republic and influencers will increase awareness of the brand and the audience's knowledge of the possibilities of tourism in the region. It will also create a positive image.

Adweek magazine conducted a study that showed that on sites with UGC content, users are 29% more likely to commit a targeted action than on other resources [3]. Encouraging users to create UGC content will allow them to build an emotional connection with the audience and naturally distribute the viral content of tourists from a trip to Kalmykia.

By the end of 2023, the volume of the Internet advertising market, in particular contextual advertising, in Russia increased by 22% according to information from the RAEC [4]. In contextual advertising of the Kalmykia brand, it is necessary to use visual images of the sights and nature of the region, since they differ favorably from images of other tourist destinations.

As a **result** of the study, relevant modern tools for promoting a territorial brand were identified. Also, the result of the study is the development of a universal system of three stages of PR promotion, which can be used for different territorial brands. Using the example of the Republic of Kalmykia, the use of this system made it possible to achieve a high degree of awareness of the population about the Republic of Kalmykia, consolidate the positioning of the region's brand as a unique tourism offer and contribute to an increase in tourist flow.

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Epishina Daria Sergeevna, student, field of study "Advertising and public relations", epishinads555@mgpu.ru, Russia, Moscow, Moscow City University
Scientific supervisor - Dzigua Dmitry Valterovich, lecturer of the chair of Advertising and Public Relations, dziguadv@mgpu.ru, Russia, Moscow, Moscow City University

PR-ПРОДВИЖЕНИЕ ТУРИСТИЧЕСКОГО СЕКТОРА КАК ЧАСТЬ КОММУНИКАЦИОННОЙ СТРАТЕГИИ ТЕРРИТОРИАЛЬНОГО БРЕНДИНГА (НА ПРИМЕРЕ РЕСПУБЛИКИ КАЛМЫКИЯ)

Епишина Дарья Сергеевна, студент, направление «Реклама и связи с общественностью», профиль «Спортивная журналистика и медиакоммуникации в спорте», epishinads555@mgpu.ru, Россия, Москва, Московский городской педагогический университет, Институт естествознания и спортивных технологий

Научный руководитель – Дзигуа Дмитрий Валтерович, доцент направления подготовки «Реклама и связи с общественностью», dziguadv@mgpu.ru, Россия, Москва, Московский городской педагогический университет.

Аннотация. В статье рассмотрены возможности территориального брендинга, представлены основные инструменты продвижения территориального бренда и приведены примеры их успешной реализации в разных регионах.

Ключевые слова: территориальный брендинг, PR-продвижение, коммуникационная стратегия, туризм

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POPULARIZATION OF THE OLYMPIC GAMES THROUGH ANIME CULTURE AT THE GAMES OF THE XXXII OLYMPIAD IN TOKYO

Erokhina A.A.

Abstract Over the past few decades, anime has become an essential part of the global popular culture, influencing various aspects of life, including sport. In 2021, Tokyo became the epicenter for sporting events, capturing the attention of millions worldwide during the XXXII

Olympic Games. This time, along with traditional methods for popularizing the Olympics, a new and innovative approach was employed – the use of anime to attract new audiences.

Keywords: Japan, Tokyo, Olympic Games, anime, Japanese culture, Olympic movement

Introduction. The use of a country's internal culture to promote the Olympic movement is closely linked to the preparations for the Olympics and Winter Olympics. Many countries are trying to highlight their "cultural identity" through distinctive cultural features. This can include thematic opening and closing ceremonies for the Games, as well as the use of specific symbols throughout the duration of the event.

A notable example of this approach is Japan, which has successfully used its unique anime culture to promote the Olympics both domestically and internationally. Anime, a form of Japanese animated film, has captured the hearts of millions around the world and has become more than just entertainment. It has become a medium for conveying deep social values and messages. One of the highlights of the XXXII Olympic Games was the successful integration of anime into the overall promotion.

Research objectives:

1. To identify examples of integrating anime culture into the Olympic movement.
2. Explore the possibilities of using anime culture to attract new competition viewers.
3. To study the influence of anime culture at the games of the XXXII Olympiad in Tokyo.

The research methods were the study of literature on the chosen topic and the analysis of Internet resources.

Discussion. The first important step that the state took to promote the Tokyo Olympic Games through anime culture was mentioned on the Asahi Shimbun website. The article, titled «Attack on Titan, JoJo's Bizarre Adventure, and Sailor Moon: Athletes' Performances and the Legacy of the Tokyo Olympics», discussed the closing ceremony of the 2016 Rio Olympics, where Japanese Prime Minister Shinzo Abe walked onto the stage dressed as the iconic video game character, Mario, followed by other characters from anime and animated films. This event symbolically hinted at the significant influence that anime culture could have on the atmosphere of the Games of the XXXII Olympiad in Tokyo.

Anime references that were further featured in the Tokyo Games. An important aspect of the preparation for the opening and closing ceremonies was the thematic component. For the closing ceremony, the organizers used a song from the anime "Blade of Demon Destruction" called "Gurenge - LiSA", which as of 2021 had over 1 billion views worldwide, to attract anime fans from all over the world to watch the event.

Additionally, during competitions in various sports, musical accompaniment was inspired by anime culture. Music compositions from the anime «Haikyuu!» were played at volleyball matches, the opening theme from "Kuroko no Basket" was used during spectacular dunks in basketball, and famous opening themes from "Attack on Titan" were used during archery competitions.

One of the most memorable moments was the collaboration with Japanese

animation studios to create a series of short films dedicated to Olympic sports. These films not only caught the attention of viewers, but also captured the essence of wrestling through the lens of anime, making them particularly appealing to younger audiences.

Participants played an important role in popularizing the games. For example, athletes took well-known poses when entering the sports arena, which attracted internet users to heated discussions on social media. Athletes from the German team recreated the poses of characters from the popular manga «JoJo's Bizarre Adventure» by Hirohiko Araki, while Russian swimmer Kliment Kolesnikov was photoFigureed in a pose from «Attack on Titan», which increased his social media followers. In addition, American Payton Otterdal, before the shot put competition, stood in the Frankie pose from the manga "One Piece", listed in the Guinness Book of Records for the largest circulation. And at the end of the performance, he shouted the famous phrase of the character «Super!». A Twitter user wrote many comments like "I'm happy that he unexpectedly did this."

During volleyball and basketball matches, fans compared the athletes to characters from the popular anime «Haikyū!» and «Kuroko's Basketball». These are two of the most well-known sports anime in the world.

The most striking event at the event was the performance by the women's rhythmic gymnastics team from Uzbekistan. The athletes were wearing costumes inspired by the popular manga and anime "Sailor Moon". They performed to the anime theme song «Moonlight Densetsu/Moonlight Legend» and did a brilliant job.

The organizers have taken measures to ensure that anime is widely presented at the Olympic venues. From special exhibitions and events dedicated to anime culture to themed cafes and shops where you could buy goods with images of anime characters, the presence of anime at the Olympics was continuous and attractive.

This approach to popularizing the Olympic Games has been a notable success. Anime culture has become a powerful tool for drawing attention to sports competitions and the ideals of the Olympic Movement. Anime helped make the Olympics more accessible and exciting for new generations, expanding the range of interests and fans of Olympic sports.

Conclusions. Anime culture is becoming a strong catalyst for attracting attention to the Olympic Games. Against the background of the games of the XXXII Olympic Games in Tokyo, anime acts as a powerful means of communication, attracting the attention of both young people and a wide audience. This scientific article analyzes the influence of anime culture on the popularization of the Olympic Games, paying attention to a number of factors such as the use of anime characters as official mascots, anime-themed events and social media content. The results of the study highlight the importance of anime culture in the context of the modern media landscape and its role in attracting new viewers to the Olympic Games.

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Erokhina Alexandra Alekseevna, 4th year student of the Department of Directing mass sports and artistic performances named after V.A. Gubanov, Mimi.Grey322@yandex.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education «Russian University of Sport «GTSOLIFK»

ПОПУЛЯРИЗАЦИЯ ОЛИМПИЙСКИХ ИГР ЧЕРЕЗ АНИМЕ-КУЛЬТУРУ НА ИГРАХ XXXII ОЛИМПИАДЫ В ТОКИО

Ерохина Александра Алексеевна, студентка 4-го курса кафедры режиссуры массовых спортивно-художественных представлений им. В.А. Губанова, Mimi.Grey322@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский Университет Спорта «ГЦОЛИФК»

Аннотация. В течение последних десятилетий аниме-культура стала неотъемлемой частью мировой поп-культуры, проникая в различные аспекты жизни, включая спорт. В 2021 году Токио стала эпицентром спортивных событий, привлекая внимание миллионов людей по всему миру на время проведения Игр XXXII Олимпиады. На этот раз, помимо традиционных форматов популяризации олимпийского движения, внимание было уделено иной, инновационной стратегии - использованию аниме-культуры для привлечения новой аудитории.

Ключевые слова: Япония, Токио, Игры Олимпиад, аниме, японская культура, Олимпийское движение

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EFFECT OF NORMOBARIC HYPOXIA ON BLOOD SATURATION AND HEART RATE IN FEMALE TRACK AND FIELD ATHLETES

Evstifeev J.S., s/s Tambovtseva R.V.

Abstract. Female track and field athletes (n=20) specializing in middle and long distance running and jumping disciplines took part in the scientific observation. The aim of the study was to investigate the effect of normobaric hypoxic load on blood saturation and heart rate parameters. Track and field athletes performed stepwise increasing load tests and Wingate test. It is shown that HR in girls-athletes for middle and long distances was slightly higher than in girls-jumpers, which may reflect the specificity of cardiovascular system adaptation to the nature of training loads in these sports. The increase in HR was more pronounced in runners, which may indicate differences in the mechanisms of adaptation to hypoxia.

Keywords: female track and field athletes, blood saturation, HR, jumping disciplines, middle and long distance

Introduction. Nowadays there is a sufficient number of scientific works devoted to the problem of influence of normobaric hypoxia on the organism of athletes [1, 2, 3, 4], in order to increase sports performance. In sports practice, many methods of hypoxia are used, which include training in the mountains, breathing in a confined space, in barocameras, etc. Many researchers believe that hypoxia has a positive effect on human health and physical performance. However, it should not be forgotten that in the modern period in highly qualified athletes with the growth of physical performance increases physiological and biochemical stress in the work of organs and organ systems. The combined effect of motor and hypoxic hypoxia leads to the summation of the effect and the appearance of acute hypoxia [3], which in turn has the strongest damaging effect on cell organelles and on the cell as a whole, which eventually leads to tissue and organ damage. The issue of hypoxic resistance remains relevant to date, but the problem of the effect of normobaric hypoxia on the female body remains open.

Purpose of the study. To study the effect of normobaric hypoxia on blood saturation and heart rate in female track and field athletes of high qualification, specializing in middle and long distance running and jumping disciplines.

Methods and organization of the study. The scientific observation was conducted at the Department of Biochemistry and Bioenergetics of Sports named after N.I. Volkov. Highly qualified female track and field athletes specializing in middle and long distance running and jumping disciplines (n=20) participated in the experiment. The girls gave informed consent to participate in the experiment, were healthy and examined by a doctor. Athletes were tested by step-increasing load on a Monark 894E cycle ergometer (Sweden) and performed the Wingate test. Primary analysis was performed using Ergomax hardware-software complex (Russia). Spirometric were performed on the gas analyzing complex "Cortex METALYZER 3B-R2" (Germany). Lung ventilation, oxygen and carbon dioxide content in exhaled air were recorded. HR was determined using Polar T34 (Finland) while working on a bicycle ergometer. Pulse oximetry (pulse oximeters: stationary - "NONIN 8600" (USA) and wrist - "MD300W" (China)) was used to continuously record HR and hemoglobin saturation of arterial blood with oxygen (blood saturation - SO_2). SO_2 and HR parameters during hypoxic test were recorded in increments of 10 at rest, before hypoxia for one minute, during 30 minutes of breathing a breathing gas mixture with 9% oxygen content, and during the recovery period during breathing in the normal mode for 3 minutes after hypoxic exposure. The obtained results were processed with the help of mathematical and statistical methods.

Results of the study and discussion. Table 1 and 2 presents the dynamics of blood oxygen saturation parameters and heart rate of female track and field athletes, which were measured at three key time points: before the hypoxic test, immediately during the test and during the recovery period.

Table 1. – Dynamics of blood saturation indices and HR after a single hypoxic exposure on a bicycle ergometer ("step")

Parameter	Sample (n=20)	Initial state	Hypoxia test	Recovery
		$\bar{X} \pm \sigma$	$\bar{X} \pm \sigma$	$\bar{X} \pm \sigma$
SpO ₂ , %	Jumping disciplines	97,75±0,46	88,93±2,80	94,06±3,32
	Middle/long distance running	97,85±0,37	91,28±4,89	96,21±2,11
HR, beats/min	Jumping disciplines	72,28±12,39	79,11±10,38	76,17±11,04
	Middle/long distance running	78,75±13,36	81,80±12,57	74,82±13,32

During the hypoxic test, a decrease in SpO₂ was observed in both groups, which indicates the organism's reaction to oxygen deficit conditions. However, the degree of this decrease and the variability of indicators differ between groups, which may be due to the specificity of adaptation to aerobic loads and hypoxia depending on the type of sports activity. In the recovery phase, a partial return of SpO₂ levels to baseline values is recorded, which reflects the recovery of the functional state of the organism after hypoxic exposure. Initially, the heart rate in middle and long distance runners was slightly higher than in jumpers, which may reflect the specificity of cardiovascular system adaptation to the nature of training loads in these sports. In conditions of hypoxia, HR increases, which is an adaptive response of the organism to oxygen deficiency. The observed increase in HR is more pronounced in runners,

possibly indicating differences in the mechanisms of adaptation to hypoxia. During the recovery period, HR decreased, emphasizing the efficiency of recovery processes and the return to normal cardiovascular function. It should be noted that SpO_2 values decreased to a lesser extent in runners, which may indicate a better adaptation of their organisms to the conditions of oxygen deficiency. At the same time, HR increased in both groups, which is an adaptive reaction of the organism aimed at compensating hypoxia by increasing blood circulation.

Table 2. – Blood saturation and HR after a single hypoxic exposure on a bicycle ergometer (Wingate)

Parameter	Sample (n=20)	Initial state	Hypoxia test	Recovery
		$\bar{X} \pm \sigma$	$\bar{X} \pm \sigma$	$\bar{X} \pm \sigma$
SpO ₂ , %	Jumping disciplines	97,12±0,83	88,19±3,74	95,12±2,18
	Middle/long distance running	97,57±0,78	90,92±5,55	95,77±1,69
HR, beats/min	Jumping disciplines	75±16,44	75,61±13,72	73,48±15,2
	Middle/long distance running	86,28±19,11	85,63±15,84	83,58±17,14

The results obtained prior to anaerobic work are similar in their trends to previously obtained results, indicating the stability of response mechanisms to hypoxic exposure between female athletes specializing in different disciplines of athletics.

Conclusions:

1. The conducted studies showed that the heart rate of middle and long distance runners was slightly higher than that of jumpers, which may be due to the specificity of cardiovascular system adaptation to the nature of training loads in these sports.

2. In conditions of hypoxia HR increases, which is an adaptive reaction of the organism to the lack of oxygen.

3. During the recovery period, HR decreases, emphasizing the effectiveness of recovery processes and the return to normal cardiovascular function.

4. Blood saturation indices decreased to a lesser extent in runners, which may indicate a better adaptation of their organisms to the conditions of oxygen deficiency.

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Evstifeev Jura Sergeevich, student of the chair of Biochemistry and Bioenergetics of Sports named after N.I. Volkov, y.s.evstifeev@gmail.com, Russia, Moscow, The Russian university of sports «GTSOLIFK»

Scientific supervisor - Tambovtseva Ritta Viktorovna, Russia, Moscow, The Russian university of sports «GTSOLIFK»

ВЛИЯНИЕ НОРМОБАРИЧЕСКОЙ ГИПОКСИИ НА САТУРАЦИЮ КРОВИ И ЧАСТОТУ СЕРДЕЧНЫХ СОКРАЩЕНИЙ У ДЕВУШЕК-ЛЕГКОАТЛЕТОК

Евстифеев Юрий Сергеевич, студент кафедры биохимии и биоэнергетики спорта им. Н.И. Волкова, y.s.evstifeev@gmail.com, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Тамбовцева Ритта Викторовна, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. В научном наблюдении принимали участие спортсменки-легкоатлетки (n=20), специализирующихся в беге на средние и длинные дистанции, и в прыжках в длину. Целью исследования являлось изучение влияния нормобарической гипоксической нагрузки на показатели сатурации крови и частоты сердечных сокращений. Легкоатлетки выполняли тесты ступенчато возрастающей нагрузки и тест Вингейт. Показано ЧСС у девушек-легкоатлеток на средние и длинные дистанции была несколько выше, чем у девушек-прыгунов, что может отражать специфику адаптации сердечно-сосудистой системы к характеру тренировочных нагрузок в данных видах спорта. Увеличение ЧСС более выражено у бегунов, что, возможно, указывает на различия в механизмах адаптации к гипоксии.

Ключевые слова: спортсменки легкоатлетки, сатурация крови, ЧСС, прыжки, средняя и длинная дистанция

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FITBOXING AS A WEIGHT LOSS FACTOR IN PEOPLE AGED 18-48

Fedorov A.D., Kleshchev V.N., Kleshcheva T.V.

Abstract. *Workouts in gyms are based on different sports. Boxing is one of them. In this case, it is usually referred to as fitboxing. This type of physical activity is widely used as a means of improving health and physical fitness. Desired effects of such workouts may be the adjustment of body weight of both men and women involved. The article examines the connection between fitboxing and achieving planned body weight indicators.*

Keywords: *fitness, fitboxing, boxing, weight loss*

Introduction. Fitboxing is a relatively new trend in the fitness industry. It is used mainly to study the basics of boxing school and improve general physical fitness, develop strong-willed qualities, and adjust body weight.

This direction is relatively new, that is why there is no single, well-established training plan, characteristics of expected effects of the load with different parameters. Coaches are guided by the State Standard of training of beginner boxers and their own intuition, which does not always bring expected results. In this regard, there is a need to study the influence of loads of different content, magnitude, and intensity on results obtained.

The present research is devoted to the study of the impact of the proposed kickboxing program on the change in body weight of those involved (18-35). It is common knowledge that boxing is very energy-intensive – an average 60-minute workout allows to burn 800-1200 calories, which makes this area very promising in the fitness industry. Accordingly, fitboxing classes are highly in demand: almost every fitness center offers them.

The object of the study is the indicators of body weight loss in fitboxing athletes.

The subject of the study is the study of the nature of body weight changes during fitboxing classes.

We suggested that studying the nature of changes in body weight indicators during fitboxing classes can provide material for more complete management of the process of changes in this parameter among those involved, the creation of effective training programs, and provide material for improving the skills of the coaching staff in the fitness industry.

Goal. The aim of the study was to study the change in body weight during fitbox training in people aged 18-45.

The following **tasks** were set for the study:

1. To study the features of constructing a fitboxing training session at the Samokat fitness club.
2. To study the nature of changes in the nature of body weight indicators in fitboxing athletes during 5 months of classes according to the standard program (01.09.2023-02.02.2024).

Methods:

1. Pedagogical experiment.
2. Methods of mathematical statistics.

Experiment design. 10 people participated in our study. The level of training varies. Some came to fitboxing classes for the first time, others have already been engaged in a short period of time. Some of the subjects were overweight.

Most participants have never been involved in martial arts, especially boxing. There was experience of training in fitness halls based on the material of other sports. Some of the subjects had experience in other sports as a teenager. The average age of our subjects is 33 years.

The subjects had classes: Monday, Wednesday, Friday from 20:00 to 21:00 for 5 months. The classes were built in a traditional style: warm-up (on the spot, in a circle, on skipping ropes, in pairs, playing), the main part (depended on the purpose of the

classes (study, working out technical elements, general physical training), the final part (general physical training, stretching exercises, gymnastics, physical therapy).

The load was selected so as not to harm the health of the students and not to overtrain them.

An example of building a fitboxing training plan:

- Warm-up for 10-15 minutes. The following warm-up options were used: in a circle, on the spot, on a skipping rope, in pairs, etc.

- The main part is 40-45 minutes. It depended on the purpose of the lesson. They mainly studied the technical basics of the boxing school. 20-25 minutes of studying technical elements. 15-20 minutes of work on bags on assignments. Also, in the main part of the lesson, exercises for physical training of athletes were used, such as: flexion and extension in the supine position (push-ups), flexion and extension in the vise (pull-ups), torso twisting lying down (press), squats with your own body weight and weights, etc.

The final part is 5-10 minutes. Relaxation exercises, therapeutic physical exercises, exercises from gymnastics, yoga were used.

In our case, the pulse characteristics of individual parts of the training meet the standards for this sport for athletes of this age and qualification.

Research results. As the training of the subjects increased, the load increased in accordance with the increase in the athlete's capabilities in relation to training loads.

Table 1 presents data on body weight measurements at the beginning and end of the studies for our subjects.

Table 1. – The results of changes in body weight among subjects at the beginning and end of the study

Changes in body weight of subjects			
at the beginning		at the end	
average ($\bar{x}$)	standard deviation (σ)	average ($\bar{x}$)	standard deviation (σ)
86.1	14.97	83.9	13.04

As follows from the table, the average weight for the group at the beginning of the experiment was 86.1 kg, the standard deviation 14.97. At the same time, it should be noted that a relatively small part of our subjects considered their weight to be elevated – 3 out of 10 people, and only 4 people set themselves the task of losing body weight. The motivation for practicing fitboxing was mainly related to mastering the striking technique.

According to our data, classes according to the proposed program had the effect of reducing average weight by 2 kilograms, which is quite noticeable and corresponds to the level of effort of the athlete and coach. The majority of our subjects evaluate the results positively.

At the end of the study, we observe a decrease in body weight in athletes: 83.04 arithmetic mean for the group of subjects, standard deviations 13.04.

A survey of students (subjects) showed that boxing (fitboxing) classes have a very beneficial effect on their well-being. After a month without interrupted classes, students noticed lightness and self-confidence and their body weight decreased. This was

noticeable both visually (by eye) and according to the measurements on the floor scales.

Conclusions:

1. The traditional structure of boxing classes helps to reduce body weight among those involved.
2. Fitboxing classes are beneficial for people who want to lose weight.
3. This program can be offered as a standard in the organization of classes for a similar contingent. It can be a starting point for various experiments regarding the volume of work, its content and intensity.

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Fedorov Alexey – Assistant of the Department of Theory and Methodology of Boxing and Kickboxing named after K.V. Gradopolov, Russian University of Sport «GTSOLIFK», Moscow, Russia, alexfedvys@gmail.com

Kleshchev Vadim – PhD, Professor, Professor of the Department of Theory and Methodology of Boxing and Kickboxing named after K.V. Gradopolov, Russian University of Sport «GTSOLIFK», Moscow, Russia, chair.boxing@gtsolifk.ru

Kleshcheva Tatyana - Senior lecturer at the Department of Physical Education of the Financial University under the Government of the Russian Federation, TKlesheva@fa.ru

ФИТБОКС КАК ФАКТОР СНИЖЕНИЯ ВЕСА ДЛЯ ЛЮДЕЙ 18-48 ЛЕТ

Фёдоров Алексей Дмитриевич – ассистент кафедры теории и методики бокса и кикбоксинга имени К.В. Градополова, РУС «ГЦОЛИФК», alexfedvys@gmail.com

Клещев Вадим Николаевич – к.психол.н., профессор, профессор кафедры теории и методики бокса и кикбоксинга имени К.В. Градополова, РУС «ГЦОЛИФК», chair.boxing@gtsolifk.ru

Клещева Татьяна Васильевна – старший преподаватель кафедры физического воспитания, Финансовый университет при Правительстве РФ.

Аннотация. Занятия в фитнес-центрах осуществляются на материале различных видов спорта. Бокс – один из них. В данном случае его принято обозначать как фитбоксинг (фитбокс). Данный вид двигательной активности широко применяется как средство укрепления здоровья и уровня физической подготовленности. Одним из востребованных эффектов данных занятий может быть коррективная работа веса тела занимающихся, как мужчин, так и женщин. В статье рассматривается связь между занятиями фитбоксом и достижением планируемых показателей массы тела.

Ключевые слова: фитнес, фитбокс, бокс, снижение массы тела

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LEGISLATIVE FRAMEWORK OF CIVIL SERVANTS' PROFESSIONAL DEVELOPMENT IN THE FIELD OF PHYSICAL CULTURE AND SPORTS

Frolova E.K., s/s Barienikova E.E.

Abstract. *This article studies the legal support for the professional development of civil and municipal officers in the field of physical culture and sports. The laws and legal acts that establish requirements for civil servants professional retraining, advanced training and internship are considered.*

Keywords: *public administration, civil servant in the field of physical education and sports, professional training, professional development*

Relevance. Approaching the definition of professional development of civil and municipal servants in academic terms, we should mention continuous professional development, acquiring new and improving already existing knowledge. An important factor defining professional development should be the functional position requirements, the development opportunities of each individual and already acquired knowledge and skills. It is impossible to achieve the necessary professional level if the servants do not develop themselves and grow professionally.

Professional development plays an important part in advanced trainings of civil servants working in the sphere of physical culture and sports. The existence of a legal framework, regulating trainings, assessment and stimulation of the professional skills and knowledge development is one of the most important aspects in this process.

The objective of our study: studying the legal basis for the professional development of civil servants in the field of physical culture and sports.

Methods: normative method.

The legal framework for the professional development of civil servants ensures proper regulation and control over the quality of services provided.

Currently, the main direction of implementation of the administrative reform in the field of civil and municipal service should be recognized the development of additional professional training of civil and municipal officers, as to effectively perform their duties, officers must not only have the necessary professional knowledge and skills, but also constantly improve them according to all changes in the legislative framework and the social processes development.

One of the core elements of the legal framework for the civil servants' professional development in the field of physical culture and sports is the definition of criteria for qualification, training and assessment of professional activity. This includes standards and requirements for completing advanced training courses, internships implementation, as well as professional assessment and certification procedures.

It is also worth noting that there should be an individual plan for the professional development of civil servants in every institution.

According to the provisions of Art. 60, 62, 63 of the Federal Law of July 27, 2004 No. 79- Federal Law “On State Civil Service of the Russian Federation”, Resolution of the Government of the Russian Federation of May 6, 2008 No. 362 “On approval of state requirements for professional retraining, advanced training and internship of state civil servants of the Russian Federation”, Decrees of the President of the Russian Federation dated December 28, 2006 No. 1474 “On additional professional education of state civil servants of the Russian Federation”, dated February 1, 2005 No. 110 “On certification of state civil servants of the Russian Federation”, the professional development of civil servants of the Russian Federation is carried out, including the development in the field of physical culture and sports.

Individual professional development plans help civil servants regularly monitor and evaluate their professional growth and achievements based on previously established goals, as well as adapt to new requirements and tendencies, set the career goals and plan the steps necessary for those goals achievement.

To study compliance with the legal requirements for civil servants’ professional development in the field of physical culture and sports, we conducted a study on the presence of an individual plan for the professional development of civil servants. The regional executive government body, namely the Ministry of Sports for the Saratov Region, was chosen as the study object.

By analyzing data of public sources on the activities of the Ministry of Sports for the Saratov Region, as well as by using the empirical research method in the form of a survey, we received the following **data**:

1. The presence of the order of the Ministry of Sport, Tourism and Youth Policy of the region dated 28.02.2016 No. 28 “On the procedure for approving individual plans for the professional development of state civil servants of the Ministry of Sport, Tourism and Youth Policy of the region.” However, there are no approved individual plans or even one unified professional development plan available.

2. According to the survey of the Ministry civil servants.

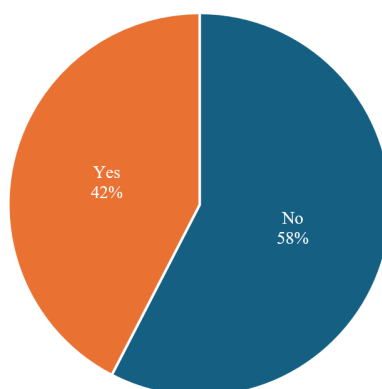


Figure 1. – About the existence of individual professional development plans

Looking at this Figure, we can say that 58% are not aware of the individual professional development plans existence, which makes us think about the civil

servants awareness in general.

Based on the results for the next question “Have you been acquainted with the individual professional development plan?” we can make a conclusion that only 39% have ever seen this document and are aware of their opportunity to undergo professional retraining, while 61% of respondents do not have such information.

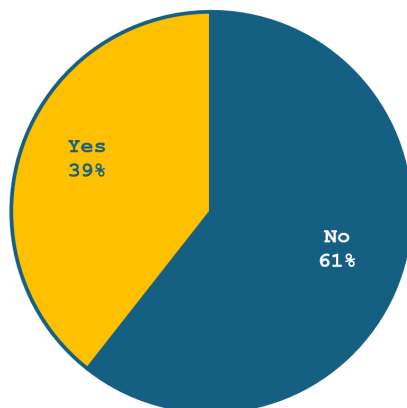


Figure 2. – Response chart: “Are you familiar with the individual professional development plan?”

To the question, “How often do you take part in professional development activities?” 42.4 respondents said that they had never undergone professional retraining at all, 27.3 undergo professional retraining every three years, 15.2% every five years, only 12.1% of participants undergo professional retraining more than once in every three years, 3% of respondents chose the option “other”.

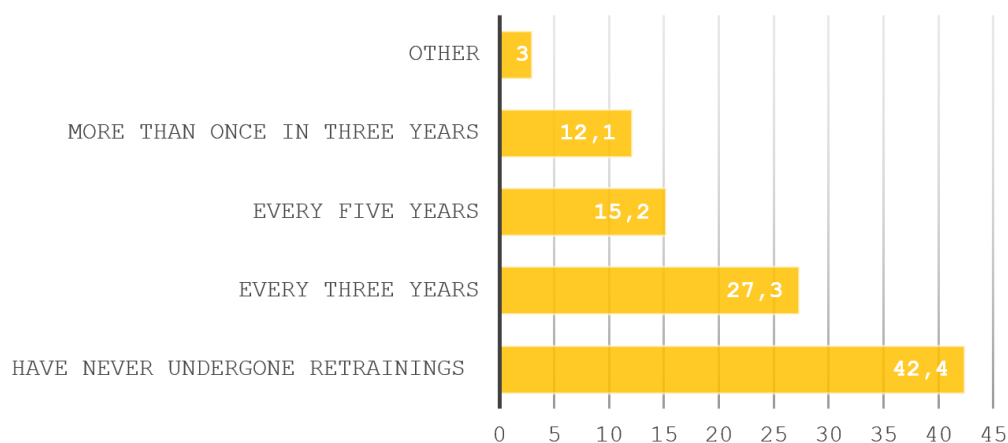


Figure 3. – Response chart: “How often do you take professional development events?”

Thus, we may conclude that there is a problem in the implementation of some legislative requirements for state civil servants in the sphere of physical culture and sports, which require particular attention; moreover, there is a real demand of the state civil servants to develop professionally themselves.

Conclusions. The legal framework for the professional development of civil servants in the field of physical culture and sports plays a significant role in ensuring a high level of

specialists knowledge, professionalism and qualifications, which contributes to the development of the field of physical culture and sports in general and the provision of high-quality public services in this very area.

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Frolova Ekaterina Kirillovna, student of the Department of Public Administration and Youth Policy garankina02@inbox.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Scientific supervisor – Barienikova Ekaterina, Senior Lecturer of the Department of Public Administration and Youth Policy, barikkat@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

ЗАКОНОДАТЕЛЬНАЯ ОСНОВА ПРОФЕССИОНАЛЬНОГО РАЗВИТИЯ ГОСУДАРСТВЕННЫХ СЛУЖАЩИХ В СФЕРЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА

Фролова Екатерина Кирилловна, студентка кафедры государственного управления и молодёжной политики, garankina02@inbox.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Бареникова Екатерина Евгеньевна, старший преподаватель кафедры государственного управления и молодёжной политики, barikkat@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье исследуется правовое обеспечение профессионального развития государственных и муниципальных служащих в сфере физической культуры и спорта. Рассматриваются законы и правовые акты, которые устанавливают требования к профессиональной переподготовке, повышению квалификации и стажировке служащих.

Ключевые слова: государственное управление, государственный гражданский служащий в сфере физической культуры и спорта, профессиональная подготовка, профессиональное развитие

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UDC 796

PHYSICAL FATIGUE EFFECT ON MOTOR NEURON EXCITABILITY ACCORDING TO THE H-REFLEX

Glier P.V.

Abstract. *The aim of the study was to assess the influence of normal upright posture on the excitability of α -motoneurons of the spinal cord according to the H-reflex in healthy young men ($n=7$). The H-reflex values of the cambric and calf muscles were determined in the supine and standing positions using stimulation electroneuromyography. It was found that Hmax/Mmax ratios of the calf and cambric muscles in standing position decreased by 29.8% and 20.2% ($p<0.05$), respectively. The vertical posture for 10 minutes had no significant effect on the H-reflex values in the supine position. Thus, the amplitude of the H-reflex of the calf and cambric muscles decreased during the transition from the prone position to the upright posture, but returned to the initial values immediately after the transition to the supine position.*

Keywords: *h-reflex, neuromuscular system, muscle fatigue, motor neuron, electromyography*

Relevance. The fatigue and following recovery issue considered in the given work has a rather long and thorough history of development and study of different aspects of this process [2].

First of all, fatigue is a physiological process. Is a foundation of such a quality as performance. This is an extremely important physical skill for any athlete. The need to understand the mechanisms that ensure performance capacity pushes researchers to search for additional scientific approach. Electromyography as one of the solutions of such problems is a complex of methods of estimating the bioelectrical activity of the human's nerves and muscle [1-3].

Electromyographic examination is a common method of diagnosing muscle conditions, used mainly for medical purposes. In the sports field, this method is used much less [1].

At the moment, there are a number of studies aimed at identifying the role of a particular muscle in the implementation of motor actions. To date we are not aware of any works describing the process of fatigue and recovery with the help of H-reflex.

Purpose of the research: is to study the excitability of motor neurons under the influence of physical fatigue. To achieve this goal and to test the hypothesis, the following tasks were defined:

1. How well is the topic of evaluation of muscle fatigue by electromyographic testing developed in sports medicine

2. To investigate motoneuron excitability at rest and under the influence of physical loads of increasing intensity.

3. To assess the restoration time of motoneuron excitability in sportsmen after physical exhaustion.

Methods: literature review, testing, statistical data processing.

Electromyography as a method of assessing muscle condition has more than a century of history and by now this method has been described and studied in sufficient detail. And the use of its diagnostic capabilities in sports has obvious potential – every year there are more and more works devoted to H-reflex in sports physiology. To date we are not aware of any works describing the process of fatigue and recovery with the help of H-reflex.

Research design. Seven student-athletes participated in the experiment. Study was conducted on Department of Physiology of The Russian university of sport "GTSOLIFK.

Protocol was formed in order to perform the research activities. The test was conducted on a multifunctional computer complex Neuro-MVP-4 (NEUROSOFT). "Neuro-MVP-4" consists of the following blocks: four-channel amplifier, audio-visual stimulator, current stimulator, functional keyboard, pedal control unit. All units are connected to the computer by USB. Bipolar cutaneous (surface) electrodes were taken as irritating electrodes. To obtain the reflex values, the recording electrodes are located: on m. soleus and m. gastrocnemius – the active electrode at the motor point 2-3 cm laterally to the midline of the lower leg at the junction level. The reference electrodes are attached along the fibers of the muscle under study; the distance between the electrodes is 2 cm.

The subject lay down on the couch on his stomach and feet hanging freely, the angle of inclination from the knees up is 25%, while the muscles are maximally relaxed.

H-reflex data acquisition before performing physical activity was recorded as follows: single tibial nerve stimulation increasing in strength to maximum H-amplitude (from 1 mA to 40 mA) and after performing physical activity - first minute of 5 stimuli (from 25 to 35 mA), and then 3 stimuli every minute for 8 minutes. To load the m. soleus and m. calf muscles, the subject was asked to perform a toe lift of the left leg standing in a mode of 5 approaches: 30 seconds of load / 30 seconds of rest.

Results (discussion). In the course of the study we obtained the following data.

1. H-wave amplitude decreased after physical load and recovered on average by 12 minutes at rest.

2. M-wave amplitude did not change statistically significantly throughout the entire measurement.

3. The ratio of H-wave to M-response changed significantly after physical load.

4. M-response of the soleus muscle at rest and after exercise changed significantly compared to the same parameters of the gastrocnemius muscle.

The practical significance lies in the fact that the identified regularities may serve as a basis for further study of the fatigue process both within the similar framework of the study and when expanding the introduced conditions (time, volume and nature of physical activity) and may be used for diagnostics of individual functional and physiological features of a particular athlete.

This experiment is aimed at increasing understanding of the physiological process of muscle fatigue and recovery of neuromuscular signals after physical

activity. The experimentally obtained data on the effect of physical fatigue on motoneuron excitability by H-reflex are important for understanding the mechanisms of recovery in athletes.

Conclusions. The results of the experiment allowed us to draw the following conclusions:

First, our hypothesis that as a result of physical load, motoneuron excitability will decrease found statistically proven confirmation.

Second, we found a difference in response to electrical stimulation between the soleus muscle and the gastrocnemius muscle. The soleus muscle demonstrated fatigue earlier than the gastrocnemius muscle. This could be explained by the fact that the former contains more fast muscle fibers and the latter slow ones. Fast muscle fibers excite quickly, but also fatigue quickly.

Thirdly, we did not find statistically significant data between the excitation threshold of trained and untrained students.

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Glier Polina, email: i89522552535@yandex.ru 2-year master's student, Department of Physiology, Russian university of sports «GTSOLIFK», Master's degree in "Medical and biological problems of adaptation of the human body to physical exertion", Moscow, Russia

Scientific supervisor – Melnikov Andrey Alexandrovich, Russian university of sports «GTSOLIFK»

ВЛИЯНИЕ УТОМЛЕНИЯ НА ВОЗБУДИМОСТЬ ДВИГАТЕЛЬНЫХ НЕЙРОНОВ ПО ДАННЫМ Н-РЕФЛЕКСА

Глиэр Полина Викторовна, магистрант 2 курса, кафедра физиологии, i89522552535@yandex.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Мельников Андрей Александрович, Российский университет спорта «ГЦОЛИФК»

Аннотация. Целью исследования была оценка влияния нормального вертикального положения на возбудимость α -мотонейронов спинного мозга по Н-рефлексу у здоровых молодых мужчин ($n=7$). Значения Н-рефлекса ягодичных и икроножных мышц определяли в положении лежа и стоя с помощью стимулирующей электронейромиографии. Было обнаружено, что соотношение H_{max}/M_{max} икроножных и плечевых мышц в положении стоя снизилось на 29,8% и 20,2% ($p<0,05$) соответственно. Вертикальное положение в

течение 10 минут не оказывало существенного влияния на показатели Н-рефлекса в положении лежа на спине. Таким образом, амплитуда Н-рефлекса икроножных и ягодичных мышц уменьшалась при переходе из положения лежа в вертикальное положение, но возвращалась к исходным значениям сразу после перехода в положение лежа на спине.

Ключевые слова: Н-рефлекс, нервно-мышечная система, мышечная усталость, двигательный нейрон, электромиография

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UDC 796

TECHNICAL TRAINING OF FOOTBALL PLAYERS AGED 14-15

Golenkin I., Glembotskaya Ya.I.

Abstract. This article presents some recommendations to help coaches implement our method of technical training in football training for players aged 14-15 years.

Keywords: technical training, football, technical readiness

Introduction. Football is not only a great way to stay physically active, but it also promotes teamwork, leadership, and communication skills. It is a sport that can be played by people of all ages, genders, and abilities, making it inclusive and accessible to everyone. In Russia, about 3 million people are engaged in football, many playgrounds and sports complexes are being built for football, new clubs are appearing, along with this, the number of people who want to engage in this wonderful sport is growing. The game occupies a leading place in the general system of physical education. Despite the fact that the date of birth of football is considered to be the second half of the 19th century, the similarity of football was born much earlier, so the ancient Egyptians, Greeks and Romans used something similar to football to practice their military skills and perform physical exercises.

In addition to the physical benefits, football also offers mental health benefits. It can help reduce stress, anxiety, and depression, boost self-confidence and self-esteem, and improve concentration and cognitive function. It is a great way to escape from daily worries and challenges, and focus on something positive and enjoyable.

Furthermore, football is a team sport that fosters a sense of unity, mutual

assistance; develops such valuable moral qualities as a sense of responsibility, respect for the game of football, for teammates and rivals, discipline, activity, the ability to quickly make the right decision. Everyone can become a football player and will be able to realize their personal qualities: independence, initiative, creativity, perseverance. At the same time, the game requires self-control and suppression of personal aspirations, for the benefit of the team's interest.

Overall, football is a sport that has a positive impact on physical, mental, and social well-being, and it is no wonder that it is one of the most popular and beloved sports in the world. Whether you are a player, a fan, or simply someone who enjoys watching a good game, football has something for everyone to enjoy and benefit from.

Relevance. An analysis of the literature data and work experience in the children's football union "Vimpel" allows us to state that in modern basic and professional technical training in football there are a number of provisions that seem important, but are not developed deeply enough. Most of the research is mainly aimed at implementing the functional readiness of football players to the detriment of the technical and tactical component. At the same time, the search for new approaches to sports training is based on the need to improve the effectiveness of sports activities. At the same time, the issue of developing new means and methods of tactical and technical training of qualified football players is relevant. The problem of Russian football is that the level of technical skill of the players of the Russian national team is inferior to the increased demand of modern football and the level of foreign players.

The solution to this problem needs to be sought deeper, at the stage of its formation. The insufficiently high level of training of graduates of the Youth sports school, the lag in the assimilation of technology at the initial stage of training, negatively affects the further preparedness of a football player. The techniques are performed with a large percentage of defects and defects in technique, which are not eliminated at the stage of their formation, and continue to remain inoperable at further training stages of football players.

Therefore, it is necessary to pay attention to the initial stages of preparation, the more effectively and thoroughly the process and control of training at these stages will be carried out, the more successful it is possible to conduct sports activities in the future, because at the initial stages the foundations of the technique of playing football are laid [1, 3, 2].

The **purpose** of the study is to increase the technical readiness of football players aged 14-15.

The **object** of the study is the technical training of football players.

The **subject** of the study is the scope and content of technical training of football players aged 14-15.

Research tasks:

1. To analyze the scientific and methodological literature on the problem;
2. To identify the means and methods of technical training of football players aged 14-15 years;
3. To prove the effectiveness of the developed methods aimed at the technical training of football players aged 14-15 years.

The experiment was conducted on the territory of the Youth Football School

"Vimpel" from September 2021 to February 2021. The experiment involved 30 football players aged 14-15 years. On a 100x60 football field. During the experiment, gates (7,32x2,44), chips, racks, shirt fronts, a whistle, a tablet, measuring instruments, a stopwatch, balls were used.

Table 1. – Exercise

№	Exercise	Dosage (performance, rest, intensity)
1	Passing the ball between the chips (1 method)	3 min., rest 30 s., low intensity
2	Transfers of the ball between the chips (method 2)	3 min, rest 30 s., low intensity
3	Transfers of the ball between the chips (method 3)	3 min., rest 30 s., low intensity
4	Transfers of the ball between the chips (method 4)	3 min., rest 30 s., low intensity
5	Passing the ball at a short distance of	3 min., rest 30 s., low intensity, distance 10 meters
6	Passing the ball over medium distances	5 min., rest 30 s., low intensity, distance 20 meters
7	Long-distance ball passing	5 min., rest 30 s., low intensity, distance 30 meters
8	Passing the ball with resistance	5 min., rest 2 min., average intensity
9	Square game	10 min., rest 2 min., average intensity
10	Big square game	15 min., rest 3 min., intensity is significant

The technical readiness of athletes. 30 athletes (15 in the control group and 15 in the experimental group) aged 14-15 years took part in the experiment. At the beginning of the experiment, 3 tests were conducted on the technical readiness of athletes, in order to check their technical readiness, they are presented below in Table 1.

Below is an analysis of the test results of the control and experimental groups, after performing the tests (table 1). The tests were conducted in order to detect differences between the groups at the beginning of the experiment. In order to determine whether there are differences between the control and experimental groups, comparisons were made using the Student's t-test. A two-sample t-test with different variances was taken, no difference was found, since the indicators of t-statistics (calculated) were less than the t-critical two-sided (tabular) or otherwise statistically not reliable, this is confirmed by the sign P, so the groups are equal and they can be compared with each other.

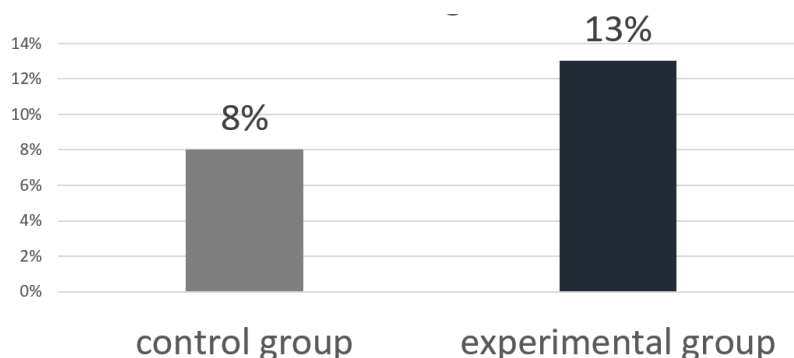


Figure 1. –Percentage increase in ball handling and goal kicking

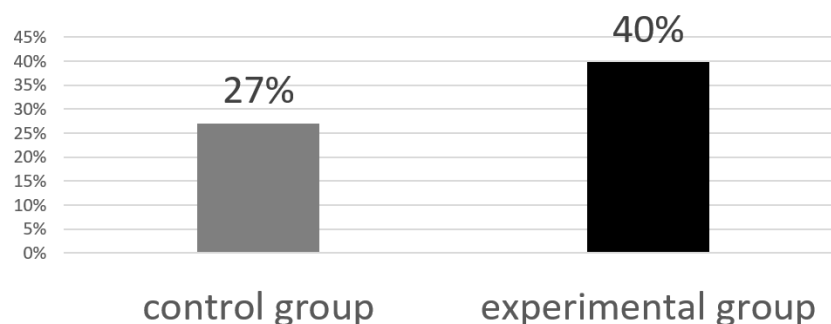


Figure 2. – Percentage increase in impact on accuracy

Conclusions:

1. When studying the technical training of football players aged 14-15, it was revealed that boys from the age of 14 have noticeable anatomical and physiological changes in the body (a strong increase in body length and weight, the development of muscle strength and endurance, the completion of ossification of most of the body, etc.), which are associated with puberty, give more opportunities and options in the application of new exercises and methods in the training process, to improve the technical training of football players.

2. The scope of technical training of football players has been changed. The types of training have been changed and reduced: in "OFP" by 3%, "SFP" by 1% and "Other types of training" by 5%. Reducing the volume of these types of training allowed to increase the volume of technical training by 9%. The increase in technical training was made in order to meet the requirements of modern football, improve the technical skills of football players, promising and successful competitive activities, as well as competitive in the future.

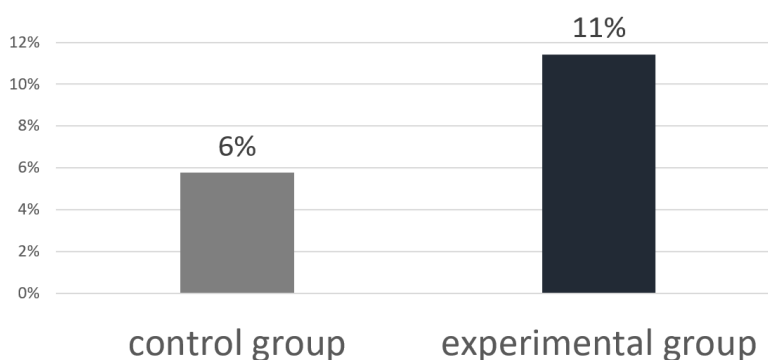


Figure 3. – Percentage gain in juggling

3. An experimental complex was developed for the technical training of football players aged 14-15 years. The test results of the control and experimental groups after the experiment are shown in Table 10: changes are shown in reducing the percentage of defects in performing technical actions (passing the ball forward and backward, conducting and intercepting, headbutts, etc.), increasing the total volume of TTD, which is one of the key factors in the game. It can be concluded that this experimental complex is effective and it should be recommended to improve the technical skills of football players aged 14-15 years.

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Golenkin I. - 2nd year Master's degree, MSAPE; e-mail: golenkin.ivan@mail.ru

Glembotskaya Ya. I., senior lecturer at the Department of Linguistic Disciplines, Moscow State Academy of Physical Education; Russia, village Malakhovka, e-mail: glembotskaja@mail.ru

ТЕХНИЧЕСКАЯ ПОДГОТОВКА ФУТБОЛИСТОВ 14-15 ЛЕТ

Голенкин И. - магистр 2 к., МГАФК; e-mail: golenkin.ivan@mail.ru

Глембоцкая Я.И. ст. преподаватель кафедры лингвистических дисциплин, «Московская государственная академия физической культуры»; Россия, пос. Малаховка, e-mail: glembotskaja@mail.ru

Аннотация. В этой статье представлены некоторые рекомендации, которые помогут тренерам внедрить наш метод технической подготовки в футбольные тренировки игроков в возрасте 14-15 лет.

Ключевые слова: физическая реабилитация, женщины среднего возраста, ожирение, диета, изменение образа жизни

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UDC 796

THE CRUCIAL ROLE OF MENTORING: EXAMPLE OF THE SPORTS INDUSTRY

Golodniuk I.D.

Abstract. *This study delves into the transformation of classical education and the necessity of mentorship to supplement traditional teaching methods. Despite the proven benefits of mentoring in theory and practice, its underutilization in the Russian sports industry raises questions about its effectiveness. Through a thorough management analysis, this research identifies and proposes the most suitable mentoring model for Russian conditions. By exploring various mentoring models and drawing from sports management, human resource management, and psychology disciplines, the study underscores the active role mentors play in helping mentees overcome obstacles and achieve professional success.*

Keywords: *development, education, mentorship, mentorship models, skills*

Introduction. In today's fast-paced and dynamic educational landscape, the role of a mentor in nurturing and developing students' competencies cannot be overstated. A mentor serves as a guide, a source of wisdom, and a pillar of support for students as they navigate the complexities of learning and personal growth. Through their guidance, encouragement, and expertise, mentors play a crucial role in

shaping students' skills, knowledge, and attitudes, ultimately preparing them for success in their academic and professional endeavors.

As we can see, classical education is transformed with a lag, and therefore a student needs additional support to find him/herself. This is where the relationship between a specialist and a student reaches a new peak level. The development and implementation of a mentoring model is a necessary step to build an effective learning and development system.

The relevance of the article lies in the fact that the benefits of mentoring have been confirmed both in theory and in practice. However, mentoring is either used extremely rarely in the Russian sports industry or not used at all. The question is why it is so if it is an effective tool?

The purpose of the study is to conduct a comprehensive management analysis of various mentoring models in sports and propose the most suitable model for Russian conditions.

The research used **methods** of analysis and synthesis, a comprehensive interdisciplinary approach. The achievements of sports management, human resource management and psychology were taken into account.

Mentoring is an active process in which an experienced professional helps a mentee overcome professional obstacles and achieve success in his career. The mentor shares his experience, knowledge and advice and helps a mentee expand his horizons and develop his professional skills [2]. Seliverstova M. [3] conducted a comparative analysis of mentoring models where have been studied such mentoring models as traditional, partner, peer-to-peer, group, high-speed, two-level mentoring.

A mentor-mentee pair, professional development, and knowledge transfer will be common to various models. Many authors additionally clarify that a mentor can also act as a career advisor. It is also important to note that the term «mentoring» often includes the need to develop abilities aimed at setting goals, planning actions, and evaluating results. Among other things, the authors note that the mentor needs to ensure consistency while working with the mentee.

Mentoring has been recognized as an effective tool for personal and professional development, despite the problems associated with this process [1].

F. Worrell wrote, «that mentoring plays an important role in talent development» [5]. And it's so, mentors play a vital role in guiding and supporting students as they navigate their academic and personal journeys. A mentor's experience and wisdom can provide invaluable insights to students, helping them develop essential skills and knowledge that go beyond what can be learned in a classroom setting. By offering advice, encouragement, and constructive feedback, mentors can help students set goals, overcome challenges, and reach their full potential.

Brad Johnson [4] in his book writes: «one of the greatest gifts mentors can give to their mentees is the skill of passing the mentoring baton». I argue that it is a role model for the mentorship model and we should target ourselves towards this level of mentoring, so system always gets new mentor from ex-mentees and share of knowledge never stops. Such continuous mentoring can be implemented in the Russian sports industry and there is already a foundation for such a mentoring model.

In the field of sports, a two-level mentoring model "coach-experienced athlete-

novice athlete" is used, the features of which are that mentoring is directly carried out by an experienced athlete in relation to a beginner under the direct supervision of a coach who bears full responsibility, including legal, for the effectiveness and safety of the mentoring process and the training process. This approach is especially common in gymnastics, martial arts, and sport games. As a result of the model, on level one there is a coach who is a mentor for both an experienced and novice athlete; on the second level an experienced athlete plays a role of mentor to novice.

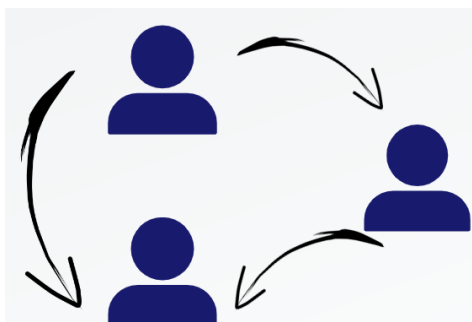


Figure 1. – An example of interaction in a two-level mentoring model

Furthermore, mentors serve as role models demonstrating professionalism, integrity, and dedication in their respective fields. Through mentorship, mentees can learn not only technical skills but also important soft skills such as communication, critical thinking, and problem-solving. These skills are essential for success in both academic and professional settings, and mentors can help students cultivate them by providing real-world examples and hands-on experience. This positive relationship can have a lasting impact on the personal and professional development, instilling in both mentors and mentees the belief that they have the potential to achieve their goals and make a difference in the world.

Summarizing the above, we can say that nothing accelerates your progress towards becoming No. 1 like a good mentor or even mentors. In Vladimir Putin's latest message to the Federal Assembly, the idea that Russia should be at the forefront in all strategically important areas of the economy is a red thread. A systematic approach to the mentoring process is one way to get one step closer to our national ambition. Sports universities can be the engine of this step change in sports industry. By using the two-level mentoring model in universities and schools we're becoming closer to a long-term perfection.

Having conducted a comprehensive analysis of mentoring models and their application, I argue that the two-level mentoring model is the most suitable for Russian conditions in sports industry. Since most people who work in the sports industry have passed through sports schools, such a model will be intuitive, which in turn will facilitate its implementation. I will also emphasize such a strong side of this model as the training of future mentors.

Teachers of a higher school, coaches and managers, in addition to their main work activity, can carry out mentoring activities in such areas as: educational, professional, personal, leisure, creative, communicative, scientific and research. Different authors emphasize positive impact of this kind of a relationship, and I argue

that mentorship in sports industry should be as common as the sun in the morning, so society reap all the benefits. However, I also must note that the two-level mentoring model is only one of many tools for achieving better performance.

Returning to the issue raised in the introduction, I will express my opinion on why mentoring is used so rarely in Russian practice, despite the available evidence base of its effectiveness. I argue that the main reason of unpopularity of mentoring in Russia is ignorance of its benefits. For mentorship to be popularized, mentees must fully know of its benefits, seek for mentors, have checklists on how to work with mentors, and drive the process. Work in this direction is a growth area.

In conclusion, the role of a mentorship in the development is multifaceted and invaluable. Mentors serve as guides, role models, and champions for mentees, empowering them to grow, learn, and succeed. By fostering confidence, critical thinking, personal development, and effective communication, mentors play a pivotal role in shaping students' skills, attitudes, and aspirations. As we continue to navigate the complexities of education and professional development, let us recognize and celebrate the vital role that mentors play in nurturing the next generation of leaders, innovators, and changemakers.

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Golodniuk Ilya Dmitrievich, postgraduate student of the Department of Public Administration and Youth Policy, ilya.golodnyuk@gmail.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of sport "GTSOLIFK".

ВАЖНАЯ РОЛЬ НАСТАВНИЧЕСТВА: ПРИМЕР СПОРТИВНОЙ ОТРАСЛИ

Голоднюк Илья Дмитриевич, аспирант, ilya.golodnyuk@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Исследование посвящено трансформации классического образования и необходимости наставничества в дополнение к традиционным методам обучения.

Несмотря на доказанную пользу наставничества в теории и на практике, его недостаточное использование в российской спортивной отрасли вызывает вопросы о его эффективности. На основе тщательного управленческого анализа в этом исследовании была выявлена и предложена наиболее подходящая модель наставничества для российских условий. Исследуя различные модели наставничества и опираясь на спортивный менеджмент, управление человеческими ресурсами и психологические дисциплины, автор исследования подчеркивает активную роль наставников в оказании помощи подопечным в преодолении препятствий и достижении профессионального успеха.

Ключевые слова: модели наставничества, навыки, наставничество, образование, развитие

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UDC 796

STATISTICAL ANALYSIS OF ELITE TENNIS PLAYERS SERVING PERFORMANCE

Gorodilov M.V.

Abstract. *This study sought to determine the features of serve performance by top tennis players in the world. It clarified the main scenarios for completing the rally in tennis and identified the relationship between main serve characteristics. These results showed us the model characteristics of elite tennis player's serve performance as a guideline for training and competitions.*

Keywords: *serve performance, ball speed*

Introduction. Today, the problem of analyzing competitive activity remains one of the most pressing issues in modern tennis. In the works dedicated to tennis, experts identify one of the key factors influencing competitive performance: technical readiness.

In tennis, the serve is the only skill that allows a player to initiate the rally at his or her own discretion.

It is an important skill that can determine the result of the match.

The aim of the study is to identify the serving characteristics of the world's leading tennis players, particularly ball speed, in order to improve training process.

Methods used for the analysis. A method of mathematical data processing is

used to analyze statistical data obtained. The study uses descriptive methods of mathematical statistics to visualize and analyze data. The arithmetic mean of the data was calculated to determine a measure of central tendency. The Pearson correlation coefficient is also calculated.

Results and discussion. We analyzed the statistics of 29 matches from 4 Grand Slam tournaments and the final tournament for 2022 and 2023. Semifinal and final matches were selected.

Next, it was necessary to calculate the arithmetic mean of these indicators in order to determine the central tendency, to compare them with each other.

Furthermore, based on statistical data for 2023 of the top 20 players in the world at Grand Slam tournaments, we have determined the main characteristics of service performance and how these are interconnected with each other and the percentage of rally wins in matches.

The statistical indicator used was the ratio of rallies to the rally length. We have received the following data, which is presented in table 1.

Table 1. – Rally length in the semi-final and final matches at Grand Slam tournaments

Rally length	The arithmetic mean
1-3	56%
4-6	21%
7-9	11%
10+	12%

We can draw the following conclusions: 1. The number of rallies with a total of strokes 1 to 3 significantly exceeds those with a sum of strokes of 4 to 6, 7 to 9, and 10 or more. 2. The overall number of rallies where the total number of strokes is 0 to 9 significantly exceeds that of rallies with 10+ strokes. 3. In professional tennis, short rallies of up to four strokes are common. Game combinations that last between three and ten seconds account for more than 80 percent of the play time in the games of leading tennis players [1]. The most common scenario in professional tennis is a 1-shot rally (serve).

Based on the serving statistics of the world's leading players from the 4th Grand Slam tournament in 2022. The sample included 20 of the top 20 tennis players at the time, based on their ranking. The first serve gives the serving player an advantage due to the high speed of the ball, making it difficult for the receiver to receive it. According to the results of our study, the maximum speed reached by the ball in the first serve from our sample tennis players is 236 km/h and the average speed is 191.5 km/h. At this speed, the percentage of games won averages 74.5%, with the average ball speed during the second serving decreasing by 20% to 154 km/h on average. The percentage of rallies started by the second serve averages 54%, with a slight decrease in the success rate compared to the first serving. Thus, the second serve becomes less effective and practically does not provide an advantage in the subsequent rally [2]. We conclude that decreasing the speed of the ball during the second serve prevents the creation of favorable conditions for winning the game, as it becomes harder to put pressure on the opposing team.

Pearson's correlation analysis revealed that there is a linear relation between the maximum speed and average speed of the ball during the first serve in the case of leading players. The value of r is 0.84. The obtained data is shown in Figure 1.

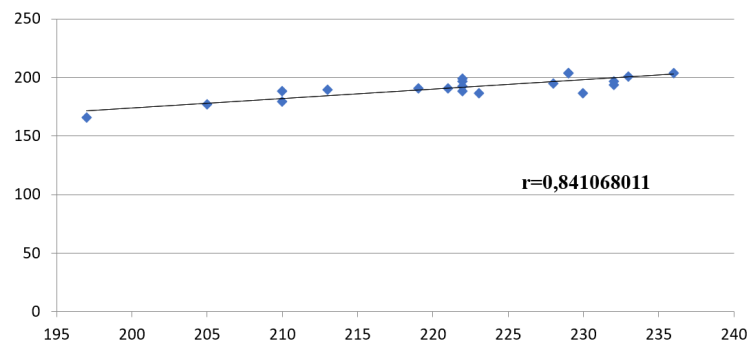


Figure 1. – Linear relationship between maximum ball speed and average ball speed of the 1st serve

Such research results allow us to believe that the faster a player is able to serve the ball, the higher the average speed of the ball. 2. The correlation between the maximum ball speed revealed, with a correlation coefficient of $r = 0.61$. The data is shown in figure 2.

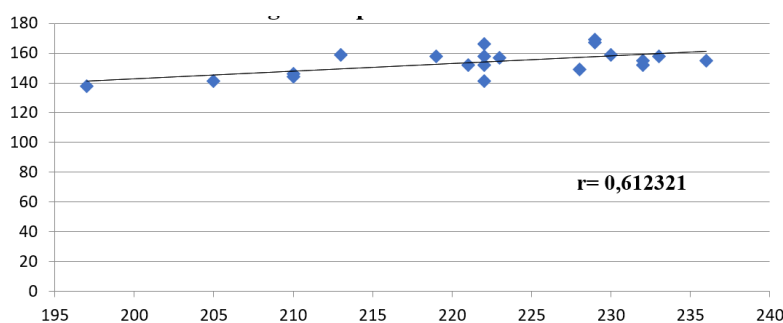


Figure 2. – Linear relationship between maximum ball speed and average ball speed of the 2nd serve

In this case, the correlation coefficient is lower than when comparing the maximum ball speed to the average ball speed of the first service. However, the dependence still remains. Of particular interest are the results of the correlation analysis between the average speed of the first serving ball and the second serving ball, which had a value of $r=0.77$. The data obtained is shown in figure 3.

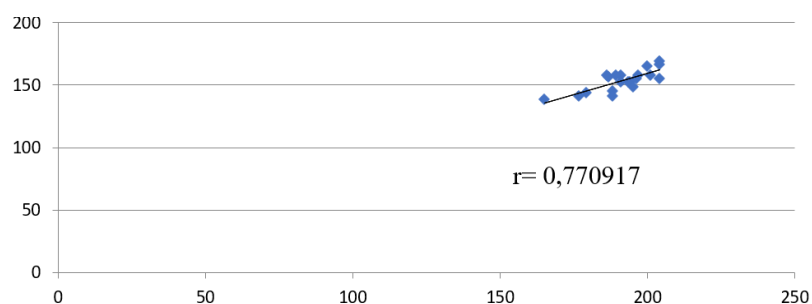


Figure 3. – Linear relationship between average speed of 1st and second serve

The correlation coefficient in this case is close to the correlation coefficient of the maximum ball speed to the average ball speed of the first service. The higher the average speed of the first serve, the higher the average ball speed of the second one. The reasons why the correlation coefficient is 0,77 it is that professional tennis players constantly change tactics during the game and perform different ball speed while serving.

Conclusion:

1. In modern professional tennis, most rally are short, with up to 4 shots. At the same time, the most common outcome in professional tennis is a 1- shot (the serve). So it confirms one more time that the serve is an important technical element that significantly influences the outcome of the match.

2. The percentage of points won on the first serve is 20% higher than that on the second serve, while the average speed of the first serve is also 20% higher than that of the second serve. Correlation analysis indicates that there is a positive relationship between the ball speed of the first serve and that of the second serve. This suggests that increasing the serving speed is crucial as it can make it more challenging for opponents to return the serve, thereby enhancing the serving player's likelihood of winning the point.

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Gorodilov Maksim Vyacheslavovich, maksimgorodilov74@gmail.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

АНАЛИЗ СТАТИСТИЧЕСКИХ ДАННЫХ О ВЫПОЛНЕНИИ ПОДАЧИ ВЕДУЩИМИ ТЕННИСИСТАМИ МИРА

Городилов Максим Вячеславович, maksimgorodilov74@gmail.com, Россия, Москва, Федеральное государственное бюджетное общеобразовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Целью этого исследования было определить особенности выполнения подачи ведущих теннисистов мира. Оно прояснило основные сценарии завершения розыгрыша в теннисе и выявило взаимосвязь между основными характеристиками подачи. Эти результаты показали нам модельные характеристики подачи элитных теннисистов, которые могут быть использованы в качестве ориентира для совершенствования тренировочного процесса.

Ключевые слова: выполнение подачи, скорость полета

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UDC 796

ENHANCING THE ORGANIZATION AND MANAGEMENT OF NATIONAL RHYTHMIC GYMNASTICS COMPETITIONS

Gribovskaya V.R., Melnikova N.Y., Maklakov I.R.

Abstract. *This article aims to explore and propose measures for improving the organization and management of national rhythmic gymnastics competitions. The commercialization and professionalization of sports, coupled with the need for revenue generation, have necessitated a shift in the existing systems and principles of competition organization. Through an analysis of key aspects and an evaluation of current practices, this study provides recommendations to enhance the overall organization and management of national rhythmic gymnastics competitions.*

Keywords: *organization of national competitions, rhythmic gymnastics, revenue generation*

Introduction. Rhythmic gymnastics has gained significant popularity, both as a sport and a form of entertainment. National rhythmic gymnastics competitions serve as platforms for athletes to showcase their skills, attract spectators, and generate revenue. However, the evolving landscape of sports demands a strategic approach to competition organization and management. This article aims to address the challenges faced in organizing and managing national rhythmic gymnastics competitions and propose measures for improvement.

The objective of our research is development of measures to improve the organization and management of national rhythmic gymnastics competitions.

Methods. Analytical methods are aimed at creating and comparing various hypotheses and theories. Practical methods are primarily the observation and conduct of experiments, as well as the description of the results obtained.

Discussion and results. Structure and Operations of Artistic Gymnastics Clubs: To understand the organization and management of national rhythmic gymnastics competitions, it is essential to analyze the structure and operations of gymnastics clubs. These clubs serve as the foundation for athlete development and competition preparation. By examining the club's structure, coaching staff, training facilities, and athlete support systems, we can identify areas where improvements can be made to enhance the overall competition experience.

Current Practices in Competition Organization: In this section, we delve into the current practices in organizing national rhythmic gymnastics competitions. This includes examining the competition format, scheduling, and logistical arrangements. It is crucial to assess the effectiveness of these practices in meeting the objectives of the competitions, such as providing a fair and level playing field for athletes, ensuring efficient use of resources, and maximizing spectator engagement.

Identification of Potential Areas for Improvement: Through a comprehensive analysis of the structure of rhythmic gymnastics clubs and the current practices in competition organization, we can identify potential areas for improvement. These may include streamlining administrative processes, enhancing communication between stakeholders, implementing technological advancements in scoring and judging systems, and exploring innovative marketing strategies to attract a wider audience.

Stakeholder Engagement and Collaboration: The successful organization and management of national rhythmic gymnastics competitions rely heavily on stakeholder engagement and collaboration. This includes fostering strong relationships between artistic gymnastics clubs, national governing bodies, event organizers, sponsors, and other relevant stakeholders. By working together, these parties can align their objectives, share resources, and collectively contribute to the growth and development of the sport.

Financial Considerations and Revenue Generation: The commercialization of sports has significantly impacted the organization and management of national rhythmic gymnastics competitions. To ensure their sustainability, it is essential to explore various avenues for revenue generation. This may involve developing strategic partnerships with sponsors, implementing ticketing and merchandising strategies, and exploring broadcasting and media rights opportunities. By generating revenue, competitions can invest in athlete development programs, improve infrastructure, and enhance the overall quality of the event.

Integration of Technology: Technology plays a crucial role in enhancing the organization and management of national rhythmic gymnastics competitions. This includes the use of advanced scoring and judging systems, video analysis tools for performance evaluation, and digital platforms for efficient communication and registration processes. By embracing technology, competitions can improve accuracy, transparency, and efficiency, ultimately enhancing the overall experience for athletes, officials, and spectators.

Conclusion. This article concludes with a summary of the findings and emphasizes the importance of continuous improvement in the organization and management of national artistic gymnastics competitions. By implementing the proposed measures, stakeholders can enhance the competitiveness, commercial viability, and overall success of these events, contributing to the growth and development of rhythmic gymnastics as a sport. In conclusion, the organization and management of national rhythmic gymnastics competitions require a strategic and innovative approach. By implementing the proposed measures, stakeholders can create a sustainable and commercially successful environment for athletes, spectators, and the sport as a whole. Continued research and adaptation to the evolving sports landscape are crucial to ensure the long-term success of national rhythmic gymnastics competitions.

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Gribovskaya Veronika Ruslanovna, Master student, nika-veronika2300@mail.ru , Management and Economics of the sports industry named after V.V. Kuzin, Federal State Budgetary Educational Institution of Higher Education «Russian University of Sport «GTSOLIFK», 105122, Moscow, Russia

Melnikova Natalia Yurievna ya.melnikova64@yandex.ru. Head of the Department of History of Physical Culture, Sports and Olympic Education of the Russian University of Sport «GTSOLIFK», 105122, Moscow, Sirenevyy Boulevard 4. Doctor of Pedagogical Sciences, Professor.

Maklakov Ivan Romanovich, Master student, ivanImaklakov@yandex.ru, theory and methodology of football and hockey, Moscow State Academy of Physical Culture (MGAPK), 140032, Moscow region, r. Malakhovka.

СОВЕРШЕНСТВОВАНИЕ ОРГАНИЗАЦИИ И УПРАВЛЕНИЯ НАЦИОНАЛЬНЫМИ СОРЕВНОВАНИЯМИ ПО ХУДОЖЕСТВЕННОЙ ГИМНАСТИКЕ

Грибовская Вероника Руслановна, магистрант, nika-veronika2300@mail.ru, Менеджмента и экономики спортивной индустрии им. В.В. Кузина, Федерального государственное бюджетное образовательное учреждение высшего образования "Российский университет спорта "ГЦОЛИФК", 105122, Москва, Россия.

Мельникова Наталья Юрьевна ya.melnikova64@yandex.ru заведующая кафедрой истории физической культуры, спорта и олимпийского образования Российского государственного университета физической культуры, спорта, молодежи и туризма (ГЦОЛИФК) 105122, Москва, Сиреневый бульвар 4, доктор педагогических наук, профессор.

Маклаков Иван Романович, магистрант, ivanImaklakov@yandex.ru, Теории и методики футбола и хоккея, Московская государственная академия физической культуры «МГАФК», 140032, Московская обл., Люберцы, рп. Малаховка.

Аннотация. Целью данной статьи является изучение и предложение мер по улучшению организации и управления национальными соревнованиями по художественной гимнастике. Коммерциализация и профессионализация спорта в сочетании с необходимостью получения доходов потребовали изменения существующих систем и принципов организации соревнований. На основе анализа ключевых аспектов и оценки существующей управления национальными соревнованиями по художественной гимнастике.

Ключевые слова: организация национальных соревнований, художественная гимнастика, получение дохода

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THE USE OF THE CIRCUIT TRAINING METHOD FOR THE DEVELOPMENT OF SPECIAL ENDURANCE OF FIGURE SKATERS

Grishankova S.O.

Abstract. *Figure skating is a complex coordination sport, a high level of special endurance ensures the manifestation of the skater's potential in conditions of training and competitive activities. Performing jumps and their combinations, rotations of various tracks of steps requires from a skater not only technical skill, but also the ability to demonstrate it for quite a long time of performance, while overcoming increasing fatigue.*

Keywords: *figure skating, special endurance, circuit training*

Introduction. It is well known that well-mastered and qualitatively performed individual complex elements in the course of preparation for competitions in a holistic skating program at competitions are performed with errors or are not performed at all [1, 2]. One of the main reasons for this is the insufficient level of special endurance, manifested in the specific conditions of figure skating. Endurance is of particular importance when performing modern free skating programs, which are saturated with the most complex elements performed both at the beginning and at the end of the program [3, 4].

Special endurance is the ability to endure long-term loads characteristic of a certain type of professional activity. It is legitimate to speak about specific endurance only when the ability to resist fatigue in a particular type of activity has significant specifics, which is due to the peculiarities of the implementation of functional capabilities that ensure the manifestation of endurance in this activity, depending on its objective requirements for different motor qualities.

To form the basis for the development of special endurance at the beginning of the preparatory period, long-term and low-intensity training work is relevant, and subsequently intensive work becomes the main means. During the competitive period, competitive exercises or simulation of competitive exercises can be the main means of increasing the level of special endurance.

The following **methodological techniques** help to form special endurance: performing special sets of exercises that have common or similar elements with the technical elements of the program; repeatedly performing to fatigue sets of exercises similar, by the nature of the efforts shown, to the elements of the program with a regular or shortened rest interval; performing special sets of exercises in difficult conditions (using weights); circuit training with a gradual increase in the intensity of execution from "station" to "station". In this study, we will consider an innovative circuit training that combines the elements of the free program in figure skating.

The **aim** of our study is to offer an innovative circuit training to improve the special endurance of figure skaters.

The **objective** of our study is the training process of figure skaters.

The **goals** of our study are:

- To reveal the features of the development of special endurance.
- Analyze the features of the circuit training.
- To conduct an experiment using innovative circular training to develop special endurance in figure skaters.

Methods:

- Theoretical (literature analysis)
- Empirical (diagnostics, quantitative and qualitative data processing).

I proposed an innovative circuit workout in which the exercise stations simulate elements from a free program. Special simulation exercises help to solve the problems of technical training on the ice.

The experimental circuit training consisted of 10 stations, 500-gram weights were worn on the legs (which simulates a skate on the leg).

1. Jumping on the step on two legs, jumping off on one leg to the exit position. (The task is to jump out as high as possible and land clearly)

2. The rear screw on the spinner (The task is to develop the maximum speed, the maximum number of revolutions)

3. Axel 1.5 turns (high-quality execution, spin and landing on one leg)

4. A swallow with a transition to a pistol and a change to a rear spinning top, a rear screw (imitation of a combined rotation, 5 accounts in each position)

5. Double rittberger with promotion (high-quality performance, spin and landing on one leg)

6. A spiral sequence, for example, swallow-billman, flag-swallow, in each position there are 5 accounts (we take a variation from the child's program).

7. Shuttle run (10 meters segment, maximum number of repetitions)

8. Two-turn tours with landing on one leg on departure (high-quality performance, spin and landing on one leg)

9. Spinning top in the crease with a removable leg (holding the position for 10 counts)

10. Double jumping rope (maximum number of repetitions)

Research design. Two groups of 5 people aged 7-9 years were formed for the experiment. The standard circular training technique for the development of special endurance was carried out with the skaters of the 1st group. For the skaters of the 2nd

group, an experimental circular training technique was proposed for the development of special endurance. Before completing the task, after performing the load, and at the 20th second of recovery, the athletes' initial pulse data were taken, and the results were entered into tables. The time of passing the stations for the 1st and 2nd groups of skaters is the same – it was 2.5 minutes in the first month and 3 minutes in the second month.

Comparing the pulse data of the 1st and 2nd groups of skaters, the level of preparedness of athletes for the proposed load and the level of development of special endurance of the skaters of the training group were evaluated. By comparing the pulse data presented in Tables 1 and 2, it is possible to judge the effectiveness of one of the techniques for the development of special endurance, or the effectiveness of using both techniques in the training process of young figure skaters.

Table 1. – Heart rate indicators in athletes of the 1st group (control)

Sportsmen	July			August			September		
	Heart rate indicators								
	Before loading	Immediately after the load	Recovery After 20m	Before loading	Immediately after the load	Recovery After 20 sec	Before loading	Immediately after the load	Recovery After 20 sec
1	72	120	78	78	120	78	66	114	66
2	78	108	78	78	114	78	66	126	66
3	78	114	78	72	102	78	78	120	84
4	66	102	72	84	108	84	78	120	78
5	66	108	66	78	102	84	66	126	66

Table 2. – Heart rate indicators for athletes of the 2nd group (experimental)

Sportsmen	July			August			September		
	Heart rate indicators								
	Before loading	Immediately after the load	Recovery After 20m	Before loading	Immediately after the load	Recovery After 20 sec	Before loading	Immediately after the load	Recovery After 20 sec
1	72	120	78	72	126	78	78	120	72
2	78	126	78	66	114	66	78	126	72
3	84	120	84	72	114	78	66	108	66
4	78	114	84	78	120	78	72	114	72
5	78	114	78	66	102	72	78	120	72

Results. The innovative circular training method proved to be effective, because it allowed us to identify at what level of development of special endurance young skaters are, and allowed us to most clearly reflect the degree of mastery of jumps and rotations in the pre-competition period. The tables show an increase in the

functional capabilities of the body – an increase in the magnitude of the loads they overcome during the study.

In conclusion, we note:

1. The conducted research shows the positive effect of using the innovative circuit training method in the training process on the development of special endurance of figure skaters;

2. The obtained indicators of the development of special endurance of the experimental group slightly exceed the indicators of the control group, which indicates the effectiveness of the use of figure skating in the development of special endurance;

3. The results presented in this paper, presented in the table, allow us to give an accurate description of the development of special endurance and evaluate the effectiveness of the use of tools and methods in the training process of figure skaters.

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Grishankova Svetlana Olegovna, undergraduate, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education «Russian university of sports «GTSOLIFK», e-mail: sveta.grishankova@mail.ru.

ПРИМЕНЕНИЕ МЕТОДА КРУГОВОЙ ТРЕНИРОВКИ ДЛЯ РАЗВИТИЯ СПЕЦИАЛЬНОЙ ВЫНОСЛИВОСТИ ФИГУРИСТОВ

Гришанкова Светлана Олеговна, магистрант, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», e-mail: sveta.grishankova@mail.ru.

Аннотация. Фигурное катание – сложнокоординационный вид спорта, высокий уровень специальной выносливости обеспечивает проявление потенциала фигуриста в условиях тренировочной и соревновательной деятельности. Выполнение прыжков и их комбинаций, вращений различных дорожек шагов требует от фигуриста не только технического мастерства, но и способности демонстрировать его на протяжении довольно длительного времени выступления, преодолевая при этом возрастающее утомление.

Ключевые слова: фигурное катание, специальная выносливость, фигуристы тренировочного этапа, круговая тренировка

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RUSSIAN TRIATHLON ATHLETES AT THE OLYMPIC GAMES IN THE XXI CENTURY: PERFORMANCE RESULTS

Grozyan D.Y.

Abstract. *The article is devoted to the analysis of the results of the performance of Russian athletes at the Olympic Games in the 21st century. The performance of Russian athletes in the period from 2001-2021 at the Olympic Games is presented in the article, as well as the sports training program for Russian athletes during the four-year cycle is considered.*

Keywords: *triathlon, Olympic Games, training of athletes, performance results*

Introduction. Triathlon is rather young, cyclical sport that includes 3 disciplines: swimming, cycling and running. Competitions in this sport take place continuously: swimming, passing the first transit zone, cycling, passing the second transit zone and running with finishing the distance. This sport entered the Olympic program quite recently - at the Games of the XXVII Olympiad of 2000 in Sydney.

The research purpose is to determine the direction for improving the results of Russian triathletes at the Olympic Games.

Methods: analysis of scientific and methodological literature, comparative method, special historical methods.

Discussion. To get successful performance, triathletes need effective technical training in all three disciplines. The domestic training system began to develop in 1991, but did not bring good results, since many coaches tried to adopt foreign experience in this sport, but also tried to rely on specialists in individual sports.

New domestic system for training athletes based on the ideas of Professor V.N. Seluyanov was developed in 2003. This system is based on the principles of targeted development of an athlete's physical qualities. To achieve a model level of preparedness by an athlete, first of all, it is necessary to purposefully develop the physical qualities and functional systems of the body; also, the main means of developing aerobic endurance in triathlon is aerobic strength training. Sprinting,

uphill jumping and special strength training in the gym are mandatory elements of triathlon training, and high lactate levels and prolonged «acidification» of the body negatively affect the functioning of most body systems and, first of all, aerobic qualities. When planning training macrocycles, most of the time was devoted to the targeted development of physical qualities. This stage took from 3 to 6 weeks. Exercises for the development of physical qualities in their structure and modes of execution differ significantly from competitive movement techniques. Therefore, the next stage was transformation (or adjustment), at which it was necessary to increase the efficiency of movement techniques in a competitive mode using the physical qualities developed at the previous stage. This stage could take 2-3 weeks depending on the preparation period. Then the athlete took part in competitions for 1 to 6 weeks (depending on the competition calendar). Thus, the duration of macrocycles ranged from 6 to 10 weeks, and the structure of the macrocycle had a pronounced block character. When planning microcycles, special attention was paid to 23 areas of training loads. The loads of the same direction were grouped within the training cycle, with strength and speed-strength loads carried out on the last day before the rest day. The five-day microcycle demonstrated the greatest effectiveness.

Analysis and systematization of statistical data made it possible to make Table 1, which presents the results of the performance of Russian triathletes at the Games of the Olympiad in the 21st century, who were trained under a program based on the «five-day training».

Table 1. – Results of the performance of Russian triathletes at the Games of the Olympiad (2004-2020)

Games of the Olympiad	Names of athletes	Results (place – time)
Games of the XXVIII Olympiad of 2004 in Athens	Generalova Olga	31 – 02:11:48.060
	Anisimova Nina	Didn't finish
	Sysoev Igor	15 – 01:53:51.370
Games of the XXIX Olympiad of 2008 in Beijing	Zausaylova Olga	36 – 02:06:34.260
	Abysova Irina	Didn't finish
	Sysoev Igor	9 – 01:49:59.380
	Polyanskiy Dmitriy	22 – 01:51:11.610
	Bryukhankov Alexandr	24 – 01:51:22.590
Games of the XXX Olympiad of 2012 in London	Abysova Irina	13 – 02:01:52.00
	Razaryonova Aleksandra	47 – 02:09:11.00
	Bryukhankov Alexandr	7 – 01:47:35.00
	Vasilyev Ivan	13 – 01:48:43.00
	Polyanskiy Dmitriy	21 – 01:49:24.00
Games of the XXXI Olympiad of 2016 in Rio de Janeiro	Razaryonova Aleksandra	20 – 02:01:09.00
	Shorets Mariia	25 – 02:01:33.00
	Abrosimova Anastasia	32 – 02:02:45.00
	Polyanskiy Igor	31 – 01:49:26.00
	Polyanskiy Dmitriy	32 – 01:49:26.00
	Bryukhankov Alexandr	Didn't finish
Games of the XXXII Olympiad of 2020 in Tokyo	Razaryonova Aleksandra	+1 circle cycling
	Gorbunova Anastasia	Didn't finish
	Polyanskiy Dmitriy	32 - 01:48:46.00
	Polyanskiy Igor	Disqualification

As follows from Table 1, Russian athletes do not show high results, the best result shown by the athletes at the Games of the XXX Olympiad of 2012 in London: 13th place took Irina Abysova and 7th place took Alexander Bryukhankov.

It should be noted that comparing the results of the Games of the Olympiad is not entirely correct, since the result is influenced by many factors: the terrain of the route, water temperature, air humidity and many others. But it is possible to notice that Russian athletes are trying to be among the leaders, but the competition is getting higher every year.

Conclusions. Thus, in order to improve the results of Russian triathletes at the Olympic Games, it is necessary:

- Coaches of national teams must monitor each athlete individually so that to improve his technical qualities as a whole and avoid failure in any of the 3 segments;
- Create favorable conditions for training athletes (providing training facilities for quality training of triathletes);
- Pay attention to the technical component in cycling and running training.

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Grozyan Daria Yurievna, 4th year bachelor, Theory and Methodology of Cycling, Triathlon and Golf Department, Grozyan03@bk.ru, Russia, Moscow, «Russian university of sports «GTSOLIFK»

РОССИЙСКИЕ СПОРТСМЕНЫ ТРИАТЛОНИСТЫ НА ИГРАХ ОЛИМПИАД В XXI ВЕКЕ: РЕЗУЛЬТАТЫ ВЫСТУПЛЕНИЙ

Грозьян Дарья Юрьевна, бакалавр 4 курса, кафедра Теории и Методики велосипедного спорта, триатлона и гольфа, Grozyan03@bk.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Аннотация. Статья посвящена анализу результатов выступления российских спортсменов на Играх Олимпиад в XXI веке. В статье рассмотрена результативность российских спортсменов в период с 2001-2021 год на Играх Олимпиад, а также рассмотрена программа спортивной подготовки российских спортсменов в период четырехлетнего цикла.

Ключевые слова: триатлон, Игры Олимпиад, подготовка спортсменов, результаты выступлений

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FEATURES OF ICE HOCKEY DEVELOPMENT IN TURKEY

Gumuslu B.

Abstract. *The article deals with general issues of the development of Turkish ice hockey. Since there are no found studies about the process of the development of Turkish ice hockey, this research aims at the solution of such issues. The study allows to call attention of Turkish authorities and ice hockey coaches to relevance of such problems.*

Keywords: *development, issues, ice hockey players, insufficient*

Relevance. The relevance of the article is that Turkey has been struggling for a long time with some factors that affect the development of Turkish hockey.

Introduction. High rates of development of abilities in childhood, adolescence, and youth make it possible to improve the quality and effectiveness of hockey players training, as well as ensure the achievement of high and stable athletic results in adulthood. However, the development of new, more effective means and methods of training young hockey players is an urgent task of hockey theory and practice. The organizational structure of Turkish hockey players includes: amateur hockey, junior, youth and adult hockey clubs. There are many issues that hinder the development of these teams and ice hockey in Turkey in general. It is necessary to identify and analyze these problems and then investigate what should be done to solve them. In this article we will cover these problems and focus on their solutions.

Purpose. The purpose of the article is to identify the causes of the development of Turkish hockey and to find out problems and their solution. To our mind, the awareness of the obstacles in development should be increased, which deeply affect the Turkish ice hockey and its future.

The major issues of the development of Turkish ice hockey. The low interest in hockey in Turkey hinders its development.

There are approximately 1800 active ice hockey players in Turkey. If we consider country's population, which is around 85 million, it means 1 ice hockey player for every 50 thousand people. In Canada the population is 38 million - the number of active ice hockey players is 548,800. This means that 1 ice hockey player for every 71 people. The population of Russia is 146 million, and the number of active ice hockey players is about 100,000. According to this, 1 ice hockey player for every 1442 people [1]. The low number of active ice hockey players in Turkey is one of the biggest factors in the failure of ice hockey to develop. The low number of active athletes can also limit the overall talent pool available for selection. It may be

more challenging for sports organizations to identify and nurture talented individuals when there are fewer participants to choose from. This could potentially impact the overall competitiveness of the country in international sporting events.

The small number of available ice rinks.

There are 12 ice rinks throughout Turkey totally. The number of ice rinks in the three largest cities of the country is as follows: 2 in Istanbul, 2 in Ankara and 1 in Izmir. There are 5 ice rinks in these three cities with a total population of 20.135.449, 1 ice rink for every 4.027.089 people.

Table 1. – The level of provision of the population with ice rinks (The data of the number of objects obtained from the official IIHF website)

Country	Number of the ice rinks	Population	Ratio of ice rinks to the population
Russian Federation	730	146 027 061	200 037
Canada	2 860	38 384 972	13 421
USA	1 550	335 190 807	216 252
Sweden	363	10 241 092	28 212
Finland	282	5 593 653	19 835
Czechia	200	10 714 399	53 591
Turkey	12	85 279 553	7 106 629

Among these countries, Turkey ranks 3rd in terms of the countrys' population. But Turkey remains behind all these countries in terms of the amount of the ice rinks provision for the population.

Expensive ice rink renting. Due to the fact that the population of the country has a large number of people corresponding to each one of the ice rinks, it is very expensive to rent sessions on ice rinks. Because of this, the trainings happen less than they should be. That is one of the reasons, why Turkish ice hockey players train less than they should.

Government financing The allowance allocated by the state of the Republic of Turkey to the ice hockey federation on an annual basis is very small compared to other popular sports. This causes the "Turkish ice hockey federation" to be unable to work flexibly and take innovative steps.

Due to the unpopularity of ice hockey in Turkey, sponsors give less or no sponsorship in ice hockey.

The lack of sponsor support is a negative factor in the development process.

The minor issues of the development of Turkish ice hockey.

- The amateur ice hockey teams and junior teams have only few matches and hockey players have lack of knowledge in conditioning, technique, tactics, rules, etc. There is no basic knowledge, or it is insufficient;

- The inability of Turkish managers to take radical decisions in the development of hockey;

- Due to the low number of teams in the leagues in Turkey, the season is short and there are insufficient tournaments;

- foreigners who play in Turkish leagues are valued more than Turkish players;
- the Turkish national team participates only in the world championships organized by “International Ice Hockey Federation”. Other than that, there are no friendly tournaments organized close to its own level or with the same level countries;

- the fact that only Turkish specialists conduct coaching staff re-training and no any foreign specialists are involved in coaching certificate acquisition, it makes seminars insufficient in terms of knowledge. Moreover, the fact that these seminars are unsupervised. That's why there are too many unqualified coaches in Turkey;

- the absence of ice hockey departments in higher education institutions in Turkey. There is no any scientific research in ice hockey.

The solutions to these issues might be:

- Ice rinks should be built in Bursa and Antalya, the provinces with the fourth and fifth largest population of Turkey. The budget of the cities is bigger compared to the provinces. It is necessary to create children's and youth teams in these provinces and ensure that they participate in the league. This will increase the number of teams in the league and so the number of games;

- The educational system in the field of ice hockey should be formed and introduced in coaching seminars.

- The state of the Republic of Turkey should show an attitude towards developing ice hockey in the country and increasing its popularity. Currently, only the Turkish ice hockey federation undertakes this;

- Introducing ice hockey as an elective course in the departments of physical education in higher education institutions;

Conclusion. Turkey has a very long and troublesome journey ahead of it in order to get closer to the countries playing in the highest leagues. In order to achieve this, in addition to the government and the Turkish ice hockey federation, coaches, athletes and their families also have a duty. The perspective of ice hockey in Turkey needs to be changed and innovation needs to come with this change. Only this way the progress can be made in ice hockey.

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Gumuslu Burak, 1-st year master student, Russian University of Sport (GTSOLIFK), Moscow, Russia

ОСОБЕННОСТИ РАЗВИТИЯ ТУРЕЦКОГО ХОККЕЯ

Гюмюшлю Бурак, магистрант, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. В статье рассматриваются общие вопросы развития турецкого хоккея с шайбой. Поскольку нет исследований о процессе и проблемах развития турецкого хоккея с шайбой, исследование включает в себя решение этих вопросов. Исследование позволяет привлечь внимание турецких властей и тренеров по хоккею с шайбой к этим проблемам.

Ключевые слова: развитие, проблемы, хоккеисты, недостаточный уровень

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UDC 796

FEATURES OF THE DEVELOPMENT OF EVENT MANAGEMENT IN THE RUSSIAN FEDERATION

Gurkin S.M.

Abstract. *The article is devoted to the study of one of the youngest and most promising areas in the leisure sector – the event industry. The article discusses the definitions of the concept of the event industry and its features of development in the Russian Federation in recent years. The purpose of the study is to analyze the current state of the event industry in Russia and the prospects for its development. The essential result of the study is to identify the necessary improvements in the event industry in the Russian market of services.*

Keywords: *event management, event services, event marketing*

Introduction. Nowadays, the event industry has turned out to be one of the most affected business sectors, first from the pandemic, then from the economic crisis and now from the geopolitical situation. Despite this, all kinds of restrictions and sanctions have not stopped its development, but even has accelerated the transition to new forms and formats.

There is no definite interpretation of the concept of the event industry at the moment, however, the analysis of many sources allows us to form a general concept: the event industry is an independent industry covering the entire spectrum for holding various kinds of events, such as: birthday, wedding, anniversary, corporate parties, mass events, team building, business events and so on.

Research methods. In our study, we are using the analysis of scientific literature.

The results of the study and their discussion. At the moment, there are no clear laws and regulations in the Russian Federation governing the activities of companies providing event services, therefore, there are no uniform standards for the provision of services and pricing. Currently, the prices for the provision of event services are formed by agencies based on consumer demand.

The Russian market of event services is currently at the stage of formation and looks quite fragmented. The bulk of all event agencies in Russia are small firms. Regarding to compliance with global trends and standards, one can say that European

standards for events ~~have been~~ are being introduced into our event industry quite difficult and slow. Events of a truly European level have been organized in the Russian Federation, probably only in the last 5-7 years.

A significant disadvantage that complicates the development of event management in Russia is the lack of an adequate level of training of event specialists. Moreover, we are not talking about courses now, but about full-fledged education in a higher educational institution, more precisely, about its practical absence in our country.

Such a practice has been used abroad for a long time – the training of Event specialists at universities – and now various representatives abroad are looking for new, more effective forms of creating high-quality specialists. Only recently, there has been a positive trend in the training of event managers, some universities have introduced "Event management" training areas, information resources have also gradually begun to develop and Internet resources dedicated to the organization of special events appear. These trends lead to the fact that the event industry market is gradually becoming an independent area of modern business in Russia.

According to experts, the current state of the event market in the Russian Federation is experiencing a new reality, which the industry has faced extremely unexpectedly and its consequences will have a negative impact on it. Event service companies have not yet recovered from the COVID-19 restrictions, as the situation escalated and became more incomprehensible and tense.

The increase in geopolitical tension leads to a restructuring of the vectors of movement of all sectors of the Russian economy and will have long-term consequences. The event industry, which mirrors socio-economic realities, also faces the need to find ways and mechanisms to adapt to changing conditions.

Exhibition and Research Center (VNITS) R&C conducted a study of the event potential of Russian regions. The results of this study allowed us to conclude that, according to a number of indicators, the event sphere was able to avoid negative dynamics. The event marketing market began to gradually recover, major federal and regional events returned to the venues, transport links in most regions recovered and the flow of domestic tourists began to return to the pre-pandemic level. The industry infrastructure has been preserved almost in full, the hotel room stock, despite the departure of international operators and the freezing of a number of projects, reduced the growth rate by almost three times from the projected figures, but retained positive results. At the same time, the number of major international events scheduled to be held both in 2022 and in the medium term until 2024 has significantly decreased.

Conclusion. Against the background of the current economic situation, which has a specific character, the enterprises of the event industry need to apply special measures for the prosperous life of the event industry, namely:

1. Adapt to customer requests. Many heads of event enterprises note that in the current situation, more than ever, one should be as "flexible" as possible in relation to customers: move on dates, respond quickly to requests, change prices. In addition, many companies sign long-term contracts and promote the idea of interacting with customers - working for a long time.

2. Package offers. Given the economic situation, the consumer will clearly be looking for more profitable and cheaper options. Here, ready-made cases can serve as

the key to preserving the profit of organizations, which, due to the volume, will be able to offer a lower cost of the service than if he collected it by individual components.

3. State assistance. As well as many business areas in Russia, the event industry needs government support, especially since this area, along with tourism, has turned out to be one of the most affected.

Moreover, we can talk here not only about the financial aspect, but rather the development of a certain scheme of operation of such enterprises, and, as a result, the opportunity to organize events.

Thus, for the development of the event business in Russia, it is necessary to train managers who will monitor compliance with measures to improve the quality of services and look for relevant ways to solve emerging problems.

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Gurkin Saveliy Mikhailovich, master's student of the 2nd year of "tourism and hotel business" department, sava.guras@gmail.com, russia, moscow, federal budgetary educational institution of higher education "Russian university of sport "GTSOLIFK".

ОСОБЕННОСТИ РАЗВИТИЯ ИВЕНТ-МЕНЕДЖМЕНТА В РОССИЙСКОЙ ФЕДЕРАЦИИ

Гуркин Савелий Михайлович, магистрант 2 курса кафедры «Туризма и гостиничного дела», sava.guras@gmail.com, Россия, Москва, Федеральное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Статья посвящена изучению одного из самых молодых и перспективных направлений в досуговой сфере – ивент-индустрии. В статье рассмотрены определения понятия ивент-индустрии и ее особенностям развития в Российской Федерации в последние годы. Целью исследования является анализ нынешнего состояния ивент-индустрии в России и перспектив ее развития. Существенным результатом исследования является определение необходимых усовершенствований в ивент-индустрии на российском рынке услуг.

Ключевые слова: ивент-менеджмент, event-услуги, событийный маркетинг

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UDC 796

BEACH SPORTS: VARIETIES AND INDICATORS OF THE MAJOR INTERNATIONAL COMPETITIONS

Gusev A.A.

Abstract. *The work presents the features and tendencies of the beach sports development at the current stage.*

Keywords: *beach sports, complex competitions, indicators of World and Olympic competitions*

Introduction. Beach sports is a unique concept developed for the promotion of physical activity and sports on the beaches and in coastal areas, aimed at expanding the participation of various segments of the population, promoting social integration, sustainable development and spreading values related to a healthy lifestyle.

The aim is to find out how interesting it is and how many international countries want to take part in the beach games.

Methods and organization of the study. The study used the methods of historical, comparative and statistical analysis, synthesis and generalization.

The results of the study. Beach sports are a category that includes all organized sports that involve activities on the beach or on a sandy surface. Some of them are traditional outdoor sports that have been adapted to play on the sandy surface of the beach, while others have developed independently as suitable for the beach environment. The All-Russian Association of Beach Sports was created on June 20, 2014. The inauguration meeting took place in the building of the Olympic Committee of Russia. The list of beach sports includes many varieties of traditional classic sports, as well as sports that originally arose for activities in the water and on the sand, the most common and well-known are:

Windsurfing – a type of sailing sport, the essence of which is a competition in

the mastery of handling a «sailing board» or «windsurfer» on water.

Beach basketball – a type of basketball played by teams of three players on a sandy surface, the goal is to score points by stopping the ball from reaching the opponent's basket, the duration of one game is ten minutes;

Beach Wrestling – style of wrestling in the standing position, carried out on the beach sand.

Beach volleyball – a type of volleyball played by teams of two players and with teams on the sand.

Beach handball – a type of handball played by teams of no less than 4 players on the sand (goalkeeper and three field players), two periods of ten minutes each, the goal is to score points by making the ball reach the opposing team's goal on the platform.

Beach rugby – a type of rugby played on the sand by teams of four to seven players, the goal is to score points by stopping the ball from landing in the goal area, the duration of the game also varies – they play two halves of 5-7 minutes.

Beach football – a type of football played by teams of two players and with teams on the sand, the ball is kicked only with the feet, the goal is to score points by scoring the ball into the opponent's goal on the field.

In addition to the most common beach types, the list also includes: beach golf – a simplified version of golf played on the sand with a polyurethane foam ball; beach woodball – a version of woodball played on the sand, which includes the use of a mallet to pass the ball through the goal; beach tennis – a type of sport in which there are elements of tennis and volleyball; beach sambo – a modified version of sambo played on the sand, with bouts lasting three minutes, without penalties and wrestling on the mat; frescobol – a beach type of sport similar to beach tennis, played in Brazil.

There are more than a dozen international games and complex tournaments for beach sports in the world.

World Beach Games – complex sports competitions that first took place in October 2019. Initially, they were planned to be held in San Diego, but due to financial problems, they were moved to Qatar. The event was organized by the Association of National Olympic Committees.

In the sports program of the World Beach Games 2019 the following types are included: basketball (3x3), water skiing (wakeboarding, water skiing), karate (kata), sailing (kiteboarding), open water swimming, beach wrestling, beach volleyball (4x4), beach handball, beach tennis, beach football; skateboarding (park), sports climbing (bouldering), triathlon (aquathlon). Representatives of Spain, Brazil and Italy managed to achieve the greatest success at the end of the Games, winning three first places in terms of the number of prizes won. The Russian national team took the sixth place at the first World Beach Games in the team medal scoring, with 7 medals in the bankroll of our athletes (2, 2, 3). The II World Beach Games were supposed to take place in 2021, but due to the coronavirus pandemic, they were postponed and are expected to be held in 2023 in Indonesia. The main indicators of complex competitions in beach sports are presented in table 1.

Table 1. – Main indicators of World and regional beach games

Name	Year of Games	Year, place	Quantity	
			countries	Types of sports
World beach games	2019	2019, Doha	97	13
African beach games	2019	2019, o. Sal	54	11
Asian beach games	2008	2008, Bali	41	17
		2010, Muscat	41	14
		2012, Haiyan	43	13
		2014, Phuket	42	26
		2016, Danang	41	14
		2020 (transferred 2023)	–	–
South American beach games	2009	2009, Montevideo	15	10
		2011, Manta	13	10
		2014, La Guaira	12	10
		2016, Pimentel	14	10
		2019, Rosario	14	15
Mediterranean beach games	2015	2015	24	11
		2019	26	11
South Asian beach games	2011	2011	8	10

South American beach games – held since 2009 especially once every two years, are a ten-sport beach event in which the countries of South America compete. In 2019 Championships in 15 sports were held at the South American Beach Games. The Games are held under the leadership of the South American Sports Organization (ODESUR). In the sports program of the South American Beach Games 2019 the following types are included: windsurfing, water skiing, rowing (rowing and canoeing), sailing, open water swimming, beach volleyball, beach handball, beach rugby, beach tennis, skateboarding, triathlon. Athletes from Brazil, Argentina and Ecuador won the largest number of medals at the end of all previous Games.

African Beach Games – a continental sports event held among athletes from Africa, were established in 2015. Association of National Olympic Committees of Africa (ANOKA). The African Beach Games took place for the first time in June 2019. Athletes from fifty-four African countries took part in the eleven sports competitions. In the sports program of the African Beach Games 2019 the following sports are included: basketball (3x3), rowing and canoeing, karate, sailing (kiteboarding), athletics, open water swimming, beach volleyball, beach handball, beach tennis, beach football, freestyle football. Athletes from Morocco, Algeria and Tunisia won the largest number of medals at the end of the Games.

Asian Beach Games – a sports event established by the Olympic Council of Asia, is held every two years among athletes representing the Asian region. The first Games were held in 2008, and since then they have been regularly held in various Asian cities. Athletes representing Thailand, Vietnam and China won the highest number of medals at the end of all past Games.

Mediterranean beach games – the decision to hold which was taken in 2012 by the International Committee of the Mediterranean Games. The Games are held every four years, and have actually been held twice – in 2015 and 2019. Representatives of

the Mediterranean countries take part in these competitions. Athletes representing Italy, France and Greece won the largest number of medals following the results of the last two Games.

South Asian beach games were held once in 2011 in Hambantota, Sri Lanka. These Games became the largest complex competitions that took place in this city. It is noteworthy that the sports program of the Games included not only traditional types of beach sports, but also such types as kabaddi - a traditional Asian game; netball – sports game for women, similar in characteristics and rules to basketball; tentpegging – ancient Asian game, type of equestrian sport, the essence of which is to pierce the target on the field with a spear (or sword) while riding a horse; and rescue skills competitions. Athletes representing India, Sri Lanka and Pakistan won the largest number of medals at the South Asian Beach Games.

Conclusions. Despite the relatively young history, international complex competitions in beach sports attract a large number of people who want to take part in them, as well as cheer for the athletes. The leaders of the World Beach Games are teams from Spain, Brazil and Italy; South American beach games - athletes from Brazil, Argentina and Ecuador, African beach games – representatives of Morocco, Algeria and Tunisia, Asian beach games – teams of Thailand, Vietnam and China, Mediterranean beach games – athletes representing Italy, France and Greece.

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Gusev A.A., alexgusev71@mail.ru, Department of Sports Diplomacy, Physical Education, Sports and Olympic Education, Russian university of sports «GTSOLIFK», Moscow, Russia.

ПЛЯЖНЫЙ СПОРТ: РАЗНОВИДНОСТИ И ПОКАЗАТЕЛИ КРУПНЕЙШИХ МЕЖДУНАРОДНЫХ СОРЕВНОВАНИЙ

Гусев А.А. alexgusev71@mail.ru, Кафедра спортивной Спортивной Дипломатии, физической культуры, спорта и олимпийского образования, Федеральное государственное бюджетное образовательное учреждение высшего образования “Российский университет спорта “ГЦОЛИФК”, 105122, Москва, Россия

Аннотация. В статье представлены особенности и тенденции развития пляжного спорта на современном этапе.

Ключевые слова: пляжные виды спорта, комплексные соревнования, показатели мировых и олимпийских соревнований

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UDC 373.51

EXPLORING THE DIVERSITY OF PHYSICAL EDUCATION TEACHERS IN CHINESE PRIMARY AND SECONDARY SCHOOLS

Hao Zhenzhu

Abstract. Combined with the characteristics of the physical education teacher industry, this article analyzes retirement from three aspects: athletes' own employment, competitive sports development, and strengthening school sports work. The necessity of athletes transforming into physical education teachers, and analyzing the feasibility of retired athletes transforming into physical education teachers from three aspects: policy support, own quality and social needs.

Keywords: physical education teachers, retired athletes, feasibility, necessity

Introduction. Given the wide coverage of basic education in China, the large urban-rural disparities and the relative lack of physical education resources, the shortage of physical education teachers in primary and secondary schools has always been a shortcoming in the development of basic education, but it is difficult to solve the employment problem of the huge number of retired athletes every year.

Goal. Therefore, this paper explores the diversity of physical education teachers, in order to make rational use of these human resources.

1. Analysis of the necessity for retired athletes to transform into physical education teachers.

Effective ways to achieve post-retired employment for athletes.

There are two main ways for Chinese athletes to find employment after retirement: firstly, the government implements the policy of resettlement; secondly, they choose their own career. Physical education teachers, as a more relevant job, have become a good choice for retired athletes' employment. Through the participation of the government, society, schools and other ways, not only can solve the athlete retirement placement work, but also expand the field of social work for retired athletes from a new perspective [1].

Effective ways to promote the sustainable development of competitive sports

Athletes, as the most core element of competitive sports, are irreplaceable direct participants in the process of building a strong sports nation, and irreplaceable special human resources in the country's economic and social development [2]. From a practical point of view, the employment situation of retired athletes is good or bad, which directly affects the supply of reserve talents for competitive sports in China. Promoting the transformation of retired athletes into physical education teachers can not only provide vitality for the structural shortage of physical education teachers in China, but also enable retired athletes to fully develop this high-quality resource.

Effective ways to strengthen physical education in schools.

2021 July, the General Office of the State Council again issued a policy, and "to make up for the full complement of primary and secondary school teacher preparation and after-school sports services put forward the requirements" [3]. However, due to the diversification of sports and organizational content of physical education teaching, physical education teachers still face the problems of insufficient quantity and low quality, which make it difficult to meet the requirements of physical education teaching in schools.

2. Feasibility analysis of retired athletes' transition to physical education teachers.

Policy factors: providing policy guarantees for the transition of retired athletes.

In 2007, the State General Administration of Sport's Provisional Measures for the Employment of Athletes gives preference to retired athletes with teaching qualifications to become physical education teachers. In 2015, the General Office of the State Council Opinions on Strengthening School Sports to Promote Students' Physical and Mental Health and Overall Development encourages outstanding retired coaches and athletes to serve as part-time physical education teachers. In 2022, in the newly revised "Sports Law of the People's Republic of China", schools give priority to hiring outstanding retired athletes who meet relevant conditions to engage in school physical education and training activities. It can be seen that national policies actively encourage retired athletes to enter campuses and provide policy support and guarantee for retired athletes to enter teaching positions.

Professional factors: athletes' professionalism translates into teacher literacy.

The professional sports quality is outstanding, and the excellent athletes have a complete technical system and training system, which can clearly explain the technical movements from different levels in sports teaching [4]. After the reform of school sports, the professionalism of physical education teachers has put forward higher requirements, and athletes have excellent sports skills level [5]. Athletes have a strong sense of collectivism and patriotism, respect for opponents in the game, abide by the rules of the rules of consciousness, is conducive to the formation of the students' sense of rules and enhance the ability to resist frustration.

Social demand: insufficient effective supply of physical education teacher resources.

There is a large shortage of outstanding physical education teachers, providing a large number of positions for retired athletes to engage in physical education work. 2021, the General Office of the State Council jointly issued the "Opinions on Comprehensively Strengthening and Improving School Physical Education Work in the New Era", which "encouraging primary and secondary schools, sports teams, sports professional clubs, and social organizations to carry out after-school training" [6]. Retired high-level athletes, can be appropriate to fill the gap of physical education teachers.

Conclusion. Promoting the transition of retired athletes into physical education teachers can not only effectively solve the contradiction between the supply and demand of physical education teachers, but also strengthen the development of school sports, which plays an important role in the construction of high-level school sports teams.

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Hao Zhenzhu Ph.D. student, lecturer 592790344@qq.com, North China University of Water Resources and Electric Power, Zhengzhou, China

ИЗУЧЕНИЕ РАЗНООБРАЗИЯ УЧИТЕЛЕЙ ФИЗКУЛЬТУРЫ В КИТАЙСКИХ НАЧАЛЬНЫХ И СРЕДНИХ ШКОЛАХ

Хао Чжэньжу, аспирант старший преподаватель 592790344@qq.com, Северо-Китайский университет водных ресурсов и электроэнергии, Чжэнчжоу, КНР

Аннотация. В сочетании с характеристиками профессии учителей физической культуры в этой статье анализируется выход на пенсию с трех точек зрения: трудоустройство самих спортсменов, развитие спортивных соревнований и усиление школьной спортивной работы. Необходимость превращения спортсменов в учителей физической культуры и анализ возможности превращения спортсменов-пенсионеров в учителей физической культуры с трех точек зрения: политическая поддержка, собственное качество и социальные потребности.

Ключевые слова: учителя физической культуры, спортсмены-пенсионеры, осуществимость, необходимость

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UDC 316

EXPERT ASSESSMENT OF THE DEVELOPMENT OF SPORTS INFRASTRUCTURE OF THE CAPITAL CITY

Iazykeev A.N., Pereverzeva N.A.

Abstract. The article deals with the issues of sports infrastructure development as an important component of public health formation. On the basis of the analysis of expert interviews the approaches to increase the economic efficiency of sports facilities and the possibilities of using the infrastructure of major sports competitions for the development of urban environment are demonstrated.

Keywords: physical education, public health, sports infrastructure

Introduction. One of the most acute problems of the current stage of development of the Russian society is undoubtedly the issues related to the improvement of the demographic situation. This problem is closely connected with the issues of preservation and promotion of public health, popularization of a healthy lifestyle, physical **education** and sports. The rapid expansion of Moscow over the last 20 years, with more than twofold increase in population, actualizes the problem of development of sports infrastructure of the capital. The priority on housing and transport construction creates a situation of ever-increasing shortage of sports facilities of different levels: from backyard playgrounds to large sports stadiums. A separate issue is the adaptation of sports facilities to the needs of different age groups, as well as persons with disabilities.

Accessibility of physical training and sports is closely connected with the issues of payback of sports facilities, their profitability and the cost of services affordable for different segments of the population. Strategies for the development of the capital's sports infrastructure should take into account the experience of preparing for such large-scale events as the 2013 Summer Universiade, the 2014 Olympic Games and the 2018 FIFA World Cup. On the threshold of the BRICS sports games announced for 2024, this task becomes even more urgent.

Modern concepts of physical *education* describe it in terms of a culture of health, a mobile lifestyle, humanistic aspects of mass sport, positive emotional experiences from playing sports [1]. The importance of regular physical activity for the promotion of public health is noted in works on the improvement of urban environment [2]. There are many studies devoted to the development of sports infrastructure, most of which are local in nature, considering the situation in individual regions. The analysis of the experience of holding large-scale sporting events is given from the point of view of the economy of objects [3], peculiarities of tourist flows [4], as well as the prospects for the development of sports tourism [5]. At the same time, there have been no studies devoted to expert analysis of the problems of creation and functioning of sports infrastructure in a large metropolis.

The social research agency "Stolitsa" with the direct participation of the author conducted research by conducting 30 expert interviews, among the experts were selected representatives of the Department of Sports of Moscow, managers of sports facilities, architects and urbanists, as well as representatives of public organizations involved in the promotion of healthy lifestyles, popularization of physical *education* and sports. The main results of the expert opinion analysis are reflected in this article.

The purpose of this study is to assess the impact of large-scale sports competitions on the development of the sports infrastructure of the metropolis. And also, to what extent the effect of international tournaments can be comprehensive and long-term.

Methods: the method of expert interviews, secondary analysis of sociological research materials.

Affordable sport: quantitative and qualitative characteristics. Most experts believe that there is an imbalance between the construction of large sports facilities and low-budget facilities: despite a fairly wide offer of sports services in Moscow, there is a clear shortage of budget and free facilities for mass sports. Another important point in assessing sports infrastructure is its adequacy to the needs of the population. The problem is that little account is taken of the climatic specifics of Moscow. Despite the presence of a large number of sports grounds in yards and parks, there are not enough budget or free indoor sports halls where citizens could practice sports at any time of the year. The existing budget gyms are heavily overloaded, and citizens often have to spend a lot of time to get to any of them. Experts focus on the problems of children's sports: there are not enough accessible facilities for them, there are few qualified coaching staff, and there are gaps in legislation regarding field events and budgeting control. Socializing is also important for this age group, open venues are not always suitable for this, and there is a need for closed halls.

The survey participants see three main problems in the operation of backyard playgrounds: lack of study of the population's demand for types of equipment and gear; insufficient work on the organization of sports activities on existing playgrounds, poor promotion of healthy lifestyles; low functionality of sports areas and not always competent installation of equipment.

City authorities and the development of sports infrastructure in the capital. Experts note that the commercial success of sports facilities requires joint efforts of city authorities and small businesses to increase the attendance of these facilities. The attendance criterion should be the main one when deciding on the

construction of various types of sports facilities. For this purpose, it is necessary to work on the formation of the information field. To this direction experts refer popularization of sports activities through mass media, various PR-events among the population living in the immediate vicinity of sports infrastructure facilities.

As for the new construction, experts suggest focusing on small sports complexes with gyms of the format popular among citizens. After studying the population's demand for sports facilities and comparing the data obtained with the existing sports infrastructure development programs, it will be possible to unify these facilities, as well as some of their equipment. This will make it possible to save budget funds and optimize the management system of such facilities. But this does not mean complete unification - the demands of local territorial communities will be taken into account in the construction and operation of sports facilities.

An important aspect of sports infrastructure construction is to take into account the transportation situation of the city. The most suitable from the point of view of traffic flow optimization is the uniform distribution of sports facilities. One of the solutions here can be a program of development of fast-built complexes for sports.

Experts are sure that there is an imbalance in the distribution of sports facilities. Districts with high building density experience a clear deficit of such facilities. In order to avoid this in the future, it is necessary to include these facilities in the planning stage of new residential development. For large sports facilities, a strategy of maximum integration into the urban environment should be followed. It should be taken into account that such large-scale facilities have an image effect for the territories.

The survey participants point out that the improvement of the economic efficiency of sports facilities is hampered by some shortcomings in the legal and regulatory framework. The interviewees highlight the following problems in the legal regulation of this sphere: the rights, legitimate interests and obligations of all participants of the sphere of service of operated commercial real estate objects are not formulated; the interests of all participants of legal relations are not taken into account and developed; there is no balance of interests of all participants of legal relations in the use of sports and entertainment facilities.

Cost-effectiveness and risks of construction of large-scale sports facilities.

Most experts agree that in terms of economic efficiency the construction of large-scale construction projects is at a low level, and as proof of their thesis they cite numerous examples both in Russia and abroad. At the moment, the number of private sports clubs in Russia is minimal. The construction of large-scale sports facilities cannot objectively be a purely commercial project; the government plays a priority role here. The only difference is the degree of business participation in the construction and further operation of facilities.

Assessing the use of sports facilities after the Olympic Games and the Universiade, experts consider the strategy of reusing this infrastructure to be the most optimal. Of course, events of this scale cannot be frequent, but smaller events will allow the sports facilities to be partially utilized. The survey participants consider the use of sports infrastructure for external and internal tourism to be a rather important strategy, but they doubt that all host cities of the upcoming tournament will be able to achieve this result.

Experts note that in addition to the economic side there is another, more important facet of the phenomenon under consideration. The construction of sports facilities in the long term can give a lot of positive long-term strategic effects, but they are difficult to quantify. First and foremost, it is an investment in national health and social well-being. Consequently, the commercial side of sports facilities construction should not prevail. The main task of mega sporting events is to improve the image of the country and specific cities.

Strategies to improve the economic efficiency of sports facilities. Experts are skeptical about the full payback of large sports facilities. A more realistic approach is to think through strategies to achieve operational break-even. Well-known international practices are: finding an anchor tenant and working with sponsors, using stadiums for concerts, festivals and other mass entertainment events, renting out part of the premises, organizing the work of clubs, bars, cinemas and stores. Experts draw attention to the fact that pricing policy and the quality of the organization of the spectator arrival system are important for ensuring high domestic attendance.

Stimulating the development of sports organizations and commercial clubs can also affect the payback of stadiums. Experts believe that the risk of underutilization of sports facilities can be minimized by creating universal multifunctional complexes that organically fit into the urban environment. This requires a concept of development and further utilization of this infrastructure. The survey participants are confident that despite the large number of sports facilities, Moscow will operate large facilities more successfully than other Russian cities.

Experience in the development of sports infrastructure in preparation for the 2018 FIFA World Cup. The vast majority of experts agree that the host cities of the World Cup have received an additional impetus for development. However, assessments of the strength and significance of such an event for urban development vary considerably. The positive argumentation is quite homogeneous and boils down to the idea that the construction of large sports facilities is usually accompanied by the development of accompanying infrastructure. First of all, it is a transportation and service network of facilities. The next positive factor the interviewed experts consider to be the intensification of business activity. Businesses have additional opportunities to use the service infrastructure (cafes, hotels, shopping and entertainment centers, etc.) not only for the period of the matches, but also after the Mundial. Another undoubted plus is the improvement of opportunities for sports activities of the city dwellers and the organization of major competitions.

Negative arguments are based on skeptical forecasts regarding the further use of large sports facilities. First of all experts doubt the economic efficiency of these projects, since the modern soccer industry is underdeveloped in Russia, and the further use of stadiums implies a significant burden on the city budget. The survey participants believe that the economic effect from the temporary influx of tourists to the cities hosting the 2018 FIFA World Cup is not comparable with the costs of building large sports facilities. If we take into account the unfavorable economic situation in the country, the consideration of the World Cup outside this context does not give a realistic Figure. Respondents express doubts about the scale of construction of related infrastructure, as the commissions responsible for

construction, despite the existence of comprehensive programs for the preparation for the 2018 World Cup, in the conditions of the crisis allocated funds mainly for the sports venues themselves.

The strategy of the city authorities for the reconstruction of the Luzhniki sports complex. All experts expressed their approval of the city authorities' strategy for the reconstruction of the Olympic complex. The survey participants believe: "Luzhniki" is one of the most important symbols not only of Moscow but also of the whole Russia. Therefore, it was very important to preserve the historical appearance of this sports facility. The construction of a new stadium would have disturbed the image of the whole sports zone, the center of which is the stadium. The project of reconstruction of the Grand Sports Arena and the whole complex corresponds to the modern European approach to the preservation of historical sports facilities. Experts consider the economic feasibility of this project acceptable, since in this case the costs of construction and reconstruction are practically comparable.

Conclusions. Most experts note the imbalance between the construction of large sports facilities and low-budget facilities. In order to increase the occupancy rate of sports facilities, it is necessary to create a system of monitoring the needs of citizens in sports services. The work of the city authorities in promoting healthy lifestyles and sports should also be intensified. There is a need for activities that will be aimed at the residents of specific territories.

If we consider the construction of large-scale sports facilities only from the economic point of view, the reasons for the unprofitability of such projects become obvious. These are the economic situation in the country, which forces to save money on the accompanying infrastructure; the low level of development of business related to sports; the qualitative specificity of mega sports projects – it implies the use of state resources. However, the main objective of mega sporting events is to improve the image of the country and specific cities, as well as to invest in the health of the nation.

A realistic approach to further utilization of sports infrastructure is to develop a strategy to bring the facilities to operational break-even. In order to integrate these facilities into the urban environment and enhance economic development, a comprehensive program for the further use of this infrastructure should be developed.

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Iazykeev Andrey Nikolaevich, undergraduate student, yazukeev@live.ru, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK"

Pereverzeva Nataliya Aleksandrovna, PhD, associate Professor of the Department of foreign languages and linguistics, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK"

ЭКСПЕРТНАЯ ОЦЕНКА РАЗВИТИЯ СПОРТИВНОЙ ИНФРАСТРУКТУРЫ СТОЛИЦЫ

Языкеев Андрей Николаевич, магистр, yazukeev@live.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Переверзева Наталья Александровна, к.ф.н., доцент Кафедры иностранных языков и лингвистики, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Аннотация. В статье рассматриваются вопросы развития спортивной инфраструктуры как важной составляющей формирования общественного здоровья. На основе анализа экспертных интервью демонстрируются подходы к повышению экономической эффективности спортивных сооружений и возможности использования инфраструктуры крупных спортивных соревнований для развития городской среды.

Ключевые слова: физическое воспитание, здравоохранение, спортивная инфраструктура

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CORRECTION OF LARGE AND FINE MOTOR SKILLS OF TEENAGERS 14-16 YEARS WITH A COMPLEX DEFECT STRUCTURE BY MEANS OF ADAPTIVE PHYSICAL EDUCATION

Islamova A.R., Rubtsova N.O.

Abstract. *The article discusses the results of a pedagogical experiment aimed at developing and experimentally verifying a technique for correcting the psychomotor development of teenagers with a complex defect structure by means of adaptive physical education. To identify the positive dynamics of indicators of the level of development of large and fine motor skills indicators in adolescents with this pathology, pedagogical testing was conducted. The results of the study show a positive dynamics of the influence of the experimental technique on the development process of teenagers with this pathology, however, no significant differences were found.*

Keywords: *complex defect structure, cerebral palsy, mental retardation, psychomotor skills, adaptive physical education*

Introduction. Infantile cerebral palsy is one of the main causes of neurological disability in children. In 2022, the Russian Ministry of Health published the following data: the incidence of cerebral palsy in premature children is 2.2-3.3 cases per 1000 newborns; among premature children it is 9-24 per 1000. Often cerebral palsy is accompanied by disorders of mental development. In particular, mental retardation is found in 13-40% of persons with cerebral palsy [3]. In these cases we are talking about a complex structure of the defect.

In persons with a complex structure of the defect all motor functions are significantly affected and psychomotor development is delayed. Often the chain setting reflexes do not develop, they cannot sit, stand and walk independently [1], which significantly complicates the process of their social adaptation. Therefore, the development of psychomotor skills, cognitive functions, and strengthening of postural musculature is important for this contingent.

Purpose of the study: to evaluate the effectiveness of the influence of the developed methodology on the process of correction of defects of psychomotor development in adolescents 14-16 years old with a complex structure of the defect by means of adaptive physical education.

Research methods. Analysis of scientific and methodological literature, pedagogical observation, pedagogical testing (tests to assess the level of functional state of the body, goniometry, assessment of muscle tone on a modified Ashworth scale, tests to assess the level of development of fine motor skills, tests to assess the level of development of large motor skills, tests to assess the level of development of physical qualities), pedagogical experiment, methods of mathematical statistics.

Organization of the study. The study was carried out on the basis of the Family Support Center "Skolkovsky". The study involved 16 people (boys and girls aged 14-16 years) with cerebral palsy (spastic tetraparesis, GMFCS level V) and mental retardation of moderate and severe degree. The subjects also had the following secondary and concomitant disorders: symptomatic epilepsy, general underdevelopment of speech, visual impairment, minor anomalies of heart

development, scoliosis of III-IV degree, contractures of major joints, foot deformities, and hip joint dislocations. Eight people (4 boys and 4 girls in each group) were selected for the experimental and control groups. The duration of classes in each group was 45 minutes. Classes in the experimental group were conducted 5 times a week for 6 months according to the developed methodology. The control group practiced 5 times a week according to the generally accepted methodology under individual rehabilitation programs.

In order to study the initial degree of deviations in psychomotor development in tennagers with a complex structure of the defect, we conducted a confirmatory experiment. The analysis of the results of the experiment showed that the subjects of the control and experimental groups did not differ significantly in all the studied indicators, the groups were selected correctly.

Based on the analysis of the scientific literature and the results of the formative experiment, we developed an experimental methodology. The content of the experimental method of correction of psychomotor skills of teenagers with a complex structure of defect by means of adaptive physical education included 4 blocks of exercises:

1. Corrective-developing exercises: exercises to reduce muscle spasticity; correction of posture disorders; exercises to improve joint mobility; exercises to correct articulation motor skills;

2. Special exercises for the development of physical qualities (coordination, endurance, strength, flexibility);

3. Exercises for the development of large motor skills: formation of skills to hold the head and support on the hands, turning over from the stomach to the back and back, crawling on all fours, transition to a sitting position from lying down.

4. Exercises for the development of fine motor skills: exercises and games for the formation of object actions, games with different types of materials, finger gymnastics.

Children with cerebral palsy have delayed or impaired formation of all motor skills such as holding the head, sitting, standing, walking and manipulative activities. Individuals with double hemiplegia have low motor potential in lying and sitting exercises, and very weak in crawling, kneeling, standing and walking. Almost all children do not perform exercises from the last three blocks. This is due to severe muscle and joint disorders [4]. To correct this type of disorders, our methodology included exercises to correct large motor skills.

This contingent is also characterized by delayed development and insufficiently formed motor skills and abilities, they may have difficulties in performing tasks with various objects. It may be difficult for them to grasp and hold objects of different shapes and sizes. To form these skills, our methodology also included various exercises for fine motor skills.

As a result of the pedagogical experiment, the average indicators of the control group were higher than those of the experimental group, but no reliable changes were revealed.

Both groups had level V on the GMFSC scale, and there were difficulties in lifting the head and holding it in a forearm-supported position, as well as in other tests. However, most of the test takers in the control group were able to perform the task independently, when in the control group, adult guidance was required to obtain similar results. A longer period of remedial classes is required for reliable differences to appear.

Table 1. – Assessment of the level of development of large motor skills according to the modified GMFM-88 scale in teenagers with complex structure of the defect in the experimental (EG) (n=8) and control (n=8) groups (CG) after the experiment

№	Name of the test	EG			CG			U*
		25%	Me	75%	25%	Me	75%	
1.	Head elevation (score)	3,00	2,87	3,00	2,00	2,62	3,00	24
2.	Hand support (score)	2,75	2,75	3,00	2,00	2,50	3,00	27
3.	Back flip over the right side (score)	2,00	2,50	3,00	2,00	2,25	3,00	26
4.	II Back flip over the left side (score)	2,00	2,50	3,00	2,00	2,12	2,25	22
5.	Transition to sitting position (score)	1,75	1,75	2,00	1,00	1,62	2,00	28

**Differences are significant: U cr. = 15 at $p \leq 0.05$*

In tests to determine the level of fine motor skills, the experimental group showed higher average results, but no reliable differences were also revealed.

Table 2. – Assessment of the level of fine motor skills development in teenagers with complex structure of defect in experimental (EG) (n=8) and control (n=8) groups (CG) after the experiment

№	Name of the test	EG			CG			U*
		25%	Me	75%	25%	Me	75%	
1.	"Pick up a ball" (score)	2,00	2,25	3,00	2,00	2,00	2,00	25
2.	"Flashlights" (score)	2,00	2,50	3,00	1,75	2,12	2,25	23,5
3.	"Knuckles" (score)	2,00	2,37	3,00	2,00	2,00	2,25	23
4.	"Worms" (score)	2,00	2,00	2,00	1,00	1,62	2,00	21,5

**Differences are significant: U cr. = 15 at $p \leq 0.05$*

The level of development of fine motor skills directly indicates the state of intelligence, development of cognitive functions and coordination abilities. In case of existing disorders of the nervous system and musculoskeletal apparatus, it should be taken into account that a longer period of remedial classes is necessary for the appearance of reliable changes.

Conclusions. The analysis of scientific literature and the results of the ascertaining experiment show that teenagers with a complex structure of the defect have significantly delayed development of large and fine motor skills. As a result of the application of the experimental methodology, there was no reliable increase in the indicators of large and fine motor skills, because this pathology requires a longer period of remedial classes for reliable differences to appear.

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Islamova Alina Renatovna, 4th year Bachelor of the department of adaptive physical education, islamova.alina11@yandex.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK"

Rubtsova Nataliya Olegovna, PhD, head of the department of adaptive physical education, afk_rgufk@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK"

КОРРЕКЦИЯ КРУПНОЙ И МЕЛКОЙ МОТОРИКИ У ПОДРОСТКОВ 14-16 ЛЕТ СО СЛОЖНОЙ СТРУКТУРОЙ ДЕФЕКТА СРЕДСТВАМИ АДАПТИВНОГО ФИЗИЧЕСКОГО ВОСПИТАНИЯ

Исламова Алина Ренатовна, бакалавр 4 курса кафедры Теории и методики Адаптивной физической культуры, islamova.alina11@yandex.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Рубцова Наталия Олеговна, к.п.н., профессор, заведующая кафедрой Теории и методики Адаптивной физической культуры, afk_rgufk@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. В статье рассматриваются результаты педагогического эксперимента, направленного на разработку и экспериментальную проверку методики коррекции психомоторного развития подростков со сложной структурой дефекта средствами адаптивного физического воспитания. Для выявления положительной динамики показателей уровня развития крупной и мелкой моторики у подростков с данной патологией было проведено педагогическое тестирование. Результаты проведенного исследования показывают положительную динамику влияния экспериментальной методики на процесс развития подростков с данной патологией, однако достоверных различий не выявлено.

Ключевые слова: сложная структура дефекта, детский церебральный паралич, умственная отсталость, психомоторика, адаптивное физическое воспитание

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USING TRADITIONAL GAMES IN PHYSICAL EDUCATION OF STUDENTS

Ismagilova L.F., Mutaeva I.Sh., Kuznetsova Z.M.

Abstract. *This article examines the process of using traditional games in the physical education of students, as well as the influence of traditional games on changes in the physical fitness of female students of higher educational institutions. During the research work, it was revealed that traditional games act as a means of increasing the effectiveness of the emotional and physical state of the body of those involved. During the study, the indicators of physical fitness of female students were taken; at the end of the study, significant changes were observed, namely, positive dynamics of all studied indicators.*

Keywords: *students, traditional games, physical education*

Introduction. The process of using traditional games in the physical education of students allows us to compare the traditions of physical education with the requirements of our time, which are aimed at creating positive dynamics of physical development and physical fitness of the younger generation [1, 2].

Thanks to traditional games, traditions, culture, worldviews and attitudes of peoples are transmitted. The use of traditional games in classes of elective disciplines (modules) in physical education and sports (ED(M) in FCiS) and in training sessions in selected sports shows the relevance of research on the topic being studied [1, 2, 3].

Currently, in the process of physical education of student youth, a number of tasks must be solved at once, and namely traditional games that can help us in this. Thanks to the implementation of traditional games, emotional and volitional qualities will be formed in students, characterizing the manifestation of a moral qualities set, mental stability in stressful situations, responsibility for oneself and for a friend. This will also contribute to a conscious interest in physical culture and sports, to an increase in motivation for systematic exercises, which will contribute to positive dynamics in the formation of the motor potential of those involved.

Purpose of the study: to analyze the physical fitness of female students with different physical activity.

Organization and methods of research. The study was conducted on the basis of the Yelabuga Institute of Kazan Federal University in the period from September 1 to December 31, 2023. The study involved 60 female students (2nd year students of the foreign languages department, 15 people in each group, respectively):

- 1st KG – the group studied according to the program – athletics.
- 2nd KG – the group was engaged in training sessions in selected sports - type of sport - arm wrestling.
- 1st EG – the group was engaged in an experimental program - athletics using traditional games in ED (M) classes in physical education and sports.
- EG 2 – the group was engaged in training sessions in selected sports using traditional games- the sport is arm wrestling.

In the control groups classes followed the traditional program – athletics. In the

experimental groups, traditional games were included in both the preparatory (5-7 min), the main (10-15 min) and the final part of the lesson (3-5 min). The use of traditional games is due to the gradual increase in the dynamics of the general physical fitness of those involved.

Research results and discussion. At the beginning and at the end of the study, indicators of female students' physical fitness were taken. Table 1 presents the control standards by which physical fitness was assessed.

Table 1. – Control standards for physical training of university students

Tests	"satisfactory"	"Good"	" Excellent"
Run 2 km, (min., sec.)	12,30-13,00	10,41-12,31	10,40 и <
Bending and extension of the arms while lying down, (number of times)	8-10	11-15	16 и >
Bend forward from a standing position on a gymnastic bench, (sec)	8-10	11-15	16 и >

Table 2 presents the arithmetic mean data on the physical fitness of female students at the beginning and end of the academic year.

Table 2 shows that the physical fitness of female students at the beginning of the study was almost the same for all the studied indicators, however, we note that the girls who enrolled in the training groups passed the standards a little better than the female students who decided to attend only classes in elective disciplines (modules) in physical culture and sports.

At the beginning of the study, CG 1 passed the standard "Running 2 km" with 13.15 ± 0.21 – the mark "unsatisfactory"; at the end this standard was passed with 12.21 ± 0.09 – the mark – "good". 2nd KG passed the standard "Running 2 km" with 12.45 ± 0.15 – grade "satisfactory", at the end this standard was passed with 11.18 ± 0.12 – grade – "good". 1st EG passed the standard "Running 2 km" with 13.16 ± 0.32 – grade "unsatisfactory", at the end this standard was passed with 10.52 ± 0.24 – grade – "good". 2nd EG passed the standard "Running 2 km" with 12.43 ± 0.12 – grade "satisfactory", at the end this standard was passed with 10.22 ± 0.14 – grade – "excellent".

At the beginning of the study, CG 1 passed the standard "Bending and extending the arms in a lying position" with 8.36 ± 0.16 - the rating is "satisfactory", at the end this standard was passed with 11.24 ± 0.14 - the rating is "good". 2nd KG passed the standard "Bending and extending the arms in a lying position" with 10.12 ± 0.28 - the grade is "satisfactory", at the end this standard was passed with 13.18 ± 0.46 - the grade is "good". 1st EG passed the standard "Bending and extending the arms in a lying position" with 8.08 ± 0.06 - the grade is "satisfactory", at the end this standard was passed with 14.39 ± 0.17 - the grade is "good". 2nd EG passed the standard "Bending and extending the arms in a lying position" with 9.28 ± 0.16 - the grade is "satisfactory", in the end this standard was passed with 16.26 ± 0.12 - the grade is "excellent".

Table 2. – Arithmetic mean data of female students' physical fitness at the beginning and end of the academic year

Tests		Run 2 km, (min., sec.)	Bending and extension of the arms while lying down, (number of times)	Bend forward from a standing position on a gymnastic bench, (see)
Study groups				
1 KG	At the beginning	13,15+0,21 – unsatisfactory	8,36+0,16 - satisfactory	9,22+0,18 - satisfactory
	At the end	12,21+0,09 - Good	11,24 +0,14 - Good	13,33+0,26 - Good
2 KG	At the beginning	12,45+0,15 – satisfactory	10,12+0,28 – satisfactory	9,42+0,12 - satisfactory
	At the end	11,18+0,12 - Good	13,18 +0,46 - Good	15,18+0,32 - Good
1 EG	At the beginning	13,16+0,32 – unsatisfactory	8,08+0,06 - satisfactory	9,18+0,38 - satisfactory
	At the end	10,52+0,24 - Good	14,39 +0,17 - Good	16,32+0,27 - Excellent
2 EG	At the beginning	12,43+0,12 – satisfactory	9,28+0,16 - – satisfactory.	11,36+0,47 - Good
	At the end	10,22+0,14 - Excellent	16,26 +0,12 - Excellent	18,02+0,18 - Excellent

At the beginning of the study, the 1st CG passed the standard “Forward bending from a standing position on a gymnastic bench” with 9.22+0.18 - the rating is “satisfactory”, at the end this standard was passed with 13.33+0.26 - the rating is “good” " 2nd KG passed the standard “Forward bending from a standing position on a gymnastic bench” with 9.42+0.12 - the grade is “satisfactory”, at the end this standard was passed with 15.18+0.32 - the grade is “good”. 1st EG passed the standard “Forward bending from a standing position on a gymnastic bench” with 9.18+0.38 - the grade is “satisfactory”, in the end this standard was passed with 9.18+0.38 - the grade is “excellent”. 2nd EG passed the standard “Bend forward from a standing position on a gymnastic bench” with 11.36+0.47 – grade “good”, in the end this standard was passed with 18.02+0.18 – grade – “excellent”.

Consequently, the implementation of traditional games in ED(M) physical education classes and during training sessions in selected sports has a positive effect on the physical qualities of female students, which is proven by the results obtained (table 2). Such a simple way of assessing the physical fitness of female students is accessible, convenient and effective, which allows the implementation of traditional games.

Conclusion. The implementation of traditional games in physical education and sports classes and during training sessions in selected sports makes it possible to solve educational, health and educational tasks, which provide the basis for the formation of physical and spiritual potential in the form of increasing the level of physical development and physical fitness of those involved. In the course of research work, we have proven the facts of successful implementation of traditional games and proven their positive impact.

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Ismagilova Liliya Fanisovna, senior lecturer of the department of theory and methodology of physical culture and life safety, Nastia2014ism@yandex.ru, Russia, Elabuga, Federal State Autonomous Educational Institution of Higher Education "Elabuga Institute (branch) "Kazan (Volga Region) Federal University". 3rd year postgraduate student, part-time course, Federal State Budgetary Educational Institution of Higher Education "Tchaikovsky State Academy of Physical Culture and Sports".

Mutaeva Ilsiyyar Shafikovna, Ph.D., Professor of the Department of Theory and Methodology of Physical Culture and Life Safety, mutaeva-i@mail.ru, Russia, Elabuga, Federal State Autonomous Educational Institution of Higher Education "Elabuga Institute (branch) "Kazan (Volga Region) Federal University".

Kuznetsova Zinaida Mikhailovna, Doctor of Pedagogical Sciences, Professor, kzm_diss@mail.ru, Russia, Naberezhnye Chelny, University of Management "TISBI", Tchaikovsky, Federal State Budgetary Educational Institution of Higher Education "Tchaikovsky State Academy of Physical Culture and Sports".

ИСПОЛЬЗОВАНИЕ НАРОДНЫХ ИГР В ФИЗИЧЕСКОМ ВОСПИТАНИИ СТУДЕНЧЕСКОЙ МОЛОДЁЖИ

Исмагилова Лилия Фанисовна, старший преподаватель кафедры теории и методики физической культуры и безопасности жизнедеятельности, Nastia2014ism@yandex.ru, Россия, Елабуга, ФГАОУ ВО «Елабужский институт (филиал) «Казанский (Приволжский) федеральный университет». Аспирант 3 курса заочной формы обучения, Федеральное государственное бюджетное образовательное учреждение высшего образования «Чайковская государственная академия физической культуры и спорта».

Мутаева Илсияр Шафиковна, к.б.н., профессор кафедры теории и методики физической культуры и безопасности жизнедеятельности, mutaeva-i@mail.ru, Россия, Елабуга, ФГАОУ ВО «Елабужский институт (филиал) «Казанский (Приволжский) федеральный университет».

Кузнецова Зинаида Михайловна, д.п.н., профессор, kzm_diss@mail.ru, Россия, Набережные Челны, УВО ВО «Университет управления «ТИСБИ», Чайковский, Федеральное государственное бюджетное образовательное учреждение высшего образования «Чайковская государственная академия физической культуры и спорта».

Аннотация. В данной статье рассматривается процесс использования народных игр в физическом воспитании студенческой молодёжи, а также влияние народных игр на изменение физической подготовленности студенток высших учебных заведений. В ходе исследовательской работы было выявлено, что народные игры выступают как средство повышения эффективности эмоционального и физического состояния организма занимающихся. В течение исследования снимались показатели физической подготовленности студенток, в конце исследования наблюдаются значительные изменения, а именно, положительная динамика всех изучаемых показателей.

Ключевые слова: студенческая молодёжь, народные игры, физическое воспитание

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UDC 796

USING INFORMATIONAL RESOURCES, NEURON NETWORKS AND SOCIAL NETWORKS / INSTANT MESSENGERS BY THE STUDENTS OF RUSSIAN UNIVERSITY OF SPORT «GTSOLIFK»

Ivanov M.A., s/s Tsakaev S.S.

Abstract. Having based on the questionnaire survey of the students of Russian University of Sport «GTSOLIFK», the informational resources most needed by the students are defined. The most meaningful characteristics of informational resources as well as their use for the purpose of study are revealed. Students' evaluation of their level of informational resources skills is researched. The link of the research findings with the tasks of improvement of learning quality is depicted.

Keywords: informational resources, post-secondary education, informational competence, artificial intelligence

Introduction. Nowadays the continuing digitalization of business, social, management, and professional processes and relations leads to the increased meaning of informational competence of specialists in all spheres of activities. Today the skills of digital technologies handling are formed both in daily life and in school, however specialized skill and knowledge needed in the future work are developed in a higher educational establishment. The development of digital skills of students and teachers linked with their future everyday life and work is examined as one of the goals of digital technologies introduction into the educational process [1]. At the same time

the authors of scientific literature mention some insufficient level of digital tools knowledge [2]. These are the reasons of relevance of the researches in the student environment linked with the problem of students' use of digital technologies.

The **goal** of the research is the evaluation of the demand for different digital tools and resources that are used in the educational processes by the students of Russian University of Sport GTSOLIFK, as well as the level of these tools and resources knowledge.

Methods. The research methods are a questionnaire survey, and literature analysis.

Experiment (Research) Design. In order to conduct the research, 335 students of Russian University of Sport GTSOLIFK were interviewed. The respondents were asked 13 questions. The survey was conducted with the help of the service "Google Forms" in February 2024.

Results Discussion. According to the research, the students of Russian University of Sport GTSOLIFK evaluate their level of educational informational resources skills more often as intermediate one. The high level of such skills is mentioned by only 13-14% of respondents. In addition, best of all the respondents have the skills of electronic libraries use (98,5% of intermediate or high level). The level of such resources skills as academic magazines and articles use is evaluated as "hard" by 72,8% of respondents. 60% of students have a "hard" level of University library resources skills.

The most attractive characteristics of informational resources, according to the students, are availability (86,3%) and variety of information (77,3%). Less valuable characteristics are considered to be economy of time (22,7%) and data updating (14%). Such feature as interactivity was mentioned by only 0,6% of respondents. The worst characteristics of the resources, according to the students, are access security (99,1%), information overload (59,4%), complexity or discomfort in their use (37,3%).

A considerable part of students (40,6%) use chat bots and artificial intelligence systems (AI) in educational (97,1%), everyday (88,4%), and scientific and practical purposes (8,7%). In this respect, 33,3% of respondents believe that they have excellent skills of the mentioned resources use, while 55,8% of respondents believe that they have "hard" level.

The most popular social networks and instant messengers among students, according to the results of the survey, are VK, WhatsApp and TikTok (these resources are used very often by more than 60% of respondents). Telegram is far behind (18,8%), at the same time 58,8% of respondents do not use this messenger at all.

In the chosen social networks students like their usability (83,3%), presence of hobby communities (77,3%) and entertaining content (63,6%) most of all. The most crucial disadvantages, according to the students, are abundance of fake information (98,5%) and the possibility of dependence (76,4%).

The survey revealed big relevance of social networks for communication in groups / forums to discuss learning: 73,1% of students turn to them several times a week, other 22,1% – once or twice a week. As a whole, students consider social networks to be useful in learning. Such opinion was given by 100% of respondents.

Conclusions. The research conducted by us helped to draw the following conclusions:

1. Students of Russian University of Sport GTSOLIFK actively use different

informational resources for the purpose of study, both the resources of general purpose (social networks, messengers, chat bots) and special educational resources (electronic libraries and academic resources).

2. As a whole, students have intermediate educational informational resources skills, however they use chat bots and artificial intelligence systems quite confidently.

3. Such modern type of informational resources as AI system is highly sought by the students, specifically according to the possibility to use it in the educational process.

From our point of view, the research results can be useful in a more accurate finding of means of student informational competence increase, objective evaluation methods, a choice of more effective informational resources for educational purposes, as well as elaboration of the mentioned resources with the aim to increase the level of education.

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Ivanov Maksim Andreevich, postgraduate student of Pedagogy Department, lol9-00@mail.ru, Russia, Moscow, The Russian university of sport "GTSOLIFK".

Scientific supervisor – Tsakaev Sajdamin Shamaevich, Russia, Moscow, The Russian university of sport "GTSOLIFK".

ИСПОЛЬЗОВАНИЕ ИНФОРМАЦИОННЫХ РЕСУРСОВ, НЕЙРОСЕТЕЙ И СОЦИАЛЬНЫХ СЕТЕЙ / МЕССЕНДЖЕРОВ ОБУЧАЮЩИМИСЯ РУС «ГЦОЛИФК»

Иванов Максим Андреевич, аспирант кафедры педагогики, lol9-00@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Цакаев Сайдамин Шамаевич, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. На основании анкетного опроса студентов РУС «ГЦОЛИФК» определены наиболее востребованные студентами информационные ресурсы. Выявлены наиболее значимые для студентов характеристики информационных ресурсов и их использование в целях обучения. Исследована оценка студентами своего уровня владения информационными ресурсами. Показана связь полученных результатов с задачами повышения качества обучения.

Ключевые слова: информационные ресурсы, высшее образование, информационная компетентность, искусственный интеллект

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THE INFLUENCE OF SOCIOCULTURAL FACTORS ON THE DEVELOPMENT OF PERSONALITY AND EDUCATION OF FIGURE SKATERS DURING OFF-SEASON TRAINING CAMPS

Ivanova D.A., s/s Zhgun E.V.

Abstract. *This study explores the influence of sociocultural factors on the development of psychological characteristics in young skaters' personalities. Results from a questionnaire clarified the views of young skaters and their parents from various regions of Russia on participating in off-season training camps. The study also delved deeper into the inclusion of cultural programs in training camps and their effects on skaters' development. The findings reveal a positive correlation between entertainment programs and athletes' psycho-emotional well-being, leading to improved sports performance.*

Keywords: *mental development, sociocultural factors, off-season training camps, figure skating*

Introduction. With the rapid development of modern figure skating, it is evident that the sport has begun to adopt increasingly complex training approaches for figure skaters. This evolution is attributed to the continuously advancing complexity of program elements performed by skaters, leading to intense physical demands from an early age and potential limitations in the child's full mental development due to time constraints.

One common method for specialized training of figure skaters is through training camps, often conducted during the early stages of training at the beginning of the preparatory period (summertime). This training format is generally regarded as an effective tool for enhancing and refining athletes' sports form.

Considering the option of conducting training camps away from the skaters' usual environment, this practice should be viewed as a means to educate and facilitate the mental development of athletes. Over years of preparation, beginning at a young age, skaters may miss out on opportunities to explore the world beyond their daily routines, potentially resulting in a loss of interest in training.

The purpose of this study is to compare the perspectives of skaters and their parents with scientific research on the influence of sociocultural factors within training camps on children's development.

Methods. Participants were recruited through figure skating associations in Republic of Karelia, Saint-Petersburg. Forty-one young figure skating or their parents voluntarily participated in the study.

For this study, we have created one questionnaire, containing 25 items divided in 3 parts. Questionnaire was used to identify information about the participation of young athletes in away training camps, the presence of a cultural component and preferences during rest between training sessions. As a second research method, a literature review was used on the topic of the influence of culture on the development of figure skaters.

The research was conducted between September 2023 and April 2024. Within our study, we applied one questionnaire for perception about the benefits of

participation in off-season training camps and visiting cultural places and studying elements of art during rest between training sessions. The questionnaires were developed with Google Forms and were delivered figure skating coaches who passed them on to their athletes to fill out.

Results Discussion. According to the survey results, only half of the respondents took part in both away and local training camps throughout their entire sports career (fig. 1).

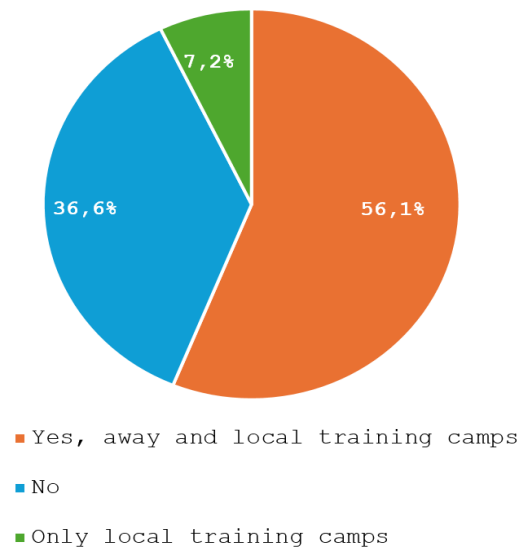


Figure 1. – Participation in career training camps

This can be explained by many reasons, from the lack of financial resources in the athlete's family (since figure skating training camps are quite expensive) to the busyness of parents, which is why they cannot accompany the child.

Off-season training camps in figure skating last on average from 1 to 2-3 weeks, which is a long period of time, especially considering the holiday period. According to statistics, most training camp organizers only offer a training program at a specific location, sometimes including accommodation and meals. And only a few of them include cultural events in the athlete's daily routine.

43% of respondents note the absence of a cultural program as part of the training camps in which they took part, which is confirmed by statistical data (fig. 2).

Due to the long duration of summer training camps, as well as travel to the place where they are held, this phenomenon can be considered not only as a tool for the development of physical qualities, but also as a way to broaden the horizons of young athletes.

As part of theoretical classes, athletes could learn about the history of their sport and the fundamental points of the rules of figure skating. Visiting local theaters, museums, and attractions would be an excellent opportunity to improve knowledge of history and art. This is very important for the skater since each program must present a unique image of the music.

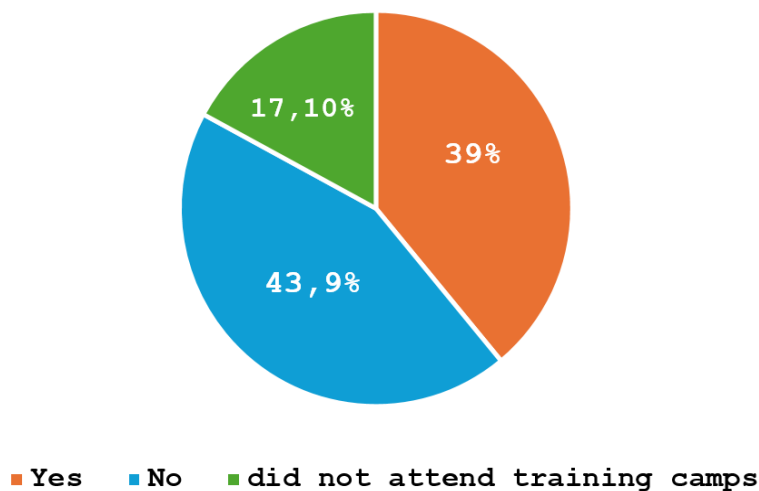


Figure 2. – Was there a cultural program during training camps?

As part of the survey, the athletes themselves and their parents noted that they would be interested in an organized cultural program. Thus, more than 50% were in favor of getting to know the sights and walking around a new place (fig. 3). This indicates a conscious approach to the comprehensive development of children.

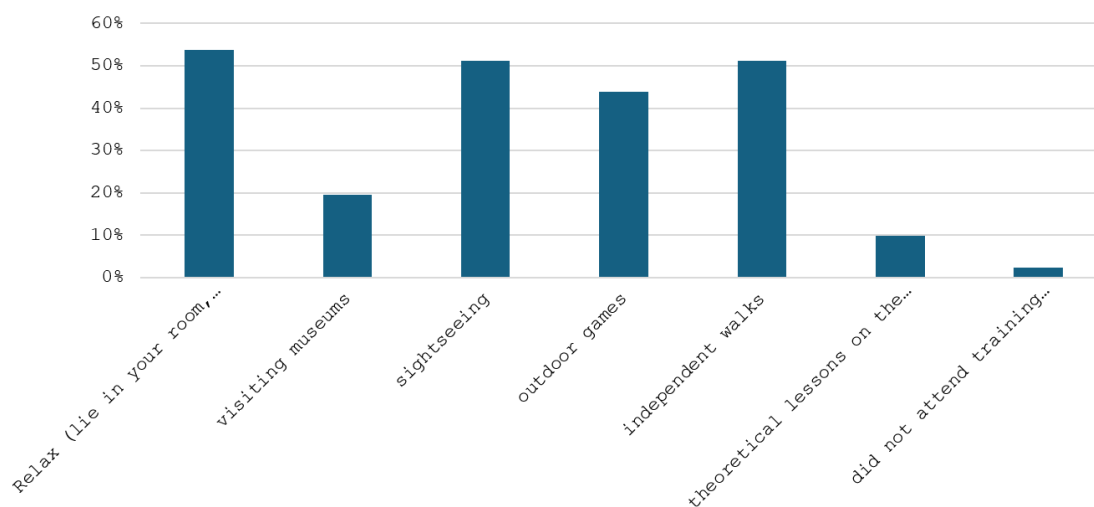


Figure 3. – Preferences in activities during rest

To achieve significant titles and receive awards in figure skating, you need to work on the ice and in the gym for several hours a day. Because of this, athletes must partially give up available entertainment. However, this does not mean that skaters doom themselves to intellectual limitations. After all, figure skating combines knowledge of physiology, biomechanics, choreoFigurey, music, literature, and art [3].

Domestic literature notes the importance for a skater of knowledge and a sense of music, as well as mastery of stage and acting skills [3]. That is why there is a need to develop the habit of visiting theaters and concerts from childhood.

The organization and conduct of training camps in figure skating are rarely mentioned in scientific research, but many authors indicate the importance of

developing not only the physical abilities of skaters, but also expanding their knowledge in the arts and exact sciences [2, 3].

Conclusions. The results of the survey showed the interest of young athletes and their parents in including cultural events in the program of summer training camps. These events should be aimed at expanding the horizons of athletes in the following areas of knowledge: history, choreography, art, music, literature, physiology, biomechanics.

The comprehensive development of young skaters will help not only to form a holistic personality in the future, but also to increase the level of artistry of the athlete, which will lead to higher scores in the components section. This in turn will improve sports results at the current stage.

Thus, off-season training camps are an effective tool for developing not only physical qualities and skills, but also the mental development of an athlete. It is during the vacation period that the opportunity for the comprehensive development of skaters arises without losing the quality of the training process. Moreover, the inclusion of a cultural program in the training schedule will also affect the motivational component of the skaters. It is known that most children have irrepressible activity and curiosity. And even after a hard workout, they will choose to play with their peers in the fresh air rather than lie on their bed at home. Therefore, holding joint classes or events will help direct children's energy in the right direction.

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Ivanova Daria Alekseevna, master's student, ivanova.darja.reu@gmail.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian university of sport "GTSOLIFK".

Scientific supervisor – Zhgun Elena Viacheslavovna, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian university of sport "GTSOLIFK".

ВЛИЯНИЕ СОЦИОКУЛЬТУРНОГО ФАКТОРА НА СТАНОВЛЕНИЕ ЛИЧНОСТИ И ВОСПИТАНИЕ ФИГУРИСТОВ ПРИ ПРОВЕДЕНИИ МЕЖСЕЗОННЫХ ФТРЕНИРОВОЧНЫХ СБОРОВ

Иванова Дарья Алексеевна, студент магистратуры, ivanova.darja.reu@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Жгун Елена Вячеславовна, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данном исследовании было рассмотрено влияние социокультурных факторов на формирование психологических особенностей личности юных фигуристов. На основе проведенного анкетирования было выяснено мнение юных фигуристов и их родителей из разных регионов России об участии в межсезонных сборах. Более подробно был рассмотрен вопрос включения культурной программы в состав сборов и ее влияние на развитие фигуристов. Результатом исследования стало положительное влияние развлекательной программы на психоэмоциональное состояние спортсменов, что также повлияло на улучшение спортивных результатов.

Ключевые слова: внесезонные тренировочные сборы, социокультурный фактор, становление личности, фигурное катание на коньках

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RECOMMENDATIONS FOR IMPROVING GOLF IN RUSSIA

Ivashina P.I., s/s Leontyeva N.S.

Abstract. In the modern world, the development and popularization of golf is observed in many regions. The degree of accessibility of classes and competitions for all segments of the population is increasing, and there is an active process of including golf in the programs of the subject “Physical Education” in schools and other educational institutions. These facts determine not only an increase in golf funding, but also an increase in the level of interest of television audiences and spectators at ongoing championships and majors. It is also important to note that golf is actively developing in our country, however, there is a contradiction between the need for further development and popularization of golf and the lack of comprehensive proposals and recommendations for improving this sport. The results obtained can be the basis for further scientific research, as well as for understanding the trends and prospects for the development of this sport.

Keywords: golf, Russia, Russian Golf Association, recommendations

Introduction. Golf in our country appeared in 1987, when the first golf club opened «Moscow City Golf Club». In 1992 the Russian Golf Association was formed, recognized by the Russian Olympic Committee, the European Golf Association (Switzerland) and the St. Andrews Golf Club (Great Britain) [1].

The **purpose** of our study is to develop proposals and recommendations for improving golf in Russia.

Methods: analysis of literary sources; analysis of documentary sources; systematization and analysis of collected information.

Results (discussion). Despite the relatively short history of the establishment of golf in our country, one can trace the productive performances of russian athletes in this sport. Thus, at the Games of the XXXI Olympiad in Rio de Janeiro (Brazil), Maria Verchenova entered the top 20 players in the tournament table, took 16th place out of 60 players. Our athletes did not participate in the Games of the XXXII Olympiad in Tokyo (Japan), because did not qualify for the Games. Despite the fact that the trigger for the removal of russian athletes from the Olympic Games is politicization, there is an increasing need to develop and implement practical recommendations for the high competitiveness of our athletes in the global sports arena in the conditions of modern realities [1, 2].

In order to improve the development of golf in our country, and in accordance with the new concept of russian foreign policy, as part of solving research problems, based on a comprehensive analysis of the current state of the theory and practice of golf in Russia and abroad, the following recommendations were developed.

Table 1. – Recommendations

Science	The international contribution	Training and competitive process
For the further development of golf as a popular mass sport, simultaneously with the construction of new sports facilities, it is advisable to significantly increase the number and quality of specialists in various fields. The initiative of the Russian Golf Association (RGA), aimed at strengthening human resources, is the organization of advanced training under the «Initial Professional Education» («IPE» -program under the leadership of the European organization uniting national “Professional golf association”).	According to the new «Concept of russian foreign policy», the comprehensive deepening of ties and coordination with friendly sovereign global centers of power - China and India is of particular importance. This area of cooperation determines the feasibility of the participation of athletes from Russia in golf competitions within the framework of championships in the Asian region.	An expedient criterion is also the optimization of the selection system for Olympic golf tournaments based on adjusting the world rankings using this optimization when holding other complex competitions under the auspices of the «International Olympic Committee» («IOC»), as well as expanding their program (mixed pairs, mixed teams).
At the same time, it is important to develop and take measures to change the pricing policy for golf through the construction of budget courses and courses with par “3” [1].	Russia also carries out mutually beneficial interaction in the field of sports with Islamic countries («Pan-Arab Games»). For the further development of the international sports system, it is necessary to revive the Games of the CIS countries, various intercontinental tournaments held jointly with Asian countries, the SCO, BRICS, CIS countries [4].	

Table 1 (continued)

Science	The international contribution	Training and competitive process
Since golf is not a typical sport for our country, and also does not have a high level of entertainment, a promising sport for the sport is its popularization among the population through the formation of an appropriate knowledge system. The conducted research will fill the information gap in the history of golf. These studies can be successfully used as educational and demonstration materials for courses and disciplines of historical and sports orientation, as well as become the basis for further research in understanding the trends and prospects for the development of this sport on an international scale. [1,3].	Important for the further dynamic development of golf is a detailed study of foreign experience, which will determine the integration of this sport into the domestic space. The priority in implementing this proposal is to study the best practices of the leading countries in golf tournaments at the Olympic Games and Regional Games. The all-round active development of cooperation is also necessary, taking into account the leveling of attempts by unfriendly countries to prevent it.	A significant advantage of golf is that this sport can be practiced at any age and level of training. Unlike many sports, golf can be considered as an active leisure activity along with the development of mass and elite sports. Thus, this necessitates the creation of a new alternative to complex competitions on a foreign model based on a combination of the integration of golf as a means of leisure, mass sports and elite sports. A promising measure is the introduction of golf as a leisure activity for all ages (inclusion in the «Moscow longevity program», integration into the infrastructure of city parks and green areas, etc.) [1].
One of the main factors hindering the development of golf in Russia is the acute shortage of coaching and teaching staff. Only a few of them have golf departments: the Russian university of sports “GTSOLIFK”, Siberian Federal University, MGIMO, MPGU, Ural Federal University.	Significant for the further dynamic development of golf is a detailed study of foreign experience, which will determine the integration of this sport into the domestic space.	
At the same time, golf has significant development prospects in the Volga, Southern, Northwestern, Siberian and Far Eastern federal districts of the Russian Federation. Student golf in the Samara region is developing mainly in the mini-golf format. There is equipment and mini-golf sections at the Samara State Technological University, Samara Aerospace University, Samara State Economic University, Samara State Pedagogical University and at the N. Lyapina Medical College. All sections in universities were created on the initiative and direct participation of the Samara Regional Golf Development Federation [1, 5]	The priority in implementing this proposal is to study the best practices of the leading countries in golf tournaments at the Olympic and Regional Games. The all-round active development of cooperation is also necessary, taking into account the leveling of attempts by unfriendly countries to prevent it. In modern realities, the privilege for the development of golf among the population is to use the experience of European and Asian countries, which are leaders in golf. [4].	

Table 1 (continued)

Science	The international contribution	Training and competitive process
Each of these federal districts has a higher educational institution of the Russian Ministry of Sports. It seems appropriate to create a golf specialization at the Volga Region State Academy of Physical Culture, Sports and Tourism (Kazan), Kuban State University of Physical Culture, Sports and Tourism (Krasnodar), Siberian State University of Physical Culture and Sports (Omsk), Far Eastern State Academy of Physical Culture (Khabarovsk) [5].		
A positive aspect for the further development of golf in the country is the cooperation of universities of physical education with the aim of exchanging experience through joint scientific and practical conferences, round tables, etc. based on the use of scientific research results on current issues in the development of golf [1, 5].		

Conclusions. Based on the analysis, proposals for improving golf in our country were developed and justified, the main of which are related to optimizing the competition system, improving international relations and coordination within the country, and is also the basis for further research in order to popularize this sport, integration into various social and educational spheres.

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Ivashina Polina Igorevna, assistant teacher of the chair of history of civilization, physical culture, sports and Olympic education, Ivashina-gierspolina@yandex.ru, Russia, Moscow, The Russian university of sports "GTSOLIFK"

Scientific supervisor – Leontyeva Nadezhda Sergeevna, Russia, Moscow, The Russian university of sports "GTSOLIFK"

Ивашина Полина Игоревна, ассистент кафедры истории цивилизации, физической культуры, спорта и олимпийского образования, Ivashina-gierspolina@yandex.ru, Россия, Москва Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Леонтьева Надежда Сергеевна, Россия, Москва Российский университет спорта «ГЦОЛИФК»

Аннотация. В современном мире развитие и популяризация гольфа наблюдается во многих регионах. Повышается степень доступности занятий и соревнований для всех слоев населения, идет активный процесс включения гольфа в программы предмета «Физическая культура» в школах и других образовательных учреждениях. Эти факты определяют не только увеличение финансирования гольфа, но и повышение уровня интереса телеаудитории и зрителей к проводимым чемпионатам и мейджорам. Важно также отметить, что гольф активно развивается в нашей стране, однако существует противоречие между необходимостью дальнейшего развития и популяризации гольфа и отсутствием комплексных предложений и рекомендаций по совершенствованию этого вида спорта. Полученные результаты могут стать основой для дальнейших научных исследований, а также для понимания тенденций и перспектив развития этого вида спорта.

Ключевые слова: гольф, Россия, Ассоциация гольфа России, рекомендации

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“WAVE” AS A MEANS OF DEVELOPING VESTIBULAR STABILITY

Ivashina V.V.

Abstract. It is impossible to have a high level of plastic expressiveness with a low degree of stability of the gymnast's body. In contrast to poses characterized by a static mode of muscle work that ensures a certain constant mutual arrangement of body parts, holistic movements of plastic expressiveness, even in the absence of a change in the place of support, involve rotational movements of the links in most joints of the body, subject to the wave nature of coordination. The article reveals the research issue of the development of vestibular stability using waves in the educational and training session of highly qualified gymnasts.

Keywords: wave, balance, vestibular stability, coordination, rhythmic gymnastics

Introduction. The most obvious and undeniable motor prerequisite for successfully mastering the technique of expressive plastic movements is flexibility,

especially in the joints of the spine. However, we have to admit that gymnasts with good joint mobility do not always have plasticity and “artistic” movements [3].

Basic “waves” can be used as an addition to the basic movements, performing them in different positions (on the floor, standing), as well as in different movements, and you can repeat the same way of performing a basic holistic “wave”, adding variations of wave-like movements with your hands. If it is not possible to specifically pay attention to mastering “waves” in the training process due to other tasks, it is rational to include them in the warm-up, as this allows you to maintain intermuscular coordination at the proper level, work out all the small muscle groups of the body and solve this problem at different stages sports training [1, 2].

The purpose. The higher the reliability of the gymnast’s balance regulation mechanisms, the higher the potential opportunity to perform the movement expressively, that is, according to the principles of rhythmic gymnastics: integrity, dynamism, “dance ability” of the movement execution.

One of the main reasons for errors that occur when performing “waves”, swings, their modifications and combinations is loss of balance. In this regard, a necessary component of creating readiness to master the movements of this structural group of elements of rhythmic gymnastics is the improvement of the vestibular function of those involved and its derivative - the balance function.

An experiment was organized on the basis of RUS “GTSOLIFK”, the purpose of which was to improve vestibular stability using waves. Two groups were identified for the study: experimental and control groups of 10 people each, who had the same level of physical fitness and the sports title of master of sports.

Methods: study and analysis of special scientific and methodological literature, as well as conducting test tasks within the framework of a pedagogical experiment and calculating the results using mathematical statistics tools.

Results. Using tests: 1 – Romberg test, 2 – Yarotsky test, 3 – Bondarevsky test, we determined the indicators of vestibular stability in all subjects of both groups (fig. 1).

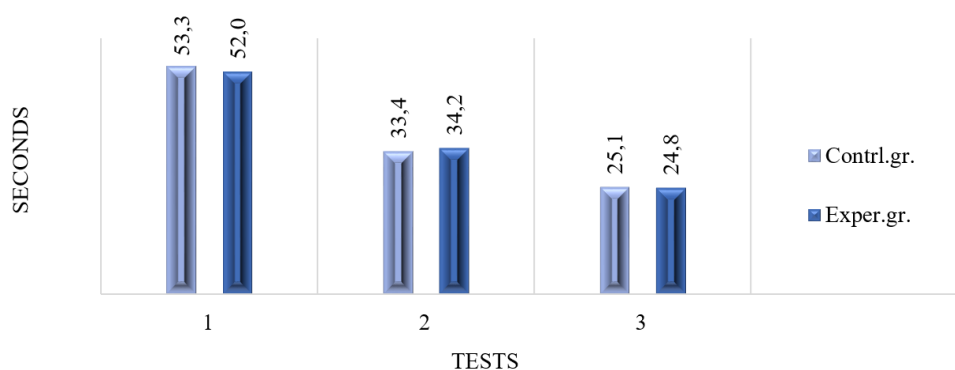


Figure 1. – Average group indicators of the level of vestibular stability of the tested gymnasts before the experiment

The content of the experimental group's classes included sets of exercises aimed at developing vestibular stability using waves. These complexes are presented in the form of three blocks, which are presented below. When performing the complexes, waves and their modifications were included.

Block 1	Block 2	Block 3
Warm-up in the middle, ground floor	A set of choreographic exercises	Special physical training, relaxation exercises
► No visual control	► At the support	► On an unstable support
► With rubber expander	► In the middle	► No visual control

Figure 1. – Blocks of exercises aimed at developing vestibular stability

The control group trained according to the generally accepted method. An experimental group of 10 people trained using these blocks of exercises. The experiment took place without disrupting the educational and training process, under normal conditions for students. The group studied within the current schedule of classes 5 times a week for 2 hours.

During the introduction of exercise complexes into the educational and training process, 60 classes were held in which female athletes developed vestibular stability and improved technical training. Afterwards, we conducted repeated testing to identify the level of development of vestibular stability. The results are presented below.

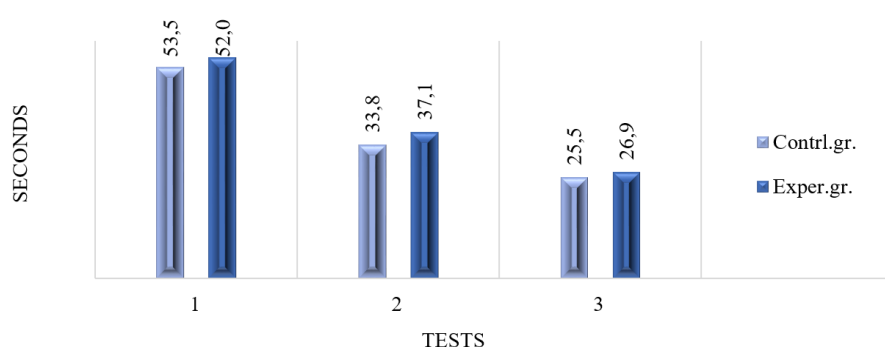


Figure 2. – Average group indicators of the level of vestibular stability of the tested gymnasts after the experiment

Conclusions. Thus, at the end of the experiment, the level of vestibular stability in the experimental group increased to a high level, while the level of the control group remained at the same level – medium.

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Ivashina Valeriya Vladimirovna, senior lecturer of the department of theory and methods of

ВОЛНА КАК СРЕДСТВО РАЗВИТИЯ ВЕСТИБУЛЯРНОЙ УСТОЙЧИВОСТИ

Ивашина Валерия Владимировна, старший преподаватель кафедры теории и методики гимнастики, valeriya.2406@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. Невозможно обладать высоким уровнем пластической выразительности при низкой степени устойчивости тела гимнастки. В отличие от поз, характеризующихся статическим режимом работы мышц, обеспечивающих определенное неизменное взаимное расположение частей тела, целостные движения выразительности пластики даже в условиях отсутствия перемены места опоры предполагают подчиняющиеся волновому характеру координации вращательные движения звеньев в большинстве суставов тела. В статье раскрывается исследуемый вопрос развития вестибулярной устойчивости с использованием волн в учебно-тренировочном занятии гимнасток высокой квалификации.

Ключевые слова: волна, баланс, вестибулярная устойчивость, координация, художественная гимнастика

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RESEARCH ON THE EFFECTS OF ADAPTIVE PHYSICAL EDUCATION-BASED EXERCISE PRESCRIPTIONS ON THE REHABILITATION OF BALANCE ABILITIES IN CHILDREN WITH CEREBRAL PALSY

Jin Qianhui, Rubtsova N.O.

Abstract. *This study aims to explore the effects of exercise prescriptions designed under the concept of adaptive physical education on the rehabilitation of balance abilities in children with cerebral palsy. Through random assignment, 10 children aged 7 to 10 from the Sichuan Bayi Rehabilitation Center were divided into an experimental group and a control group, with five children in each. The experimental group received a customized exercise prescription based on adaptive physical education for 12 weeks, while the control group continued with regular treatment. Assessments were carried out using the Italian Tecnobody PK252 system and the Berg Balance Scale. Results demonstrated that the experimental group significantly outperformed the control group in all balance tests, confirming the effectiveness of the exercise prescription in enhancing the balance abilities of children with cerebral palsy.*

Keywords: *Cerebral Palsy, Adaptive Physical Education, Balance Rehabilitation, Exercise Prescription, Berg Balance Scale*

Introduction. Cerebral Palsy (CP) is a common disorder affecting motor and balance abilities in children [1,2]. Adaptive physical education offers a novel approach to rehabilitation through personalized exercise programs [3,4]. This study involved ten children with CP from the Bayi Rehabilitation Center in Sichuan Province, exploring the impact of exercise prescriptions designed under the concept of adaptive physical education on their balance capabilities. By comparing an experimental group receiving the tailored exercise program to a control group undergoing conventional treatment, this study assesses the effectiveness of exercise prescriptions in improving balance abilities in children with cerebral palsy.

Methods. This study included ten children with cerebral palsy, aged between 7 and 10 years, from the Bayi Rehabilitation Center in Sichuan Province. Through random allocation, these children were evenly divided into an experimental group and a control group, with five children in each. The experimental group received a customized exercise prescription designed under the principles of adaptive physical education for a duration of 12 weeks, specifically aimed at enhancing their balance abilities (as detailed in table 1). The control group continued with standard treatment protocols. The study utilized the Italian Tecnobody PK252 balance testing system and the Berg Balance Scale to assess and compare the balance abilities of both groups before and after the intervention. This method was designed to quantify the specific benefits of the exercise prescription in improving the balance abilities of children with cerebral palsy and to ascertain the effectiveness of adaptive physical education exercise prescriptions in clinical practice.

Table 1. – Exercise prescription exercise content

1-4 weeks					
Basic Core and Resistance Strength Exercises					
Exercise Name	Target Muscle Group	Method	Reps/ Duration	Rest Time	Frequency/ Week
Static Squat and Wall Sit	Quadriceps, Gluteus Muscles	Maintain a wall-sitting position, thighs parallel to the ground	20-30 s/3 sets	30 s	3 times/week
Prone Hip Extension	Gluteus Muscles, Hamstrings	Prone position, alternately raise each leg	10 reps/3 sets per leg	30 s	3 times/week
Abdominal Activation and Crunches	Rectus Abdominis	Lying on back, knees bent, hands behind head	10 reps/3 sets	30 s	3 times/week
5-8 weeks					
Enhancing Resistance Strength & Introducing Basic Balance Training					
Standing Elastic Band Hip Adduction	Hip Adductors	Standing, elastic band around ankles, pull inward	15 reps/3 sets per leg	30 s	3 times/week
Heel Raises	Calf Muscles	Standing, raise heels as high as possible, then slowly lower	20 reps/3 sets	30 s	3 times/week
Eyes-Closed Single-Leg Stand	Balance Perception	Stand on one leg, eyes closed	20 s/3 sets	45 s	3 times/week

Table 1 (continued)

1-4 weeks Basic Core and Resistance Strength Exercises					
9-12 weeks Comprehensive resistance exercises and advanced balance training					
Static Squat with Resistance Band	Gluteus Maximus, Quadriceps	Standing, knees slightly bent, resistance band near ankles, perform squats	15 reps/3 sets	45 s	3 times/week
Multitask Swiss Ball Exercise	Core Stability	Sitting on a Swiss ball, perform upper limb activities such as passing a ball or simulating daily actions	10 minutes	–	3 times/week
Balance Pad Resistance Exercise	Dynamic Balance	Stand on a balance pad, perform resistance exercises with a band, such as arm raises or lateral pulls	10 reps/3 sets	45 s	3 times/week
Balance Games	Balance Control	For example, "Falling Leaves to Roots", standing on a balance pad, catching light balls thrown at them	10 minutes	–	3 times/week

Results. The results of this study indicate that the experimental group, which underwent a 12-week adaptive physical education-based exercise prescription, significantly outperformed the control group in all balance measurement indicators. As depicted in table 2 and figure 1, improvements in the movement ellipse area, anterior-posterior swing amplitude, lateral swing amplitude, and movement length were all greater in the experimental group compared to the control group. Additionally, the Berg Balance Scale scores reflected a similar trend: scores in the experimental group increased from 34 to 48, while in the control group, they rose from 36 to 40 (As figure 3). These data confirm the effectiveness of adaptive physical education exercise prescriptions in enhancing the balance abilities of children with cerebral palsy.

Table 2. – Comparison of balance indicator parameters before and after intervention in the experimental and control groups (Experimental group: n=5, Control group: n=5)

Parameter	Eye Condition	Experimental Pre-Test (M ± SD)	Experimental Post-Test (M ± SD)	Control Pre-Test (M ± SD)	Control Post-Test (M ± SD)
Movement Ellipse Area	Open	125 ± 10 mm ²	108 ± 8 mm ²	125 ± 10 mm ²	120 ± 9 mm ²
	Closed	273 ± 22 mm ²	254 ± 20 mm ²	273 ± 22 mm ²	260 ± 21 mm ²
Anteroposterior Swing	Open	5 ± 0.5 mm	3 ± 0.4 mm	5 ± 0.5 mm	4.5 ± 0.45 mm
	Closed	7 ± 0.7 mm	5 ± 0.6 mm	7 ± 0.7 mm	6.5 ± 0.65 mm
Lateral Swing	Open	3 ± 0.3 mm	2 ± 0.2 mm	3 ± 0.3 mm	2.8 ± 0.28 mm
	Closed	5 ± 0.5 mm	4 ± 0.4 mm	5 ± 0.5 mm	4.7 ± 0.47 mm
Movement Length	Open	308 ± 31 mm	286 ± 29 mm	308 ± 31 mm	300 ± 30 mm
	Closed	421 ± 42 mm	397 ± 40 mm	421 ± 42 mm	410 ± 41 mm

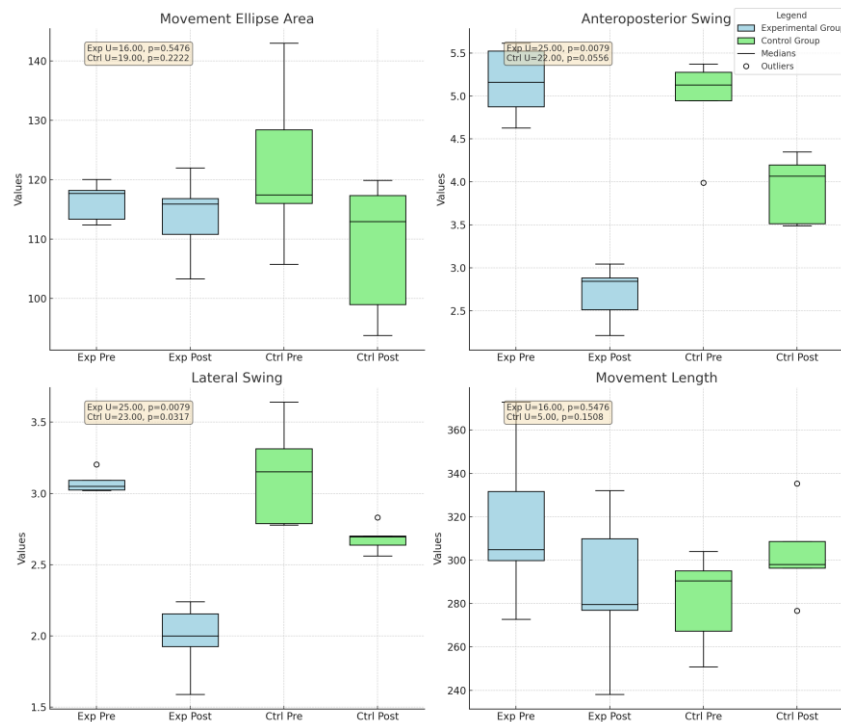


Figure 1. – Balance Indicator Parameters: Experimental vs. Control Group Analysis with Mann-Whitney U Test Results (Experimental group: n=5, Control group: n=5)

Table 3. – Berg Balance Scale Scores (Experimental group: n=5, Control group: n=5)

Group	Test Time	Score (M ± SD)
Experimental Group	Before Training	34 ± 3
	After Training	48 ± 2
Control Group	Before Training	36 ± 3
	After Training	40 ± 3

Discussion. The results demonstrate the efficacy of adaptive physical education (APE)-based exercise prescriptions in enhancing balance among children with cerebral palsy (CP). Significant improvements in the experimental group across key indicators such as the movement ellipse area, swing amplitude, and movement length highlight the tailored exercise program's impact compared to the control group's standard treatment. The Berg Balance Scale scores underscore the benefits of APE, with the experimental group showing a notable increase from 34 to 48, versus a modest rise from 36 to 40 in the control group. These results suggest that customized exercises designed to improve proprioception and motor control are crucial for enhancing physical stability in children with CP. Utilizing the Tecnobody PK252 system and Berg Balance Scale provided a detailed analysis of balance changes, essential for effective CP management. The study suggests that APE principles in exercise prescriptions significantly improve balance abilities more than standard treatments. Future research should continue to explore the long-term impacts of these interventions on a larger scale.

Conclusion. This study confirms that adaptive physical education significantly improves balance in children with cerebral palsy. Tailored exercise programs yield

better outcomes than standard treatments, highlighting the need for personalized rehabilitation approaches. Future studies should expand on these findings, exploring long-term benefits and broader applications.

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*Jin Qianhui, PhD student, jhui806711@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK";
Rubtsova Natalia Olegovna, PhD, Professor, Head of the Department of Theory and Methodology of Adaptive Physical Culture, Natalia.rubtzova@gmail.com, Federal State budgetary educational institution of higher Education "Russian university of sports "GTSOLIFK".*

ИССЛЕДОВАНИЕ ЭФФЕКТИВНОСТИ ПРОГРАММЫ АДАПТИВНОЙ ФИЗИЧЕСКОЙ КУЛЬТУРЫ НА ВОССТАНОВЛЕНИЕ СПОСОБНОСТЕЙ БАЛАНСА У ДЕТЕЙ С ДЕТСКИМ ЦЕРЕБРАЛЬНЫМ ПАРАЛИЧОМ

Цзинь Цяньхуэй, аспирант, jhui806711@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»;

Рубцова Наталия Олеговна, к.п.н., профессор, заведующая кафедрой теории и методики адаптивной физической культуры, Nataly.rubtzova@gmail.com, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Данное исследование направлено на изучение эффективности программы упражнений, разработанной на основе концепции адаптивной физической культуры, для восстановления способностей к балансу у детей с детским церебральным параличом. С использованием метода случайного распределения, 10 детей в возрасте от 7 до 10 лет из реабилитационного центра "Восемь первых" в Сычуане были разделены на экспериментальную и контрольную группы, по 5 человек в каждой. Экспериментальная группа принимала участие в специально разработанной 12-недельной программе адаптивной физической культуры, в то время как контрольная группа получала стандартное лечение. Оценка проводилась с использованием итальянской системы Testobody PK252 и шкалы баланса Берга. Результаты показали, что экспериментальная группа значительно превзошла контрольную группу по всем показателям баланса, что подтверждает эффективность упражнений в улучшении способностей к балансу у детей с детским церебральным параличом.

Ключевые слова: детский церебральный паралич; Адаптивная физическая культура; Реабилитация баланса; Программа упражнений; Шкала баланса Берга

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UDC 796

MUNICIPAL PROGRAMS FOR THE DEVELOPMENT OF PHYSICAL EDUCATION AND SPORTS

Kalinin K.I., s/s Kachulina N.N.

Abstract. *This article discusses the main goals and objectives of municipal programs for the development of physical culture and sports, as well as the main problems that do not allow municipalities to implement these programs as effectively as possible.*

Keywords: *municipality, program, physical culture, sports, development, local authorities*

Relevance. Management in the field of physical culture and sports is one of the key directions of our country's social policy, at the municipal level as well, which is reflected in specific areas: international, national, health, cultural, educational. It is impossible to develop an effective management system for the development of physical culture and sports in a municipality without determining the main vectors of its further existence, without analyzing financial opportunities and the desired end result, without taking into account the opinions of a professional sports association and residents of the municipality.

The aim of the study. The basic task of local authorities is to create the necessary conditions for attracting different categories of citizens to sports, which improves the demographic situation in the country and reduces the workload of medical institutions. Local authorities and sports communities have the opportunity to independently influence the local characteristics of municipal education in the field of physical culture and sports.

The priority areas for the development of physical culture and sports include:

- the involvement of citizens, especially children and youth, in regular physical education and mass sports;
- improving the level of physical fitness of the Russian Federation citizens;
- increasing the accessibility of sports facilities, including in rural areas and rural agglomerations, as well as for people with disabilities and disabled persons;

– the development of adaptive physical culture and adaptive sports.

The development of the municipal system of physical culture and sports on the one hand and the lack of an integrated system of optimal development direction, taking into account the priorities of municipal policy, the needs of the local community in physical and wellness services, its own internal resources, on the other hand, leads to imbalance, inconsistency, instability in general.

The main problem of the development of physical culture and sports at the municipal level is the lack of financing, which does not allow the municipal authorities to fully provide the necessary conditions for municipality citizens to engage in physical culture and sports. Today, large settlements have the highest level of sports and physical education facilities in their territories, while small settlements often do not have any resources that allow them to develop a municipality in this field.

As part of the development of physical culture and sports, it is necessary to develop innovative programs that meet modern realities to increase the interest of residents of the municipality in a healthy lifestyle and sports. To form an effective management system high-quality monitoring of physical development and training of citizens is necessary. The results of this operational analysis have a positive impact on the development and implementation of programs for the development of physical culture and sports in municipalities.

Methods: analysis method, theoretical analysis of scientific and methodological literature.

Results. The main expected end result of the Program is the sustainable development of physical culture and sports, which is characterized by an increase in quantitative indicators and a qualitative assessment of the changes taking place in the field of physical culture and sports.

As part of the development of physical culture and sports, it is necessary to develop innovative programs that meet modern realities to increase the interest of residents of the municipality in a healthy lifestyle and sports. To form an effective management system high-quality monitoring of physical development and training of citizens is necessary. The results of this operational analysis have a positive impact on the development and implementation of programs for the development of physical culture and sports in municipalities.

Conclusions. Currently, the role of physical culture and sports is becoming more versatile and now it is not only a social factor, but also a part of politics in the modern world. Attracting more and more people to sports shows the physical potential and improvement of the health level of the population.

Public administration in the field of physical culture and sports is the activity of public authorities, which is divided into executive, administrative and regulatory, aimed at supporting this area as one of the priority sectors in the Russian Federation, involving citizens in physical culture and sports, creating a comfortable infrastructure, popularizing a healthy lifestyle implemented in the field of physical culture and sports, creating conditions for the development of high-achievements sports. Public administration in the field of physical culture and sports is the main tool for the development and regulation of physical culture and sports at all levels. The management mechanism in the field of physical culture and sports includes

methods, forms, functions of management and the system of authorities.

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Kalinin Kirill Igorevich, student of the department of Public Administration and Youth Policy, kirillkalinin13@mail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Scientific supervisor – Kachulina Natalia Nikolaevna, Senior Lecturer at the Department of Public Administration and Youth Policy, nik.ifk@mail.ru, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

МУНИЦИПАЛЬНЫЕ ПРОГРАММЫ ПО РАЗВИТИЮ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА

Калинин Кирилл Игоревич, студент кафедры государственного управления и молодёжной политики, kirillkalinin13@mail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Качулина Наталья Николаевна, старший преподаватель кафедры государственного управления и молодёжной политики, nik.ifk@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение

Аннотация. В данной статье рассматриваются основные цели и задачи муниципальных программ по развитию физической культуры и спорта, а также основные проблемы, которые не позволяют максимально эффективно реализовывать муниципалитетам данные программы.

Ключевые слова: муниципалитет, программа, физическая культура, спорт, развитие, местные органы власти

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THE SPORTS PROJECTS "MOVEMENT OF THE FIRSTS" OF ALL-RUSSIAN PUBLIC STATE MOVEMENT OF CHILDREN AND YOUTH

Kamenskaya P.I., Myagkova S.N.

Abstract. The article considers the main projects and activities of the sports program of the All-Russian Public State Movement of Children and Youth "Movement of the Firsts", such as "Challenge of the Firsts", "Zarnitsa. Legends of the Future", "Technosport of the First" and others. The implementation of projects helps to increase the involvement of children and young people in systematic physical education and sports. It also provides an opportunity for the Movement's participants to practice modern and accessible sports that attract youth.

Keywords: youth, Movement of the First, sports, physical education, healthy lifestyle, schoolchildren, sports project

Introduction. "Movement of the Firsts" is an all-Russian public and state movement established on July 14, 2022 based on the proposal of the Russian leadership aiming to educate and provide teenagers with leisure activities in order to build a mindset "based on traditional Russian cultural and social values". The movement's departments have opened in every region and municipality of Russia, and primary units of the movement are being actively created in schools across the country.

"Movement of the Firsts" has become a space for involving many talented, motivated young people in educational, creative and sports projects. Twelve activities directions of "Movement of the Firsts" were singled out, all of them reflecting an important sphere of life of modern youth. Physical education and sports were also identified as a specific direction "Sport – Reach and Win!".

The **purpose** of our study is considering the main projects of the sports program of the All-Russian Public State Movement of Children and Youth "Movement of the Firsts".

Methods: bibliographic analysis of literature and Internet materials, analysis of the data obtained.

Discussion. The direction "Sport" is aimed at developing the habit to lead an

active lifestyle, to practice sports and to take care of personal health among all the members of the movement. Children and teenagers participating in sports improve both their physical abilities and their teamwork skills. Mass involvement of the movement's participants in a sport is also intended to create a vision of a healthy lifestyle as an important part of youth culture. A large number of projects of all-Russian and regional scale are implemented within the framework of this direction. The following article describes the most interesting of these projects.

The All-Russian project “Challenge of the Firsts” is the flagship project of the sports direction of the Russian Movement of Children and Youth. The goal of the project is to influence the development of moral and spiritual sphere of young people's personality through physical culture and sports.

More than 400 thousand schoolchildren and students from all over the country aged from 6 to 18 years old are going to join the project in the 2023-2024 season. “Challenge of the Firsts” is 52 sports areas, including: skipping rope, tag rugby, drone racing, workout, mas-wrestling, flatball, skateboarding, floorball, BMX, lapta, scooting, SCATT shooting, bossaball, roundnet, phygital sports and others. This project is distinctive in that its sports and activities are suggested by the participants of Movement of the Firsts themselves and they are not similar to current competitions and sports events.

The “Technosport Firsts” sports festival is a unique event where competitors face off in more than just physical challenges, such as the obstacle race and GTO multiathlon, but also in technology-based subjects, including sports programming, drone racing and laser tag. This festival is about strength, agility and innovation meeting together and developing as integral parts of progress. The goal of the festival is to develop such activities as sports programming, laser tag, obstacle races, drone (UAV) racing and the “Ready for Labor and Defense” multiathlon in Russian Federation. The sports festival was held in Grozny, Chechen Republic, from February 16 to 19, 2024.

“Technosport of the Firsts” sports festival events:

1. Laser tag “Counter Battle”.

Laser tag is a team tactical military game with safety laser weapons and hit detection sensors. Sensors are placed on vests, helmets or armbands.

2. Information Security Systems Programming.

This competition requires participants to showcase their skills in developing software solutions.

3. Drone race (up to 220mm FPV).

Drone racing is one of the youngest sports. It is actively gaining popularity in the world. Drone racing includes competitions for speed, as well as overcoming artificial obstacles such as rings, gates, and flags.

4. Obstacle race.

Obstacle race is a still young competition, but it has gained a lot of popularity. It is a cross-country run with overcoming various obstacles.

5. Multiathlon “Ready for Labor and Defense”.

The All-Russian Physical Culture and Sports Complex “Ready for Labor and Defense” (GTO) is a normal basis for physical education of the country's people aimed at mass sports promotion. During the festival, participants take part in long

jumps from a place with a two-legged push, bending and extending arms while lying on the floor (push-ups), lifting the torso from lying on the back (abs), lifting weights and running 100 meters.

The national project “Zarnitsa: Legend of the Future” is a military-patriotic game based on sports presented in a completely new and modern format using digital technologies. “Zarnitsa 2.0” is a military-patriotic game, during which participants learn the skills of basic military training and behavior in an extreme situation.

The aim of the Game is to provide participants with the skills of basic military training, to develop the personal qualities of youth that contribute to the successful fulfillment of their career, family life and creativity. It is also aimed at developing the strong principles of patriotic awareness, a sense of loyalty to the duty to protect the homeland, and an proactive citizenship, as well as at promoting the patriotic movement and the system of historically established military-patriotic games in the Russian Federation.

Moreover, the Game helps to improve leadership skills, independent thinking, to build a responsible attitude to personal and public safety and to express a civic position. The important mission of the Game is to form a solid patriotic consciousness among youth and to raise interest towards the history of Russia and Armed forces of Russian Federation. Squads of 10 people take part in the Game. All squad members are given one specialty: squad leader, sapper, surveyor, UAV operator, doctor, storm trooper, political officer and military officer.

The All-Russian project “Zarnitsa 2.0” allows participants to fully express themselves, to develop a sense of belonging to the common goal, self-discipline for the sake of common victory. They also develop a sense of duty to the squad and the country. They form skills that meet present-day challenges, including dealing with cyber threats, various types of UAVs, fake news detection and much more. They learn that even an ordinary school student within a team of peers is able to overcome fears, overcome his / her anxiety and fatigue for the sake of a common goal.

To sustain motivation and enthusiasm of Movement members, during the year the sports program participants were invited to take part in sports challenges. The Movement's social media published posts with sports professionals challenging the project members to carry out sports-related activities.

There are also regular sessions of All-Russian workouts which include online classes from professional coaches, tutorials from specialists of the All-Russian Physical Culture Complex “Ready for Labor and Defense” and live exercises with Olympic champions.

Conclusions. The implementation of above projects and events helps to increase children and young people's involvement in systematic physical education and sports. It also gives the Movement's members the opportunity to engage in modern and accessible sports that arouse true interest among children and young people.

Projects in the field of physical education and sport represent an important part of the work of the Movement of the Firsts. Grigory Gurov, Head of the Board of the Movement of the Firsts, emphasized that “sports projects unite active young people of the Movement of the Firsts into a single ecosystem and they are a basis for sports education and healthy lifestyle of the Firsts”.

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Kamenskaya Polina Igorevna, Graduate student, polina.kamenskaya1998@mail.ru, Russian Sport University, address: No4 Sirenevyy Blvd, Moscow

Myagkova Svetlana Nikolaevna, Doctor of Education, Professor, myagkova.sn@mail.ru, Russian Sport University, address: No4 Sirenevyy Blvd, Moscow, Russia

СПОРТИВНЫЕ ПРОЕКТЫ ОБЩЕРОССИЙСКОГО ОБЩЕСТВЕННО-ГОСУДАРСТВЕННОГО ДВИЖЕНИЯ ДЕТЕЙ И МОЛОДЁЖИ “ДВИЖЕНИЕ ПЕРВЫХ”

Каменская Полина Игоревна, Аспирант, polina.kamenskaya1998@mail.ru, Российский университет спорта, Москва, Сиреневый бульвар, дом 4.

Мягкова Светлана Николаевна, Доктор пед. наук, Профессор, myagkova.sn@mail.ru, Российский университет спорта, Москва, Россия

Аннотация. В статье рассматриваются главные проекты и акции спортивного направления Общероссийского общественно-государственного движения детей и молодёжи «Движение первых», такие как «Вызов Первых», «Зарница. Легенды будущего», «Техноспорт Первых» и другие. Реализация проектов способствует увеличению вовлеченности детей и молодёжи в систематические занятия физической культурой и спортом, а также создаёт возможность для участников Движения заниматься современными и доступными видами спорта, вызывающими неподдельный интерес у детей и молодёжи.

Ключевые слова: молодёжь, Движение первых, спорт, физическая культура, здоровый образ жизни, школьники, спортивный проект

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ASSESSMENT OF THE SPECIAL PREPAREDNESS OF YOUNG QUALIFIED FEMALE CHESS PLAYERS FOR COMPETITIONS WITH CLASSIC TIME CONTROL

Kauzova A.A., s/s Akimushkin R.V.

Abstract. Competitions with classical time control are one of the most challenging forms of chess play. This article presents an analysis of various components of specialized preparation for young qualified female chess players for such competitions and reveals their correlational relationships.

Keywords: *young female chess players, classical time control, specialized preparation, correlation of preparedness components*

Introduction. The relevance of the research topic lies in the fact that currently more than 300,000 school-age children, including more than 70,000 girls, are professionally engaged in chess in the Russian Federation [5]. The peak of chess classes falls on the age of 9-10 years (30% of the total contingent of young qualified chess players) and the main contingent of children's chess competitions are young athletes aged 8 to 12 years (65%). At each age interval (by year of birth), 22-23% of young chess players in the Russian Federation are girls (in total, 22.7% of chess players from 6 to 18 years old). This phenomenon has been called the "female constant in chess" [1].

In recent years, there has been a clear increase in interest in women's chess [3]. Effective training of the younger generation of chess players determines the need for continuous improvement of special chess training techniques, adaptation to changing conditions and taking into account all the features of competitions with classical time control to ensure maximum effectiveness of the training process and achieve the best results in tournaments.

The purpose: to analyze the special preparedness of young qualified chess players for competitions with classical time control.

Methods and organization of research. As part of our research, a specialized questionnaire "Diagnosis of special preparedness of a chess player" was developed, created on the basis of the structure of special preparedness proposed by V. Bologan [2] and B. Zlotnik's recommendations for conducting diagnostic studies [4]. This questionnaire is aimed at determining the level of special preparedness of chess players.

The experiment was conducted with the participation of a 12-year-old qualified chess player who played in the 2023 Russian Federation Chess Championship among girls under 13 years old.

The chess player took a questionnaire after each of the nine rounds of the competition. This technique made it possible to track the dynamics of preparedness and reaction to various game situations during the tournament.

The results of the study and their discussion. For the analysis data were taken from a correlation table obtained as a result of a survey showing the relationship of various components of the preparedness of a young qualified chess player aged 12 for a tournament with classical time control.

As the tournament progressed, the chess player's performance improved in opening preparation (0.62), saving difficult positions (0.55) and evaluating the opponent's behavior (0.78). Which indicates the workability during the tournament.

The relationship between the result of the batch and other components.

The result of the game is most strongly correlated with the prevention of the opponent's counterplay (0.73), anticipation (0.69), tactical vision (0.51) and a sense of inspiration (0.69). This shows the importance of psychological stability and self-confidence in order to achieve positive results.

	Tour number	The result of the party	Time allocation	Preventing counterplay	Anticipation	Tactical vision	The quality of the calculation of options	Debut preparation	Degree of fatigue	Saving difficult positions	Home preparation	The mood for the party
Tour number	1											
The result of the party	0,05	1,00										
Time allocation	0,13	-0,20	1,00									
Preventing counterplay	0,09	0,73	-0,23	1,00								
Anticipation	0,13	0,69	-0,42	0,80	1,00							
Tactical vision	0,00	0,51	-0,42	0,80	0,76	1,00						
The quality of the calculation of options	0,06	0,33	-0,18	0,46	0,76	0,53	1,00					
Debut preparation	0,62	-0,45	0,04	-0,47	-0,35	-0,35	0,04	1,00				
Degree of fatigue	-0,29	0,48	-0,35	0,33	0,74	0,47	0,74	-0,40	1,00			
Saving difficult positions	0,55	0,11	-0,03	0,13	0,49	-0,03	0,49	0,19	0,41	1,00		
Home preparation	0,18	-0,09	-0,11	0,25	-0,11	0,23	-0,11	0,19	-0,3	-0,13	1,00	
The mood for the party	-0,14	0,24	-0,30	0,08	0,55	0,04	0,55	-0,25	0,82	0,72	-0,33	1,00
Assessment of the opponent's behavior	0,78	0,04	-0,10	-0,11	0,21	0,05	0,05	0,42	0,06	0,56	-0,22	0,15
Psychological state	-0,27	0,69	-0,11	0,25	0,57	0,23	0,57	-0,38	0,85	0,25	-0,50	0,66

Figure 1. – Components of preparedness

Preventing counterplay. When preventing an opponent's counterplay, the greatest correlation is noted with anticipation (0.80) and tactical vision (0.80). These data indicate the importance of understanding the tactical and strategic intentions of the enemy in order to prevent his actions.

Anticipation. Anticipating the opponent's plans is associated with tactical vision (0.76), the quality of calculating options (0.76), the freshness of the chess player after the previous round (degree of fatigue) (0.74), the mood for the game (0.55) and a sense of inspiration (0.57). This emphasizes that with good anticipation, both chess performance and psychological factors increase.

Tactical vision. The connection of tactical vision with the quality of calculation of options was noted (0.53). It follows from this that with a good level of tactical vision, the accuracy of calculating options increases.

The quality of the calculation of options. The quality of the calculation of the options directly depends on the degree of accumulated fatigue of the chess player during the tournament (0.74), the mood for the game (0.55) and a sense of inspiration (0.57).

Freshness after the round. The amount of energy of a chess player strongly correlates with the mood for the game (0.82), and the feeling of inspiration (0.85). This means that the mood for the party directly depends on the level of recovery of

the athlete.

Rescue of difficult positions. The athlete was better able to save difficult positions on days when she assessed the behavior of the opponent (0.56) and did not have problems with the mood for the game (0.72).

Conclusions:

The analysis showed that for successful performance in competitions with classical time control, young chess players need deep and multifaceted training.

Based on the analysis, the following conclusions can be drawn:

1. Due to the increase in the number of women's tournaments, the need for special training of qualified chess players has increased.

2. A questionnaire of special preparedness of a chess player has been developed, including 14 questions on the following components: debut preparation, calculating abilities, evaluation of the opponent's actions and psychological aspects.

3. The analysis of the special preparedness of a qualified chess player during the period of competitive activity was carried out, which revealed a correlation between the components of training. This helps to make adjustments to the training process and competitive activities.

4. Based on the correlation analysis, recommendations have been developed for working with qualified chess players who have improved the results of female athletes.

5. During the tournament, the chess player was given recommendations to pay more attention to the psychological state of the opponent, assess the mood, fatigue and time allocation. According to the analysis of the table of fitness components, the results increased noticeably as soon as the chess player began to follow these recommendations.

Young chess players should pay attention to comprehensive training, combining theoretical knowledge with practical skills and psychological stability. A thorough analysis of your games as well as an understanding of your strengths and weaknesses will help you achieve the best results in competitions.

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Kauzova Anastasiya Andreevna, 3rd year Student of the Department of computer ports, chess and digital technologies, nastena.kauzova.03@mail.ru, Russian university sport «GTSOLIFK», Russia, Moscow.

Scientific supervisor – Akimushkin Roman Valer'evich, Russian university sport «GTSOLIFK», Russia, Moscow.

ОЦЕНКА СПЕЦИАЛЬНОЙ ПОДГОТОВЛЕННОСТИ ЮНЫХ КВАЛИФИЦИРОВАННЫХ ШАХМАТИСТОК К СОРЕВНОВАНИЯМ С КЛАССИЧЕСКИМ КОНТРОЛЕМ ВРЕМЕНИ

Каузова Анастасия Андреевна – студентка 3 курса кафедры компьютерного спорта, шахмат и цифровых технологий Российского университета спорта «ГЦОЛИФК»), Москва, Россия, nastena.kauzova.03@mail.ru.

Научный руководитель – Акимушкин Роман Валерьевич, Российского университета спорта «ГЦОЛИФК»), Москва, Россия.

Аннотация. Соревнования с классическим контролем времени являются одним из наиболее сложных видов шахматной игры. В данной статье представлен анализ различных компонентов специальной подготовленности юных квалифицированных шахматисток к таким соревнованиям и выявлены их корреляционные взаимосвязи.

Ключевые слова: юные шахматистки, классический контроль, специальная подготовленность, корреляция компонентов подготовленности

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UDC 796.015.2

MOBILE LABORATORY - WEB APPLICATION IN THE SPORTS TRAINING SYSTEM

Khalikov G.Z., Mutaeva I.Sh., Petrov R.E., Kuznetsov A.S.

Abstract. *To achieve high sports results at the present stage of sports development, it is necessary to combine general and individual approaches in planning and programming the training process, as well as providing operational information about the state of the body at various stages of the training process. This web application was developed to monitor and assess the functional state of the athletes' body in a combination of 3 areas: heart reserves, neuromuscular system, functional capabilities of the leg muscles and heart. In each of the directions, based on the entered indicators, the derived indicators are automatically calculated and converted into a point-based evaluation system.*

Keywords: *development, web application, mobile laboratory programming, functional state, athletes*

Introduction. The discussion about optimizing the strategy for training highly qualified athletes in sports requires timely and prompt adjustment of the content and structure of sports training:

- first of all, taking into account the patterns of the body's adaptation to competitive conditions;
- secondly, with the use of information technologies and cumulative model characteristics the types of training for athletes, taking into account the type of sport [1, 2].

The purpose of the study was the development and implementation of the “Mobile Laboratory” web application for assessing of the body's functional state for highly qualified athletes.

Research objectives:

- develop a test version of the web application and check its capabilities;
- check the functionality of the “Mobile Laboratory” web application with an assessment of the individual indicators of one athlete.

Research design. The development of a test version of the web application was carried out from June 2023 to December 2024. The research was carried out at the laboratory of the Yelabuga Institute of Kazan Federal University. A number of web technologies were used to develop the web application. One of the main web technologies was programming in PHP. The software product was tested with the participation of student-athletes involved in acyclic and cyclic sports.

Results discussion. The web application includes the method of S.A. Dushanin, which simultaneously allows you to determine bioenergy types based on heart reserves and evaluate, based on the entered indicators, heart reserves; an electromyographic method, which is based on the determination of electrical potentials during muscle contraction, where the maximum and average values of thigh muscle contraction in microvolts are assessed; a test with a bicycle ergometric load to determine the potential of the heart, the aerobic metabolic threshold of the leg muscles, and the anaerobic metabolic threshold of the leg muscles.

Thus, the basis for the development of the web application was the study of the above-mentioned data, which combines data entry of the received data, automatic calculation of derived indicators, accounting, storage, visualization of the dynamics of the studied indicators and the formation of conclusions.

The client side consists of a menu for registration and authorization of the subject, data input and output, and a data visualization menu.

The data input menu block consists of:

- data input according to the method of S.A. Dushanin;
- data input of electromyographic indicators;
- input of data on the results of bicycle ergometer testing of physical performance and recovery moments.

Using the “data output” menu, you receive a generalized report of the indicators used.

The algorithm for recording indicators is based on automatic conversion from

absolute values to points and calculations of derived indicators of a test with a bicycle ergometer load, which further simplifies the analysis and understanding of the dynamics of indicators, and also facilitates their comparison with each other.

In addition, conducting research and collecting indicators allows for automatic recording, accumulation and storage of them in a database.

Figure 1 shows a fragment of the cumulative database system with the tables “Physical load”, “Dushanina”, “MyoFigurey”, “Users”, which are interconnected.

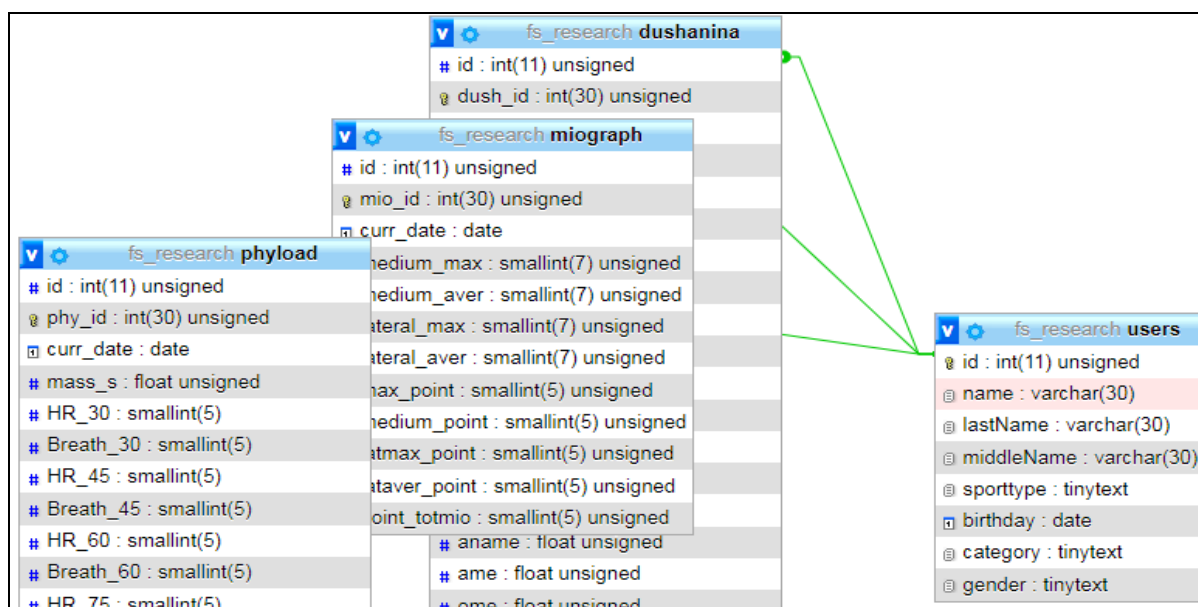


Figure 1. – Fragment of a database with tables “Physical load”, “Dushanina”, “MyoFigurey”, “Users”, which are interconnected

In the future, the accumulation of data will make it possible to identify individual characteristics of the functional state of a highly qualified athlete from stage to stage of training, thereby helping to identify model characteristics during the annual macrocycle of the athlete’s training.

Conclusions. Thus, the developed web application, conducting research using this development, collecting indicators allows for automatic recording, accumulation and storage of them in a database, which in the future will make it possible to identify the individual characteristics of the functional state of a highly qualified athlete from stage to stage of preparation, thereby facilitating the identification of model characteristics for selecting and assessing the capabilities of the sports reserve by sport.

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Khalikov Gazinur Zinnurovich, PhD, associate Professor of the Department of Theory and Methods of Physical Culture and Life Safety, khalikov88th@gmail.com, Russia, Elabuga, Elabuga Institute (branch) of Kazan (Volga) Federal University.

Mutaeva Ilsiya Shafikovna, PhD, Professor of the Department of Theory and Methods of Physical Culture and Life Safety, mutaeva-i@mail.ru, Russia, Elabuga, Elabuga Institute (branch) of Kazan (Volga) Federal University.

Petrov Roman Evgenievich, PhD, associate Professor of the Department of Theory and Methods of Physical Culture and Life Safety, romanpetrovdr@mail.ru, Russia, Elabuga, Elabuga Institute (branch) of Kazan (Volga) Federal University.

Kuznetsov Alexander Semenovich, Doctor of Pedagogical Sciences, kuznetsov-as@mail.ru, Russia, Tchaikovsky, Tchaikovsky State Academy of Physical Culture and Sports, Kazan, Volga Region State University of Physical Culture, Sports and Tourism.

МОБИЛЬНАЯ ЛАБОРАТОРИЯ - ВЕБ-ПРИЛОЖЕНИЕ ДЛЯ ОЦЕНКИ ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ СПОРТСМЕНОВ В АЦИКЛИЧЕСКИХ И ЦИКЛИЧЕСКИХ ВИДАХ СПОРТА

Халиков Газинур Зиннурович, к.п.н., доцент кафедры теории и методики физической культуры и безопасности жизнедеятельности, khalikov88th@gmail.com, Россия, Елабуга, Федеральное государственное автономное образовательное учреждение высшего образования «Елабужский институт КФУ».

Мутаева Ильдияр Шафиковна, к.б.н., профессор кафедры теории и методики физической культуры и безопасности жизнедеятельности, mutaeva-i@mail.ru, Россия, Елабуга, Федеральное государственное автономное образовательное учреждение высшего образования «Елабужский институт КФУ».

Петров Роман Евгеньевич, к.п.н., доцент кафедры теории и методики физической культуры и безопасности жизнедеятельности, romanpetrovdr@mail.ru, Россия, Елабуга, Федеральное государственное автономное образовательное учреждение высшего образования «Елабужский институт КФУ».

Кузнецов Александр Семёнович, д.п.н., kuznetsov-as@mail.ru, Россия, Чайковский, Чайковская государственная академия физической культуры и спорта, Казань, Поволжский государственный университет физической культуры, спорта и туризма

Аннотация. Для достижения высоких спортивных результатов на современном этапе развития спорта необходимо сочетание общего и индивидуального подходов в планировании и программировании процесса подготовки спортсменов, а также обеспечения оперативной информацией о состоянии спортсменов. Данное веб-приложение было разработано для контроля и оценки функционального состояния в сочетании 3-х направлений: резервов сердца, нервно-мышечной системы, функциональные возможности мышц ног и сердца. В каждом из направлений по введенным показателям выполняется автоматический расчет производных показателей и перевод в баллы.

Ключевые слова: разработка, веб-приложение, программирование, функциональное состояние, спортсмены

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THE BENEFIT OF CRITICAL THINKING METHOD IN TEACHING A FOREIGN LANGUAGE

Khodyreva I.N.

Abstract. *The article presents the benefit of critical thinking method in teaching a foreign language to students. The possibility of using digital tools to optimize the techniques of critical thinking technology is examined. The advantage of students' participation in blogging, forums and conferences is revealed. It is analyzed the relationship between authentic materials and critical thinking development among language learners. The study reveals the application importance of authentic materials in developing students' critical thinking skills.*

Keywords: *benefit; critical thinking; a foreign language; method; digital tool; authentic*

Introduction. What is critical thinking? There are many definitions of critical thinking. In simple words, critical thinking is one of the special types of mental activity, which is aimed at interpreting the world around and evaluating the expected results. This article discusses the process of development of critical thinking among students of non-linguistic specialties during teaching a foreign language using authentic materials in English, ways of developing critical thinking of students.

The relevance of the article. The technology for the development of critical thinking is one of the modern and innovative pedagogical technologies, and the use of authentic text while teaching a foreign language is one of the promising ways to include cognitive functions in the work, as well as expand the horizons of students. Not all teachers of foreign languages realize the importance and advantage of critical thinking as a method of teaching and the tool of motivation and enhancing the quality of education. This study presents the investigation of the methods of developing students' critical thinking skills.

The purpose of the study is to analyze and assess the methods of critical thinking and their impact on the process of foreign languages teaching.

Research methods. Literature survey, analyses of literature, pedagogical observation.

Discussion. The problems and effectiveness of teaching a foreign language in universities play an important role in the discussions of the scientific pedagogical community. Relevant in recent years is not only to use the traditional methods of teaching a foreign language but also try to offer a combination of methods, the use of new computer environments and tools to develop the ability to deal with information. As students are often grouped in classes of mixed level of English, choosing content can cause challenges for teachers: Which topics should be chosen? Which textbooks might have a wide range of general content material, using a variety of texts drawn from radio broadcasts and magazine articles, for example. While such texts can afford opportunities for critical reflection, they do not offer the most appropriate models of academic discourse. So, at more advanced levels of education, for example at Master or PhD Departments, students need to be challenged with authentic academic sources, such as journal scientific articles and textbook chapters, and be

expected to write within the expectations of their chosen disciplines. Examples of authentic students' writing are particularly useful as models of embodied critical thinking. Students will be motivated and engaged by topics which are close to their scientific papers and meaningful in their future professional field, so it is good to encourage them to choose their own material to be motivated and then encourage them to analyze the quality of information.

Critical thinking in academic reading and listening. Engaging with text teachers also need to encourage their students to engage critically with the author's meanings: relating the author's text to what they already know, evaluating the author's arguments, and potentially making shifts in their own position. Teachers need to challenge their students to participate in active dialogue with the text: asking questions about the text, making links, examining the author's reasoning and probing the author's viewpoint and participate in the discourse of their discipline. Throughout this critical reading process, students are learning to appropriate academic language, as well as to extend their own understanding of the topic.

Critical thinking in academic writing and speaking. It develops in students the ability to express ideas and arguments clearly, logically and reflectively. It is a fundamental aspect of critical thinking. It is through writing and speaking that students both develop and express their critical thinking. To be successful in this aspect teachers need to develop at classes students' skills such as summarizing, comparing two similar texts, linking ideas in an argument and so on. Such introductory phrases as why..., nevertheless... without doubt...present the language of critical thinking. Teachers should offer their students to apply their acquired skills of critical thinking using such digital tools as organizing online discussions, blogging and participation in forums and conferences and also making in-class presentation. Language learning and critical thinking are mutually enhancing. Critical thinking enhances language learning at every level. Interactive work with students develop the ability of critical thinking. Students need to build confidence to raise questions, voice ideas and participate in dialogue. This means that the traditional role of the teacher to be in the centre of the teaching process can be changed to give more opportunities for student's participation. A critical-thinking class depends on the questions with a challenge and which come from the students as well as the teacher. Group work and think-pair-share activities can provide non-threatening, supported opportunities for students to practise critical thinking.

At the current time digital technologies provide an opportunity for students to practice their English. There are some popular critical thinking application (apps) such as MindNode, MondOnMap and MindMeisteras which are essential for both teachers and students to develop the ability to analyze and evaluate information effectively. Through the use of apps specifically designed to encourage deep thinking and problem-solving is possible

Conclusion. Traditional teaching methods of a foreign language should include the method of critical thinking to develop problem-solving skills to create own opinion on the base of studied literature and to approach problems with a more analytical mindset to increase the level of language proficiency. Critical thinking approach is a mutual process and it is benefit for both teachers and students to develop this skill. At the present time of digital technologies it is recommended to

study best critical thinking Apps to encourage students to promote their learning experience and motivate them.

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Khodyreva I.N., senior lecturer, Russian University of Sport (GTSOLIFK), e-mail-stranger.68@mail, Russia, Moscow

ПОЛЬЗА МЕТОДА КРИТИЧЕСКОГО МЫШЛЕНИЯ В ОБУЧЕНИИ ИНОСТРАННОМУ ЯЗЫКУ

Ходырева И.Н., ст. преподаватель, Российский Университет Спорта (ГЦОЛИФК), stranger.68@mail.ru, Россия, Москва

Аннотация В статье представлены преимущества метода критического мышления при обучении студентов иностранному языку. Рассматривается возможность использования цифровых инструментов для оптимизации приемов технологии критического мышления. Раскрывается преимущество участия студентов в блогах, форумах и конференциях. Анализируется взаимосвязь между аутентичными материалами и развитием критического мышления у изучающих язык. Исследование показывает важность применения аутентичных материалов в развитии навыков критического мышления у студентов.

Ключевые слова: пособие; критическое мышление; иностранный язык; методика; цифровой инструмент; аутентичный

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DEVELOPMENT OF STRENGTH ABILITIES OF LOWER ACROBATS USING PAIR EXERCISES AT THE STAGE OF ADVANCED LEARNING.

Khokhlov O.S., Kozlov V.V.

Abstract. *The article presents the results and general provisions on the methodology of developing the strength abilities of lower acrobats using pair exercises at the stage of in-depth learning. The means used, methods, volume and intensity of the training load are described. The application of acrobatics has positive reviews.*

Keywords: *strength abilities, pair exercises, acrobat, advanced stage of learning*

Introduction. It is obvious that good physical fitness, determined by the level of development of basic physical qualities, is the basis of efficiency in all types of activities. However, the lower acrobats do not always have enough physical training to perform complex paired elements due to the insufficient amount of information about special and general physical training in educational publications related to the irrelevance of such a sport as sports acrobatics. Not everyone knows exactly how to perform pair acrobatic exercises, for example, pyramids or various supports. Pair exercises are an affordable and effective means of physical training that do not require expensive equipment and special places of study [1, 2].

According to E.V. Perepelyukova and V.I. Thorev, the most favorable periods of strength development in young men are considered to be the age from 13-14 to 17-18 years. The sensitive period of development of absolute muscle strength is observed at the age of 16-17 years (the maximum value of the quality of strength reaches by the age of 18-20 years) [3, 4].

The relevance of our work is to increase the amount of knowledge in the field of sports acrobatics, to add an experimental method of strength development for lower acrobats of high school age from 16 to 17 years using paired exercises at the stage of in-depth learning. This will not only increase the chances of high athletic performance in competitions, but also reduce the probability of injury by strengthening the muscular-skeleton system of the whole body.

The object: physical education of children of high school age.

Subject: methods of strength development in acrobats of high school age (16-17 years old).

The purpose of the work is to increase the efficiency of the process of developing the strength abilities of lower acrobats at the stage of in-depth learning.

Research hypothesis: it was assumed that the proposed method of developing strength abilities would be effectively used in working with lower partners in pair-group sports acrobatics. To achieve the set research goal, it is supposed to solve the following tasks: 1. To study the state of the issue in the literature. 2. To develop and propose an experimental development methodology.

Methods of research: review and analysis of literary sources, pedagogical

supervision, the survey method, pedagogical experiment, analysis of the results.

Organization of the study. The research was conducted in Moscow, Trekhgorny Val str., 2-4c1 in group classes with athletes aged 16-17 years in the number of 16 people. It lasted five months from September 2022 to January 2023. Athletes trained 5 times a week for 4 hours. At the end of each training session, 40 minutes were allocated for the end of the main part of the lesson. To determine the effectiveness of pair exercises for the development of acrobats' strength abilities at the stage of in-depth learning, a pedagogical experiment was conducted in which two groups took part: a control and an experimental group, each of which had 8 acrobats aged 16-17 years. The physical training of the control group is based on a standard technique (repeated method) using general developmental exercises in a dynamic mode. The physical training of the experimental group (EG) was based on a set of exercises from the methodology presented by us, namely: strength exercises with an upper partner. The exercises were performed in a statodynamic mode together with their own or other partner, who was heavier. It is also recommended to use additional weight not only for yourself, but also for a partner.

Before and after the experiment, testing was conducted to determine the level of physical fitness of the athletes. The experiment includes four tests that have proven their effectiveness and reliability in practice: pull-ups on the crossbar (number of times), hanging on bent arms on the crossbar (sec), bending the arms in the prone position (number of times in 1 min), 16 kg kettlebell jerk (number of times).

The main part. The peculiarity of this technique is the use of a set of paired exercises with a partner. To complicate the exercises, that is, to increase the resistance in the form of a partner's mass, weights were used. Another way to complicate the exercise was to replace your partner with another with a larger body weight. As an example, several exercises from our methodology are given: the initial standing position, the upper partner stands in straight arms in a handstand, the legs of the lower one together. Holding the partner is performed as long as possible on outstretched arms in a handstand, legs straight, joined together. To complicate the exercise, weights can also be put on the legs of the upper partner to increase the effectiveness of the impact on the muscles of both partners. Exercise promotes the development of strength endurance.

Another example of pair exercises: standing, the upper partner stands on his hands and feet facing the lower one. The lower acrobat throws and catches the partner on bent arms. The exercise is performed non-stop as many times as the lower acrobat is capable of. This exercise is called "hand-to-hand pace with a toss with weights on your feet", it promotes the development of proper strength, speed-strength abilities and strength endurance.

Methods of mathematical statistics were used to process the results. The difference in the average group indicators was determined by the Student's t-criterion, since the data are objective. Table 1 shows the average statistical results of the tests of the control and experimental groups before and after the experiment, as well as the dynamics of the increase in results.

Table 1. – Changes in the test results of the control group (KG) compared with the experimental group (EG) during the experiment

Control test	Group	Before the experiment $\bar{x} \pm \sigma$	After the experiment $\bar{x} \pm \sigma$	Dynamics of results %
Pull-ups on the crossbar	K	10,88 $\pm$ 2,16	11,63 $\pm$ 2,55	6.89%
	E	10,63 $\pm$ 4,06	13,13 $\pm$ 4,54	23.51%
Hanging on bent arms on the crossbar (seconds)	K	24,71 $\pm$ 4,25	26,75 $\pm$ 4,58	8.25%
	E	24,35 $\pm$ 5,67	29,39 $\pm$ 5,52	20.69%
Bending the arms in a prone position	K	46,75 $\pm$ 2,49	48,25 $\pm$ 2,12	3.2%
	E	46,38 $\pm$ 1,76	48,88 $\pm$ 1,8	5.39%
Kettlebell jerk 16 kg	K	36,75 $\pm$ 3,28	38,13 $\pm$ 2,99	3.75%
	E	36,75 $\pm$ 6,54	39,88 $\pm$ 5,81	8.51%

According to the results of the first control test, it can be said that the control and experimental groups on average have the same level of development of this quality.

According to the results of the second control test, 5 months later, starting in September, we received significant shifts in the indicators in the experimental group. In the control group, the indicators also improved, but to a less extent. The greatest shifts were in the exercises "Pull-ups on the crossbar" (23.51%) and "Hanging on bent arms on the crossbar" (20.69%). There were minor shifts in the rest of the exercises. The lowest percentage increase in strength in the test "Bending the arms in the prone position", it is equal to 5.39%.

Conclusion:

1. The stating of the issue in the scientific literature has been studied. The control exercises comply with the standards of the TRP. There is a lack of coverage of the problem of educating strength abilities in students aged 16-17.
2. An experimental technique for developing the strength abilities of lower acrobats aged 16-17 years has been developed and proposed.
3. This technique has a strong effect on the physical qualities and technical skills of athletes. According to the results of the experiment, the students improved the quality of performance of paired exercises, where throws and holds of the upper partner were present.

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Khokhlov Oleg Sergeevich, 1st year Master's student, Department of Theory and Methods of Gymnastics alikiu0906@gmail.com Moscow, Russian university of sports «GTSOLIFK»

Kozlov Valery Vladimirovich – Candidate of Pedagogical Sciences, Associate Professor of the Department of Theory and Methods of Gymnastics, e-mail: 89161541336@mail.ru, Russia, Moscow, Russian university of sports «GTSOLIFK».

РАЗВИТИЕ СИЛОВЫХ СПОСОБНОСТЕЙ НИЖНИХ АКРОБАТОВ С ИСПОЛЬЗОВАНИЕМ ПАРНЫХ УПРАЖНЕНИЙ НА ЭТАПЕ УГЛУБЛЕННОГО РАЗУЧИВАНИЯ

Хохлов Олег Сергеевич - магистрант кафедры ТуМ гимнастики alikiu0906@gmail.com г. Москва, Российский Университет спорта «ГЦОЛИФК».

Козлов Валерий Владимирович – канд. пед. наук, доцент кафедры теории и методики гимнастики, e-mail: 89161541336@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье представлены результаты, общие положения по методике развития силовых способностей нижних акробатов с использованием парных упражнений на этапе углубленного разучивания. Описываются используемые средства, методы, объём и интенсивность тренировочной нагрузки. Прикладность акробатики имеет положительные отзывы.

Ключевые слова: силовые способности, парные упражнения, акробат, углубленный этап разучивания

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DEVELOPMENT OF A PHYSICAL REHABILITATION PROGRAM FOR MIDDLE-AGED PEOPLE WITH LUMBAR SPINE HERNIAS IN A REHABILITATION CENTER

Khrapunov K.A.

Abstract. *The purpose of this scientific work is to research and develop a physical rehabilitation program for middle-aged people with lumbar spine hernias in a rehabilitation center. Improving the effectiveness of physical rehabilitation in all its manifestations.*

Keywords: *lumbar spine hernia, physical rehabilitation program, effectiveness of rehabilitation program*

Introduction. Diseases of the musculoskeletal system today, perhaps, are on the top of the list of the most frequent health problems of modern man. The reason for this is the sedentary lifestyle that a modern person leads. From the earliest years, children unwittingly learn to sit in the wrong position in class and spend hours at the computer. As a result, by the age of 20, young people begin to have serious problems with the spine, which in the future may turn into other, no less serious diseases: scoliosis, osteochondrosis, herniated disc.

For most people, problems with the spine seem to have no solution, especially for people of mature and elderly age who are sure that the lost health cannot be returned. However, modern medicine has long known a progressive method of treating these diseases - this is kinesitherapy. Kinesitherapy is a movement treatment. This is one of the oldest and most effective methods of treating diseases of the musculoskeletal system known to mankind. The people who once developed this technique knew perfectly well: a person is born to spend his life in motion. This is the key to excellent well-being, vigor of body and spirit.

The **objective** of our study is to analyze and explain the meaning of exercises for middle-aged people with lumbar spine hernias.

Methods. Analysis of scientific and methodological literature, questionnaires, instrumental methods, psychological tests, observation in dynamics, statistical method, social method (quality of life). The study will involve 8 men aged 20-35 years. The study will be conducted on the basis of the Zagorye gym wellness center.

Results. The presented rehabilitation program contributes to the early recovery of patients with lumbar spine hernia.

Patients are treated according to individual programs, compiled taking into account the peculiarities of the course of the disease, concomitant pathology, age, severity of muscle failure.

Treatment is carried out on an outpatient basis at a time convenient for patients. The mode of attending classes is determined by the doctor at the initial consultation and depends on the speed of recovery, muscle performance, the severity of the process, taking into account also the patient's ability to attend classes.

Since medical anesthesia does not contribute to the restoration of muscle tissue, but, on the contrary, leads to its dystrophic changes, S.M. Bubnovsky uses special

analgesic exercise complexes, local cryotherapy with ice, therapeutic massage, as well as General AeroCrioTherapy as an alternative analgesia.

Drug anesthesia is dangerous for the body by losing the ability of self-regulation. The principle of treatment is simple: in our body there are so-called "deep" muscles tightly adjacent to the skeleton. They allow the bone system to maintain the correct position and function properly.

Drug anesthesia is dangerous for the body by losing the ability of self-regulation. The principle of treatment is simple: in our body there are so-called "deep" muscles tightly adjacent to the skeleton. They allow the bone system to maintain the correct position and function properly.

List of exercises:

Exercise #1. Performing the lower thrust. The patient sits on the floor or, alternatively, a universal bench facing the MTB (Multifunctional Bubnovsky simulator) and, slightly bending his legs, puts his heels into the "heels" of the MTB. Holding on to the handle, the patient will perform traction from the lower block, leaning back in parallel when exhaling. In the final position, the back should be straight. Performing two versions of the exercise (alternately) will help restore blood circulation in the lumbar region and eliminate pain. It is possible that after a few repetitions, the back muscle will start to hurt, but this is normal.

Exercise #2. Biceps of the thigh. A universal bench is placed opposite the MTB. With one knee, the patient rests on the floor, and the second leg, straight, should lie across the bench. The leg on the bench is pulled from the lower block, while the knee joint bends to the maximum on exhalation. The weight for traction is selected in such a way that the number of repetitions is about 13-15 times.

Exercise #3. Quadriceps of the thigh. The position of the body is the same, but the head should be directed to the simulator. The patient performs the traction of the upper block (necessarily on exhalation) until the leg is fully unbent at the knee. Starting position facing the simulator. Performing exercises on the quadriceps.

Exercise #4. Traction with a straightened leg. The patient lies on his back in the same way as in the previous case, and performs a leg pull from the upper block. This exercise, as well as the following ones, should be performed 15-20 times.

Exercise #5. The use of adductor muscles. The patient lies on his side (the head should be directed to the simulator) and makes a straight leg pull from the upper block.

Exercise No. 6. Traction of one knee. You also need to perform exercises that unload large joints of the legs. Here, the patient, kneeling, makes a pull from the upper block with one leg.

Exercise No. 7. Knee traction. It is intended for unloading the vertebral part. The patient lies down with his feet to the MTB and does knee traction from the upper block.

Exercise No. 8. Birch. Belongs to the same series. The patient lies down with his head to the MTB, touching the floor surface with his shoulder blades and heels, and makes a thrust from the upper block.

Exercise No. 9. The plow. It is intended for trained patients. The exercise is performed in the same way as the previous one, but from the lower block. The end point is the pelvis touching the floor surface with the legs fixed at an angle of 45 degrees.

Exercise No. 10. Squat. Thanks to the performance of such a squat, the hip

bends without axial loads on the spine, which no other barbell exercise can boast of.

Conclusion: Acceleration of rehabilitation of patients, improvement of their general condition after rehabilitation, reduction of negative consequences of diseases.

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Khrapunov Konstantin Andreevich, student, kostya.khrapunov@gmail.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

РАЗРАБОТКА ПРОГРАММЫ ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ ДЛЯ ЛЮДЕЙ СРЕДНЕГО ВОЗРАСТА С ГРЫЖАМИ ПОЯСНИЧНОГО ОТДЕЛА ПОЗВОНОЧНИКА В РЕАБИЛИТАЦИОННОМ ЦЕНТРЕ

Храпунов Константин Андреевич, студент, kostya.khrapunov@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Смыслом данной научной работы является исследование и разработка программы физической реабилитации для людей среднего возраста с грыжами поясничного отдела позвоночника в реабилитационном центре. Повышение эффективности физической реабилитации во всех ее проявлениях. В статье раскрываются упражнения, которые помогают в реабилитации лиц среднего возраста с грыжами поясничного отдела позвоночника.

Ключевые слова: грыжа поясничного отдела позвоночника, программа физической реабилитации, эффективность программы реабилитации

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DEVELOPMENT OF ENDURANCE OF 12-14 YEAR – OLD ATHLETES IN ACROBATIC ROCK 'N' ROLL

Khromykh P.K.

Abstract. *Acrobatic rock 'n' roll as a dance sport includes all aspects of sports training, which is understood as a directed process of forming the necessary arsenal of motor skills and abilities, development of various qualities and related abilities. Both at the initial stage of training*

and for transition between categories an athlete needs to develop general endurance and certain types of special endurance.

Increasing from category to category physical and psychological loads in sport require the introduction of new, more advanced methods, means and techniques of training athletes. The issue of development of general and special types of endurance in dance sport has not been considered by Russian and foreign authors and there are no general recommendations and requirements for the development of this component.

Keywords: *acrobatic rock'n-roll, special endurance, exercise programme*

Introduction. Acrobatic rock 'n' roll is one of the new and developing sports which thanks to its colourful personality, attracts a large number of participants of different ages. To a certain extent, acrobatic rock 'n' roll is more than a dance and more than a sport. It is the close combination of the art of dance and professionalism of the athlete required in acrobatic rock'n'roll that makes it unique. Acrobatic rock'n'roll classes comprehensively develop a personality, both from the socio-cultural aspect and from the moral and physical qualities.

For successful sports activity it is necessary to properly develop not only moral and volitional qualities, but also physical fitness of athletes. This task at various stages of athlete training is directly related to the development of different types of endurance necessary to fulfil the tasks and requirements associated with the category in which the athlete performs. Often coaches do not pay proper attention to the development of special endurance in athletes, which affects and even reduces the effectiveness of performance in future.

Objective. The aim of our study is to increase the special endurance of 12-14 year-old athletes in acrobatic rock'n'roll by means of specific anaerobic training.

Methods. Analysis of scientific and methodological literature; methodology of determination of physical performance by PWC 170; pedagogical experiment; methods of mathematical statistics.

Research design. The experiment on determination of special endurance of athletes in acrobatic rock'n'roll was conducted in groups of 12-14 year-old children in the number of 8 people each.

At the beginning of our study the physical fitness of children was tested. The study of physical performance of the subjects at the beginning and end of the experiment was carried out using the PWC 170 test. The technology of the study was as follows: the subjects performed two moderate power loads on a bicycle ergometer (350 and 650 kgm/min) with pedal speed 55-65 rpm, the duration of each load was 3 minutes, the rest interval between loads was 2 minutes. At the end of each minute of exercise, HR was recorded. In the experimental group the children were engaged in our developed programme. In the control group children were engaged in the traditional programme of training, which included: the preparatory part (warm-up in the form of rhythmic gymnastics or a set of choreoFigureic exercises, dance steps of European and Latin American programmes); the main part (training of motor actions, improvement of dance joints and combinations); the final part (stretching).

After 4 months, a repeated test was conducted to identify changes in physical fitness that occurred during the period of the pedagogical experiment.

Discussion. The special endurance training programme consisted of

performing complexes of general conditional exercises after dancing pieces and entirely «runs» of the programme.

After completing 1 piece of the dance programme (15-20 sec), and usually there are 5 of them, athletes begin to perform basic shifts and acrobatic elements from our developed programme of special endurance. Such basic shifts and acrobatic elements are the major part of the dance composition. Here is a list of our programme exercises.

Basic figures:

- basic step (on the spot, in couple).
- double basic step
- pair dancing
- rotations (on the spot, on the basic step)
- diagonal – RR variation

Shifts:

- portal
- top shift
- top shift with a turn
- bottom shift
- American spin

Special acrobatics:

- dive
- tie
- arm flip
- shoulder flip
- plate
- staff
- baby somersault

Acrobatics:

- forward somersaults
- back somersaults
- handspring
- Forward somersaults (1, 2, 3 in a row)
- Back somersaults (1, 2, 3 in a row)
- Jumping on the stomach
- Jumps with 180° turns

Basic figures and shifts were performed at a pace of 36 and 48 beats/min, special acrobatics exercises at a pace of 48 beats/min. The duration of one exercise was 20 seconds.

Upon completion of the pieces, the pair proceeded to "runs", which are competitive for this age and last 1:30-1:45 min. Immediately after that, the athletes started performing general conditional exercises: different types of walking and running. Various hops and jumps in running. Running for short distances. Long and high jumps. Exercises with a partner, with weights, without weights. The duration of such work was 2-3 minutes.

All exercises were performed without a rest break. During the dancing pieces performance, the rest interval after the exercises was 1-1:15 min, after the "run" 6-8 min.

The number of "runs" from 1-2 at the beginning of the experiment to 3-4 at the

end of the experiment. The duration of the experimental period was 3 months. Specific endurance training was carried out in the main part of training sessions 3 times a week. The complexity of the dance programme increased as the elements and steps were improved.

Physical performance testing was carried out before and after the set of training.

Table 1. – Dynamics of physical performance according to the PWC 170 test

Group	PWC 170 before (kgm/min)	PWC 170 after (kgm/min)	% increment	validity
Experimental n= 8	563,8±36,4	681,3±58,9	17,5	p≤0,05
Control group n= 8	567,3±25,4	601,1±28,7	5,8	p≤0,05

From the presented data we can conclude that as a result of systematic training there were statistically significant shifts in physical performance indicators. In the experimental group the initial level of physical performance was 563.8±36.4 kgm/min, and in the control group 567.3±25.4 kgm/min. After the experiment, the physical performance level of the control group was 601.1±28.7 kgm/min and the experimental group was 681.3±58.9 kgm/min. As a result of data calculation, the % gain of the experimental group was 17.5, which is three times higher than that of the control group (5.8).

Conclusion. Development of special endurance does not only contributes to the growth of this physical quality, but also to the strengthening of children's health, development of personal and volitional qualities.

The effectiveness of the development of special endurance contributes to the increase in the level of fitness of athletes in the chosen sport, their competitiveness.

Complex development of this physical quality has a beneficial effect on the body, namely on the musculoskeletal apparatus, cardiovascular and respiratory systems.

Increase of special endurance and improvement of other physical qualities necessary for a person, development and maintenance of them at the necessary level is especially important for athletes in acrobatic rock 'n' roll.

The most effective are complexes of exercises of basic gymnastics with application of ORU, applied exercises (walking, running, jumping), acrobatic exercises, exercises of rhythmic gymnastics.

Fragments of the complexes can be used as recommendations to parents for children's independent exercises at home.

The comprehensive assessment of physical fitness of 12-14 year-old children engaged in sports dancing can be used by coaches to monitor the initial level of the students and the dynamics of their development indicators in the process of training.

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Khromykh Pavel Konstantinovich – Postgraduate Student of the Department of Theory and Methodology of Gymnastics at the Russian University of Sport «GTSOLIFK», Moscow, Russia, p2504032@gmail.com

ВОСПИТАНИЕ ВЫНОСЛИВОСТИ У СПОРТСМЕНОВ 12-14 ЛЕТ В АКРОБАТИЧЕСКОМ РОК-Н-РОЛЛЕ

Хромых Павел Константинович – аспирант кафедры теории и методики гимнастики, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», Россия, Москва, p2504032@gmail.com

Аннотация. Акробатический рок-н-ролл, как танцевальный вид спорта, включает все аспекты спортивной тренировки, под этим понимается направленный процесс формирования необходимого арсенала двигательных умений и навыков, развития различных качеств и связанных с ними способностей. Как на начальном этапе подготовки, так и для перехода между категориями спортсменов нуждается в развитии, как общей выносливости, так и отдельных видов специальной.

Возрастающие от категории к категории физические и психологические нагрузки в спорте требуют введение новых, более совершенных методов, средств и приемов подготовки спортсменов. Вопрос развития общей и специальных видов выносливости в танцевальном спорте, не рассмотрен российскими и зарубежными авторами и нет общих рекомендаций и требований к развитию данного компонента.

Ключевые слова: акробатический рок-н-ролл, специальная выносливость, комплекс упражнений

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UDC 796.06

ANALYSIS OF THE QUALITY OF PHYSICAL EDUCATION AND HEALTH SERVICES IN A PRESCHOOL EDUCATIONAL ORGANIZATION CONDUCTED ON A PAID BASIS

Klokov K.A.

***Abstract.** The article presents an analysis of the quality of physical education and health services of a preschool educational organization provided on a paid basis. A questionnaire survey*

was conducted to identify the quality of service provision. The most popular physical education and health services for children of preschool educational organizations are researched. The main performance indicators of the implemented services were calculated. The loading indicators of the gym and swimming pool of a preschool educational organization have been determined.

Keywords: *preschool educational organization, physical education and health services, quality of services*

Introduction. The value of education in society is explained by the need to increase the level of education of the population in accordance with the requirements of the modern world, the influence of technical and information progress in all spheres of life. Education is that part of human life that shapes the intellectual, spiritual and cultural state of society [3, 4].

In this regard, one of the main objectives of state policy is to ensure education and its quality at all levels, including preschool.

Our country guarantees universal accessibility, including preschool education in state or municipal educational organizations [1]. In accordance with the Federal Law “On Education in the Russian Federation,” the main educational goal of the activities of a preschool educational organization is the implementation of preschool education programs [2].

However, the latest changes that the preschool education system in Russia has undergone, associated with the introduction of the Federal State Educational Standard for Preschool Education (Order of the Ministry of Education and Science of the Russian Federation dated October 17, 2013 No. 1155) have led to a number of qualitative changes in preschool education. New pedagogical technologies have appeared, the variability of software and methodological support has increased, and a qualitatively different mechanism for expert assessment and monitoring of the quality of educational services, including paid services, is being formed. The latter has become one of the priority areas of activity of the preschool educational organization.

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«On the national development goals of the Russian Federation for the period until 2030» sets the task of creating conditions for physical education and sports, mass sports for all categories and groups of the population. Including increasing the level of provision of the population with sports facilities to increase to 70% by 2030 the proportion of citizens systematically involved in physical culture and sports.

There are 1,156 preschool educational organizations (167,945 students) in the Nizhny Novgorod region. According to federal statistical observation in form 1-FC, 100,945 people (more than 60% of the total number of pupils) attend physical education classes in preschool educational organizations. More than 3,000 preschool children attend sports sections at the bases of additional education organizations, physical education and health complexes, and organizations providing sports training in the Nizhny Novgorod region [5].

The goal is to improve the physical education and health activities of preschool educational organizations by expanding the types of paid physical education and

health services.

Methods - analysis of scientific and methodological literature, questioning, pedagogical experiment.

Discussion. Hypothesis – it was assumed that the introduction of new physical education and health services will improve the efficiency of physical education and health work and the economic efficiency of a preschool educational organization.

The founder of the municipal budgetary preschool educational institution «Kindergarten № 137» is the Department of Education of the Nizhny Novgorod city administration. The number of kindergarten students is 246 people (including 128 children aged 5-7 years). In addition to the three compulsory physical education classes, preschoolers aged 5-7 years are provided with additional services that have a physical education, health, social, communicative and artistic focus. As a physical education and health service, students are given the opportunity to engage in swimming, water aerobics, and general physical training with the predominant use of outdoor games and elements of volleyball and competitive games (relay races). A total of 76 children aged 5-7 years are engaged in four physical education and health sections of the kindergarten.

The kindergarten has a gym (9 m x 8 m).

Standard capacity of the gym = $(18 \times 10) \times 1 / 0.5 = 360$ people per day. The serving capacity of the gym = $(360 \times 5) / 2 = 900$ people.

In total, 246 people regularly train in the gym.

Gym occupancy efficiency factor = $246 / 900 \times 100\% = 27.3\%$. The main load of the gym occurs from 9.00 to 11.00 and from 16.00 to 18.00. The average workload is 35% of the norm. From 6.00 to 7.00 and from 11.00 to 16.00 the hall is empty.

The kindergarten has a swimming pool (6 m x 10 m).

Standard capacity of the pool = $(20 \times 8) \times 1 / 0.5 = 320$ people per day. Pool capacity = $(320 \times 5) / 2 = 800$ people.

In total, 176 children regularly practice in the pool. Pool load efficiency factor = $176 / 800 \times 100\% = 22\%$.

The main loading of the pool occurs from 10.00 to 13.00 and from 17.00 to 18.00. The average workload is 52.5% of the norm. From 13.00 to 16.00 the pool is not used.

The occupancy rate of the gym and swimming pool makes it possible to introduce new physical education and health services.

In order to identify an assessment of the quality of the provision of paid physical education and health services in kindergarten No. 137 in the city of Nizhny Novgorod, a questionnaire survey was conducted among 110 parents.

Table 1 presents the most important indicators of significance that demonstrate the requests of parents when receiving physical education and health services for their children.

Table 1. – Indicators of the degree of demand for parameters of physical education and health services

Service parameters	Degree of significance, points					Number of responses	Total points (ai)	Weight factor (qi)
	1	2	3	4	5			
1. Team sports (football, volleyball, basketball)	1	2	3	4	5	- 3 5 51 51	480	0,0273
2. Physical education and recreational activities in the pool (swimming, water aerobics)	1	2	3	4	5	- - 8 45 57	489	0,0278
3. Ability to swim	1	2	3	4	5	- - 5 18 87	522	0,0297
4. Development of coordination abilities	1	2	3	4	5	- - - 23 87	527	0,0300
5. Improving motor skills	1	2	3	4	5	- - 3 14 93	530	0,0302

The survey showed that the following physical education and sports services are in greatest demand: team sports (football, volleyball, basketball), swimming and, above all, swimming lessons, as well as aqua aerobics classes. As the most sought-after physical quality, parents pointed to the development of children's coordination abilities, and also paid attention to improving vital motor skills.

Table 2 presents indicators of the degree of satisfaction with the provision of paid physical education and health services.

From the data obtained, it can be noted that respondents are not completely satisfied with the provision of paid physical education and health services.

After a questionnaire survey, two paid physical education and health services were introduced in kindergarten No. 137 for children aged 5-7 years: «Plavnichok» – swimming lessons and «Flying Ball» – general physical training classes with the predominant use of outdoor games and volleyball elements.

Table 2. – Indicators of the degree of satisfaction with paid physical education and health services

Service parameters	Degree of satisfaction, points					Number of responses	Sum of points (Pi)	Quality Index (Qi)	qi x Qi
	1	2	3	4	5				
1. Team sports (football, volleyball, basketball)	1	2	3	4	5	90 15 5 - -	135	0,2454	0,0066
2. Physical education and recreational activities in the pool (swimming, water aerobics)	1	2	3	4	5	35 28 12 25 10	277	0,5036	0,0140
3. Ability to swim	1	2	3	4	5	28 35 8 21 18	296	0,5381	0,0159
4. Development of coordination abilities	1	2	3	4	5	3 21 28 41 17	378	0,6872	0,0206
5. Improving motor skills	1	2	3	4	5	8 16 23 48 15	376	0,6836	0,0206

These services made it possible to improve respondents' satisfaction with the provision of paid physical education and health services, as shown in table 3.

Table 3. – Indicators of the degree of satisfaction with paid physical education and health services after the introduction of new services

Service parameters	Degree of satisfaction, points					Number of responses	Sum of points (Pi)	Quality Index (Qi)	qi x Qi
	1	2	3	4	5				
1. Team sports (football, volleyball, basketball)	1	2	3	4	5	- - 14 28 68	494	0,8981	0,0251
2. Physical education and recreational activities in the pool (swimming, water aerobics)	1	2	3	4	5	- - 11 39 60	489	0,8890	0,0248

Table 3 (continued)

Service parameters	Degree of satisfaction, points					Number of responses	Sum of points (Pi)	Quality Index (Qi)	qi x Qi
3. Ability to swim	1	2	3	4	5	- 3 14 38 55	475	0,8636	0,0256
4. Development of coordination abilities	1	2	3	4	5	- - 8 45 57	489	0,8890	0,0266
5. Improving motor skills	1	2	3	4	5	- 5 9 35 61	482	0,8763	0,0264

As a result of the introduction of popular services, the integral indicator of the quality of physical education and health services increased from 0.7919 (average quality level) to 0.8662 (high quality level).

Conclusion. The organization of physical education and health services for children 5-7 years old on a paid basis made it possible to: increase the number of students by 24 people (i.e. by 19% of the total number of children 5-7 years old in a preschool organization); increase the occupancy of the gym from 35% to 42% (by 7%) and the swimming pool from 52% to 62% (by 10%); increase the integral indicator of the quality of physical education and health services to a high level of 0.8662; increase income from paid physical culture and health services by 144 thousand rubles per year and net profit – by 47.2 thousand rubles (the net profit ratio was 22.0%).

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Klokov Kirill Andreevich, graduate student, kirillklokov4@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian university of sports «GTSOLIFK».

АНАЛИЗ КАЧЕСТВА ФИЗКУЛЬТУРНО-ОЗДОРОВИТЕЛЬНЫХ УСЛУГ В ДОШКОЛЬНОЙ ОБРАЗОВАТЕЛЬНОЙ ОРГАНИЗАЦИИ ПРОВОДИМЫХ НА ПЛАТНОЙ ОСНОВЕ

Клоков Кирилл Андреевич, аспирант, kirillklokov4@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье представлен анализ качества физкультурно-оздоровительных услуг дошкольной образовательной организации проводимых на платной основе. Проведён анкетный опрос с целью выявления качества оказания услуг. Показаны наиболее востребованные физкультурно-оздоровительные услуги для воспитанников дошкольной образовательной организации. Проведён расчёт основных показателей эффективности внедрённых услуг. Определены показатели загрузки спортивного зала и бассейна дошкольной образовательной организации.

Ключевые слова: дошкольная образовательная организация, физкультурно-оздоровительные услуги, качество услуг

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PARENTS INFLUENCE ON INCREASING TRAINING LOADS OF FOOTBALL PLAYERS OF INITIAL TRAINING GROUPS

Kohan S.P.

Abstract. *Effective training of football players is based on the scientifically grounded construction of the multi-year training system and requires a rational building of the training process. The study reveals an insufficiently studied factor that influences the forcing of training and early specialization of young football players. It is shown that parents can be the cause of increasing training loads in children.*

Key words: *initial training of football players, early specialization, forcing sports training*

Introduction. Modern football places high demands on the level of athlete's fitness. Effective development and maximum realization of the athlete's motor capabilities is possible with the rational building of a multi-year training process [3, 4, 7].

The first stage of multi-year training of football players is the stage of basic training. In the Russian system of state football schools, children are enrolled from the age of 7, in private academies of football clubs from 5-6 years old. According to some data [2] in the leading football academies in Europe, the basic training of football players is carried out from the age of 6. At the same time, the optimal age to start football is the period from 8 to 10 years old [6]. There is a need for rational planning of the process of multi-year training of children, to avoid the adverse effects of early specialization.

The coach influence on the multi-year training process building and the increase of loads is undoubted, however, as practice shows, the personal motives of parents can be the reason for increasing the training loads of children.

The purpose of our study is to determine the influence of parents on the football players training load increasing at the initial stage of training.

Methods: literature search, survey.

Research design. We developed questionnaires to determine the number of training sessions per week and the number of football schools where young football players were training at the same time. The respondents were parents of football players enrolled in Children's and Youth Sports Schools and Schools of Moscow and Belgorod (53 people). All children were engaged in initial training groups (7-9 years old).

Results. We have put forward the assumption that parents are one of the significant factors influencing the volume of training load of young football players. As a result of the conducted questionnaire survey of football players' parents, we obtained data on the number of football schools in which their child is engaged in one time (table 1).

Table 1. – Results of the questionnaire survey of parents regarding the number of football schools their child attends at one time

Number of football schools in which the child is involved	1	2	3
% of respondents who were positive	88,7%	11,3%	0%

The majority of respondents – 88.7% noted that their children are engaged in one sports school, but 11.3% of respondents indicated that their child is simultaneously engaged in two football schools to improve the effectiveness of training. It was revealed that parents consider attending additional football lessons by their children to be an effective means of achieving a high level of fitness.

The study established the number of training sessions attended by young football players per week, and also clarified the parents' opinion on the necessary number of training sessions for more effective preparation of football players at the stage of basic training (fig. 1).

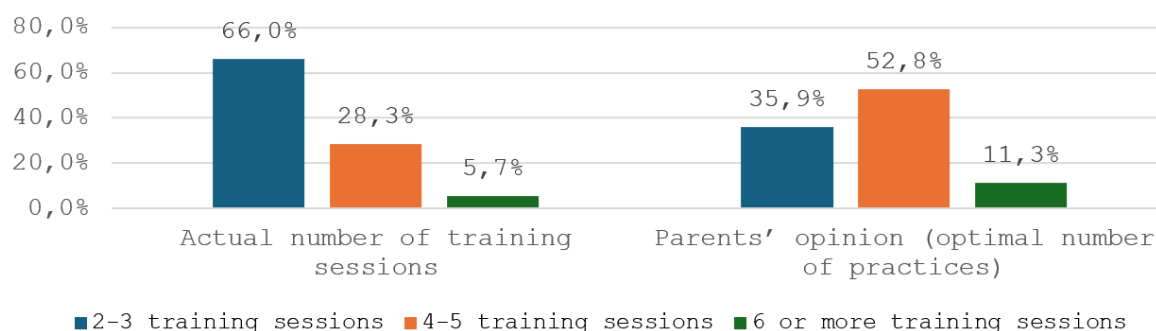


Figure 1. – Actual number of training sessions attended by children and parents' opinion on the number of training sessions for effective training of players of this age group

It follows from the received data that 34% of children at the stage of basic training attend 4 or more training sessions per week (4-5 training sessions per week attend – 28.3% of children, 6 training sessions per week and more – 5.7%). According to the majority of parents who participated in the survey, for more effective training of young football players of 7-9 years old, the number of training sessions per week should reach 4-6 training sessions per week. This volume of training loads exceeds the official norms recommended by the federal standard of sports training in football for this age. As follows from the results of the study, parents often act as one of the factors that influence the increase of the training load of young athletes and contribute to forcing the process of their training.

Conclusions:

1. The work reveals an insufficiently studied factor critically influencing the increase of training load in young Russian football players, affecting the forcing of their training.

2. It is shown that parents are one of the factors influencing the increase in the number of organized training sessions in young football players.

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Kohan Sergey Pavlovich, post-graduate student, sergejkohan@mail.ru, Russia, Moscow, Russian university of sport «GTSOLIFK».

Scientific supervisor – Vovk Sergey Ivanovich, Russia, Moscow, Russian university of sport «GTSOLIFK»

ВЛИЯНИЕ РОДИТЕЛЕЙ НА УВЕЛИЧЕНИЕ ТРЕНИРОВОЧНЫХ НАГРУЗОК ФУТБОЛИСТОВ ГРУПП НАЧАЛЬНОЙ ПОДГОТОВКИ

Кохан Сергей Павлович, аспирант, sergejkohan@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Вовк Сергей Иванович, Российский университет спорта «ГЦОЛИФК»

Аннотация. Эффективная подготовка футболистов основывается на научно обоснованном построении многолетней системы подготовки и требует рационального построения тренировочного процесса. В исследовании выявлен недостаточно изученный фактор, влияющий на форсирование подготовки и раннюю специализацию юных футболистов. Показано, что причиной увеличения тренировочных нагрузок у детей могут быть родители.

Ключевые слова: начальная подготовка футболистов, ранняя специализация, форсирование спортивной подготовки

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FEATURES OF TACTICAL TRAINING FOR HOCKEY ATTACKERS AGED 13-14 DURING DEFENSIVE MOVES

Kokhno V.O., Cherenkov D.R.

Abstract. *This research investigates the defensive tactical maneuvers of 13-14-year-old hockey forwards, aiming at identifying common errors and assessing the importance of defensive actions in youth hockey development. Video analysis of 32 matches and a survey of 71 expert coaches provided insights into the key indicators of successful defensive tactics. Results highlight a tendency to prioritize defensive actions over offensive strategies, indicating a need for reevaluation and modernization of tactical training methods in youth hockey programs.*

Keywords: *youth ice hockey, tactical maneuvers, defensive actions, coaching preferences, training methods*

Introduction. Currently, youth ice hockey places high demands on the skill level of young players, driven by the rapid development of both the sport itself and athletics in general. With each passing year, training facilities and competition venues continue to improve and evolve. Based on this, there is a proliferation of new approaches and methodologies for athlete development over extended periods of athletic training, leading to enhancements in the technical proficiency of hockey players. However, the prescribed norms for assessing physical qualities such as speed, endurance, agility, strength, and flexibility fail to adequately evaluate and instill in young hockey players an understanding of defensive tactical maneuvers. Among the key factors in hockey player development is tactical training, which constitutes an integral component of the preparation process for hockey players.

Research Objective. An identification of the most crucial tactic maneuvers employed by 13-14-year-old hockey forwards during defensive actions.

Research Methods:

1. Video analysis of matches.
2. Pedagogical observation.
3. Surveying of coaches.

Research Findings. The initial phase of the research involved conducting video analysis of 32 matches featuring youth hockey teams (attackers) aged 13-14 from HC Atlant (Mytishchi), HC Dynamo (Moscow), and HC CSKA (Moscow). The aim was to identify errors committed by attackers during defensive actions (loss of puck control). Existing questionnaires designed to identify leading tactical actions of young hockey players were adapted, and a survey of expert coaches (n=71) in the field of youth ice hockey from various regions of the Russian Federation was conducted. The surveyed coaches represented teams such as Dynamo (Moscow) (n=16), CSKA (Moscow) (n=15), Atlant (Mytishchi) (n=14), Ak Bars (Kazan) (n=14), and Salavat Yulaev (Ufa) (n=12).

As a result of the analysis, we identified forty key indicators of the successful execution of tactical actions, seventeen of which pertained to defensive tactical actions.

The survey included the following question: "What should be paid attention at and given more time during practices in terms of teaching your team tactics?" The survey results are presented in table 1.

The most necessary tactical actions for implementing tactics according to coaches of youth hockey schools (n=71)

The assessment was conducted on a five-point rating scale.

Table 1. – Importance of tactical actions based on survey results

№	Tactical Actions	Result
1	Shots on goal (SOG)	4.98
2	Timeliness of passes	4.91
3	Player interaction on the ice	4.87
4	Puck handling	4.82
5	Coordinated puck retrieval with a teammate	4.71
6	Unexpected passes	4.71
7	Stealing the puck from the opponent	4.68
8	Speedy maneuvering	4.65
9	Transitioning from offense to defense	4.61
10	Controlling opponent actions	4.60
11	Playing in a numerical disadvantage	4.59
12	Pass accuracy	4.57
13	Playing in a numerical advantage	4.55
14	Playing for puck possession after faceoff	4.53
15	Ice positioning	4.51
16	Dribbling around opponents	4.50
17	Passive puck retrieval	4.48
18	Long/short puck passes	4.47
19	Attacking side's collective pressing	4.46
20	Counterattack from the offensive zone	4.45
21	Active puck retrieval	4.43
22	Defensive formation	4.41
23	Opponent player coverage	4.37
24	Player interaction (lines, pairs)	4.33
25	Opening up space on the ice	4.29
26	Partner support	4.23
27	Passing the puck to a teammate	4.23
28	Personal opponent coverage	4.22
29	Receiving the puck oneself	4.21
30	Blocking opponents in tight spaces	4.19
31	Evading opponent coverage	4.07
32	Pressing	3.99
33	Partner support	3.94
34	Creating the best position to receive a pass	3.92
35	Obstructing the goalkeeper's view	3.87
36	Zone defense	3.81
37	Counterattack from the defensive zone	3.77
38	Partner support	3.76
39	Power plays	3.64
40	Offense (gradual)	3.45

As evident from table 1, the leading indicator of tactical actions among young hockey players is "Shots on goal" (SOG), with a rating of 4.98 out of 5.00 possible. We concluded that this is linked to an immediate desire to produce results, often at the expense of neglecting other aspects of tactical preparation. The second most significant indicator is "Timeliness of passes," suggesting that coaches strive to execute attacks and opponent counterattacks with maximum efficiency and minimal time loss. The third indicator, "Player interaction on the ice," is closely tied to coaches' efforts to avoid conceding goals at all costs, making these three indicators the most crucial tactical actions according to them.

Conclusions. The errors identified through video analysis and coach surveys led to the conclusion that young hockey players and expert coaches often overlook defensive actions, not giving them the attention, they deserve. They may perceive defensive actions as less crucial compared to offensive maneuvers in their competitive activities. There is a need to reassess the current approach to teaching defensive actions to young attackers and modernize the existing methodology of tactical training in youth hockey schools to enhance teams' defensive capabilities.

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Kokhno Vladimir Olegovich, PhD student of the Department of Theory and Methodology of Hockey named after A.V. Tarasov "Russian University of Sport" "GTSOLIFK", Moscow, samp-789@yandex.com.

Cherenkov Dmitry Robertovich, PhD in Pedagogic sciences, Associate professor of the Department of Theory and Methodology of Hockey named after A.V. Tarasov of the «Russian University of Sport «GTSOLIFK», Moscow, Russia, dmitriych61@mail.ru

ОСОБЕННОСТИ ТАКТИЧЕСКОЙ ПОДГОТОВКИ ХОККЕЙНЫХ НАПАДАЮЩИХ 13-14 ЛЕТ ВО ВРЕМЯ ОБОРОНИТЕЛЬНЫХ ДЕЙСТВИЙ

Кохно Владимир Олегович, аспирант кафедры ТуМ хоккея имени А.В. Тарасова, Российского Университета Спорта «ГЦОЛИФК», Москва, Россия, samp-789@yandex.com.

Черенков Дмитрий Робертович, к.п.н., доцент кафедры теории и методики хоккея имени А.В. Тарасова, директор ИДО, Российского Университета Спорта «ГЦОЛИФК», г. Москва, Российская Федерация, dmitriych61@mail.ru.

Аннотация. В данном исследовании изучаются защитные тактические маневры хоккейных нападающих 13-14 лет с целью выявления типичных ошибок и оценки значения защитных действий в развитии юношеского хоккея. Видеоанализ 32 матчей и опрос 71 тренера-эксперта позволили получить представление о ключевых показателях успешной оборонительной тактики. Результаты подчеркивают тенденцию отдавать приоритет защитными действиями над наступательными стратегиями, что указывает на необходимость переоценки и модернизации методов тактической подготовки в молодежных хоккейных программах.

Ключевые слова: юниорский хоккей, тактические действия, оборонительные действия, предпочтения тренеров, методы тренировки

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THE INFLUENCE OF THE "POWER BREATHE" BREATHING TRAINER ON THE ENDURANCE LEVEL OF ROWERS

Komlev N.A., Zahryamina L.N.

Abstract. *This article presents the results of a study of the effect of the "Power breathe" breathing trainer on the endurance level of elite rowers.*

Keywords: *breathing trainer "Power breathe", rowing, rowers, endurance, elite sports*

Introduction. Rowing is a cyclical sport where the priority is the development of general and special endurance, requiring a huge amount of effort from the athlete to achieve a high athletic result [1].

Many coaches mainly focus on training the cardiovascular system, not paying attention to the respiratory system [2]. The analysis of scientific and methodological literature confirms that the respiratory muscles are prone to fatigue when performing high-intensity work [3]. Based on this, training the respiratory muscles can increase the level of endurance of athletes and, as a result, athletic performance. Solving this problem will improve the training process in rowing. For this reason, it is necessary to assess the impact of the "Power breathe" trainer on the endurance level of the elite rowers.

The purpose of the study. To determine the effect of the "Power breathe" breathing trainer on the endurance level of the elite rowers.

Organization and methods of research. To solve the tasks, the following research methods were used: analysis of scientific and methodological literature; pedagogical observation; pedagogical experiment; method of mathematical data processing. The data was obtained between September 10, 2022 and February 10, 2023. Athletes aged 21-23 participated in the study. In total, 20 men of the group of the elite sportsman. All athletes are professionally engaged in rowing and are winners, prize-winners and participants of the Russian championship. In order to determine the primary level of endurance, the following tests were used: athlete's body weight (kg.); lung volume (VO₂ liters); average power on the Concept-2 rowing simulator at a distance of 2000 meters (Watts); running at 3000 meters (min.); VO₂ max step test on the Concept-2 rowing simulator (ml. min. kg.).

The results of the study and their discussion. At the beginning of the study, the athletes underwent initial testing, which took place in the city of Kazan at the Rowing Sports Center. Table 1 shows the average data of testing the level of endurance of athletes. Later, two groups of 10 people each were randomly formed. The control group trained according to the generally accepted training program of the Russian national team, the experimental group trained according to the method we proposed using the "Power breathe" breathing simulator.

According to the results of the initial testing, we can observe a slight difference between the athletes of both groups. The average body weight in the control group is 1 kg lower than in the experimental group. The average lung volume and VO₂ MAX levels are almost identical in both groups. An analysis of the results obtained on the

Concept-2 rowing simulator at a distance of 2000 meters showed that the control group had 2 watts higher than the experimental group, which indicates a small difference between the studied groups. In the 3000 meter run, the performance of the experimental group was 12 seconds higher than that of the control group.

Table 1. – Average values of athletes' endurance level at the beginning of the experiment

Group	Weight (kg)	Lung volume (litters)	c-2 (Watts)	Run 3000 m (min.)	VO2 max Test MI/min/kg
Control N=10	89,2±1,6	5,4±0,3	447,6±7,3	11,57±0,36	61,8±1,3
Experimental N=10	90,3±2,5	5,4±0,4	445,5±10,9	11,45±0,30	61,7±1,7

Athletes from both groups trained for 12 weeks. Table 2 shows the microcycle scheme of the methodology developed by us, which included 10 workouts per week and 1 day off. The athletes of the experimental group performed warm-up exercises with the "Power breathe" breathing simulator 3 times a week, while the athletes of the control group performed a general developmental warm-up. Then the athletes of both groups performed a special warm-up on the rowing simulator "Concept-2", and after that - the task provided for in the training plan.

Table 2. – Microcycle Figure

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Warm up with Trainer		Warm up with Trainer		Warm up with Trainer		Weekend
Morning training	Morning training	Morning training	Morning training	Morning training	Morning training	
Evening training	Evening training		Evening training	Evening training		

At the end of the study, the athletes underwent a control test, which included the same tests as at the beginning (table 3). Based on the test results, we can see an increase in results in both groups.

Table 3. – Average values of athletes' endurance level at the end of the experiment

Group	Weight (kg)	Lung volume (litters)	c-2 (Watts)	Run 3000 m (min.)	VO2 max Test MI/min/kg
Control N=10	88,6±2,5	5,8±0,5	460,6±9,5	11,48±0,32	62,9±1,6
Experimental N=10	91,4±3,2	6,7±0,6	487,9±7,6	11,29±0,28	67,9±1

According to the results of the study, the lung volume of the athletes in the control group remained unchanged, while that of the experimental group increased by 1.3 liters. The average power on the Concept-2 rowing simulator at a distance of 2000 meters increased in both groups. In the experimental group, the indicators are

27.3 watts higher than in the control group, which indicates the effectiveness of the proposed technique using the "Power breathe" breathing simulator. At the end of the study, both groups had an increase in VO₂ max levels. However, in the experimental group, the indicators were 5 units higher than in the control group. In the 3000-meter run, the control group showed slightly higher results, but the experimental group had 19 seconds higher performance. It is worth noting the improvement in the results of the experimental group, they are higher than those of the control group by 7 seconds. Based on this, it follows that the methods developed by us using the "Power breathe" breathing trainer contributes to the growth of overall endurance among elite rowers.

Conclusions:

1. The primary level of endurance of rowers of the highest sports skill has been determined. According to the results of the initial study, it was found that the results are equal in both groups.

2. The methodology developed by us has been introduced into the training process of the academic rowers of the group of higher sports skills. The experimental group trained for 12 weeks, 10 workouts per week using the "Power breathe" breathing trainer.

3. The level of influence of the "Power breathe" breathing tainer was assessed. According to the results of the control testing, the experimental group showed higher results than the control group. Based on this, we can conclude that the "Power breathe" breathing trainer increases the endurance level of the elite rowers.

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Komlev Nikita Alekseevich, 2-nd year master student of the Department of Rowing and Sailing T&M, nikita.komlev.2017@gmail.com, Russia, Moscow, Federal State Budget Education Institution of Higer Education, Russian university of sport «GTSOLIFK».

Zakhryamina Liliya Nikolaevna, PhD in Education, Lecturer of the Department of Rowing and Sailing T&M, zakhryamina_liliya@mail.ru, Russia, Moscow, Federal State Budget Education Institution of Higer Education, Russian university of sport «GTSOLIFK».

ВЛИЯНИЕ ДЫХАТЕЛЬНОГО ТРЕНАЖЕРА «POWER BREATHE» НА УРОВЕНЬ ВЫНОСЛИВОСТИ ГРЕБЦОВ АКАДЕМИСТОВ

Комлев Никита Алексеевич - магистр кафедры ТуМ гребного и парусного спорта имени А.Ф. Комарова, nikita.komlev.2017@gmail.com, Россия, Москва, Федеральное

Государственное бюджетное учреждение высшего образования «Российского университета спорта «ГЦОЛИФК».

Захрямина Лилия Николаевна – к.пед.н., доцент кафедры ТиМ гребного и парусного спорта имени А.Ф. Комарова, zakhryamina_liliya@mail.ru, Россия, Москва, Федеральное Государственное бюджетное учреждение высшего образования «Российского университета спорта «ГЦОЛИФК».

Аннотация. В данной статье приведены результаты исследования влияния дыхательного тренажера «Power breathe» на уровень выносливости гребцов-академистов группы высшего спортивного мастерства (МС).

Ключевые слова: дыхательный тренажер «Power breathe», академическая гребля, гребцы-академисты, выносливость, высшее спортивное мастерство

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UDC 796

PROCESS OF PLANNING AND CONDUCTING OF SPORT EVENT

Komova Maria

Abstract. Any of sport events can be and should be classified. It is necessary to use different methods of planning while conducting such events. This research has determined the usage of production planning methods instead of project planning methods when planning sport events.

Keywords: planning and conducting, sport event, classification, production planning method, classification

Introduction. For the qualitative implementation of all stages of a sporting event, it is necessary to pre-plan and organize the processes of preparation and implementation of the sporting event. Pre-planning includes analyzing and calculating resources, defining all processes, sequencing the processes, etc. Without process planning, the organization of the same processes cannot be properly built.

Under sports events we will understand sports competitions, as well as training events, including theoretical and organizational parts, and other activities in preparation for sports competitions involving athletes.

The purpose of the study is to show the possibility of using production planning techniques in planning sport events.

Methods. Literature survey.

Structure of sporting events. Sports events have a certain structure. A mass sporting event is a sport and entertainment event that includes the following stages:

- meeting of guests and athletes;
- opening and closing ceremonies;

- competition;
- awarding;
- final works.

In addition to the processes that occur during any sporting event, there are processes that occur during the planning and organization of sporting events. For example, before there is a meeting of guests at a sporting event, it is necessary to plan and organize the sale of tickets, advertising of the sporting event, preparation of seating, etc. Also for the opening and closing parts of the event it is necessary to prepare a script plan in advance, develop choreography for artists, recruit the right number of people, rehearse the choreography, etc.

In the textbook by S.V. Altukhov "Event Management in Sports. Management of sports events" in Chapter 3 in paragraph 3.2. there is a table that lists the sections of preparation and realization of a sporting event. The structure of a sporting event is the basis for a large number of sporting events. Especially for those sporting events that take place at the state level and that are included in the unified calendar plan.

Selection of classification features

The purpose of classifying sport events is to further select planning techniques according to the sport event classifier. Therefore, the selection of classification features in this paper is related to the further selection of planning techniques.

Three classification attributes are chosen to classify sport events: rank, periodicity and venue.

Rank. A rank of the competition is an important indicator in sports. The rank of a competition is determined by various parameters. Main parameters:

- a number of participants and countries;
- a size of the prize fund;
- a level of judges.

The importance of the rank is that it affects the attractiveness of the competition for athletes and spectators, the level of media attention, the possibility for athletes to get points for participation in other competitions, the attraction of sponsors and other factors. As a rule, the higher the rank of the competition, the higher the prize fund and the level of judges, as well as the more media attention and participants from different countries. Athletes who take prizes in high ranked competitions can get more points for participation in other competitions and increase their rating in the ranking system.

It is reasonable to consider two ranks:

1. High rank. It includes National Championships and National Open tournaments.

2. Medium rank. It includes Regional competitions and local level cups and tournaments.

Frequency. This attribute influences the choice of planning methodology, firstly, from the point of view of using the same resources. If a sporting event takes place every week, there is no need to use different venues (unless it is regulated by a change of sport), make new advertising (new banners), look for new referees every time. Second, the periodicity of sporting events affects the uniqueness of sporting events. For example, sports events held once a year have a higher uniqueness than sports events held once a month. In the first case, in the planning methodology, it is

necessary to lay down resources to prepare a scenario solution for the big gala part of the sport event. In the second case, the same stage of preparation of the ceremonial part will take much more time and other resources.

Two variants of recurrence can be distinguished:

- 1 time per year;
- several times a year.

Location. This attribute influences the planning methodology. When the venue(s) of an enterprise is selected as the venue(s) for a sporting event, there is a great saving of resources. This affects the process of finding a venue for the sports event, checking the venue, coordinating the venue, checking or finding equipment, etc. As a result, some of the processes in the planning methodology are removed and time is freed up for other processes.

The use of the designations "enterprise sites" and "leased sites" does not always correspond to the location of the sites. There are instances where a business has rented venues from another business over several years for the same event. In this case, the venue will belong to the group of "enterprise venues", since no resources will be spent on finding a venue for the sports event, checking the venue, coordinating the venue, checking or searching for equipment, etc.

General attributes. In addition to the private attributes that have been taken to classify sport events (rank, frequency and location), there are general attributes (uniqueness and typicality). The attribute of uniqueness and the attribute of typicality can be applied to different spheres of activity, including sport events. Consequently, from the private attributes (rank, frequency and location) we can further move to the general attributes (uniqueness and typicality).

All attributes (both private and general) influence the choice of planning methodology.

After classifying sport events with respect to the private classification attributes, it is possible to proceed to the classification of sport events with respect to the general classification attributes. To do this, each private classification attribute needs to be considered in terms of the general classification attributes.

The rank of sport events can be high and medium. High rank can be compared with the attribute of uniqueness, medium rank with the attribute of typicality. High rank sport events are never repeated, are planned and conducted in different ways, are always something new, therefore, these sport events are unique. The opposite is the case with medium-ranking sport events. These sport events have the same structure, may be identical or differ from each other insignificantly, therefore, these sport events are typical.

The other two attributes (frequency and location) can be similarly divided. Sports events held once a year are unique, several times a year are typical. Sports events held at different venues - unique, at one venue - typical.

The following division is obtained:

High-ranking sporting events held once a year at different venues are unique. Medium-ranking sporting events that take place several times a year at the same venue are typical.

Conclusions. The necessity of selecting techniques for planning sports events leads to the need to develop an appropriate classifier of sports events. The classifier

of sport events may include the following particular classification attributes:

- rank;
- periodicity;
- venue.

And general classification attributes:

- uniqueness;
- typicality.

On the basis of the classifier of sports events it is possible to give recommendations on the selection of planning techniques in accordance with the developed classifier of sports events.

Recommendations for the selection of planning methodologies according to the sport event classifier. In order to select planning techniques for different types of sport events, it is necessary to rely on the general classification of objects – unique and typical. These two large groups can be considered in terms of different types of planning. In terms of uniqueness, in production planning only unit production planning, and in project planning both network planning and Gantt method planning are suitable for this feature. Unit production planning and project planning, in turn, have similarities. Unit production can be viewed from the point of view of a project. And the project is always unique, has a goal and time frame.

The planning of high-level sporting events that take place once a year at different venues can be related to both unit production planning and project planning. Each high-ranking sporting event is unique and requires an individual approach. In the project approach to planning a sporting event, it is impossible to select norms, so the duration of work at the planning stages can only be calculated by a probabilistic method.

If we consider the sign of typicality, then in production planning we can distinguish the planning of serial production. In batch production the batch size is specified, batch release occurs with a certain periodicity, time and other costs are known. Project planning does not correlate with the sign of typicality.

Sports events of medium rank, repeated several times a year and held at one site, are comparable to the production of serial type of production. In this case, the rank of the sporting event is comparable to the batch size, the recurrence of the sporting event per year is known, and the required costs of the sporting event are known. In the production approach to planning a sporting event it is possible to select time norms for most processes, so the planning is deterministic.

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Komova Maria Mikhailovna, 1-st year master student of the direction "Physical education", komova-marusa@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

ПРОЦЕСС ПЛАНИРОВАНИЯ И ПРОВЕДЕНИЯ СПОРТИВНОГО МЕРОПРИЯТИЯ

Комова Мария Михайловна, магистрант 1-го года обучения направления «Физическая культура» komova-marusa@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Все спортивные мероприятия могут и должны быть классифицированы. Существует необходимость в использовании различных методов планирования при организации и проведении таких мероприятий. Данное исследование доказывает преимущество использования продуктивных методов планирования вместо проектных при планировании спортивных мероприятий.

Ключевые слова: планирование и проведение, спортивное мероприятие, продуктивный метод планирования, классификация

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UDC 323.213

STATE YOUTH POLICY IN THE FIELD OF PHYSICAL EDUCATION AND SPORTS

Kondrashina M.A.

Abstract. *This article examines the concept and essence of youth policy, the main trends of its development. The main directions of the development of modern youth policy in the field of physical education and sports are given in accordance with the strategy of the state youth policy for the period up to 2025. The activity of the Committee on Youth Policy of the State Duma of the Russian Federation is analyzed.*

Keywords: *youth, youth policy, development of youth policy, formation of civil society, physical education and sports*

Introduction. Youth, as a social group, is the most active and mobile part of society. In all historical periods of life, it was the youth who became the main driving element on the path to revolution and radical restructuring. When reviewing issues of youth policy, the state needs to constantly improve and supplement the normative framework that ensures the relationship between the state and youth, as in the future, this will allow it to see it as a full-fledged resource in the future development of the country.

The purpose of our study is to analyze the path of development of state youth policy in the field of physical culture and sports.

Main part. Federal Law №489-FZ of December 30, 2020 "Youth Policy in the Russian Federation" in article 2 defines youth and young citizens as a socio-demographic group of persons aged from 14 to 35 years inclusive (except in cases provided for by law) who have citizenship of the Russian Federation. At the same time, the law defines youth policy as a set of regulatory, financial, economic, information and analytical, staff, scientific and other measures implemented on the basis of interdepartmental interaction of federal executive authorities, executive authorities of the subjects of the Russian Federation, local governments with the participation of civil society institutions companies, legal entities, regardless of their organizational and legal forms, and citizens of the Russian Federation, including businessmen, and aimed at creating conditions for the development of young people, their self-realization in various spheres of life, civil-patriotic and spiritual-moral education of young citizens in order to achieve sustainable socio-economic development, global competitiveness, and national security of the Russian Federation.

The State youth policy is designed to ensure, first of all, equal conditions for the spiritual, cultural, intellectual, mental, professional, social and physical development and self-realization of young people. Regarding the sphere of physical culture and sports, the goal of youth policy is to create conditions for youth participation in the sports life of society.

Among the main directions of the youth policy, it is possible to highlight: the organization of leisure, recreation, youth health improvement, the formation of conditions for physical education, sports, and the promotion of a healthy lifestyle. It is this area that is more relevant to the competence of youth policy in the field of physical culture and sports.

At the moment, the regulatory framework regulating youth policy in the Russian Federation is in the process of formation and continuous improvement. Until 2000, the state did not pay special attention to youth, state programs were advisory in nature and were not financed, since they were not considered a priority at that time, funding was more carried out on a leftover basis, in small volumes. Since 2000, a program-oriented approach has been applied, federal-targeted programs have been created and put. For example, the federal target program "Youth of Russia" appeared (2001-2005), the main purpose of which was to help the younger generation on the path of its development and realization of its potential for the benefit of society and the state.

According to the Decree of the Government of the Russian Federation dated December 18, 2006 №1760-R, a new strategy for the development of youth policy was adopted, which was already based on the possibility of valuing statistical data for the further realization of state youth policy. These facts helped the state to understand what

it is worth focusing on when prognosing the further development of youth policy.

December 30, 2020 The President of the Russian Federation, Vladimir Putin, signed the Federal Law "Youth Policy in the Russian Federation". The law establishes a unified regulatory framework that establishes the basic foundations of youth policy in the territory of the Russian Federation: goals, principles, main directions and forms of implementation of youth policy in the Russian Federation [3].

The basis of the modern state youth policy is the youth development strategy of the Russian Federation for the period up to 2025.

The State Duma Committee on Youth Policy was based in 2021 from the members of the State Duma to develop basic, conceptual proposals for the realization of the constitutional powers of the State Duma, for preliminary consideration of draft laws and their preparation for consideration, for the preparation of conclusions on draft laws and draft resolutions submitted for consideration [1]. 24.06.2022 during a meeting of the Committee at the site of the I All-Russian conference "Physical Culture and Sport as one of the main directions of youth policy in the Russian Federation", held in the Russian Federation university "GTSOLIFK", the Chairman of the Committee on Youth Policy, Artem Metelev, said that an article on youth support will appear in the Law "Youth Policy in the Russian Federation" in the field of physical culture and sport [2]. This will make it possible to improve existing and create new conditions and tools for youth sports. Also, the meeting mentioned the project of the "Youth Card" in the field of physical culture and sports, which will help not only attract young people to sports, but also support fitness clubs in difficult economic conditions.

The Chairman of the State Duma Committee on Youth Policy also commented on the published instructions of the head of state following the meeting of the State Council in February 2023, concluding that the President considers youth policy to be a matter of strategic national security [5]. Among the plans for 2024, the State Duma Committee on Youth Policy has set tasks to discuss the strategy for the implementation of youth policy in the Russian Federation for the period up to 2030, meetings of working groups on the following areas:

- Patriotic education of Russian citizens;
- Family protection, issues of fatherhood, motherhood and childhood, dedicated to the year of the Family in Russia;
- Youth employment, career;
- Youth safety and prevention of extremism;
- Youth policy in universities;

In the field of physical culture and sports, it is planned to improve the regulatory framework regarding modifications to the Federal Law "Physical Culture and Sports in the Russian Federation":

1. improvement of the legal regulation of student sports clubs;
2. establishment of general requirements for the organization and holding of sports camps with the participation of children, including on the basis of recreation organizations for children and their health improvement [4].

Conclusion. The formation of modern state youth policy in the Russian

Federation took place in rather difficult economic and political conditions. At the same time, modern youth policy multifaced covers all spheres of youth's life, touching upon all topical issues in youth self-determination, forming moral and spiritual values, a sense of patriotism and responsibility for the future of their country, and in the field of physical culture, youth policy forms the involvement of youth in physical culture and sports.

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Kondrashina Maria Anatol'evna, master of 1st year of study at the department of public administration and youth policy, m6915p@yandex.ru, Russian University of Sport "GTSOLIFK", Moscow

ГОСУДАРСТВЕННАЯ МОЛОДЕЖНАЯ ПОЛИТИКА В СФЕРЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА

Кондрашина Мария Анатольевна, магистр 1 года обучения кафедры государственного управления и молодёжной политики, m6915p@yandex.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. В данной статье рассматривается понятие и сущность молодёжной политики, основные этапы ее развития. Приводятся основные направления развития современной молодёжной политики в сфере физической культуры и спорта в соответствии со стратегией государственной молодёжной политики на период до 2025 года. Анализируется деятельность Комитета по молодёжной политике Государственной Думы РФ.

Ключевые слова: молодёжь, молодёжная политика, развитие молодёжной политики,

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UDC 796.412.2

**DETERMINING THE SUCCESS OF PERFORMING JUMPS OF
CATEGORY “C” BY HIGHLY QUALIFIED ATHLETES
IN AESTHETIC GYMNASTICS**

Kondrateva A.S., Ivashina V.V.

Abstract. *Aesthetic gymnastics today is characterized by the constant development of sportsmanship and aesthetic and technical values in competitive compositions. An important element of the competitive combination of gymnasts are jumps performed with a certain amplitude and height. So, with changes in the competition rules, criteria for assessing jumps were formed, depending on which it is possible to get from 0,1 to 0,3 points, this requires a high level of development of physical qualities and sports abilities, namely the development of speed-strength abilities depends on the quality of the element's execution - this is the exercise technique, height, amplitude. The article examines the issue of the level of development of these abilities of the aesthetic gymnastics team performing in the women's category.*

Keywords: *aesthetic gymnastics, jump, technique, speed-strength abilities, speed, strength*

Introduction. Changing in International Competition rules leads to a development additional standards and new technical values of the elements, including jumps. The requirements regarding physical qualities, especially speed-strength abilities of athletes, have been tightened recently.

Jumps are considered one of the most distinctive elements of body movements. The main indicators of the level of sportsmanship, when performing jumps, are the exercise technique, height and amplitude, which are directly dependent on the

development of the special qualities of each athlete in the team, namely speed and strength abilities (jumping ability) and the ability to implement them at the moment of the jump [1, 2].

Aesthetic group gymnastics competitions are held in accordance with the rules approved by the International Federation of Aesthetic Group Gymnastics (IFAGG), as well as the events regulations [3]. It is necessary to have at least two criteria, for example, split shape 180° amplitude+rotation; split shape 180° amplitude+en tournant, to get the highest value for a single jump – 0,3 points and 0,6 points for jumps series, this requires a high level of development of special physical training from the athletes.

Special physical training takes the most important place in the training process of gymnasts, and technical elements of a program require athletes to work on determined abilities that are leading in this sport.

The **objective** of our study is the improvement of speed-strength abilities of highly qualified athletes in aesthetic gymnastics. To achieve this aim, the following tasks were defined: to determine the level of development of speed-strength abilities and the technique of jumps of category “C”.

Methods. The pedagogical experiment was conducted on 16 students (girls) of the “Russian University of Sport “GTSOLIFK”, members of group team “Aimant”, masters of sports in aesthetic group gymnastics. They have the same physical training and perform in the women category. The study consisted in recording the average group indicators of speed-strength abilities and the success of performing jumps of category “C” while conducting tests (Federal standard of sports training “aesthetics gymnastics”) [5] and control exercises of specific techniques for jumps [4].

Two groups: experimental and control were defined, 8 people each.

Results. In Table 1, the results of the tests for the aesthetic gymnasts in the first stage of research are presented. Average value of long jump is in both groups very similar – 186 cm at experimental and 188 cm at control group, which corresponds to the value of «4» out of 5 possible. A similar situation was observed for the Abalakov test - height jump (in centimeters), where the average values was 40.5 cm in the experimental group, 41.5 cm in the control group, which corresponds to the level of development of speed-strength abilities above average.

Table 1. – Average values of 4 tests by gymnasts for 2 studied groups: experimental and control in the first stage of research

№	Test 1		Test 2		Test 3		Test 4	
	Long jump, cm		Abalakov test, cm		Jump over a bench, times		Double forward jumps with rope, times	
	ex/gr	c/gr	ex/gr	c/gr	ex/gr	c/gr	ex/gr	c/gr
1	187	178	35	44	15	10	52	51
2	175	207	41	47	16	15	46	54
3	184	178	39	40	15	16	47	53
4	179	184	42	39	14	17	51	48
5	176	200	44	42	15	16	50	50
6	186	185	38	42	17	14	49	52
7	197	184	42	41	16	16	52	52

Table 1 (continued)

№	Test 1		Test 2		Test 3		Test 4	
	Long jump, cm		Abalakov test, cm		Jump over a bench, times		Double forward jumps with rope, times	
	ex/gr	c/gr	ex/gr	c/gr	ex/gr	c/gr	ex/gr	c/gr
8	203	193	43	43	16	13	50	49
Σ	1488	1504	324	332	124	120	400	408
X	186	188	40,5	41,5	15,5	15	50	51
σ	10,14	10,50	2,98	2,93	0,93	2,20	1,93	2,00
mx	3,59	3,71	1,05	1,04	0,33	0,78	0,68	0,71
V	5,45	5,59	7,35	7,05	5,97	14,69	3,85	3,92

In the third test – jumping over a bench (for 10s) the gymnasts of the experimental group showed the result 15.5 times, the control group – 15 times. During the fourth test – double forward jumps with rope (for 30s) athletes of the experimental group showed the result 50 times, the control group – 51 times. Therefore, in these tests, the level of development of speed-strength abilities was below average.

To determine the success of performing jumps category «C» were used control exercises, which were evaluated according to the IFAGG competition rules of aesthetic gymnastics experts by judges of various categories (n=3). The technique of jumps, their amplitude, height, shape and landing were evaluated. The technical value of a single jump of the category “C” – 0.3 points according to the difficulty table, and for a possible combination (C+C=0,3+0,3) in the series of jumps you can get an additional +0,1 point.

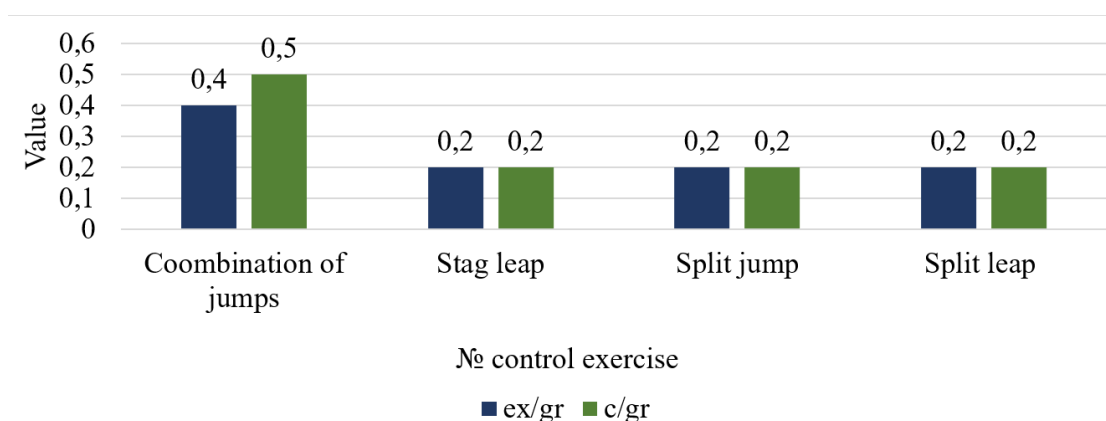


Figure 1. – Average values of control tests by gymnasts for 2 studied groups: experimental and control in the first stage of research

Of the maximum possible values: 0,6 points for the combination of jumps and 0,3 points for each single jump - the gymnasts of the experimental and control groups received values, which were distributed as follows: for the combination of jumps 0,4 points and 0,5 points, where the penalty in the experimental was 0,3 points, in the test 0,2 points. Both groups received 0,2 points for stag leap, split jump and leap. These results show that experts resulted in deduction 0,1 points for isolated jumps.

Conclusions. The level of development of speed-strength abilities was medium

and below average. The technique of jumps of category “C” are on average 0,1 points below maximum. The results reflect the need to develop and test the effectiveness of the special physical training complex using external resistance (a power band) to improve the speed-strength abilities of highly qualified athletes, as well as successfully perform specific elements of aesthetic group gymnastics.

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Kondratyeva Anastasia Sergeevna, 4th year student of the Department of Theory and Methods of Gymnastics, akondrateva19@icloud.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

Ivashina Valeriya Vladimirovna, Senior Lecturer of the Department of Theory and Methods of Gymnastics, valeriya.2406@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

ОПРЕДЕЛЕНИЕ УСПЕШНОСТИ ВЫПОЛНЕНИЯ ПРЫЖКОВ КАТЕГОРИИ «С» СПОРТСМЕНКАМИ ВЫСОКОЙ КВАЛИФИКАЦИИ В ЭСТЕТИЧЕСКОЙ ГИМНАСТИКЕ

Кондратьева Анастасия Сергеевна студентка 4-го курса кафедры теории и методики гимнастики, akondrateva19@icloud.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Ивашина Валерия Владимировна, старший преподаватель кафедры теории и методики гимнастики, valeriya.2406@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. Эстетическая гимнастика сегодня характеризуется постоянным развитием спортивного мастерства и эстетических и технических ценностей в соревновательных композициях. Важным элементом соревновательной комбинации гимнасток являются прыжки, выполняемые с определённой амплитудой и высотой. Так с изменениями правил соревнований были сформированы критерии оценки прыжков, в зависимости от которых возможно получить от 0,1 до 0,3 балла, это требует высокого уровня развития физических качеств и спортивных способностей, а именно развития скоростно-силовых способностей зависит качество исполнения элемента – это техника упражнения, высота, амплитуда. В статье рассматривается вопрос уровня развития указанных способностей команды по эстетической гимнастике, выступающих в категории женщины.

Ключевые слова: эстетическая гимнастика, прыжок, техника, скоростно-силовые способности, скорость, сила

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FEATURES OF THE DEVELOPMENT OF PHYSICAL CULTURE AND SPORTS IN THE RUSSIAN FEDERATION UNDER MODERN SOCIO-ECONOMIC CONDITIONS

Korovin T.D., s\с Myagkova S.N.

Abstract. *The article analyzes the role of physical culture and sports in Russia within the context of contemporary challenges. Emphasis is placed on the importance of developing infrastructure and increasing the accessibility of sports facilities for the population under the current socio-economic conditions. The research findings indicate the necessity of joint efforts between the public and private sectors to develop this sphere and enhance the nation's health.*

Keywords: *physical culture and sports management, sports, physical education, social issues*

Introduction. Currently, Russia is facing heightened political, economic, and social challenges, which increase societal tensions and necessitate addressing issues related to the strengthening and preservation of mental and physical health of the population. This is why the development of physical culture and sports is one of the priorities of the state's social policy [3]. Furthermore, the Russian Federation continues to grapple with socio-demoFigureic issues, which also impact the health of the population. One of the most significant factors in strengthening and preserving health is physical culture and sports. It is necessary to develop a program for the development of physical culture and sports, as well as to set goals and objectives based on the external and internal environment. Additionally, it is crucial to consider the level and living conditions that need to be taken into account when shaping the means and methods of improvement in the field of physical culture and sports [1].

The purpose of the study is to analyze the features of the functioning of physical culture and sports in the Russian Federation under modern socio-economic conditions.

Methods: theoretical analysis and synthesis of literary sources and legal documents.

Results (discussion). Physical culture and sports play a crucial role in shaping a healthy lifestyle for individuals, serving as the physical culture of society. Against the backdrop of increasing social tensions, the number of individuals whose health deteriorates due to alcohol abuse, smoking, and other harmful habits is rising.

In these circumstances, the formation of a healthy lifestyle becomes particularly relevant. With the decrease in population income, budgetary organizations play a significant role in providing state (municipal) physical education and health services. Currently, individuals engaging in sports, regardless of their location, serve as role models for the majority of Russian citizens. A large portion of the population rushes to attend gyms, pools, health-oriented physical activities, and fitness classes to emulate their idols. Such sports trends represent a potent marketing concept, driving individuals to invest increasingly in maintaining their physical fitness. This direction in the sports industry meets the demands of both professional athletes and sports enthusiasts.

Both governmental and private organizations offer physical education and health services to millions of people striving for a healthy lifestyle. We have sports, entertainment, leisure, and fitness clubs. Fitness has become a fun and convenient way to spend time, admired by many today. Retailers of sports goods and other enterprises in the fitness industry operate in complex market conditions, compelled to provide competitive services, enhance management and marketing efficiency, and service using specialized equipment. However, this alone is insufficient for maintaining the nation's health. The following figures testify to this. In 2023, approximately 70 million people [4] in the Russian Federation were engaged in physical culture and sports, accounting for 53% of the total population. It is worth noting that according to the federal project "Sport is the norm of life," by 2030, the proportion of Russians regularly engaged in sports should increase to 70%.

Due to the rising costs of physical education, health, and sports services, many people find it impossible to afford regular visits to sports facilities.

The provision of mass sports development services and the market's dynamics depend on the availability of necessary stadiums, ice arenas, pools, fitness centers, and well-equipped ski resorts. Thus, the sports service market has become one of the most crucial elements of the modern sports industry.

In light of this, the primary goal of the state's socio-economic policy should be the development of physical culture and sports in the country, with the main objective of this policy being the maximal utilization of means of physical culture and sports for the improvement and formation of a healthy lifestyle among the population of the country. In the complex socio-economic conditions of Russia's existence, the development of the sphere of physical culture and sports will help address the following tasks:

- Ensuring equal opportunities for engaging in physical culture and sports;
- Ensuring the implementation of state programs for the development of physical culture and sports in the regions of the Russian Federation.
- Enhancing the quality of the process through new, situational methods of providing sports services - online technologies;

- Cultivating interest and desire among the population for regular engagement in physical culture and sports;
- Strengthening the material and technical base of physical culture and sports.

Conclusion. The Ministry of Sports of the Russian Federation should be guided by the fundamental principles conducive to the favorable implementation of activities aimed at the development of physical culture and sports. The principle of the integrity of the individual, manifested in normal mental and physical health, can be supported through self-realization via physical culture and sports. It is essential to ensure the continuity of physical education not only among young people but also among other population groups. Addressing such significant social challenges requires the concerted efforts of the executive and legislative authorities at all levels.

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Korovin Timofey Denisovich, 1st year master's student, korovkintima@inbox.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "Russian university of sports «GTSOLIFK».

Scientific supervisor – Myagkova Svetlana Nikolaevna, "Russian university of sports «GTSOLIFK», Russia, Moscow

ОСОБЕННОСТИ РАЗВИТИЯ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА В РОССИЙСКОЙ ФЕДЕРАЦИИ В СОВРЕМЕННЫХ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ УСЛОВИЯХ

Коровин Тимофей Денисович, студент 1 курса магистратуры, korovkintima@inbox.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Мягкова Светлана Николаевна, «Российский университет спорта «ГЦОЛИФК», Россия, Москва

Аннотация. В статье анализируется роль физической культуры и спорта в России в контексте современных вызовов. Подчеркивается важность развития инфраструктуры и повышения доступности спортивных объектов для населения в сложившихся социально-экономических условиях. Результаты исследования указывают на необходимость совместных усилий государственных и частных секторов для развития этой сферы и укрепления здоровья нации.

Ключевые слова: физкультурно-спортивный менеджмент, спорт, физкультура, социальные проблемы

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FANS PERCEPTION TOWARDS VIDEO ASSISTANT REFEREE (VAR) IN THE RUSSIAN PREMIER LEAGUE.

Korzhukov A.V.

Abstract. *This article examines fans' attitudes towards VAR in the Russian Premier League. Despite its potential benefits, VAR also carries the risk of not being well received by fans. Total of 248 RPL fans completed an online survey on their opinion of VAR and changes they felt would make VAR better. The majority of fans were happy for VAR to continue being used in the RPL but felt that changes should be made to the way fans are informed about VAR screenings.*

Keywords: *video Assistant Referee, VAR, fans' perceptions, Russian Premier League, referee's announcement*

Introduction. The Video Assistant Referee (VAR) technology is a tool that can assist referees in making better decisions in the event of a 'clear and obvious error' or 'serious missed incident' related to goal decisions, penalty decisions, direct red card decisions, and mistaken identity. After a successful testing period, VAR was approved by The International Football Association Board (IFAB) by unanimous vote on 3 March 2018 [2]. The Russian Premier League implemented VAR into the league ahead of the 2019/20 season.

To fully comprehend the impact of VAR, it is crucial from a business and managerial standpoint to understand its effect on the fan experience. VAR's impact on game time is often misunderstood by fans. Research indicates that throw-ins, free kicks, and goal kicks can consume more than 30 minutes of playtime in a game [1]. Nevertheless, these actions are an integral part of the game and often go unnoticed unless they are an obvious attempt to waste time. Reviewing VAR evidence is a quick process that takes up significantly less time than set pieces during a game [3]. Although it may be a new phenomenon, it is not a cause for concern as it is a necessary measure to ensure fair play. While fans attending stadiums without big screens may find it difficult to follow, it is important to note that VAR situations are thoroughly reviewed to avoid any errors. By providing clear communication and education to consumers, we can eliminate confusion and frustration surrounding VAR situations.

A key point for the relevance of our study is the fact that the Russian Football Union has joined the FIFA and IFAB experiment in which referees will announce their decisions when they see controversial incidents on the pitch-side monitor and when the referee's video assistant records an offside position or determines where the rules were violated - inside or outside the penalty area. FIFA and the IFAB are already involved in the experiment with the Portuguese and Mexican football federations, and the announcement of referee decisions after a VAR intervention has also been used in some international tournaments.

The article is aimed at determining the attitude of Russian Premier League fans towards introducing and using VAR technology.

Research design and results. A quantitative approach was used in this study. More specifically, a survey was conducted with football fans (n=248 respondents). Surveys are the standard research method for reaching out to mass target populations, such as sport fans, and describing their characteristics, perceptions, and behavior. They provide objective data and avoid subjective evaluations.

Participants were confidently recruited through social media platforms, specifically Vkontakte and Telegram. A social media post was posted in Vkontakte groups dedicated to Russian Premier League fans of no specific team-affiliation, as well as on Telegram, where there were no geographical filters present. Participants received a clear and concise explanation of the study's nature, purpose, and inclusion criteria, which mandated active following of Russian Premier League. If interested, participants were provided with a link to the survey, provided they met the inclusion criteria. Preliminary and post-completion statements were included to inform the participants of the purpose of their participation as well as inform them on their right to withdraw from the study.

The survey was conducted from February 2 through February 26, 2024. Of the entire sample size, 248 participants completed all 8 questions. None of the participants had a request for removal from the survey after completion.

The Yandex Forms online survey system was used to construct and perform the survey. This tool was found to be suitable because of the ease of creating, distributing, and analyzing an aesthetically pleasing survey that was easy for respondents to navigate and respond to, with no advertisements or other potentially distracting content on the screen. The eight questions dealt with various problems with VAR in the Russian Premier League. The statements, the number of participants who agreed with the statements, and their percentages are shown in table 1.

Table 1. – Survey of Russian Premier League fans regarding the operation of the VAR system

Statement	Quantity	%
The addition of VAR has made the Russian Premier League fairer	226	91,1
I find it difficult to understand how VAR works	41	16,5
The information provided about what the VAR is checking for is inadequate	174	70,2
VAR situations take up too much time of a Russian Premier League game	169	68,2
The introduction of VAR has made me less interested in watching Russian Premier League football	11	4,4
The introduction of VAR in the Russian Premier League has made goals less enjoyable due to almost every goal potentially being subjected to a VAR review	98	39,5

Table 1 (continued)

Statement	Quantity	%
VAR screens should be mandatory in every Russian Premier League stadium to ensure that fans inside the stadium are thoroughly informed on why a VAR decision is made	183	73,8
Referees should announce their final decision after on-field review	178	71,8
VAR should be removed from the Russian Premier League until the system is perfected	9	3,6

More than 90% of respondents, namely 91.1%, believe that the use of the Video Assistant Referee system in the Russian Premier League makes the refereeing of football matches fairer. Also, despite some shortcomings in the technology, only 3.6% are of the opinion that the VAR system should be abandoned until it is perfect and the introduction of technology has made football less interesting for only 4.4% of Russian Premier League fans. Most respondents understand how VAR systems work (83,5%), but often do not have enough information about what is tested by video referees (70,2%) and feel it takes too long (68,2%). The announcement of the final decision by the referee after on-field review (71,8%) and the appearance of a VAR screens in the stadiums (73,8%) would improve the perception of the operation of the Video Assistant Referee system, according to the respondents.

Conclusion. Based on the results of the study, the following conclusions can be drawn:

1. Football fans of the Russian Premier League have formed a positive attitude to the introduction and use of the Video Assistant Referee technology at matches. As 91.1% believe that the refereeing of football matches has become fairer, and only 3.6% believe that it is necessary to stop using VAR until the system is perfect, and only for 4.4% watching football matches has become less interesting after the introduction of VAR.;

2. Video Assistant Referee technology has a number of drawbacks for spectators, such as insufficient information about what the VAR is checking (70.2%) and VAR situations taking up too much of the game (68.2%).;

3. The appearance of the VAR screen on stadium monitors during Russian Premier League games (73,8%) and the referee's announcement of the final decision after on-field review (71,8%) can minimize the main disadvantages of the VAR system for football fans.

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Korzhukov Alexey Victorovich, 1-st year Ph.D. student of The Russian University of Sport «GTSOLIFK», Serenevyy Blvd 4, Moscow, Russia, korzhukov.alex@yandex.ru, replay operator of VAR project of «Russian Football Union», expert of institute of sports management and law of NRU «HSE», Pokrovskiy blvd 11, Moscow, Russia.

ВОСПРИЯТИЕ БОЛЕЛЬЩИКАМИ СИСТЕМЫ ВИДЕОПОМОЩИ АРБИТРАМ (VAR) В РОССИЙСКОЙ ПРЕМЬЕР-ЛИГЕ.

Коржуков Алексей Викторович, аспирант Российского Университета Спорта «ГЦОЛИФК», Сиреневый бульвар 4, Москва, Россия, korzhukov.alex@yandex.ru, оператор видеоповторов проектного офиса по внедрению системы видео помощи арбитрам «Российский футбольный союз», эксперт института спортивного менеджмента и права НИУ «ВШЭ», Покровский бульвар 11, Москва, Россия

Аннотация. В данной статье рассматривается отношение болельщиков к системе VAR в Российской Премьер-лиге. Несмотря на потенциальные преимущества, VAR также несет в себе риск того, что будет негативно воспринята болельщиками. В общей сложности 248 болельщиков РПЛ заполнили онлайн-опрос о своем мнении о VAR и изменениях, которые, по их мнению, могли бы сделать VAR лучше. Большинство болельщиков имеет позитивное восприятие системы VAR, но считают, что необходимо внести изменения в способ информирования болельщиков касательно видео просмотров.

Ключевые слова: система видео помощи арбитрам, восприятие болельщиками, Российская Премьер-Лига, объявление решения судьи

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FEATURES OF THE INFLUENCE OF RECREATIONAL SWIMMING ON THE FUNCTIONAL STATE OF MEN AND WOMEN OF MATURE AGE

Kudinov E.M.

Abstract. *The article presents the results of a study of morphological and functional indicators of men and women of mature age during health-improving swimming lessons. The influence of such swimming lessons on the health of people of mature age was revealed. The data obtained can help coaches to correct training program, and also to help anybody who is involved in swimming.*

Keywords: *morphofunctional indicators, mature age, recreational swimming, organism*

Relevance. *The influence of health-improving swimming on the body of a*

mature person is a important issue at the moment. There is a tendency in our country towards an increase in the population of mature people, who are from 40 to 60 years old. People more often get memberships of fitness clubs and visit the pool to maintain and, in some cases, improve their health. In this study, it is shown how swimming effects the body of a mature person.

Purpose of the study. The purpose of the article was to identify the morphofunctional characteristics that are influenced by swimming on the condition of men and women of mature age.

Research methods:

1. Anthropometry
2. Questionnaire
3. Methods of mathematical statistics

Research results. 21 men and 21 women were examined during the study of the influence of swimming lessons on the condition of mature age persons. The age of the subjects ranged from 40 to 60 years, with swimming experience from 1 to 11 years. At the beginning and at the end of the study, participants were given a questionnaire where was various morphofunctional indicators and emotional state entered.

To study the morphofunctional indicators of mature people a questionnaire was conducted and their morphofunctional indicators were assessed at the beginning of the study and at the end after six months of recreational swimming.

Table 1. – Average values and standard deviations of morphofunctional indices of mature men engaged in recreational swimming before and after six months of training

Indicators		Before start Men	After six months Men	Differenc
Body weight (kg)		76,0±8,4	75,1±8,5	0,9 (P>0,05)
Body mass index		23,25±2,44	22,98±2,32	0,27 (P>0,05)
Resting heart rate		58,24±7,18	55,86±3,45	2,38 (P>0,05)
Pressure (ml.Hg)	Systolic	128,7±3,2	129,0±3,3	-0,3 (P>0,05)
	Diastolic	80,2±4,0	80,2±3,4	0 (P>0,05)

As we can see from table 1 above, mature men show positive changes in morphofunctional parameters after six months of recreational swimming. This can be seen most clearly in the dynamics of resting HR. Also, mature men lost on average almost one kilogram of weight from their initial indicators.

Table 2. – Average values and standard deviations of morphofunctional indicators of mature women involved in recreational swimming before and after six months of classes

Indicators		Before start Women	After six months Women	Differenc
Body weight (kg)		59,2±5,7	59,0±5,2	0,2 (P>0,05)
Body mass index		20,37±2,13	20,29±1,96	0,08 (P>0,05)
Resting heart rate		55,81±10,45	54,29±7,82	1,52 (P>0,05)
Pressure (ml.Hg)	Systolic	128,24±3,51	128,24±3,51	0,05 (P>0,05)
	Diastolic	79,86±3,42	79,86±3,42	1,28 (P>0,05)

As we can see from table 2 above, mature-aged women show slight changes in the following indicators.

Conclusions. We investigated how exactly morphofunctional indices of males and females of mature age change.

It turned out that such morphofunctional indices as HR and body weight change most dynamically.

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Kudinov Egor Maksimovich, 1st year student of master degree of Russian University of Sport, ieghor.kudinov.2013@mail.ru, Russia, Moscow

ОСОБЕННОСТИ ВЛИЯНИЯ ЗАНЯТИЙ ОЗДОРОВИТЕЛЬНЫМ ПЛАВАНИЕМ НА ФУНКЦИОНАЛЬНОЕ СОСТОЯНИЕ МУЖЧИН И ЖЕНЩИН ЗРЕЛОГО ВОЗРАСТА

Кудинов Егор Максимович, студент I курса магистратуры, Российский университет спорта, ieghor.kudinov.2013@mail.ru, Россия, Москва

Аннотация. В статье представлены результаты исследования морфофункциональных показателей мужчин и женщин зрелого возраста при занятиях оздоровительным плаванием, а также было выявлено влияние занятий оздоровительным плаванием на состояние здоровья людей зрелого возраста. Полученные данные могут помочь тренерам при составлении программы тренировок, а также для наглядного ориентира к чему стоит двигаться.

Ключевые слова: морфофункциональные показатели, зрелый возраст, оздоровительное плавание, организм

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ADDITIONAL MEANS OF TECHNICAL TRAINING IN SYNCHRONIZED SWIMMING

Kuksina A.A.

Abstract. *The article presents the analysis of additional means of technical training of synchronized swimmers used in the training process.*

Keywords: *technical training, synchronized swimming, training means, training process*

Relevance. Synchronized swimming presents a group of athletes performing various figures in water synchronously with music. This is a spectacular sports discipline, but at the same time technically difficult, involving significant training loads. Synchronized swimmers need to have flexibility, technical skills, good physical condition, using technical training tools.

The **purpose** of our study is to identify the means used in the technical training of synchronized swimmers.

The problem of the study lies in the need for further study of the means used to train athletes in synchronized swimming.

The hypothesis of the study is that exercises for the technical training of synchronized athletes are quite diverse and the search, and generalization based on the analysis of literature, as well as the direct creation of additional technical means, will contribute to improving the efficiency of the training process.

The task of the study is to search for existing means of technical training of synchronized swimmers.

The main **methods** of research are the analysis and generalization of special methodological literature.

Research design. The organization of the research is defined by the process of studying literature of our university scientific library and Internet resources.

Discussion. The most important types of training in synchronized swimming include physical training, which is divided into general and special. General physical training (GPT) helps to improve the overall performance efficiency and creates backgrounds for the development of the necessary physical qualities and abilities of synchronized swimmers. All types of sports swimming, general developmental exercises with their body weight and training weights, cross-country running, sports games, elements of gymnastics, acrobatics, choreography can be used as means of GPT in synchronized swimming.

Special physical training (SPT) is aimed at developing motor skills and abilities needed for effective work in synchronized swimming. This type of training includes special preparatory exercises on land and in water, including elements of other sports that are close to synchronized swimming in nature (stands, splits, somersaults, flips, etc.) and imitation exercises of the technique of rowing movements, basic positions, figures, and elements of synchronized swimming figures and arbitrary compositions. Modifications of sports methods of swimming, diving in

length and depth, special movements and elements of synchronized swimming figures, diving, acrobatics in water, "bundles" are widely used in classes in the water.

Integral training includes physical, technical, tactical and psychological training. In this context, coordination and implementation of theoretical, technical, tactical, physical and psychological preparedness of an athlete in competitive activities is of great importance [1].

In synchronized swimming, technical training includes mastering the basic elements of compulsory and free programs [2].

Special Technical training (STT) is the process of teaching athletes the basics of motor action techniques and improving selected forms of sports equipment, as well as developing the necessary motor abilities.

Special technical training in the water includes special high-speed movements, elements of figures and, in general, an arbitrary program, in particular, rotational elements, ejections, jumps, exercises with weights on the water. Various training methods and tools are used to improve it. Trainings in synchronized swimming can be held in outdoor and indoor swimming pools, sports and choreoFigureic halls. The topic of inventory and equipment requires special attention when practicing synchronized swimming [5].

Sports equipment includes a wide range of tools used for working in water and in the gym. In water, fins (long and short), hand paddle (large, small, "eights"), training weights for arms, legs and torso, elastic rubber and other means to increase muscle loads are used. When practicing on land, the possibilities of universal gyms are used. Minimum requirements for training on land: mats, gym walls, benches, various weights, jump ropes and rubber. For the rhythmical training of synchronized swimmers, a choreoFigureic hall with a ballet bar, mirrors, wooden flooring and music are necessary. The development of gymnastic and acrobatic elements is carried out in halls with carpets, acrobatic tracks, jumping pits, trampolines equipped with spars [3].

Special "simulators" can be used for stretching synchronized swimmers: an expander for a support stroke, a tape with grips for stretching, an expander for twine training, tapes for stretching feet, etc. All these tools are used in the training process of athletes almost daily. They can be used both in the process of general technical training and in special (on land and in water).

Also, synchronized swim training cannot do without a nasal clamp. It is a small clamp made of hard plastic or wire. It also has a thin rubber coating. The nose clip prevents water from entering the nose of athletes during rapid movements and turns upside down in the water, which does not cause discomfort and pain.

Conclusions. Thus, the number of technical training tools used in synchronized swimming is quite wide. On the basis of the analyzed literature we came to the following conclusions:

1. The process of training synchronized swimmers involves technical training as the most important aspect of this sport, since it forms the main part of the spectacular component of the competition.

2. There is a wide range of additional tools used in the training process of synchronized swimmers both on land and in water, used by athletes. They can be used to improve general and special technical and physical condition.

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Kuksina Anna Alekseyevna, Master's student, anna_kuks@mail.ru, Russia, Omsk, Siberian State University of Physical Education and Sports

ДОПОЛНИТЕЛЬНЫЕ СРЕДСТВА ТЕХНИЧЕСКОЙ ПОДГОТОВКИ В СИНХРОННОМ ПЛАВАНИИ

Кукукина Анна Алексеевна, магистрант, anna_kuks@mail.ru, Россия, Омск, Сибирский государственный университет физической культуры и спорта

Аннотация. В статье представлен анализ дополнительных средств технической подготовки синхронисток, применяемых в тренировочном процессе.

Ключевые слова: техническая подготовка, синхронное плавание, средства подготовки, тренировочный процесс

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SIGHTING ACCURACY IN PUTT FOR GOLFERS OF DIFFERENT QUALIFICATION

Kurbonzoda Sh.B., Antonova N.P.

Abstract. *The accuracy of aiming when playing a pattern for athletes of various qualifications and specialization in the disciplines of golf and mini golf is examined in this article.*

Keywords: *golf, putt, aiming*

Introduction. Playing on the green has the greatest impact on the result in golf, because every stroke on the green is an increase in the score, whereas an error when playing with other clubs can be corrected without increasing it. Aiming plays an important role in the effectiveness of playing the pattern, i.e. the orientation of the head of the pattern relative to the line of sight [1]. There are various techniques for teaching aiming in a putt. Some of them involve the use of technical means /1, 2/ [2]. To assess the accuracy of aiming, some golf clubs in the United States use a laser, the beam of which is directed at a mirror mounted on the front surface of the putter. The player reports readiness to strike, the experimenter turns on the laser and judges the accuracy of aiming by the deflection of the reflected beam [3].

The **purpose** of our study is to determine sighting accuracy for playing with putter depending on qualification and specialization of athletes in disciplines golf and mini golf.

Methods. Analysis and generalization of literary sources; pedagogical supervision; methods of mathematical statistics; comparative analysis.

Discussion. In the golf laboratory of the Department of Theory and Methodology of Cycling, Triathlon and Golf, a device has been developed and manufactured consisting of a power supply unit placed on a shaft and connected with wires on one side with a button, and on the other with a laser mounted on the head of the club. The button is placed on the shaft in a place convenient for the golfer so that he can conveniently press it with his usual grip. When the button was pressed, the laser beam projected a vertical stripe both on the surface in front of the stick and on the screen with markings and the aiming point indicated on it. Golfers were asked to simulate aiming. The screen was located at a distance of seven meters from the ball. The golfer pressed the button when he thought that he was aiming. A deviation from the aiming point was recorded. This deviation was then recalculated using trigonometric functions into the angles of deflection of the stick when aiming. The standard deviation was the criterion for aiming accuracy. Each golfer completed twenty attempts. After each attempt, the subject took a step away from the ball and started aiming from the beginning. Mini-golfers took part in the experiment: six masters of sports, three candidates for master of Sports, two first-class athletes, three athletes of the third junior category, as well as golfers of five CMS, one of the first category, six of the third junior category. As a result of the conducted research, the following results were obtained. The standard deviation of the club head when aiming

for mini golfers is less than for golfers of the same qualification. So, for mini-golfers of candidates for the master of sports, the standard deviation averaged 0.5 degrees, and for golfers of the same qualification 0.8. For a golfer of the first adult category, the same indicator was 0.9 degrees, and for a mini-golfer of the first category – 0.6 degrees. For mini-golfers of the third junior category, the standard deviation of the club when aiming was on average one degree, whereas for golfers of the same category 1.3 degrees. The spread between the best and worst standard deviation values is smaller for mini golfers than for golfers. The fact that mini-golfers aim more accurately than golfers can be explained by the fact that mini-golfers practice only hitting putts, while golfers practice hitting with fourteen different clubs. All strokes can be attributed to the standard ones for mini-golfers, while golfers have strokes from grass of different heights, obstacles and non-standard positions. Golfers have to devote time to improving the technique of executing strokes with all kinds of clubs and significantly less time is given to practicing putting putts than mini-golfers.

Conclusions:

1. As the qualifications of both golfers and mini-golfers increase, the value of the standard deviation of the club head decreases when aiming.
2. With the growth of sportsmanship, the decrease in the value of the standard deviation of the club head when aiming slows down.
3. Golfers have a reserve for improving aiming when making putts.

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Kurbonzoda Shodmoni Burkhon - Laboratory assistant and engineer of the Planning and Technical Support sector of the Research Institute of Sports and Sports Medicine of Russian university of sport «GTSOLIFK»; address: No 4 Sireneviy Blvd Russia, Moscow, E-mail: shodmoniburhon@gmail.com.

Antonova Nadezhda Pavlovna – Lecturer of the Department of Theory and Methodology of Computer Sports, Chess and Digital Technologies of Russian university of sport «GTSOLIFK»; address: No 4 Sireneviy Blvd Russia, Moscow, E-mail: a_nadezhda88@mail.ru.

ТОЧНОСТЬ ПРИЦЕЛИВАНИЯ В ПАТТЕ У ГОЛЬФИСТОВ РАЗЛИЧНОЙ КВАЛИФИКАЦИИ

Курбонзода Шодмони Бурхон - лаборант и инженер планирования и технического сопровождения НИИ спорта и спортивной медицины РУС «ГЦОЛИФК»; E-mail shodmoniburhon@gmail.com, Москва, Россия, Сиреневый бульвар, дом 4

Антонова Надежда Павловна – преподаватель кафедры теории и методики

компьютерного спорта, шахмат и цифровых технологий РУС «ГЦОЛИФК»; E-mail: a_nadezhda88@mail.ru, Москва, Сиреневый бульвар, дом 4

Аннотация. В статье рассматривается точность прицеливания при игре паттером у спортсменов различной квалификации и специализации в дисциплинах гольф и мини-гольф.

Ключевые слова: гольф, патт, прицеливание

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UDC 796

ACROBATICS AS AN INTEGRAL PART OF COMPETITIVE ROUTINE OF ELITE ATHLETES IN AEROBIC GYMNASTICS

Kuzminykh Daria

Abstract. *This article reflects the peculiarities of competitive routine in aerobic gymnastics, in particular: the acrobatic component of the exercise. On the basis of the analysis of the content of the competitive composition, the tendencies in the introduction of acrobatics into the exercises in aerobic gymnastics, the variability of bindings with acrobatic elements, the influence of acrobatics on the overall points in aerobic gymnastics were revealed.*

Keywords: *acrobatic elements, aerobic gymnastics, elite gymnasts*

Introduction. Speaking about the development of a competitive routine in aerobic gymnastics, it is important to realize that it is a multi-stage process involving many elements of the aerobic athlete's training. Thus, acrobatic elements, which are part of the overall composition, can be mentioned as an integral part.

The purpose of our research is to find out how important it is to use acrobatic elements in the aerobic gymnast's routine, to trace the tendency of presence of acrobatic elements and links with them in the programmes of finalists of the Russian Aerobic Gymnastics Championship, as well as to prove or disprove the importance of acrobatic training.

Acrobatic training is an important aspect of an athlete's training, starting from the initial training and continuing up to the stage of top sportsmanship. However, until 2016 the competition rules limited the use of acrobatic elements in the competition composition up to a complete ban. In modern rules there is a positive tendency to introduce acrobatics into aerobic gymnastics, but it is important to realize that not all elements are allowed, but only some. In aerobic gymnastics such exercises

are called "semi-acrobatic". Acrobatic elements do not have an independent value and are not evaluated separately, but they do affect the score for the criterion "artistry" in the sub-criterion "overall content".

In most cases, acrobatic elements are used for various transitions between standing and sitting elements, including somersaults, flips, rolls, stands (on hands, elbows) and so on. Starting from the age category "juniors" in the competition composition may include elements of jumping acrobatics, but they are not mandatory and are performed with sufficient acrobatic training of the athlete.

Special attention is paid to semi-acrobatic elements: transitions, interactions, supports (pyramids), which are an obligatory component of a competitive composition (Kruchek E., 2023).

According to L.Y. Arkaev (2004), acrobatic training is an important part of the technical training of gymnasts. In cases where acrobatic training has a large volume and intensity, it is combined with special physical, functional and other types of training.

It is important to realise that the absence of acrobatic elements does not affect the final score, but their presence gives additional points, which is good for improving the overall performance and shows the aerobic athlete as a highly skilled gymnast with acrobatic training as well.

The importance of acrobatic training of athletes is due to the "acrobatisation" that we can observe in the last decade. This is caused by several factors, such as:

- the increase in the number of competitive compositions containing acrobatic and semi-acrobatic exercises;
- the appearance in competitive compositions of elements of complexity like highly skilled gymnasts in aerobic gymnastics, which require a large number of rotations during the high jump;
- awarding additional points for acrobatic exercises in combination with elements of difficulty in the final evaluation.

Methods. The study included two stages: theoretical analysis, video analysis of the Russian Championships 2024. The programmes of the finalists (1st-8th place) in the trio category were used. These methods were selected as the most effective. In the literature analysis, we analysed articles that were relevant to the old rules of aerobic gymnastics to identify the trend of acrobatic component development in athletes' routines. Video analysis was the support to identify the current trends relevant for the year 2024. This allowed us to update our existing knowledge and to look in more detail at the acrobatic component as part of the overall points.

Results and discussion. According to the results of the theoretical analysis it was found that athletes do not just perform acrobatic elements to make their routines more fascinating, but in order to obtain certain points. The study revealed that acrobatics in the programme is divided into three main components: artistic acrobatics, acrobatic difficulty.

Artistry acrobatics are acrobatic elements that, together with various jumps or transitions to the floor, allow the athlete to fulfil the requirements for one of the five criteria (overall content) in the artistry assessment.

Acrobatic difficulty involves the performance of acrobatic elements in combination with elements of sport aerobics complexity in order to obtain additional

points. For example, when performing an acrobatic element in combination with one aerobic element, an athlete can get additional 0.1 points, and when combined with two – 0.2 points.

During our research we analysed video of the performances of the finalists of the Russian Aerobic Gymnastics Championships in the trio category to understand how often acrobatic elements are performed and which of the elements are the most frequent. First of all, we determined that acrobatic elements were performed in all routines. There were a minimum of 2 elements and a maximum of 3 elements in each performance. Due to the fact that in the final artistic score it was difficult to determine what percentage of it was increased by the presence of acrobatic elements, this point was not taken into account. However, it became obvious that all highly qualified athletes have acrobatic training, which means that in order to perform at such a high level, athletes should be prepared also from the point of acrobatics.

We further analysed which elements of acrobatics are performed by aerobic athletes and identified the frequency. The data are summarised in the following table:

Table 1. – Number of different acrobatic elements in the programmes of the trio finalists at the Russian Sport Aerobics Championships 2024

№	Name of element	Amount
1	Cartwheel	2
2	Headstand	1
3	Roll	3
4	Walkover	5
5	Round off	3
6	Kip up	3
7	Back handspring	1
8	Total number	18

Thus, it was concluded that the most frequent elements of acrobatics are walkover, round off, kip up and roll. These elements are easier to perform than others, so they take less effort to complete, but add as many extra points as the more difficult ones. This is the reason for the choice of elements. It became obvious that acrobatic training of aerobic gymnastics athletes is an integral part, as it is present in all the routines, taking from 1 to 8 positions at the Russian Aerobic Gymnastics Championships 2024.

Conclusion. Thus, we have identified features in the performance of acrobatic elements in aerobic gymnastics and proved that acrobatic training is an integral part of the training of a highly skilled gymnast. By the way, the athlete's preparation of optional elements is not a general rule for everyone. However, if a coach wants to develop competitive gymnasts in the 18+ category, acrobatic training should be thought about from the first steps of training of the athlete. Therefore, we can recommend to include acrobatic training of the aerobic athlete in the training plan. This makes the routine more entertaining, competitively capable and helps to earn extra points.

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Kuzminykh Daria Dmitrievna, student, Russia, Moscow, Federal State Budget Edicational Institution of Higher Education The Russian University of Sport "GTSOLIFK", daria.kuzminykh23@gmail.com

АКРОБАТИЧЕСКАЯ ПОДГОТОВКА КАК НЕОТЪЕМЛЕМАЯ ЧАСТЬ СОРЕВНОВАТЕЛЬНОЙ КОМПОЗИЦИИ У СПОРТСМЕНОВ ВЫСОКОЙ КВАЛИФИКАЦИИ ПО СПОРТИВНОЙ АЭРОБИКЕ

Кузьминых Дарья Дмитриевна, студент, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», daria.kuzminykh23@gmail.com

Аннотация. В данной статье отражены особенности соревновательной программы в спортивной аэробике, в частности: акробатический компонент упражнения. На основе анализа содержания соревновательной композиции выявлены тенденции внедрения акробатики в упражнения высококвалифицированного гимнаста в спортивной аэробике, необходимость акробатической подготовки, а также влияние акробатики на общие баллы в спортивной аэробике.

Ключевые слова: акробатические элементы, спортивная аэробика, высококвалифицированные гимнасты

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MASS SPORTS EVENTS AS THE KEY ELEMENT OF PROMOTING PHYSICAL EDUCATION AND SPORTS

Lapina P.Yu., s/s Myagkova S.N.

Abstract. *The purpose of this scientific article is to analyze the role of sports events in Moscow in the field of promotion of physical education and sports. The article examines various sports events held in Moscow and their impact on attracting the population to physical education and sports, as well as examines the methods of promoting physical education and sports used in organizing these events and evaluates their effectiveness.*

Keywords: *sporting events, Moscow, propaganda, type of culture, sport*

Introduction (Relevance). Recently, the topic of health and a healthy lifestyle and their relationship has been increasingly raised in the media, scientific and popular literature. For example, according to Izutkin D.A., the interaction of lifestyle and health is set objectively, it is conditioned by existing social, political, cultural, environmental and other relations in society. At the same time, the realization of this relationship depends not only on objective conditions, but also on subjective incentives, it reflects a certain motivation of the individual in the direction of improving health.

The **purpose** of our research is to analyze the major most significant events held in Moscow in order to promote physical culture and sports, as well as to study the methods of propaganda used by event organizers. **Methods:** analysis and generalization. Such attention to this issue, as well as the ideas and principles of a healthy lifestyle, such as proper nutrition, giving up bad habits, engaging in physical activity, following a daily routine, has a positive effect on the growth of interest in healthy lifestyle and an increase in the number of people who are trying to change their lives by joining a healthy lifestyle. It follows from this that mass sports events and festivals are gaining more and more popularity.

For such a large and modern city as Moscow, it is not difficult to organize such events. This can be characterized by such reasons as the large availability of various playgrounds, parks and recreation areas, as well as the number of people who want to take part in events and their organization, and, of course, with the budget of the city, which allows organizing mass sports events. But not only the city authorities pay attention to sports and public health, commercial companies also try to hold various master classes, training sessions and marathons.

Moscow has a rich history of sporting events that have had a significant impact on the promotion of physical culture and sports. Here are some of the most significant events:

1. The 2014 Olympic Games. Firstly, the very holding of the Olympiad required high physical fitness of the participants. Athletes from all over the world could demonstrate their endurance, strength, and agility in various disciplines, inspiring others to play sports and exercise. Secondly, the Olympics showed a variety of sports disciplines and types of physical activity, and this in turn could encourage people to try and get involved in new sports, as well as diversify their technique. In

addition, the Olympic Games also provided an opportunity to promote sporting values such as fair play, respect for the opponent, discipline and self-control, and mass events held within the framework of the Olympics could also inspire people to join physical activities.

2. The Moscow Marathon. Moscow is known for two mass marathons of our time, one of which is the Moscow International Peace Marathon, which aroused mass interest in long-distance running, and the second, the one that is currently being held – the Moscow Marathon, which creatively developed this mass interest, attracted new audiences and showed a fundamentally new approach to such events. Since 2013, this event has consisted of a marathon distance and a 10 km satellite race and has attracted the attention of both professional athletes and fans of this sport, which is an important tool for promoting a healthy lifestyle and physical activity. During its existence, the Moscow Marathon, as a locomotive, attracted a strong interest in running in the city and throughout Russia, forming a massive craving for both formats that already existed – for example, running clubs, and such new forms of running movement as: numerous commercial running schools, new media, "running" tourism.

3. "Race of heroes" (also known as Hero Race or Gonka Geroev). One of the most popular mass sports events not only in Moscow, but also in Russia is the relay Race of Heroes. It is an extreme cross-country obstacle course organized by the League of Heroes. For the first time, a test event was held at the Alabino military training ground in 2013, which gathered about 300 participants. The participants showed their results on an eight-kilometer-long cross-country track with more than 30 obstacles. The Race of Heroes is a project that unites thousands of athletes and fans of an active lifestyle throughout Russia. In 2019, it was officially recognized as a sport.

Results (discussion). The following can be distinguished as propaganda of physical culture and sports used by the organizers of events in Moscow:

1. Mass events:

- Organization of sports festivals and competitions: attracts the attention of citizens and creates positive associations with sports.
- Parades and events: used to attract attention and demonstrate an active lifestyle.
- Media propaganda:
 - Television and radio advertisements: effective means to reach a wide audience, emphasize the importance of sports.
 - Specialized publications: articles and reports in newspapers and magazines about sports raise awareness of sports events.
 - Social networks and the Internet:
 - Promotion of events through social networks: creation of pages, organization of contests, publication of photo and video materials.
 - Online resources: posting information on specialized websites and platforms increases online engagement.
 - Sponsorship and Partnership:
 - Attracting corporate partners: sponsorship of sports events, creation of partner programs for companies.
- The effectiveness of these methods can be viewed as follows:

- Increased participation: mass events and educational programs help attract new participants.
- Awareness raising: Media campaigns and social media are effective in spreading information and generating interest in sports.

Conclusions. In conclusion to the scientific article, it is possible to emphasize the importance of mass sports events as a key tool for promoting physical culture and sports among the population. From the analysis of the events conducted, it can be concluded that the organization of various events, such as the Olympics, marathons, races and relay races, actively attract public attention to physical activity. It is also worth noting that sports events contribute to the formation of sports as an important socio-cultural phenomenon capable of uniting people of different ages and social groups.

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Lapina Polina Yurievna, 1st year master's student, polina.lapina.2002@mail.ru, Russia, Moscow, Federal state budget educational institution of higher education "The Russian university of sports "GTSOLIFK".

Scientific supervisor – Myagkova Svetlana Nikolaevna, Professor, Russia, Moscow, Federal state budget educational institution of higher education "The Russian university of sports "GTSOLIFK".

МАССОВЫЕ СПОРТИВНЫЕ МЕРОПРИЯТИЯ КАК КЛЮЧЕВОЙ ЭЛЕМЕНТ ПРОДВИЖЕНИЯ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА

Лапина Полина Юрьевна, студент 1 курса магистратуры, polina.lapina.2002@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель - Мягкова Светлана Николаевна, доктор педагогических наук., профессор, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Целью данной научной статьи является анализ роли спортивных мероприятий в Москве в сфере пропаганды физической культуры и спорта. В статье рассматриваются различные спортивные события, проводимые в Москве, и их влияние на

привлечение населения к занятиям физической культурой и спортом, а также изучаются методы пропаганды физической культуры и спорта, используемые при организации данных мероприятий и оценивается их эффективность.

Ключевые слова: спортивные мероприятия, Москва, пропаганда, физическая культура, спорт

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UDC 796/799

DETERMINATION AND ASSESING OF PHYSICAL PERFORMANCE IN BASKETBALL 3X3

Lapshin N.A.

Abstract. *The paper presents a methodology hat allows you to assess the physical performance of 3x3 basketball players. This methodology includes tests to assess physical performance in 3x3 basketball. During the testing, the heart rate is monitored in real time. Based on the results of heart rate monitoring, the intensity of accumulation of pulse debt and the execution time are estimated. The indicators obtained during the study allowed us to develop standards by which physical performance in 3 x 3 basketball is assessed.*

Keywords: *testing, physical performance, 3x3 basketball, specific exercises*

Since the inclusion of 3x3 basketball in the Olympic Games program, the development of this sport has been progressing at a rapid pace. Nevertheless, in order to achieve high results, it is necessary to build a training process that would be based on scientific data and include scientific and methodological support for the preparation of athletes for competitions of various levels. In order to ensure the effectiveness of the training process, it is necessary to monitor the condition of athletes throughout the preparation in order to bring the players into a state of fitness for the main competitions.

At various times, authors have been proposed and described traditional methods for monitoring the condition of athletes in classical basketball (Levushkin S.P., 2018, Lapshin N.A., 2018, etc.), nevertheless, these methods do not imply an assessment of

special performance in 3x3 basketball.

The **purpose** of our study is to develop a methodology for assessing the physical performance of 3x3 basketball players, which includes tests on the basketball court.

The study involved women basketball players of the student team of RUS "GTSOLIFK" in the number of 12 people.

Methods: analysis of scientific and methodological literature, motor testing, heart rate monitoring and mathematical and statistical data processing.

Results. We have developed three tests to evaluate the special results of 3x3 basketball players. All tests are aimed at modeling competitive activity, performing certain movements on one half of the basketball court that would meet the physiological requirements of 3x3 basketball.

Figure 1, as an example, shows a test scheme that includes long-range shots and running. The player must complete 5 shots. He makes the first shot from the corner. After the throw, the athlete accelerates to the center of the court and runs to the next point. Further, as shown in the figure, the player makes shots from the points and after each attempt running to the center line. The player's task is to complete the entire exercise at maximum speed.

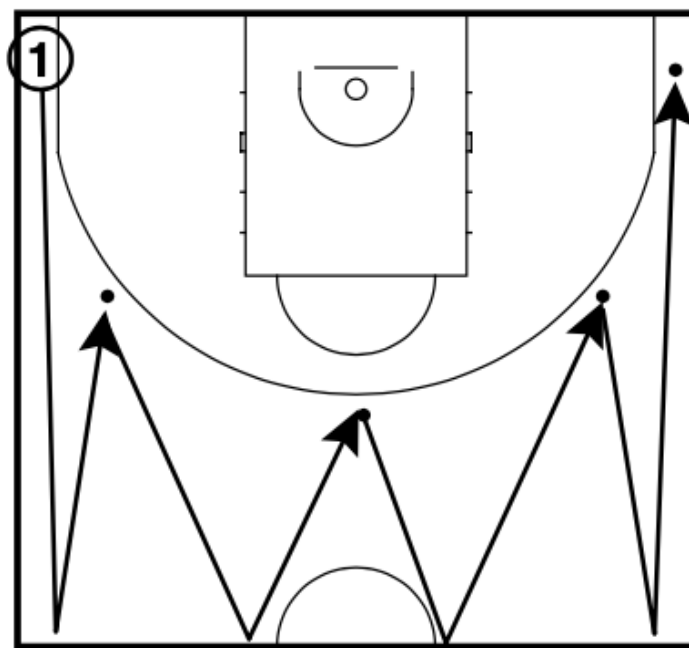


Figure 1. – Test Figure

During the test, the following pulse parameters were recorded, processed and analyzed (using the Polar Team System complex):

1. average heart rate;
2. an indicator of the intensity of accumulation of pulse debt (INPD).

The main integral indicator of all the above is the INPD indicator. This indicator is calculated using a special formula.

The test time was also recorded for each of them.

Table 1. – Standards for assessing the special performance of 3x3 basketball players according to test 1

Indicators	Level of indicators of special peerformance				
	low	Lower average	average	Above average	high
Average HR	>168	162-168	161-149	148-142	<142
T.	>97,3	90,9-97,3	78,0-90,8	77,9-71,5	<71,5
IAPD	>2,90	2,40-2,90	2,39-1,39	1,38-0,88	<0,88

After we received the data obtained during testing, we developed standards for evaluating physical performance in 3x3 basketball.

The reliability of these tests was proved by us during the study using the "test retest" procedure and conducting a correlation analysis between the results of the first and second tests of basketball players, who were tested with a difference of one day. The informative value of the tests was proved using a logical method. Table 2 shows the data of the correlation analysis according to the INPD indicator.

Table 2. – The results of the correlation analysis between the INPD indicators obtained during the first and second tests

Indicator	Correlation coefficient
IAPD 1	0,93
IAPD 2	0,79
IAPD 3	0,97

Conclusions. The developed methodology makes it possible to assess the level of physical fitness of 3x3 basketball players without using expensive and hard-to-reach equipment. These tests allow you to quickly obtain data on the current state of basketball players and their readiness for competitive activities.

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Lapshin N.A., PhD, associate Professor of the Department theory and methodology of basketball, nik.lapshin4@mail.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

ОПРЕДЕЛЕНИЕ И ОЦЕНКА ФИЗИЧЕСКОЙ РАБОТОСПОСОБНОСТИ В БАСКЕТБОЛЕ 3Х3

Лапшин Н.А., к.п.н., доцент кафедры теории и методики баскетбола, Российский университет спорта «ГЦОЛИФК», nik.lapshin4@mail.ru, Россия, Москва

Аннотация. В работе представлена методика, позволяющая оценить физическую работоспособность баскетболисток 3х3. Данная методика включает тесты для оценки физической работоспособности в баскетболе 3х3. В ходе тестирования проводится мониторинг частоты сердечных сокращений, в режиме реального времени. По результатам пульсометрии оценивается интенсивность накопления пульсового долга и время выполнения. Полученные в ходе исследования показатели позволили нам разработаны нормативы, по которым оценивается физическая работоспособность в баскетболе 3х3.

Ключевые слова: тестирование, работоспособность, баскетбол 3х3, специфические упражнения

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CHARACTERISTICS OF MORPHOFUNCTIONAL STATUS OF ATHLETES AND WOMEN DOING FREESTYLE WRESTLING

Levina K.M., Zakharyeva N.N.

Abstract. *The article presents a comparative analysis of the characteristics of the morphofunctional status of highly qualified athletes involved in freestyle wrestling. A survey of 35 wrestlers conducted, divided into groups by gender: group 1 - 24 male wrestlers and group 2 - 11 female athletes. In female athletes, musculoskeletal injuries are more common, which requires a more responsible approach to warming up and recovery. Male wrestlers distinguished by a greater degree of severity of myofibrillar hypertrophy of the muscles of the upper limbs and lower legs and more developed strength abilities, higher values of pulmonary ventilation and respiratory reserves, which explains their priority in the development of aerobic endurance. Female wrestlers note a better ability to maintain vertical stability when performing stabilometric tests with visual control.*

Keywords: *freestyle wrestling, athletes, sportswomen, comparative analysis, injuries of the musculoskeletal system, morphofunctional characteristics, psychophysiology, stabilometry, spirometry, mental performance; muscle strength; maximum pulmonary ventilation, coordination abilities*

Introduction. Wrestling is extremely popular all over the world. However, until the 21st century, this sport was considered traditionally male and not suitable for women and little consistent with women's traditional evolutionary biological role. At the highly qualified stage, athletes and athletes involved in freestyle wrestling experience extremely high physical and mental stress [1]. However, there is little work on the comparative analysis of the characteristics of morphofunctional transformations in athletes who have been involved in wrestling for a long time and have high sports qualifications, which determines the relevance of the presented article.

The purpose of our study is: to identify gender differences in the morphofunctional status and physical qualities of highly qualified wrestlers involved

in freestyle wrestling.

Methods. Research was to find out reasons why 35 sportsmen and women involved in freestyle wrestling, performing in middle weight categories, were examined. When conducting a comprehensive study in wrestlers, the following methods used: 1. analysis of scientific and methodological literature; 2. physiological survey; 3. method of physiological observation; 4. study of physical development: bioimpedansometry, body weight, body length; chest circumference. 5. physiological testing: spirometry, tonometry; study of heart rate variability using the hardware and software complex “Varicard 2.51”, Ryazan; 6. study of the physical qualities of young sambo wrestlers: hand muscle strength (dynamometer DMER-120); trunk muscle strength (backbone dynamometry), flexibility: bending test on a bench and other tests; coordination abilities: test “Stability time in the Romberg pose”; stabilometry method – “Target” test, performed on the Stabilan-01-2 device [5]; 7. psychophysiological testing was carried out using the IVPS2.1 software and hardware complex. Koryagina Yu.V. (2001), Nogin S.V. (2001-2003) [4]. Methods of mathematical statistics performed using Microsoft Office Excel and Statistica 7.

Study design. The study was conducted with the participation of 35 highly qualified athletes, engaged in freestyle wrestling, performing in middle weight categories, divided by gender into groups: 1st group (gr1) – male athletes – 24 people.; age: 19.77 ± 1.80 years; 2nd group (gr2) – female athletes – 11 people; age: 20.40 ± 2.55 years. Physiological testing carried out under standardized conditions with the participation of the Sports Medicine Laboratory of the Research Institute of Sports and Sports Medicine RUS "GTSOLIFK". All athletes signed an informed consent protocol on the safety of the scientific experiment for health.

Results. A survey was conducted of 35 highly qualified athletes involved in freestyle wrestling, divided by gender into groups: 1st group (gr1) – male athletes – 24 people; and 2nd group (gr2) – female athletes – 11 people; Athletes regularly participate in championships in Moscow, Russia and international tournaments. According to the results of statistical analysis, the tested men and women involved in wrestling do not have significant differences in terms of indicators: age, training experience, volume of training load (hours per week) and, therefore, the data can be comparable when conducting a comparative analysis presented in the table 1.

Table 1. – Anthropometric characteristics and sports history of athletes involved in freestyle wrestling

Parameter	Gr1 (n=24)		Gr2 (n=11)		p-level
	M	st.dev	M	st.dev	
Age (years)	19,77	1,8	20,41	2,55	0,34
Experience (years)	9,86	2,75	9,83	3,05	0,22
Training hours (per week)	15,82	5,12	14,02	2,49	0,72
Height (m)	177,32	5,93	158,70	9,15	0,01*
Weight (kg)	76,09	10,17	59,40	9,36	0,01*
BMI	23,48	1,17	24,48	1,91	0,05*
Right arm muscle strength	55,91	10,56	39,55	7,47	0,01*
Left arm muscle strength	54,68	9,85	40,30	4,26	0,01*
Vital capacity of the lungs (ml)	4707,20	610,94	3478,10	410,32	0,01*
Breath holding time in the Stange test (s)	55,08	12,80	38,33	6,51	0,05*

The data presented in the table distributed normally according to the Kolmogorov-Smirnov test. As can be seen from table 1, for most anthropophysiological indicators, significant differences established in the comparison groups (with a high degree of reliability), which reflects both the gender and genetic characteristics of the anthropometry of healthy men and women, which is reflected in the parameter values: height (m), weight (kg), BMI, waist circumference. BMI values reflect normal body weight for both male and female wrestlers. To a certain extent, a reflection of the effects of long-term, specific physical activity in male athletes involved in freestyle wrestling is a greater degree of severity of myofibrillar hypertrophy of the muscles of the upper and lower extremities of the flexor and extensor muscles of the shoulder, forearm and lower leg in comparison with female athletes. This reflected by the values of the parameters: circumference of the shoulder, forearm and lower leg (in cm) and the values of the maximum voluntary muscle strength of the right and left hands (daN). Significant intergroup differences in chest circumference (CHC) indicators established in the following states: rest, inhalation/exhalation (cm), which also reflect the priority of the development of pulmonary ventilation in males. The gender differences in pulmonary ventilation indicators that we identified explain the priority in the development of aerobic endurance in male wrestlers [2].

According to sports history data obtained as a result of a questionnaire and interviews with athletes, it was found that 57% (20 people) of wrestlers had a sports history of injuries to the musculoskeletal system (MSA) and the central nervous system (CNS), received as a result of a fall on the mat and when carrying out attacking and counterattacking techniques. Moreover, among female wrestlers engaged in freestyle wrestling, injuries to the musculoskeletal system are more common 63.60% (7 people) than among male wrestlers: 54.01% (13 people).

Psychophysiological characteristics of male wrestlers indicate a greater speed of reaction to stimuli in the RDO and "Choice reaction time" tests. Their results in the "Choice reaction time" test correspond to the rating "above average" (normal indicators are from 0.33 to 0.43 (ms)) [4], where female wrestlers report average results. The fast speed of responses to a moving object allows male wrestlers to develop greater speed of attacks and counterattacks in fights. When performing complex tests "Reproduction of a time interval (with sound) error (in%)" and "Measuring segments (error" (%)), where the accuracy of time perception by athletes is assessed under conditions of exposure to sound interference, female wrestlers note better orientation ability in time ($p < 0.05$), although test results in athletes of both sexes indicate a very high quality of time assessment under conditions of interference [4]. The values of the NPC indicators of the computer version of the tapping test reflect a significantly higher frequency of wrist movements in male wrestlers compared to women involved in freestyle wrestling. The combination of developed conditioning physical qualities of strength and speed gives male wrestlers an advantage in performing holds during fights. When solving cognitive problems of the 3-stage "URA" test (Sonkin V.D. (2009)), it was noted that male wrestlers are able to perform cognitive tasks for a longer period of time and resist the development of fatigue during cognitive loads in comparison with women. Significant differences

revealed at the final attempts: 7th and 10th stage 1 of the test ($p < 0.05$). When performing more complex cognitive tasks of stages 2 and 3 of the test, male and female athletes do not note significant differences, which confirms the high qualifications of athletes of both sexes. Perhaps the data on gender differences in the cognitive abilities of wrestlers will be clarified by expanding the number of participants in the sample in the gr2 group and complicating the cognitive tasks, which is an open field for research.

Evaluation of the results of stabilometric tests performed by athletes indicates a better ability to maintain vertical stability when performing tasks of stabilometric tests by women in the presence of visual control, in comparison with male wrestlers. In the presence of visual control, female athletes have better postural orientation and postural balance, which is confirmed by data from psychophysiological and stabilometric testing. This is what allows female athletes engaged in freestyle wrestling to have greater postural stability in comparison with male wrestlers, and dictates the need to supplement the training process of male wrestlers with physical exercises that develop coordination.

Conclusions:

1. The established gender differences in anthropophysiological indicators of wrestlers involved in freestyle wrestling reflect both the evolutionary sexual and genetic characteristics of the anthropometry of men and women: height, weight, BMI, waist circumference, and, at the same time, are a reflection of the influences of specific long-term physical activity, which is expressed Myofibrillar hypertrophy of the muscles of the upper and lower extremities, flexor and extensor muscles of the shoulder, forearm and lower leg is more pronounced in male wrestlers compared to female athletes.

2. The priority has been established for the development of functional respiratory reserves in male wrestlers, in comparison with female athletes involved in freestyle wrestling, which is confirmed by the parameters of the chest circumference and its excursion, as well as the values of pulmonary ventilation indicators. The identified gender differences in pulmonary ventilation parameters explain the priority in the development of aerobic endurance in male wrestlers in comparison with women involved in freestyle wrestling.

3. Male wrestlers at the highly qualified stage, in comparison with highly qualified female wrestlers, note advantages in the development of conditioning physical qualities: speed, hand muscle strength, endurance, and also have greater accuracy and speed of response to stimuli when conducting psychophysiological tests of RDO and choice reaction.

4. Female athletes involved in freestyle wrestling, when performing stabilometric tests with visual control, note better abilities for postural orientation and postural balance, in comparison with male wrestlers. The best coordination abilities of female wrestlers are confirmed by the values of the indicators: the length of the trajectory of the central motion along the sagittal (mm), the normalized area of the vectorogram (mm²/s) and the average linear speed of movement of the central motion along the sagittal (mm/s), which has lower values in comparison with men ($p < 0.01 - 0.05$).

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Levina Ksenia Mikhailovna, 2nd year master's student, Department of Physiology, RUS "GTSOLIFK"; methodologist, Department of Anatomy and Biological Anthropology; Russian State University "GTSOLIFK", Moscow, e-mail: ksenia.levina.2000@mail.ru, Russia, Moscow.

Zakharyeva Natalia Nikolaevna, Professor, Department of Physiology, RUS "GTSOLIFK", Chief Specialist, Research Institute of Sport and Sports Medicine, zakharyeva.natalia @mail.ru, Russia, Moscow, Russian State University of Sports "GTSOLIFK", Moscow, Russia

ВОЗРАСТНЫЕ ОСОБЕННОСТИ МОРФОФУНКЦИОНАЛЬНОГО СТАТУСА ЮНЫХ САМБИСТОВ ИЗ РОССИИ И КИТАЯ.

Левина Ксения Михайловна, магистрант 2-го года обучения кафедры физиологии РУС «ГЦОЛИФК»; методист кафедры анатомии и биологической антропологии; Российский государственный университет «ГЦОЛИФК» г. Москва, e-mail: ksenia.levina.2000@mail.ru, РФ, Москва, Сиреневый бульвар. 4.

Захарьева Наталья Николаевна, профессор кафедры физиологии РУС «ГЦОЛИФК», главный специалист НИИ Спорта и Спортивной медицины, zakharyeva.natalia @mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

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RESEARCH ON THE SUSTAINABLE DEVELOPMENT OF SQUARE FITNESS DANCE ACTIVITIES IN CITIES –TAKING ZHENGZHOU CITY AS AN EXAMPLE

Li Xuezhai

Abstract. *With the development of social economy, people in the pursuit of material wealth growth at the same time will devote more attention to the attention of the body's health, square fitness dance activities by virtue of its own unique advantages soon popular throughout China . This paper analyzes the overview of square fitness dance activities in Zhengzhou City, and concludes that noise nuisance, lack of guidance, insufficient space and unfavorable penalties are important factors affecting the sustainable development of square fitness dance activities in the city, and proposes to solve the existing contradictions by legislating, authorizing regulations, perfecting training and expanding venues, and provides countermeasures for the sustainable development of square fitness dance activities in Zhengzhou City.*

Keywords: *square dance, sustainable development, research countermeasures*

Introduction. National fitness is closely related to the daily lives of the masses. The extensive development of national fitness is conducive to the improvement and improvement of national quality. Comprehensive national strength. In terms of its occurrence mechanism, square fitness dance originated at the grassroots level of society, meeting people's most basic physical safety needs, and spreading widely among communities. It is a specific natural environment, humanistic environment and specific natural environment, humanistic environment, and social development under certain historical conditions. It is an inevitable product of the regional living environment for people and the carrier of sports culture [1]. The vigorous square fitness dance is an important part of the community's sports culture, an important carrier of the spiritual civilization of a harmonious community, and an important way for grassroots organizations to implement the core values of socialism [2].

1 Definition of square fitness dance. Square fitness dance is a kind of new fitness dance in recent years, and it is now popular in many cities and towns of all sizes in the country and even in the world, and is favored by the people. The author believes that modern square fitness dance refers to the people's spontaneous, in the square and open space, unified, for fitness, self-entertainment, friendship for the purpose of the music rhythm accompanied by the dance as a carrier of fitness

activities. It is precisely because of the simple and easy-to-learn movements of square fitness dance, significant fitness effect, low requirements for venue facilities, pleasant and light music accompaniment, flexible and free mode of participation, and no geographical and cultural restrictions that it has been deeply welcomed by the masses of the people [3].

2 Overview of square fitness dance activities in Zhengzhou. Like other cities across the country, Zhengzhou's square fitness dance activities are also in full swing in large urban parks and shopping malls such as Greentown Square, Bishagang Park, Wenbo Square, People's Park, and Bauhinia Mountain Park, as well as in open spaces in communities. Whether in the morning or evening, hundreds or even thousands of people participate in square dance fitness activities. The general public is very happy to participate in this group fitness activity, including retired elderly people. Zhengzhou City holds Zhengzhou Mass Square Dance Competitions with various themes every year. Square fitness dance activities not only exercise the body, but also enrich the people's spare time life. With the active participation of the masses, Zhengzhou's square dancing activities are at the forefront of the country.

3 Problems in the development of square fitness dance activities in Zhengzhou City. Due to the limited resources of the city's public sports facilities, in the square fitness dance activities carried out in full swing, but also appeared a lot of discordant voices.

3.1 Noise nuisance from square dancing activities. The several "evils" of square fitness dance activities are the first of the noise nuisances. Due to the lack of planning and resources, many square fitness dance venues are adjacent to residential areas, and the square fitness dance music is played a lot, so noise nuisance disputes and conflicts occur frequently. Mr. Chen, a citizen of Zhengzhou, is the organizer of a square fitness dance team. This summer, their team encountered power outages, throwing oil on the square, and beer bottles occupying space. "Insulting" remarks about square dance activities were written on the floor and walls of a park, and older dancers were splashed with dirty water by residents upstairs. Not only is the square dance project in Zhengzhou treated in this way, but many other cities in China have also opposed square dance activities.

3.2 Lack of training and guidance for square dance activities. At present, the development of square fitness dance activities mainly relies on the spontaneous convening and organization of a small number of enthusiasts with certain fitness dance skills. These few fitness dance enthusiasts are very enthusiastic about their own fitness dance activities and have certain fitness dance skills, so they are very enthusiastic about convening and organizing fitness dance teams. They enjoy a high degree of prestige in the whole fitness dance activity team and play the roles of convenor, organizer, administrator and professor at the same time. The fitness dance activity team may be dozens of people or hundreds of people, the group size is very large, and there are many people participating in it. The fitness dance skill level of these convenors directly determines the skill level of the activity group, and their words and deeds also influence the group participants' thinking and consciousness in a subtle way. How to improve the fitness dance skills and ideological and political level of these convenors,

so that they can teach fitness dance in a more standardized and scientific way, and have the ability to develop and innovate the content of fitness dance, and at the same time, ensure that they can play a role in spreading the "positive energy" within the team, it is particularly important to train them in a planned manner.

3.3 Insufficient space for square dancing activities. At present, most of the square fitness dance activities are carried out in the open space of residential neighborhoods and commercial plazas, and there are very few large plazas in Zhengzhou that are far away from residential areas like Greentown Plaza. Many of these squares are close to residential areas, and square dancing is bound to have an impact on the residents. In China's cities, due to population migration, most of the cities are characterized by a shortage of land, and the plot ratios of the neighborhoods are usually very high. Due to planning problems, the number of community parks near the neighborhoods is very limited. Most neighborhoods do not take into account the fitness needs of their residents when planning their construction, and open space is a scarce resource in neighborhoods where buildings are located next to each other. This leads to a contradiction between the actual needs of residents for fitness and the lack of activity venues.

3.4 Unfavorable penalties for nuisances caused by square fitness dance activities. An important reason for the continuous emergence of square fitness dance nuisance problem is the unfavorable punishment of illegal fitness dance activities, in the face of the fact that the noise nuisance, the dancing party does not care about the dance is still dancing tweeter is still playing, lack of supervision and punishment of illegal fitness dance activities. Noise from square dancing is a product of urban development, but no one is willing to control the noise from square dancing. Traffic and commercial noise belongs to the traffic and industry and commerce departments, while the environmental protection department is only responsible for industrial and construction noise, at present, there is no special department to manage the noise of plazas and parks in the province, and once everyone passes the buck, there will be no one to manage the situation. Firstly, it is difficult to supervise, secondly, it is difficult to obtain evidence, and thirdly, it is difficult to enforce. The fundamental reason is that there is no one to manage and there is no way to rely on it, and it is even more impossible to penalize noise-disturbing plaza fitness dance activities. As a result, there is no place for residents to complain about noise nuisance, and they are forced to resort to extreme retaliatory behavior.

4 Suggestions for solving the problems of square fitness dance activities

4.1 Adoption of legislation to regulate the conduct of square fitness dance activities. Square fitness dance is a national fitness activity worth promoting, but there have been continuous disputes and conflicts due to noise nuisance. By regulating square fitness dance activities through legislation, so that square fitness dance activities can be carried out within the time, place and noise zone stipulated by law, it can effectively regulate the development of square fitness dance activities and avoid noise nuisance, so as to achieve the sustainable development of fitness dance activities. Adjusting and balancing the interests claimed by both parties, easing the value conflict between the subjects of rights, and realizing that both parties are bound

within the limits of tolerance, together with the means of legislation, law enforcement and justice, may become a path of channeling solutions.

Zhengzhou City can also introduce the Zhengzhou City Square Fitness Dance Activity Convention through the hearing of legislation to regulate the development of square fitness dance activities.

4.2 Ensuring the enforcement of penalties through legal and regulatory authorization. For those who do not listen to persuasion and continue to disturb the people's square fitness dance activities must have corresponding supervision and punishment measures. Currently, there is no clear authority to regulate and punish square dance noise, but the Zhengzhou municipal government can authorize the management and punishment of square fitness dance activities to the management bodies of squares or parks through laws and regulations, so that illegal activities can be stopped in a timely manner.

4.3 Establishment of a sound management organization to provide training and guidance for square fitness dance activities. As square fitness dance is an important part of national fitness activities and has a large number of participants, the government should attach great importance to the guidance and training of square fitness dance activities. Currently, square dance organizers have limited skills and varying levels of ideological and political sophistication. This requires the relevant government departments to set up a square fitness dance guidance office to directly manage the activity, organize professional fitness dancers to give technical guidance to the conveners of square fitness dance groups from time to time, and improve the skill level of square fitness dance; at the same time, the relevant departments should provide appropriate guidance to this group, and cultivate them into "positive energy" for the construction of a harmonious society, so that they can play an important role in the harmonious society. At the same time, the relevant departments should properly identify and guide this group and cultivate them into "positive energy" for the construction of a harmonious society, so that they can play a positive role in the construction of a harmonious community and the construction of the socialist core value system [4].

4.4 Positive expansion and scientific planning to increase the number of activity sites. Lack of space has been a major obstacle to the sustainable development of square dance activities. The bottleneck of venues has limited the number and scale of square fitness dance activities, and indirectly led to frequent noise nuisance incidents and conflicts over the occupation of activity venues. To solve the problem of lack of space, the relevant departments of the municipal government can start from the following aspects: Firstly, serious research and investment in the development and improvement of some idle and unused space in the urban area of Zhengzhou City, so as to create open space for citizens' fitness; secondly, investment in the reconstruction of the open space in the residential community, so as to maximize the value of its space utilization and meet the demand of residents' fitness on the open space; thirdly, the relevant departments have to issue documents to strictly require the construction of new buildings to have the following regulations. Thirdly, the relevant departments should issue documents strictly

stipulating that the new buildings for community residents to reserve space for cultural and sports activities, and as an important acceptance project, but also to strengthen the supervision of the use of these open spaces shall not be diverted to other uses; Fourthly, in the construction of new urban areas should be built more large plazas and parks, to meet the needs of residents' recreation and fitness.

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Li Xuezhai, Master's degree, 1019876335@qq.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK";

ИССЛЕДОВАНИЕ ПО УСТОЙЧИВОМУ РАЗВИТИЮ ЗАНЯТИЙ ФИТНЕСОМ-ТАНЦАМИ В ГОРОДАХ НА ПРИМЕРЕ ГОРОДА ЧЖЭНЧЖОУ

Ли Сюэчжай, магистрант, 1019876335@qq.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»;

Аннотация. С развитием социальной экономики люди в погоне за ростом материального благосостояния в то же время будут уделять больше внимания здоровью тела, занятия квадратными фитнес-танцами в силу собственных уникальных преимуществ вскоре станут популярными по всему Китаю. В данной статье анализируется обзор занятий квадратными фитнес-танцами в городе Чжэнчжоу, делается вывод о том, что шум, отсутствие руководства, недостаточное пространство и неблагоприятные наказания являются важными факторами, влияющими на устойчивое развитие занятий квадратными фитнес-танцами в городе, и предлагается решить существующие противоречия путем законодательного регулирования, утверждения правил, совершенствования тренировок и расширения мест проведения занятий, а также предлагаются контрмеры для устойчивого развития занятий квадратными фитнес-танцами в городе Чжэнчжоу.

Ключевые слова: квадратный танец, устойчивое развитие, исследовательские контрмеры

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EDUCATION OF COORDINATION ABILITIES IN GIRLS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AT RHYTHMIC GYMNASTICS CLASSES

Loshkina E.A., s/s Rubtsova N.O.

Abstract. *The article deals with the effectiveness of the methodology of education of coordination abilities in girls 4-6 years old with attention deficit hyperactivity disorder at rhythmic gymnastics classes. The means used and the results obtained during the experiment are described.*

Keywords: *coordination abilities, attention deficit hyperactivity disorder, means of rhythmic gymnastics*

Introduction. Nowadays, attention deficit hyperactivity disorder (ADHD) is increasingly common and diagnosed in people of different ages, especially in preschool children.

Children with ADHD continue to be brought up and educated according to the standard, not adapted to their needs program, including in sports sections.

Attention deficit hyperactivity disorder is a neuropsychiatric disorder characterized by an age-inappropriate degree of severity of attention deficit disorder, hyperactivity, and impulsivity, which are manifested in various social situations (at school, at home, etc.). [3]

Girls are more characterized by inattentive symptoms, while boys are more likely to have ADHD with predominant hyperactivity symptoms. Based on this peculiarity, in girls behavioral abnormalities are more hidden and therefore are not detected at one or two times of observation, respectively, are not treated and have a poorer prognosis. In comparison with boys, they have a much greater degree of social maladaptation, learning difficulties, personality disorders [1].

A child with attention deficit hyperactivity disorder has disturbed behavioral aspects that prevent him or her from mastering educational material on par with healthy peers. The child does not pay attention to details or makes careless mistakes in any activity, has difficulty concentrating in school lessons or during play, does not follow instructions, is easily distracted, and is forgetful in daily activities [1, 3]

An important role in the process of upbringing and education, including sports training will have the features of emotional state and motivational/volitional sphere. The child will perform tasks and listen to the teacher only based on his mood, so competent management of the emotional background of the child will successfully affect the learning of educational material [1].

Disorders in children with ADHD are also observed in the motor sphere. Children with attention deficit hyperactivity disorder are characterized by clumsiness, violation of large and fine motor skills, orientation in space. There is increased physical activity, the predominance of simple and primitive motor actions, as well as increased pace of their performance [1, 2].

In rhythmic gymnastics classes children from a very young age begin to learn and practice orienting in space (right-left, forward-backward), orienting on their body

scheme (body parts), as well as learn the basic technique of holding an apparatus (jump rope, hoop, ball, clubs, ribbon), according to the rules of the sport. Discipline in classes allows to develop children's diligence and attention. Classes in a group allow to develop self-discipline and competent organization of their activities. All this will help these children to adapt in other spheres of life in the future, for example, in the educational process.

The availability of various methods that are implemented in the educational process of children with ADHD is not enough to competently build the training process of preschool children in various sports sections. This is the relevance of this study and served to develop a methodology for the education of coordination abilities in girls 4-6 years old with ADHD, engaged in rhythmic gymnastics.

The aim of the study is to investigate the influence of the methodology of education of coordination abilities on increasing the effectiveness of the system of sports training in girls 4-6 years old with attention deficit hyperactivity disorder in rhythmic gymnastics.

The object of the study is the process of training of 4-6 years old girls with attention deficit hyperactivity disorder in the rhythmic gymnastics section.

The study was conducted on the basis of secondary general education school №20 in Balashikha. Girls with ADHD attended the rhythmic gymnastics section at the stage of initial sports training. Classes were held 3 times a week for 90 minutes for half a year in an inclusive environment.

Girls with attention deficit disorder born in 2019-2017 took part in the experiment. Children practiced according to our developed methodology of education of coordination abilities in girls with ADHD in rhythmic gymnastics classes. The control group practiced according to the standard methodology in rhythmic gymnastics.

In addition to attention deficit hyperactivity disorder, some children had posture disorders and flat feet.

During the use of the developed method in addition to the standard method of rhythmic gymnastics in the work with the experimental group were used: formation exercises, rhythmic gymnastics, exercises for the development of static and dynamic balance, exercises for the correction of flat feet posture disorders, exercises for the development of fine motor skills.

Formation exercises contributed to a more accurate and logical conduct of the training, competent and quick transitions between exercises, and preservation of the general discipline of the group.

Rhythmic gymnastics was used instead of mobile games (musical games) and in the form of regulated dance sequences in the main part of the class. This group of exercises helped to retain the interest of children with ADHD in the class and to cultivate tempo and rhythm.

The other groups of exercises (on motor skills, static and dynamic balance, correction of secondary disorders) were used throughout the experiment and solved the problem of education of coordination abilities in this contingent. The success of these exercises depended on the general emotional background of the trainees and the location of these complexes in the training system.

The level of coordination abilities increased due to competent selection of exercises by the teacher, distribution of these exercises in the training system,

management of the general emotional background of the group.

Table 1. – Comparison of indicators of development of coordination abilities in girls with ADHD in experimental (n=6) control (n=6) groups after the experiment

Indicators	EG			KG			U
	Me	25%	75%	Me	25%	75%	
Static balance , passe test (in points)	5,5	5	6	5	4	5	2,5
Dynamic balance, long jump from a standing position (in meters)	1,05	0,91	1,16	0,94	0,83	1,6	13
Dynamic balance, 360 degree turn on the gymnastics bench (in seconds)	11,5	10	14	14,5	11	17	5,5
Rhythm test (difference in seconds)	1,45	0,64	1,65	3,39	1,68	4.96	3

Based on the tabulated values, we can conclude that due to the method of education of coordination abilities, tested on the experimental group, the coordination indicators of the students became significantly higher than in the control group. In the test "rhythm" the index of the experimental group is 2.3 times better than in the control group. There is a small difference in the indices of static equilibrium, the difference in the indices of dynamic equilibrium is significant.

Conclusion. Thus, the growth of indicators of development of coordination abilities in the experimental group proves that the means chosen by us and their competent use have a beneficial effect on the development of coordination in girls with attention deficit hyperactivity disorder and can be used in work with this contingent.

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Loshkina Elizaveta Andreevna, 4th year student, Russian University of Sport "GTSOLIFK", Moscow, Russia, lizaloshkina@gmail.com

Scientific supervisor – Rubtsova Natalia Olegovna, Candidate of Pedagogical Sciences, Professor, Head of the Department of Theory and Methodology of Adaptive Physical Culture, nataly.rubtsova@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

ВОСПИТАНИЕ КООРДИНАЦИОННЫХ СПОСОБНОСТЕЙ У ДЕВОЧЕК С СИНДРОМОМ ДЕФИЦИТА ВНИМАНИЯ И ГИПЕРАКТИВНОСТИ НА ЗАНЯТИЯХ ПО ХУДОЖЕСТВЕННОЙ ГИМНАСТИКЕ

Лошкина Елизавета Андреевна, студентка 4-го курса, Российский университет

спорта «ГЦОЛИФК», Россия, Москва, lizaloshkina@gmail.com

Научный руководитель – Рубцова Наталия Олеговна, к.п.н., профессор, заведующая кафедрой теории и методики адаптивной физической культуры, nataly.rubtzova@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматривается эффективность методики воспитания координационных способностей у девочек 4-6 лет с синдромом дефицита внимания и гиперактивности на занятиях по художественной гимнастике. Описаны используемые средства и полученные в ходе эксперимента результаты.

Ключевые слова: координационные способности, синдром дефицита внимания и гиперактивности, средства художественной гимнастики

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COMBINED ELEMENTS FORM THE BASIS OF THE TECHNICAL MERIT OF ELITE GYMNASTS' PERFORMANCES

Luzgan E.A., s/s Novikova L.A.

Abstract. This paper presents an analysis of the combined elements in the exercises performed by elite gymnasts, as well as an identification of common variations of these combined elements and a discussion of their significance.

Keywords: combined body difficulties, difficulties of body, balance, rotation, jump, elite gymnasts

Introduction. The development of rhythmic gymnastics in a highly competitive environment has led to a focus on selecting those difficulties of body that are highly valued in competition rules. In this context, gymnasts have begun to incorporate combined body difficulties into their exercises in order to increase the complexity of their performances with various apparatuses, as combined body difficulties are highly technically demanding. Combined body difficulties are 2 body difficulties performed in a connected, consecutive manner (without hop and without travelling on the support leg). All body difficulties must be from the tables of body difficulties. Difficulties included in the combined difficulty can be from different groups of body elements (same or different shapes) or from the same group of body elements but must be in different shapes. The rules of rhythmic gymnastics

competition have been revised to allow for an unlimited number of combined body difficulties in an exercise, and there is no limit on the number of difficulties linked together. Additionally, special allowances have been introduced for linking the second and subsequent difficulties together competition program, where gymnasts show only technical elements. Additionally, an exercise without a specific theme was included in the competition program, in which gymnasts demonstrate only technical skills. In this regard, it is essential to explore more efficient methods of teaching combined skills in conjunction with complex coordination of the subject matter, as well as address the contradiction between the necessity to master combined body difficulties and the absence of methodological guidelines on the content of technical training based on current scientific data.

The purpose of the paper was to analyze the combination elements in the exercises performed of elite gymnasts, with the aim of further specifying effective methods of technical training. The study took into account the factors that influence the quality of mastery of combined elements in rhythmic gymnastics.

Methods of research. In this study methods of video analysis and literary review.

Results. We analyzed 50 exercises by elite gymnasts participating in the 2024 Russian Rhythmic Gymnastics Championship.

The analysis of the exercises of elite gymnasts revealed that the combined elements in their exercises consist of high-difficulty moves from one or more structural groups. The most commonly used combinations of elements include «balance+balance+balance+jump+rotation», «rotation+rotation+jump», «jump+balance+rotation» or «balance+jump+rotation», «balance+rotation». On average, each gymnast performs 4-5 such combined elements their exercises. It is worth noting, however, that while 6-7 combined elements are performed without an apparatus, gymnasts execute 3-4 combined elements with a hoop 4-5 with a ball, and 2-3 with a ribbon. This distribution of combined elements in the exercises of elite gymnasts can be attributed to the increased complexity involved difficulty of apparatus during these combined elements. Each element included in a combined element requires different apparatus work, as each object has its own unique characteristics and demands. It should also be noted that, on average, the greatest gymnasts combine five elements of body difficulty, with each combined elements comprising three elements of body difficulty for the gymnast.

Conclusion. Gymnasts, in order to increase the difficulty of their exercises with various apparatus, have begun to incorporate combined elements into their exercises, as these allow them to score more points in a shorter period of time. At present, however, there is no established methodology for teaching these combined elements. The number of combined elements included in an exercise with apparatus depends on the difficulty level of the apparatus. It is therefore necessary to investigate the effectiveness of training methods for combined elements, taking into consideration the factors that influence the quality of a gymnast's performance when incorporating combined elements with apparatus in rhythmic gymnastics.

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Luzgan Elena Alexandrovna, 1st year undergraduate, email: luzgan.lena@bk.ru, Russia, Moscow, Federal State Budgetary Institution of Higher Education "Russian university of sports "GTSOLIFK".

Scientific supervisor – Novikova Larisa Aleksandrovna, Russia, Moscow, Federal State Budgetary Institution of Higher Education "Russian university of sports "GTSOLIFK".

КОМБИНИРОВАННЫЕ ЭЛЕМЕНТЫ КАК ОСНОВА ТЕХНИЧЕСКОЙ ЦЕННОСТИ УПРАЖНЕНИЙ ГИМНАСТОК ВЫСОКОЙ КВАЛИФИКАЦИИ

Лузган Елена Александровна, магистрант I курса, email: luzgan.lena@bk.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Новикова Лариса Александровна, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. Данная статья посвящена анализу комбинированных элементов в соревновательных упражнениях гимнасток высокой квалификации, а также выявлению часто встречающихся вариаций комбинированных элементов и анализу их ценности.

Ключевые слова. комбинированные элементы, равновесия, прыжки, повороты, гимнастки высокой квалификации

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CHARACTERISTICS OF THE MORPHOFUNCTIONAL STATUS AND VERTICAL STABILITY IN BOOZROOM DANCERS FROM RUSSIA AND CHINA

Lyu Miao Miao, Zakharyeva N.N.

Abstract. The article presents significant differences in anthropometric indicators, body composition, cardiorespiratory system data and vertical stability of highly qualified dancers involved in sports ballroom dancing from Russia and China, who have a high rating in sports ballroom dancing. The differences in anthropometric data, that we identified indicate significant intergroup differences in the form of lower stature, but larger girth sizes of the chest on inhalation and exhalation, smaller girth sizes of the waist and lower leg and the thickness of the subcutaneous fat fold on the abdomen and greater maximum voluntary strength of the muscles of the left and right hand. right hands of Russian dancers, which is a reflection of their high level of training.

Keywords: sports ballroom dancing, dancers, highly qualified athletes, morphofunctional status, anthropometric characteristics, body composition, Romberg test, stabiloFigureic indicators, vertical stability, dynamometry, tonometry, spirometry

Relevance. This article presents data from a comparative analysis of the characteristics of the morphofunctional status of highly qualified dancers involved in sports ballroom dancing from Russia and China. Ballroom dancing is a rapidly developing sport all over the world and of course in Russia and China. Ballroom dancing is a sport that is actively developing all over the world, including in the Asian region, where it has great development prospects. However, it is precisely in relation to the features of morphophysiological transformations that occur in the body of athletes involved in sports ballroom dancing, as a result of structural changes during long-term adaptation to physical activity, not many works have been published so there is a need to expand the spectrum research in this direction [1, 2, 3].

The **purpose** of our study is: to identify differences in the parameters of morphofunctional status and vertical stability among highly qualified dancers engaged in sports ballroom dancing from Russia and China.

Methods. We carried out anthropometric testing with the measurement of: body

length, body weight, the circumference of the body, the vertical stability. The strength index of the hand muscles measured with a DMER-120 dynamometer both at rest and after dynamic loading "Target" test in the European rack, using the stabiloanalyzer with biofeedback device "Stabilan 01-2. The heart rate of concealment (HR) and arterial addition (SAD – systolic, DAD – diastolic) measured using an Omron S1 semi-automatic tonometer. Statistical methods: Microsoft Office Excel, Statistics 23. We investigated 20 female athletes of high quality were examined from Russia and China, everyone is actively engaged in sports ballroom dancing.

Results. Dancers from Russia are taller, they have a smaller waist circumference and a larger chest circumference on inhalation and exhalation and vital lung capacity, which reflects the better development of breathing in Russian dancers compared to dancers from China when practicing sports ballroom dancing (SBT). The strength index of the muscles of the left hand at rest has better development in dancers from China ($p<0.01$), However, the Coefficient of Strength endurance (SWR) is more optimal in Russians, which emphasizes the harmony of the development of the physical quality of strength in Russian dancers under the influence of physical exertion ($p<0.05$). Significant differences in body mass index, body fat mass and basal metabolism were revealed, which indicates the best fitness of athletes from the Russian Federation.

The results of the "Stability in the Romberg pose" test for the left leg 3 variant of the test with the fixation of the right leg on the knee. Russian dancers are more stable in the Romberg test on the left foot. Data on the characteristics of vertical stability of highly qualified dancers from Russia and China engaged in sports ballroom dancing in the "Target" test. There were no statistically significant differences in the basic parameters of the Target stabilometric test. This indicates a good development of vertical stability among dancers from both Russia and China. The revealed differences relate to the differences in the movement of the center of pressure and the peculiarities of the angles of inclination of the body with the frequency of tremor-like vibrations in dancers when performing test tasks. Significant differences in the maximum manifestations of asymmetry in the development of linear velocity in dancers revealed in the sagittal plane.

Conclusions:

1. Highly qualified dancers from Russia engaged in sports ballroom dancing, in comparison with dancers from the People's Republic of China, have greater values of indicators: body length, chest circumferences during inhalation and exhalation, vital capacity of the lungs.

2. We identified morphofunctional characteristics of Russian dancers determine good opportunities for the manifestation of their aerobic abilities and allows them to perform high-quality dances in the finals of competitions and take prizes at prestigious international competitions.

3. Highly qualified dancers involved in sports ballroom dancing from the People's Republic of China must include in their training program Thai breathing exercises and physical exercises that develop aerobic endurance: cross-country running, abdominal exercises, which will help improve the functioning of the cardio-

respiratory system and the development of aerobic endurance.

Suggestions:

1. Highly qualified dancers from Russia engaged in sports ballroom dancing, in comparison with dancers from China, have high values of indicators: body length, chest circumference on inhalation and exhalation and vital capacity of the lungs.

The revealed morphofunctional characteristics of Russian dancers determine the good possibilities of their aerobic and strength endurance, which allows them to perform high-quality dances and take high prizes in the finals of prestigious international competitions.

2. The characteristics of the development of vertical stability in dancers from the Russian Federation and the China differ in the differences in the movement of the center of pressure and the peculiarities of the angles of inclination of the body of dancers with the frequency of tremor-like vibrations when performing the tasks of the "Target" test. Dancers from the Russian do a better job with the tasks of the "Target" test.

3. Highly qualified dancers engaged in sports ballroom dancing from China need to include Tai Chi breathing exercises and physical exercises that develop aerobic endurance in their training program: crosses, physical exercises on the press, which will contribute to improving the functioning of the cardio-respiratory system and the development of aerobic endurance, therefore it will improve the functional state of the cardio-respiratory system of athletes and it will develop aerobic endurance.

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Liu Miao Miao, 2nd year Master's student (full-time), Department of Physiology, RUS Department of Physiology "GTSOLIFK", e-mail:15225721812@163.com, PRC, Henan, Fgou, house 3. 8(930)9473166

Zakharyeva Natalya, Professor, Department of Physiology, RUS "GTSOLIFK", Chief Specialist, Research Institute of Sport and Sports Medicine zakharyeva.natalia@mail.ru, Russia, Moscow, Russian University of Sport "GTSOLIFK", Moscow, Russia

ХАРАКТЕРИСТИКА МОРФОФУНКЦИОНАЛЬНОГО СТАТУСА И ВЕРТИКАЛЬНОЙ СТАБИЛЬНОСТИ У ТАНЦОВЩИЦ ИЗ РОССИИ И КИТАЯ

Люй Мяо Мяо, магистрант 2 года обучения (очная форма обучения) кафедры физиологии РУС «ГЦОЛИФК», e-mail:15225721812@163.com, КНР, Хэнань, Фгоу, дом 3. 8(930)9473166

Захарьева Наталья Николаевна, профессор кафедры физиологии РУС «ГЦОЛИФК», главный специалист НИИ Спорта и Спортивной медицины zakharyeva.natalia@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

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SYSTEM ANALYSIS OF QUALIFICATION DEVELOPMENT PROGRAMS IN THE FIELD OF FITNESS USING DISTANCE EDUCATION TECHNOLOGIES

Makhrova E.V., Pavlov E.A.

Abstract. The article is devoted to some substantive and normative-legal aspects of using distance learning technologies in the implementation of advanced training programs in the field of fitness considering professional standards in the field of physical culture and sports. The professional standards in the field of physical culture and sport that meet the requirements of professional activity of specialists in the field of fitness are specified; the competitive analysis of organizations providing services for advanced training of fitness instructors is carried out. The comparative analysis of modern digital platforms used in the implementation of educational programs using distance technologies is presented.

Keywords: professional standard, professional development, distance education

Introduction. The modern system of higher education is characterized by the active introduction of distance education technologies [1]. The ambiguous opinion about the feasibility (including economic), admissibility, legality and effectiveness of using distance education technologies in the system of additional professional education actualizes the topic of the study. In the presence of many positive aspects of distance learning, there is currently quite a wide range of problems and nuances that should be considered in order to design a holistic harmonious and effective educational process that meets high standards of the quality of education.

In connection with the emergence of new professions due to the appearance of new labor functions, the problems of professional development of specialists in the field of fitness are becoming particularly relevant. Updating and improving competencies become the key issues of competitiveness of a person working in the fitness industry. In the conditions of rapidly changing and developing fitness services market the necessity of professional development, aspiration to self-education and self-improvement become the tasks of successful activity of fitness organizations.

Methods. An analysis of scientific and methodological literature. Analysis of normative-legal acts and documents regulating the education of specialists in the field of fitness and their qualification. A comparative analysis of educational organizations providing services to improve the qualifications of fitness instructors. A comparative analysis of modern digital platforms used in the implementation of educational programs using distance technologies. Content analysis of the official websites of educational organizations. Expert survey. Mathematical and statistical processing of data.

Results. In the course of the study, the websites of 75 educational organizations of the Russian Federation providing services for professional development for fitness professionals were analyzed. The analysis of educational programs was carried out according to the following criteria: the availability of license for the right to implement programs of additional professional education, the presence of the word "fitness" in the name of the educational organization; the cost of the program; the program duration (hours, months); the use of the requirements of professional standards or the requirements of federal educational standards in the development of the program; the presence of an official website and the presence of the section "Information about the educational organization" on the website, due to the requirements of the federal educational standards such as Resolution of the Government of the Russian Federation from 20.10.2021 №1802 and Order of the Federal Service for Supervision of Education and Science from 14.08.2020 № 831 [3, 5].

Based on the results of the analysis, a list of 75 educational organizations with a valid license was formed. Information was requested on the official website of Rosobrnadzor in the "Register of licenses" section [6]. Out of 75 organizations, only 45 (60%) organizations have access to the official website, while 23 (30%) organizations have a full description of educational programs, including the duration and cost, thematic plan, as well as information about final certification. Only 19 (25%) organizations comply with the requirement to have a section "Information about the educational organization" on the website [4]. At the same time, in accordance with the Federal Law No. 273-FZ "On Education in the Russian

Federation" dated 29.12.2012, as well as the Order of the Ministry of Education and Science of the Russian Federation No. 499 dated July 1, 2013 "On Approval of the Procedure for Organization and Implementation of Educational Activities in Additional Professional Programs", only 16 (21%) out of 75 educational organizations have programs that take into account the requirements of professional standards [1, 2]. Thus, it can be concluded that only 21% of organizations specializing in the provision of educational services for professional development and professional retraining of specialists in the field of fitness, comply with the current legislation of the Russian Federation on a formal basis.

Professional standards were also analyzed referred to the Council for Professional Qualifications in the field of physical culture and sport and in the structures of which there are work functions formed by work actions, necessary skills and necessary knowledge associated with the sphere of fitness: 05.002 Coach in adaptive physical culture and adaptive sports; 05.004 Instructor-methodologist in adaptive physical education and adaptive sports; 05.005 Specialist in instructing and methodological work in the field of physical education and sports; 05.008 Head of an organization carrying out activities in the field of physical education and sports; 05.009 Specialist in maintenance and repair of sports inventory and equipment; 05.012 Coach-teacher; 05.013 Specialist in promotion of fitness services; 05.017 Specialist in fitness (fitness trainer); 05.018 Specialist in school and student sports [6].

Based on the results of the analysis, it was proposed to divide work actions and necessary skills into two groups - general and specific, which were considered from the point of view of the possibility of their formation in the distant format. The first type included such work actions and necessary skills as: interaction with equipment; psychological contact; first aid, which are present in the professional standards. The second group included work actions and necessary skills that are specific to each of the analyzed professional standards. It should be noted that the analysis did not take into account the required knowledge, since this part of the work function is theoretical and can be fully implemented by distance.

The share of general work actions and necessary skills in work functions without considering the necessary knowledge is 30%, while the share of specific work actions and necessary skills is 70% of the total number of didactic units disclosed in work functions. At the same time, the percentage ratio of general work actions and necessary skills is determined by the following indicators: 13% – first aid; 12% – interaction with equipment; 5% – psychological contact; 70% – specific. Thus, almost 90% of work actions and necessary skills can be formed in the distant format, 10% – no.

The final stage of the study, was the analysis of platforms for distance education [3]. The 11 most popular platforms were selected for comparative analysis. Characteristics of platforms for distance education by significant criteria for assessing their quality are presented in Table 1. Each criterion was evaluated on the following scale: "0" – unsatisfactory evaluation – absence of evaluation criterion on the platform (low evaluation of the platform by users, negative comments); "1" – evaluation criterion is on the platform, but its evaluation is average (inconvenient use, average evaluations and comments of users, etc.); "2" – excellent evaluation – evaluation criterion with good and excellent evaluations (convenient to use, positive evaluations and comments of users, etc.).

Table 1. – Characteristics of distance education platforms by significant criteria for assessing their quality

Criteria for platform evaluation	Platform for distance education											TOTAL
	EdproBiz	TeachBase	Uchi.pro	Moodle	iSpring	Mirapolis	Antitreningi	GoogleClassroom	Eduardo	Getcourse	Ilias	
Ability to host multimedia	2	2	2	2	2	2	2	2	2	2	2	22
Content creation	2	2	2	2	2	2	2	2	2	2	2	22
Grade control	2	2	2	2	2	2	2	2	2	2	2	22
Russian language interface	2	2	2	2	2	2	2	2	2	2	0	20
Interface simplicity	2	2	2	2	2	2	1	2	2	0	2	19
Mobile version	2	2	2	2	2	2	2	2	0	2	0	18
Asynchronous learning	2	2	2	2	2	2	2	2	0	2	0	18
Technical support	2	2	2	0	2	1	2	0	2	2	2	17
Data storage (Server/Cloud)	2	2	2	2	2	1	1	1	1	1	1	16
User evaluation of the platform	2	2	2	2	1	2	1	1	1	0	0	14
Possibility to organize webinars	2	2	2	2	2	0	0	1	0	2	0	13
Free version	2	0	2	2	1	0	0	2	2	0	2	13
User comments	2	1	2	1	1	2	1	0	1	0	1	12
Possibility of gamification	2	0	0	2	2	2	2	0	0	0	0	10
Proctoring	2	2	0	0	0	0	0	0	0	0	0	4
TOTAL	30	27	26	25	25	22	20	19	17	17	14	

As can be seen from the presented data, the most preferred platforms for distance education include: EdproBiz, TeachBase, Uchi.pro, Moodle and iSpring. The least preferred are Google Classroom, Eduardo, Getcourse and Ilias. At the same time, the most common significant criteria for assessing the quality of distance learning platforms are (present in acceptable quality in more than 50% of platforms): the ability to place multimedia content; the ability to create content; the ability to monitor the progress of students; Russian language interface; simplicity of the interface; the presence of a mobile version; the possibility of asynchronous learning; the availability of technical support; the ability to store data (on the organization's server and (or) using cloud technologies); the availability of free version of the platform. The least common significant criteria for assessing the quality of distance learning platforms are: the cost of the paid version of the platform; the ability to conduct webinars; the possibility of gamification. And the least developed, but the most important from the point of view of assessing the quality of education is the possibility of proctoring. Thus, the choice of a right platform for distance learning is quite limited, which may lead to additional difficulties at the stage of implementation of the educational program.

Conclusion. The system analysis conducted within the framework of this study

indicates the shortcomings of the distance format of professional development in the fitness industry, as in practice many of the educational organizations provide professional development courses entirely in the distance format, which in turn does not meet the quality requirements of education in the fitness industry. At the same time, 78% of such organizations do not comply with the current legislation of the Russian Federation in the field of education on a formal basis.

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Makhrova Ekaterina Vadimovna - 2nd year student of the Faculty of Master's Preparation, Russia, Moscow, RUS «GTSOLIFK», mahrova.ev@gtsolifk.ru

Pavlov Evgeny Alexandrovich - Candidate of Pedagogical Sciences, Professor, Head of Department of Recreation and Sports and Health Tourism, Russia, Moscow, RUS «GTSOLIFK», pavlov.ea@gtsolifk.ru

СИСТЕМНЫЙ АНАЛИЗ ПРОГРАММ ПОВЫШЕНИЯ КВАЛИФИКАЦИИ В ОБЛАСТИ ФИТНЕСА С ПРИМЕНЕНИЕМ ДИСТАНЦИОННЫХ ОБРАЗОВАТЕЛЬНЫХ ТЕХНОЛОГИЙ

Махрова Екатерина Вадимовна – студентка 2 курса Факультета магистерской подготовки, Россия, Москва, РУС «ГЦОЛИФК» mahrova.ev@gtsolifk.ru

Павлов Евгений Александрович – к.п.н., профессор, заведующий кафедрой Рекреации и спортивно-оздоровительного туризма, Россия, Москва, РУС «ГЦОЛИФК» pavlov.ea@gtsolifk.ru

Аннотация. Статья посвящена отдельным содержательным и нормативно-правовым аспектам применения дистанционных образовательных технологий при реализации программ повышения квалификации в области фитнеса с учётом профессиональных стандартов в области физической культуры и спорта. Конкретизированы профессиональные стандарты в области физической культуры и спорта, отвечающие требованиям профессиональной деятельности специалистов в области фитнеса; проведен конкурентный анализ организаций, предоставляющих услуги по повышению квалификации фитнес-инструкторов. Представлен сравнительный анализ современных цифровых платформ, используемых при реализации образовательных программ с использованием дистанционных технологий.

Ключевые слова: профессиональный стандарт, повышение квалификации, дистанционные образовательные технологии, фитнес, трудовая функция, образовательная платформа

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UDC 796

PHYSICAL REHABILITATION FOR CHRONIC NONSPECIFIC THORACIC SPINE PAIN – RESULTS OF A PHASE I STUDY

Malitskaya A., s/s Tkachenko S.A.

Abstract. Chronic nonspecific thoracic spine pain currently has no specific clinical recommendations for treatment and rehabilitation. The prevalence of this type of pain is in third

after cervical and lumbar pain. The researchers assumed and proved in the first stage of the experiment that the combination of self-mobilization exercises for the thoracic region and strengthening the scapulae retractor muscles for 8 weeks significantly reduces the level of pain according to the VAS, improves the quality of life associated with back pain.

Keywords: *thoracic spine pain, chronic nonspecific pain, kinesiotherapy, physical rehabilitation exercises*

Introduction. Thoracic spine chronic non-specific pain (TSPP) is still an under-researched area of knowledge. Physical rehabilitation of TS chronic nonspecific pain lacks detailed clinical guidelines and established rehabilitation protocols, unlike those of cervical and lumbar spine regions. As part of the master's study, stage 1 of the experiment was conducted. As a hypothesis, the researchers assumed that independent mobilization techniques in TS and static strength achieved position stabilization exercises will have a maximum effect on the pain syndrome and will allow to improve the quality of life of the subjects by minimal means, reduce pain, and reduce function limitations associated with TS chronic pain.

Main part. «Clinically, thoracic spine pain occurs between the levels of C7-T1 and T12-L1 and is often, but not exclusively, associated with pathologies such as osteoporosis, osteoarthritis, Scheurmann's disease and ankylosing spondylitis» [3]. But in real practice, excluding serious pathologies, more common diagnoses are osteochondrosis, unspecified dorsopathy, dorsalgia, and thoracalgia. There are no established clinical recommendations for TS physical rehabilitation in either domestic or foreign practice [3]. According to the people with TS chronic pain surveys, medical institutions are limited to the prescription of NSAIDs, myorelaxants, and general recommendations to "increase physical activity". Nonspecific forms of physical activity result in little improvement in symptoms, sometimes worsening. Acute primary pain in the thoracic spine can successfully become chronic and aggravated due to the prevalence of sedentary lifestyle and office style of work, which are inevitably associated with prolonged static loads on the thoracic spine.

A population-based study by Leboeuf-Yde C, Nielsen J, Kyvik Ko et al. 2009 [1] showed that the annual expected medical attention for thoracic pain is 7.2% of the general population (23.7% and 24.2% for lumbar and neck pains, respectively).

Risetti M., Gambugini R. and Testa M in 2023 indicate [3] that physical rehabilitation professionals are choosing a multimodal combination of exercise, manual intervention and patient education as consensus solutions for the management of TS chronic nonspecific pain. This is consistent with clinical guidelines for other chronic musculoskeletal pain.

Another challenge is patient compliance, their ability to maintain and follow prescribed rehabilitation programs. This issue is especially important in self-administered exercises and/or remote work with patients, where the instructor's presence and their support are unachievable. Minimizing patient's effort was chosen to address this issue. The challenge for the researchers was to find minimal intervention time that would result in reliable symptoms improvement.

Luetchford S. et al [2] used the McKenzie Mechanical Diagnosis and Therapy (MDT) concept to classify 100% of TS pain as a "derangement syndrome". According to the MDT concept, this syndrome should respond with improvement to

mechanical stimulus: repetitive movements in one direction (flexion or extension). Excessive extension in the TS is rare in the population, and severe thoracic flexion leading to hyperkyphosis is more common.

Materials and Methods. 23 subjects, 4 were situationally selected to the "waiting list" and formed the "control" group. No significant differences were found between the groups in the parameters of pain levels, pain experience and Oswestry Disability Index. The intervention group consisted of 14 women, 5 men, mean age 34.70 ± 5.67 years, mean VAS pain level 3.28 ± 1.24 points, maximum 7 points. The mean pain experience was 2 years (but not less than 0.5 years).

Our study suggested that TS mobilization in extension should be a primary intervention. The exercise was performed with the props' help – a massage roller (foam-roll, MFR-roll). Initial position – lying on the back, hands behind the head in a wrist lock, the roll was placed in the shoulder blades area, perpendicular to the axis of the spine. From this position, the subject was asked to perform repetitive TS extensions toward the floor. The subject determined the range of motion independently, based on the available motion range and/or pain level increase. It was recommended that when any of those thresholds was reached, the subject should immediately begin a smooth return to the starting position.

Isometric "airplane" exercise – prone position, arms held in the air 90° to torso (bringing the shoulder blades together) – was chosen as an additional way to stabilize the result. The scapulae retractors, rhomboid muscles, and the middle portion of the trapezius muscles were target areas. Additionally, spinal extensor muscles were involved. The variation of Tabata was chosen as the performance protocol, which is quite accessible in terms of duration and has been noted as effective also for isometric loads [4]. Thus, the subjects were asked to hold a slight elevation of the upper body from the floor and maximal scapulae retraction for 8 repetitions of 20 seconds each with a 10-second rest in between. It was suggested to do additional rounds of TS roll self-mobilizations before and after the exercise.

The subjects were asked to perform at least 3 sets of 15-20 repetitions of TS roll self-mobilizations during the day at regular intervals. The desire to perform more repetitions or sets was encouraged. The "airplane" set was to be performed once a day.

Before and after 8 weeks of exercise subjects filled out the Oswestry Disability Index, Tampa Kinesiophobia Questionnaire, SF-36 Quality of Life Questionnaire, average/maximum VAS pain score and marked their symptom localization on the body-chart. During 8 weeks of the study's 1st phase the subjects were interviewed 3 times a week to monitor their overall well-being and amount of exercises performed. Also, at the end of 8 weeks the subjects provided feedback (positive/negative/neutral) on program effectiveness. Statistical analysis was made with StatTech program v.4.1.5.

Results and Discussion. Over the course of 8 weeks, subjects performed an average of 81% of the suggested mobilization repetitions and 73% of the suggested "airplane" exercise amount. The missed days rate was 5%. Adherence to the program was considered high. According to the final survey, any kind of additional exercise load would have resulted in lower adherence. After 8 weeks subjects showed improvements in all target parameters. The Oswestry questionnaire score changes were 8 points in the intervention group (min. clinically significant difference is 6

points), but the difference with the control group was statistically insignificant. ($p=0,305$) According to the SF-36 questionnaire, the pain level decreased by 17%, the average and maximum VAS of pain decreased by 2 and 3.43 points, respectively. These results have a statistically significant difference with the control group.

Student's t-test was used for groups of quantitative indicators with normal distribution. The Mann-Whitney U-test was used for groups of quantitative indicators without normal distribution. Differences were considered statistically significant at $p < 0.05$.

Small statistical power and an insignificant control group should be considered a disadvantage of the study. The researchers hope to expand the experimental base and control group in the future to get more statistically significant data. The exact impact of training, communicative or psychological aspects cannot be easily defined individually. Chronic nonspecific pain has an intermittent course, so improvements and worsening of the condition have a wave-like nature.

Table 1. – Descriptive statistics of quantitative variables

Parameter	Control	Intervention	t or U	p < 0,05
Age, M (SD)	39,50 (2,65)	33,68 (5,65)	0,060	> 0,05
Years of pain experience, Me [IQR]	1,50 [1,00; 4,00]	4,00 [2,00; 8,50]	0,345	> 0,05
Oswestry DI before, Me [IQR]	29,00 [27,50; 30,00]	30,00 [27,00; 32,00]	0,458	> 0,05
SF-36 Physical Functioning – PF, before M (SD)	0,89 (0,06)	0,88 (0,08)	0,789	> 0,05
SF-36 Bodily pain – BP before, M (SD)	0,70 (0,16)	0,52 (0,23)	0,143	> 0,05
VAS avg. before, M (SD)	3,00 (1,63)	3,34 (1,19)	0,628	> 0,05
VAS max. before, M (SD)	6,00 (2,83)	7,08 (1,35)	0,244	> 0,05
Oswestry DI Δ, Me [IQR]	4,00 [3,00; 4,50]	8,00 [2,00; 11,00]	0,305	> 0,05
SF-36 Physical Functioning – PF, Δ M (SD)	0,01 (0,07)	0,07 (0,07)	0,137	> 0,05
SF-36 Bodily pain – BP Δ, M (SD)	-0,13 (0,34)	0,17 (0,22)	0,040	< 0,05
VAS avg. Δ, M (SD)	0,00 [0,00; 0,12]	2,00 [1,00; 3,00]	0,011	< 0,05
VAS max. Δ, M (SD)	0,00 (0,00)	3,43 (2,30)	<0,001	< 0,05

To assess this factor, researchers are planning to conduct two more phases of the experiment.

Conclusions. The data represent the results of the experiment's first phase. Statistically significant improvements in VAS pain questionnaires, SF-36 (bodily pain subscale), and clinically significant improvements according to the Oswestry questionnaire confirm that regular performance of self-mobilization exercises in the direction of extension for the TS, combined with scapulae retractors strengthening exercises, successfully reduce symptoms in TS chronic nonspecific pain. At the end of the 1st stage 16 subjects (84.2% of the intervention group) rated the result as a positive. The next stage of the study involves an educational lecture on the symptoms' development, pain-management skills and performing exercises as a preventive measure. The goal of the 2nd phase is to evaluate the stability of currently achieved

improvement through next 8 weeks and to investigate the integration of the necessary movement forms into daily activity, as well as difficulties and obstacles encountered.

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Malitskaya Anna, student of Department of physical rehabilitation, massage and health physical culture named after I. M. Sarkizov-Serazini. Russia, Moscow, The Russian University of Sport «GTSOLIFK», annamalitskaya@gmail.com

Scientific supervisor – Tkachenko S.A., candidate of Pedagogy, Associate Professor, Head of the Department of Physical Rehabilitation, Massage and Recreational Physical Education named after I. M. Sarkizov-Serazini, Moscow, The Russian University of Sport «GTSOLIFK», tkachenkos@inbox.ru

ФИЗИЧЕСКАЯ РЕАБИЛИТАЦИЯ ПРИ ХРОНИЧЕСКОЙ НЕСПЕЦИФИЧЕСКОЙ БОЛИ В ГРУДНОМ ОТДЕЛЕ ПОЗВОНОЧНИКА – РЕЗУЛЬТАТЫ ПЕРВОГО ЭТАПА ИССЛЕДОВАНИЯ

Малицкая Анна, студент 1 курса магистратуры кафедры физической реабилитации, массажа и оздоровительной физической культуры И.М. Саркизова-Серазини, Россия, Москва, ФГБОУ ВО «РУС ГЦОЛИФК», annamalitskaya@gmail.com

Научный руководитель – Ткаченко Светлана Анатольевна, к.п.н., доцент, заведующая кафедрой физической реабилитации, массажа и оздоровительной физической культуры И.М. Саркизова-Серазини, Россия, Москва, «РУС ГЦОЛИФК», tkachenkos@inbox.ru

Аннотация. Хроническая неспецифическая боль в грудном отделе позвоночника в настоящее время не имеет специфических клинических рекомендаций по лечению и реабилитации. Распространенность такого вида боли находится на третьем месте после болей в шейном и поясничном отделах. Исследователи предположили и доказали в первом этапе эксперимента, что сочетание упражнений для самостоятельной мобилизации грудного отдела и для укрепления мышц ретракторов лопаток в течение 8 недель достоверно снижают уровень боли по ВАШ, улучшают качество жизни, связанное с болью в спине.

Ключевые слова: боль в грудном отделе позвоночника, хроническая неспецифическая боль, кинезиотерапия, физическая реабилитация, упражнения

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UDC 394.481

THE CONNECTION OF MODERN OLYMPIC CEREMONIES WITH ANCIENT CEREMONIES: CENTURY-LONG CONTINUITY OF ELEMENTS

Manzyuk E.V., Koreneva M.V.

Abstract. This article is devoted to the Opening Ceremonies of the Olympic Games as a tool for spreading Olympic knowledge and values. The historical aspects of the Olympic ceremonies, as well as the role of the protocol part in the process of transmitting the primary ideas of Olympism to a wide audience are highlighted in the work. The historical continuity of some elements of the Opening Ceremonies of the Olympic Games and their significance in the system of the international sports and Olympic Movement is of interest.

Keywords: Olympic Games, Opening Ceremony, Olympic knowledge, Olympic values

Introduction. The world we live in is a beautiful and huge world, but, unfortunately, there is a place for fear, injustice, cruelty, evil, wars and death in it. The events taking place in the world demonstrate that today society makes too many mistakes in understanding «harmonious development and peaceful coexistence». Now we all need a «navigator» - something that will show what to do when there is suddenly more violence in life than love. In this regard, the issue of promoting Olympic values is of particular relevance. The three main values of Olympism are excellence, friendship and respect. Olympic ceremonies can serve as a tool for their preservation and transmission. They are considered as the most important part of sports competitions and attract the attention of a multi-million audience of spectators, even those who are sometimes far from sports.

The research purpose is to determine the connection of modern Olympic ceremonies with ancient ceremonies in order to use ancient traditions during the opening and closing ceremonies of contemporary large-scale sporting events to spread true ideas of Olympism.

Methods: analysis of scientific and methodological literature, comparative

method, special historical methods.

Discussion. Now the Olympic ceremonies are the result of a complex historical process. Historians and sociologists have contributed knowledge to the topic of the genesis and development of the Olympic ceremonies. Thanks to them, we know that the origins of the Olympic ceremonies were the religious rituals of Ancient Greece. A set of ritual symbols – torch relay, parade of nations, oaths, anthem are the part of the general ceremonial system associated with the Olympic philosophy. These symbols serve as a mean of social and cultural communication, transmission and spread of Olympic knowledge and values [1, 3].

The Olympic Charter of the modern Olympic Games defines three main traditional ceremonies: the Opening and the Closing Ceremonies, Awarding of Winners and Prize-Winners.

According to the Olympic Charter, ceremonies must be held in strict accordance with the regulations of the IOC protocol. The protocol part of the Opening Ceremony of the Games contains the appearance of the Head of the State, the parade of athletes, the declaration of the Games open, the Olympic oath, the Olympic flame. The text of the Olympic Charter provides an understanding of when and what speeches should be made by the President of the International Olympic Committee and the Chairman of the Organizing Committee of these Games; what should be said by the Head of the State; how to organize the parade of teams of participating countries at the stadium; when the olympic flag and olympic flame appear; when oaths are said by the participants and by the judges, etc. These components are an obligatory part of every ceremony and carry one of the human virtues that are universal and understandable to everyone [1].

Let's consider the connection between modern Olympic Ceremonies and Ancient ones, where we can trace the centuries-old continuity of some elements.

The oath. In Antiquity, there was an oath of athletes and judges about a fair fight. Every athlete before taking part in the ancient Greek Olympic competitions, was required to take an oath of fair fight. This custom took place at the foot of the formidable statue of Zeus, holding lightnings in his hands. The judges gave the parting words: «If you have adequately prepared for the Olympic Games, if you are not burdened by a low act, then go with a cheerful heart. If you are, then leave» [1].

The Games of the VII Olympiad of 1920 in Antwerp played a significant role in the continuity of the tradition of holding Olympic ceremonies. The famous Belgian water polo player and the fencer Victor Boin, took the Olympic oath for the first time in the history of the modern Games. The idea of its revival belonged to Pierre de Coubertin [3].

To date, the recitation of the Olympic oath by one of the country's outstanding athletes on behalf of all athletes has not only come out of the program, but it is also a mandatory ritual for the opening of the Games. This is a promise to fight fairly in accordance with the rules and principles of sport and the Olympic spirit. The oath of impartial judging is also pronounced by several judges on behalf of all judges of the Games. In 2012, the coaches' oath was added to the protocol. The XXII Olympic Winter Games of 2014 in Sochi became a historical event, since for the first time the coach of the country hosting the Olympic Games took the oath on behalf of all

coaches. The oaths of judges, athletes, coaches show integrity, loyalty to accepted obligations, sincerity to others and to oneself, and therefore they are a tool for conveying the principles of fair play.

The Ceremonial parade of athletes. In ancient Greece, the Panathenaic procession took place in the Parthenon, which was a grandiose performance. The residents of Athens followed the participants along the sacred path to the temple. Sacrifices were made in honor of the goddess Pallas Athena. With such parades, the Greeks honored their gods and showed unity that amazed foreigners. The sacred rule determined the strict order in which the participants had to move (first were the priests, followed by the rulers and ephebes). The parades were held on the opening day of the Olympic Games and on the day of the sacrifice.

The Games of the IV Olympiad of 1908 in London are interesting because the delegations of athletes from eighteen countries who were presented at the stadium marched solemnly. It is important that each team presented their national flags at the ceremony for the first time, and were also dressed in the same original costumes. The order of the participants was determined by the names of the countries in English. Thus, it can be argued that the London Opening Ceremony was the first at which the Parade of Nations was organized [3].

Nowadays, national teams for the participation in the march parade are presented in alphabetical order by the name of the countries in the language of the country hosting the Games or in the official language of the IOC – French or English. The representative of the host country, carrying a sign with the name of the respective country, walks in front of each group. Behind him the bearer who is usually an athlete participating in the Games walks and carries the flag of his country at the head of the team. As a rule, the flag is trusted to the most titled and respected athletes. The Greek flag and the representatives of the Greek NOC begin the parade of athletes, and the delegation of the host country finishes it. The traditional march parade is a tool for spreading the idea of unity, friendship, and mutual understanding.

Another tradition that has ancient roots, originating in Ancient Greece, is the ceremony of lighting the Olympic flame. The cult procession was held in Olympia, dedicated to Hestia – the goddess of the family hearth and sacrificial fire. The relay race was held for religious purposes on the first days of the full moon. Several teams of runners carried the torch, passing it from one to another. The first team to arrive with a torch was declared the winner.

At the opening ceremony of the Games of the IX Olympiad of 1928, a new attribute of the ceremony appeared - the Olympic flame, first lit at the Games stadium in Amsterdam in 1928, which burned throughout all the days of the Olympic competitions. At the opening ceremony of the Games of the XI Olympiad, the existing tradition of lighting the Olympic flame was continued, and for the first time the flame was carried from Olympia by runners passing the torch like a baton.

Currently, this ritual is an integral attribute of the Olympic Games and has an important social and cultural significance of the Olympic Ceremonies. Overcoming the path from Olympia to the host city, this ceremony is a tool for attracting a mass audience, a symbol of the greatness of the Olympic Games, the preservation and transmission of Olympic traditions.

During the Games of 444 BC, one wrestler sent a dove to his place of residence after becoming an Olympian. The dove flew 160 km, representing the so-called symbol of the athlete's victory.

The innovation in the history of the Ceremony of the Games of the VII Olympiad in Antwerp in 1920 was the launching of two thousand doves with ribbons tied to their paws, the colors of which corresponded to the colors of the flags of the countries participating in the Olympic competitions [3].

At the present stage white doves are an integral part of the Olympic Ceremony. For example, at the Games of the XXIX Olympiad of 2008 in Beijing were «digital doves» created using stadium projection. And at the XXII Olympic Winter Games of 2014 in Sochi there was a choreoFigureic episode «Swan Lake», in which swans turned into «doves of peace». White doves are a tool for spreading the idea of peaceful coexistence.

According to the data obtained, the Olympic Ceremonies represent an integral part of the Olympic Games of our time and are a distinctive feature of the Games from other sports competitions, the tradition of which has a long and rich history, dating back to the history of Ancient Greece [3].

Conclusions. Thus, with a history of more than a century, the modern Olympic Movement has a task that it has always had, but now is becoming especially relevant: to achieve the most complete and effective implementation, preservation, transmission and spreading of Olympic values and ideals through sports. In turn, the Olympic Ceremonies are a tool that can become a saving force for the world. Thanks to them, society will be able to subjugate its ever-belligerent and destructive energy in order to direct it into a creative direction, for the benefit of preserving peace for all subsequent generations.

Studying the genesis and development of the Olympic Ceremonies will help not only to determine the true idea of Olympism, but will also contribute to the borrowing of the content of the protocol part of the Olympic Ceremony and its use during the opening and closing ceremonies of large-scale sporting events.

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Manzyuk Ekaterina Vadimovna, 1st year Master student of the History of Civilization, Physical Education, Sports and Olympic Education Department, ekaterina_manzyuk@mail.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

Koreneva Maria Vadimovna, candidate of pedagogical sciences, Associate Professor, Associate Professor of the History of Civilization, Physical Education, Sports and Olympic Education Department, maria_koreneva@list.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

СВЯЗЬ СОВРЕМЕННЫХ ОЛИМПИЙСКИХ ЦЕРЕМОНИЙ С АНТИЧНЫМИ ЦЕРЕМОНИЯМИ: МНОГОВЕКОВАЯ ПРЕЕМСТВЕННОСТЬ ЭЛЕМЕНТОВ

Манзюк Екатерина Вадимовна, магистрант 1 курса кафедры Истории цивилизации, физической культуры, спорта и олимпийского образования, ekaterina_manzuyuk@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Коренева Мария Вадимовна, к.п.н., доцент, доцент кафедры Истории цивилизации, физической культуры, спорта и олимпийского образования, maria_koreneva@list.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Данная статья посвящена церемониям открытия Олимпийских игр как инструменту распространения олимпийских знаний и ценностей. В работе освещены исторические аспекты олимпийских церемоний, а также роль протокольной части в процессе передачи широкой аудитории первоначальных идей олимпизма. Интерес представляет историческая преемственность некоторых элементов церемоний открытия Олимпийских игр и их значения в системе международного спортивного и олимпийского движения.

Ключевые слова: Олимпийские игры, церемония открытия, олимпийские знания, олимпийские ценности

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UDC 371+ 378.046.4

TESTING A MODEL OF ADVANCED PROFESSIONAL EDUCATIONAL PROGRAM FOR SAMBO SPECIALISTS BASED ON INTERACTIVE TRAINING METHODS

Maryanyan S.A., Tabakov S.E.

Abstract. *This study presents the results of piloting an educational program model aimed at enhancing the qualifications of Sambo specialists. During the pilot experiment, students' self-assessment of professional competencies significantly improved, and the effectiveness of the presented interactive teaching methods is supported by the quality of creative projects developed by students in the control and experimental groups. The research hypothesis was confirmed, and the*

obtained results formed the basis for the development of qualification enhancement courses and professional retraining programs for Sambo specialists.

Keywords: *qualification enhancement, educational program design, interactive teaching methods, professional competency development*

Introduction. Our previous studies made it possible to establish that the role of interactive teaching methods in the educational process, in comparison with traditional methods, occupies a leading position in the modern educational paradigm [3], where the implementation of student-oriented, activity-based and competence-based approaches in the process of professional education comes to the fore. training of future specialists, aimed primarily at subject-subject interaction between students and the teacher. However, during the survey, we determined that teachers, while highly appreciating the effectiveness of interactive teaching methods, most often conduct classes using traditional teaching methods. It should be emphasized that the 3++ generation Federal State Educational Standard states that at least 30% of classes should be conducted using various interactive teaching methods. According to A.V. Vasilyeva, the main problem of labor intensity when using interactive learning in practice is the lack of methodological development [1].

The research hypothesis posits that conducting a pilot experiment using interactive teaching methods during sessions with students will enhance their level of professional competencies. Subsequently, the obtained results will enable the design of an educational program for qualification enhancement courses and professional retraining for Sambo specialists.

The purpose of the study. To test the effectiveness of the model of an educational program for advanced training for sambo specialists, based on interactive teaching methods, during a pilot experiment.

Objectives:

1. To identify the professional competencies of students specializing in Sambo at the coaching faculty.
2. To determine the self-assessment of the level of professional competencies among Sambo students in the control and experimental groups before the experiment.
3. Present the results of the pilot experiment using interactive teaching methods.
4. To determine the self-assessment of the level of professional competencies among Sambo students in the control and experimental groups after the experiment.
5. To evaluate the effectiveness of the educational program model for qualification enhancement.

During the pilot experiment, the interactive methods employed included organizational educational games, a form of training games used in qualification enhancement and personnel retraining [4, 5], and peer-to-peer learning, also known as "equal to equal" learning. It is worth noting that peer-to-peer learning has been identified as quite effective and innovative, as supported by recent scientific research [2]. In our study, the allocation into control and experimental groups was based on the teaching method: the control group consisted of students using organizational educational games, while the experimental group used peer-to-peer learning (P2P

learning). A total of 14 students participated in the experiment.

Below we present the professional competencies of students specializing in Sambo at the coaching faculty (table 1). It should be noted that these competencies are reflected in the curriculum of the Bachelor's educational program, 49.03.01 «Physical Education»

Table 1. – Content of evaluated professional competencies for students of the coaching faculty, specializing in Sambo

Type and index of competence	Content of competence
PC-1	Ability to plan, record, and analyze training process and competitive activity results during stages of athletic training
PC-2	Ability to implement an individualized approach in the athletic training process
PC-3	Ability to oversee athletes' competitive activities
PC-4	Ability to improve personal athletic skills during training sessions, mastering movement techniques, tactical actions, and expressive means specific to the chosen sport discipline.
PC-5	Ability to organize participants' involvement in events related to medical-biological, scientific-methodological, and anti-doping support of athletic training.

Before the pilot experiment, 4th year students of Sambo specialization assessed the initial level of their professional competencies (table 2).

Table 2. – Self-assessment of the level of professional competencies of students in the control and experimental groups before the experiment

№	CG (n=8) ($\bar{x} \pm \sigma$)	EG (n=6) ($\bar{x} \pm \sigma$)	U – Mann-Whitney	Significance of differences
PC-1	6,0±0,75	6,17±0,56	20,5	P>0,05
PC-2	5,88±0,66	5,83±0,56	23,5	P>0,05
PC-3	5,25±0,56	5,67±0,67	30	P>0,05
PC-4	5,75±0,56	5,50±0,83	20,5	P>0,05
PC-5	6,13±0,66	5,83±0,56	19	P>0,05

It should be noted that the self-assessment of the level of professional competencies was conducted on a 10-point scale. From the data in table 2, it can be seen that there are no significant differences observed between the control and experimental groups.

During the experiment, participants from the control and experimental groups engaged in active collective interaction and developed 8 creative projects. The results of these projects were evaluated by experts using a 5-point scale based on the following criteria: interdisciplinary approach, quality of methodology presentation, project defense, overcoming language barriers, and overall expert assessment. The criterion of overcoming language barriers was considered because among the

participants, 8 students were from the People's Republic of China (table 3).

Table 3. – Quality of creative task performance by students in the control group (CG) and experimental group (EG) based on experiment results

№ Project	Criteria for evaluation									
	Using an interdisciplinary approach		Quality of design of the methodology		Project protection		Overcoming language barrier		Final expert assessment	
	KГ	ЭГ	KГ	ЭГ	KГ	ЭГ	KГ	ЭГ	KГ	ЭГ
1	3,5	4,0	4,5	4,33	4,0	4,67	4,5	4,33	4,0	4,0
2	3,5	3,67	3,5	4,33	4,5	4,0	3,5	3,67	3,5	4,0
3	3,5	3,67	3,0	3,33	3,5	4,33	4,5	4,0	3,5	3,67
4	3,5	4,67	4,5	4,33	3,5	4,0	4,0	3,67	3,5	4,0
5	3,5	3,67	4,0	3,33	4,0	3,67	4,5	3,67	4,0	3,33
6	3,0	3,0	3,0	3,67	3,0	4,0	4,0	2,67	3,0	3,33
7	2,5	3,0	3,5	3,67	3,0	3,67	3,5	3,67	3,0	3,67
8	4,5	4,67	3,0	3,67	4,5	4,33	3,5	4,0	3,5	4,67
$\bar{x} \pm \sigma$	3,44 $\pm$ 0,34	3,79 $\pm$ 0,49	3,63 $\pm$ 0,53	3,83 $\pm$ 0,37	3,75 $\pm$ 0,5	4,08 $\pm$ 0,27	4,0 $\pm$ 0,38	3,71 $\pm$ 0,30	3,5 $\pm$ 0,25	3,83 $\pm$ 0,33

As we can see from the results of the pilot experiment, there are no significant differences in the evaluation of the presented projects by students. The average scores of the completed works range from 3 to 4.5 points. Interestingly, the language barrier was slightly better overcome by students in the control group compared to the experimental group (4.0 points vs. 3.71 points). However, students from the experimental group performed better in project defense (4.08 points vs. 3.75 points).

After the pilot experiment, students were again asked to assess their level of professional competencies. The results are presented in table 4.

Table 4. – Self-assessment of the level of professional competencies of students in the control and experimental groups after the experiment

№	CG (n=8) ($\bar{x} \pm \sigma$)	EG (n=6) ($\bar{x} \pm \sigma$)	Point difference	U – Mann-Whitney	Significance of differences
PC-1	8,50 $\pm$ 0,63	9,67 $\pm$ 0,44	1,17	21	P>0,05
PC-2	8,00 $\pm$ 0,75	9,33 $\pm$ 0,67	1,33	23,5	P>0,05
PC-3	8,13 $\pm$ 0,66	9,50 $\pm$ 0,67	1,37	22	P>0,05
PC-4	8,25 $\pm$ 0,56	9,33 $\pm$ 0,44	1,08	22	P>0,05
PC-5	8,50 $\pm$ 0,50	9,84 $\pm$ 0,28	1,34	18	P>0,05

To compare the self-assessment results of professional competencies before and after the experiment, let's present a Figure that visually demonstrates the dynamics (fig. 1).

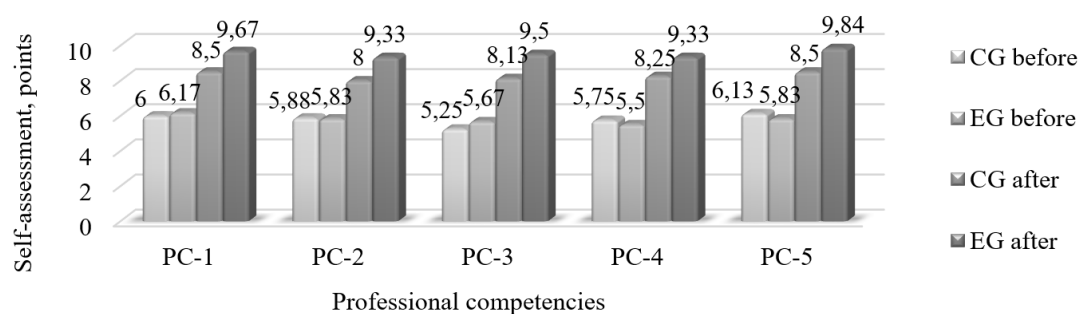


Figure 1. – Dynamics of the level of development of professional competencies among students in the control and experimental groups

The data from figure 1 demonstrates that after the pilot experiment, the difference in self-assessment of professional competencies between the control and experimental groups is insignificant, only 1 point. The self-assessment level of professional competencies in the control group increased by approximately 2.5 points after the experiment, while in the experimental group, it increased by 3.5-4 points. This indicates their readiness for future professional activities and the effectiveness of the conducted experiment.

Conclusion. Testing the model of the educational program for advanced training allows us to judge the high effectiveness of interactive teaching methods that were used during the pilot experiment. It was found that training using the peer-to-peer learning method is not inferior in effectiveness to an organizational educational game. Based on this model, we subsequently conducted advanced training and professional retraining courses for sambo specialists. The structure and content of the educational program, as well as the results obtained, are presented in the dissertation work.

1. Based on the bachelor's educational program in the field of 49.03.01 "Physical Education," professional competencies were identified and presented in table 1.

2. The self-assessment of the level of professional competencies among students before the experiment did not show statistically significant differences between the Control Group (CG) and Experimental Group (EG), with an average value of 5.8 points (table 2).

3. The results of the pilot experiment are presented in Table 3. There were no significant differences in the quality of the developed creative projects between students in the CG and EG, indicating the high effectiveness of the teaching methods used in the study: peer-to-peer learning and organizational-training games.

4. The self-assessment of the level of professional competencies among students after the pilot experiment increased, with an increase of 2.5 points in the control group and 3.5-4 points in the experimental group (table 4).

5. The results of the pilot experiment demonstrated a high degree of effectiveness of interactive teaching methods and served as a basis for organizing further experiments in professional retraining and qualification courses for specialists in sambo.

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Maryanyan Suren Aramovich, postgraduate student of the Department of Theory and Methodology of combat sports, syren13@yandex.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Tabakov Sergey Evgen'evich, Ph.D., Professor of the Department of Theory and Methodology of combat sports, samboskif@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

АПРОБИРОВАНИЕ МОДЕЛИ ОБРАЗОВАТЕЛЬНОЙ ПРОГРАММЫ ПОВЫШЕНИЯ КВАЛИФИКАЦИИ ДЛЯ СПЕЦИАЛИСТОВ ПО САМБО, НА ОСНОВЕ ИНТЕРАКТИВНЫХ МЕТОДОВ ОБУЧЕНИЯ

Марьянян Сурен Арамович, аспирант кафедры теории и методики единоборств, syren13@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Табаков Сергей Евгеньевич, кандидат педагогических наук, профессор кафедры теории и методики единоборств, samboskif@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. В данной статье приведены результаты анкетирования тренеров и руководителей спортивных организаций по самбо с целью выявления структуры и содержания учебных разделов программы повышения квалификации.

Ключевые слова: профессиональная подготовка и переподготовка кадров, программа повышения квалификации по самбо

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UDC 796

AGE -RELATED CHANGES IN VARIOUS COMPONENTS OF THE ENDURANCE IN «MASTERS» CATEGORY SWIMMERS

Mekhtelev O.V., Mekhteleva E.A., s/s Solomatin V.R.

Abstract. *The decline in the dynamics of world records in swimming over the past decade raises the question of the effectiveness of the existing system of alternating loads and rest in the process of long-term preparation. The search for possible limiting factors within the framework of this issue becomes relevant. Thus, the purpose of this study was to identify the dependence of the level of development of various components of endurance on the age of the athlete. As a result of the study, it can be noted that with a change in the athlete's age, the smallest decrease in results occurs at sprint distances, while at middle distances the earliest change in results occurs. The cumulative training effect obtained in the initial periods of training makes it possible to obtain more stable adaptive changes in the systems that ensure the development of speed-strength qualities rather than endurance during long-term work.*

Keywords: *swimming, adaptive changes, endurance, training effects, bioenergetic indicators*

Introduction. It is worth noting that a certain stagnation of sports results in swimming is being observed in the last decade. It is widely known that high level sports achievements are the result of long-term athlete's training. This process is based on the training effects obtained as a result of the load. The size, duration, nature and focus of the load lead to targeted adaptive shifts in the athlete's body, providing the necessary level of condition to achieve the maximum result. The design of the athlete training process is subordinated to the well-known principles formulated by L.P. Matveev in 1991. One of the basic principles of training is the principle of continuity and systematic alternation of load and rest. According to the

main provisions of this principle, sports training is built as a continuous long-term and year-round process, in which the impact of each subsequent training, microcycle, mesocycle, etc. enhances the effect of the previous one. Work and relaxation are regulated in such a way as to ensure the optimal development of qualities and abilities and prevent the development of deadadaptation of various components of the athlete's preparedness [2, 3].

Given the decrease in the dynamics of world records in swimming over the past decade, the issue of the effectiveness of the current system of alternating loads and rest in the multi-year training process arises. The search for possible limiting factors within the framework of this issue becomes relevant. Since sports swimming is a cyclic sport with mainly abundance on endurance, it is worth evaluating the stability of adaptive restructuring in the athlete's body, which allow to maintain a high level of development of various components of endurance.

The **goal** of this study is to identify the dependence of various components of endurance on the athlete's age.

To achieve this goal of investigation the following **objectives** were set-up:

1. To summarize the data of the best results at the world championships among swimmers of the elite division and swimmers of the Masters category from 2000 to 2019 at distances of 50-, 200- and 800-m freestyle.

2. To determine the age-related changes in the energy supply process in swimmers of the Masters category depending on age, based on sports results obtained at distances of 50-, 200- and 800-meters free in men and women.

For solving these objectives were used the following **methods**:

- analysis of scientific and methodological literature,
- analysis and generalization of competition protocols,
- Figureic data processing methods,
- comparative analysis,
- methods of mathematical and statistical data processing.

Experiment design. To get generalized data to solve the tasks, the protocols of world championships in the elite division and the Masters category were analyzed since 2000 till 2019. Analyzed results obtained at distances of 50-, 200- and 800-meters freestyle in men and women in all age groups. The source of the protocols was the official website of the International Swimming Federation www.fina.org.

The work performed by athletes in these distances most accurately characterizes the anaerobic-alactate, anaerobic-glycolytic and mixed aerobic-anaerobic zones of energy supply to the athlete's body. The time to cover the distance is an integral indicator of the power, capacity and efficiency of the above energy supply processes.

To identify the age-related difference in results it was used relative result which is calculated as the percentage change in the result of one age group from another.

Results discussion. According to the data obtained during the analysis of the world championships protocols in the noted swimming distances in women we learned that for each distance under consideration, 4 age-related zones of relative increase in the time of overcoming can be distinguished (table 1).

Table 1. – Age-related changing results zones in women

Zone	50m Free		200m Free		800m Free	
	Age group	Related result changing, %	Age group	Related result changing, %	Age group	Related result changing, %
I	25-49	<2%	25-44	<2%	25-44	<2%
II	50-69	3-5%	45-64	3-4%	45-54	3-4%
III	70-79	5-9%	65-79	6-10%	55-79	6-9%
IV	80-94	>12%	80-94	>15%	80-94	>10%

As a result of the analysis, it can be noted the smallest decrease in the results with the athlete's change of age, and therefore preserving the training effect, it occurs at sprint distances requiring the development of speed and power skills. At the styers' distances, mainly with the aerobic orientation of the body's energy supply, an earlier change in the results occurs. At medium distances with a high share of the anaerobic-glycolytic component of the body's energy supply, the earliest change in the results occurs. At the same time some investigators mark that anaerobic energy supply processes especially in anaerobic-alactate zone have the highest speed of deadaptation [1].

The data analysis of the best result dependence on the age of the athlete at distances of 50-, 200- and 800-meters freestyle for men is shown in table 2.

Table 2. – Age-related changing results zones in men

Zone	50m Free		200m Free		800m Free	
	Age group	Related result changing, %	Age group	Related result changing, %	Age group	Related result changing, %
I	25-49	<2%	25-49	<2%	25-54	<2%
II	50-69	2-4%	50-59	3-4%	55-64	4-6%
III	70-79	6-7%	60-79	6-8%	65-79	7-8%
IV	80-94	>13%	80-94	>12%	80-94	>14%

As a result of the analysis, it can be noted that the identified patterns of changes in sports results in men, at all distances under consideration and the dynamics of changes in the results in women are generally repeated. The significant result changes in 200- and 800-m distances in men are starting some later than in women – after 60 years old.

To confirm the obtained results, it was observed individual results of some swimmers in other stroke specialization in distances 50-, 100- and 200-meters. Table 3 presents individual data of high-class swimmers who performed at various levels of competition and returned to sport after a long period of time. The volume of loads mastered by athletes at the stage of sport improvement and maintaining the highest sport skills was up to 3,600 km per year, after returning to the training process – about 800 km per year.

Table 3. – Individual results of TOP-10 swimmers in «Masters» category

Individual characteristics		Training break duration	50m breaststroke	100m breaststroke	200m breaststroke
S. M.	The best result	10 yrs	31,91	01:08,8	02:29,3
Croatia	Current result (45 years)		34,1	01:15,3	02:43,6
Olympic Games finalist	% of the best result		6,80%	9,50%	9,50%
L. D.	The best result	10 yrs	32,82	01:11,9	02:37,3
France	Current result (45 years)		35,19	01:18,0	02:52,5
Europe Championships finalist	% of the best result		7,20%	8,60%	9,70%
E. M.	The best result	15 yrs	33,56	01:12,3	02:39,1
Russia	Current result (45 years)		35,63	01:18,6	02:54,9
National championships podium	% of the best result		6,20%	8,60%	9,90%

The table shows that the smallest change in the result relative to the personal best occurs at a distance of 50 meters and at a distance of 200 meters the maximum changes in the result are observed. According to that we can assume that the cumulative training effect allows to get more sustainable adaptation shifts in systems which provided speed and strength skill development than endurance for long work.

Based on this research we can make a conclusion that the structural trace gained in the first 10-years training period allows to decrease the load volumes in the period of high sport achievement for elite swimmers mostly for sprinters.

According to the results we can make the following **conclusions**:

1. With a change of athlete's age, the lowest reduction in the results occurs at sprint distances requiring the development of speed-power skill; At the stayers with aerobic orientation of the energy supply of the body, an earlier change in the results occurs; At medium distances with a high share of the anaerobic component of the body's energy supply, the earliest change in the results occurs. The athletes of various levels of sports qualification have the similar index of the loss of sport condition as a result of the cessation of training activities. The smallest value of sport condition loosing is observed at sprint distances.

2. The cumulative training effect gained in the beginning training periods allows to get more sustainable adaptation shifts in systems which provided speed-strength quality development than endurance for long work. Base on that it is possible to decrease the load volumes during the period of high sport achievement for elite swimmers especially in short distances. And use the time to focus on specific exercises in relevant to sport specialization energetic supply zones.

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Mekhtelev Oleg Viktorovich, 2nd year PhD Student, Mekhtelev1976@yandex.ru, The Russian University of Sport "GTSOLIFK", 4 Sirenevyy Blvd. Moscow, Russia

Mekhteleva Elena Aleksandrovna, PhD, Associate Professor, Mitukhina1978@mail.ru, The Russian University of Sport "GTSOLIFK", 4 Sirenevyy Blvd. Moscow Russia

Scientific supervisor - Solomatin Viktor Radeevich, D.Sc. (Pedagogy), Professor, nosorog52@mail.ru, The Russian University of Sport "GTSOLIFK", 4 Sirenevyy Blvd. Moscow Russia 105122

ВОЗРАСТНЫЕ ИЗМЕНЕНИЯ РАЗЛИЧНЫХ КОМПОНЕНТОВ ВЫНОСЛИВОСТИ У ПЛОВЦОВ КАТЕГОРИИ «МАСТЕРС»

Мехтелев Олег Викторович, Аспирант 2 курса, Mekhtelev1976@yandex.ru, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, дом 4, Москва, Россия

Мехтелева Елена Александровна, Кандидат педагогических наук, доцент, Mitukhina1978@mail.ru, Кафедра теории и методики спортивного и синхронного плавания, аквааэробики, прыжков в воду и водного поло, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, дом 4, Москва, Россия

Научный руководитель - Соломатин Виктор Радиевич, Доктор педагогических наук, профессор, nosorog52@mail.ru, Кафедра теории и методики спортивного и синхронного плавания, аквааэробики, прыжков в воду и водного поло, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, дом 4, Москва, Россия

Аннотация. Снижение динамики мировых рекордов в плавании в течение последнего десятилетия поднимает вопрос об эффективности сложившейся системы чередования нагрузок и отдыха в процессе многолетней подготовки. Поиск возможных лимитирующих факторов в рамках данного вопроса становится актуальным. Таким образом, целью данного исследования явилось выявление зависимости уровня развития различных компонентов выносливости от возраста спортсмена. В результате проведенного исследования можно отметить, что с изменением возраста спортсмена наименьшее снижение результатов происходит на спринтерских дистанциях, на средних дистанциях происходит наиболее раннее изменение результатов. Совокупный тренировочный эффект, полученный в начальные периоды тренировки, позволяет получить более устойчивые адаптационные сдвиги в системах, обеспечивающих развитие скоростно-силовых качеств, чем выносливости при длительной работе.

Ключевые слова: плавание, адаптивные изменения, выносливость, тренировочные эффекты, биоэнергетические показатели

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PRIORITY DIRECTIONS FOR THE DEVELOPMENT OF PHYSICAL CULTURE AND SPORTS IN RUSSIAN FEDERATION AT THE PRESENT STAGE

Melnikov D.V., Melnikova N.Yu., Melnikov V.V.

Abstract. *The global challenges of our time largely affect physical culture and sports. The growing demand for physical culture and sports services, the dynamic change in consumer demand, structural transformations in the economy, the penetration of digital technologies into all spheres of life of the state and society, the formation of a new technological order, together with the tasks of achieving high sports results in conditions of increasing competition and current sanctions, impose new requirements on public administration.*

Keywords: *ministry of Sports of the Russian Federation, strategy 2030, physical culture and sports*

The activities of the Ministry of Sports of the Russian Federation (hereinafter referred to as the Ministry) in 2023 were aimed at implementing the tasks set by strategic and program documents in the field of physical culture and sports, defining the directions and targets of development, strategic objectives, targets for the period up to 2030:

- The Strategy for the Development of Physical Culture and Sports until 2030, approved by Decree of the Government of the Russian Federation No. 3081-r dated November 24, 2020 (hereinafter referred to as Strategy 2030), as amended by Decree of the Government of the Russian Federation No. 1118-r dated April 29, 2023;

- The State Program of the Russian Federation "Development of Physical Culture and Sports in the Russian Federation", approved by Decree of the Government of the Russian Federation No. 1661 of September 30, 2021 (as amended by Resolutions of the Government of the Russian Federation No. 2440 of December 24, 2021, No. 924 of May 20, 2022, No. 1405 of August 11, 2022, dated November 9, 2022, No. 2019, dated December 15, 2022, No. 2314, dated June 24, 2023, No. 1029, dated December 8, 2023, No. 2078, dated December 15, 2023, No. 2168) (hereinafter referred to as the State Program);

- The Federal project "Sport is the norm of life" (hereinafter referred to as the FP "Sport is the norm of Life");

- The Federal project "Development of physical culture and mass sports";

- The federal project "Business Sprint (I choose sports)".

In addition, in close cooperation with federal executive authorities and public organizations, the Ministry is actively involved in the implementation of:

- The plan of the main activities until 2027, carried out within the framework of the Decade of Childhood;

- Concepts of demographic policy of the Russian Federation for the period up to 2025;

- Strategies for sustainable development of rural areas of the Russian Federation for the period up to 2030;

- Concepts of state family policy in the Russian Federation for the period

up to 2025;

- Strategies for action in the interests of the older generation in the Russian Federation for the period up to 2025;
- The action Plan for the implementation of the Fundamentals of the State Youth Policy of the Russian Federation for the period up to 2025;
- Concepts for the development of student sports in the Russian Federation for the period up to 2025;
- The Action Plan for the implementation of the Concept of Demographic Policy of the Far East for the period up to 2025, etc.

The 2030 Strategy defines the vision of the development of the Russian Federation as leading global sports powers, whose citizens leads a healthy lifestyle and are actively involved in mass sports, with economically stable professional sports, high prestige in the international sports arena and zero tolerance for doping.

The specified document provides for 11 priority areas, including: improvement of the industry management system and interaction between subjects of physical culture and sports, development of the training system for sports reserves and high-performance sports, human resources of physical culture, sports and sports medicine, anti-doping support system, infrastructure development, international cooperation, digital transformation of the industry management system, improvement of health and well-being, as well as improving the standard of living of the population.

The actual values of the indicators of the Sport – the Norm of Life project, calculated in accordance with the calculation methodology approved by Order No. 376 of the Ministry of Sports of the Russian Federation dated July 1, 2021, were achieved by the end of the year, and in some indicators exceed the planned values of the reporting period:

- "The share of citizens systematically engaged in physical culture and sports": the plan for December 2023 – 53.1%, fact – 53.1 %;
- "The level of provision of citizens with sports facilities based on one-time capacity": the plan for December 2023 is 60.4%, the fact is 63.4%.

By 2030, in order to develop the industry, it is necessary not only to ensure an increase in the proportion of citizens who systematically engage in physical culture and sports to 70%, but also to educate a new generation of citizens for whom physical activity and sports will become an integral part of everyday life, and instill the need for physical activity in the middle and older generation.

In 2022, work began on the creation and reconstruction of sports infrastructure in new regions of the Russian Federation, as well as on training and retraining of personnel. This activity will be expanded in 2023 [1].

Thus, by the end of 2023, due to a 5% redistribution of budget funds of the Ministry of Sports of Russia:

- for the event "overhaul (restoration) of sports facilities" instead of the planned three (2 in the Luhansk People's Republic and 1 in the Kherson region) 11 objects have been restored;
- according to the event "creation of open-type sports and recreation complexes" with the planned value of 12 sites, 12 have now been erected, 2 more will be commissioned by the end of the year and 21 more sites will be delivered by the

end of March 2024.

- according to the event "provision of new sports equipment and inventory" with a planned value of 30 institutions (10 each in the DPR and LPR and 5 each in the Zaporozhye and Kherson regions) due to careful study of the list of equipment and inventory with the regions, equipment was delivered to 129 institutions by the end of the year and to 79 more institutions by the end of the year.

At the same time, 69 institutions are equipped with donations from the Presidential Fund for Cultural Initiatives and 73 from donations from the Nash Sport Foundation.

In terms of training (retraining) and advanced training of coaching, teaching and management personnel.

A total of 1,657 people were trained, of which 789 workers in the field of physical culture and sports were trained within the framework of the federal project "Sport is the norm of Life", 868 people were funded by the Nash Sport Foundation within the framework of the program of the Russian Academy of National Economy and Public Administration.

In order to develop the sphere of physical culture and sports, at the end of 2020, Government Orders No. 3081-r of November 24, 2020 and No. 3615-r of December 28, 2020 adopted the 2030 Strategy and an action plan for its implementation (hereinafter referred to as the 2030 Plan).

Pursuant to subparaFigure "a" of paraFigure 2 of the list of instructions of the President of the Russian Federation following the meeting of the Council under the President of the Russian Federation for the Development of Physical Culture and Sports dated June 8, 2022 No.Pr-1005, Government Orders of the Russian Federation dated April 29, 2023 No. 1118-r and 1120-r amended the 2030 Strategy and Plan 2030.

The changes in the Strategy and Plan provide for the implementation of measures aimed, inter alia, at the development of high-performance sports in the current geopolitical situation, the development of innovative sports combining digital technologies and physical activity, the formation of relevant approaches to the development of mass sports, the integration of new subjects of the Russian Federation into the system of physical culture and sports [2].

According to preliminary data, by the end of 2023, the following indicators of the state program of the Russian Federation "Development of Physical Culture and Sports" (hereinafter referred to as the State Program) were exceeded:

- «The level of provision of citizens with sports facilities based on the one-time capacity of sports facilities" - plan 60.4%, fact 63.4%;

- "The level of satisfaction of citizens with the created conditions for physical culture and sports" – the plan is 63%, the fact is 63.9%.

The indicators of the State Program have been achieved:

- "The share of citizens who systematically engage in physical culture and sports" – the plan is 53.1%, the fact is 53.1%;

- "The share of the rural population systematically engaged in physical culture and sports" – plan 43.4% fact 43.4%.

Due to the non-admission of Russian athletes by international sports organizations to participate in international sports competitions, the indicators of the

State Program and Strategy "The share of Russian athletes who entered the top eight athletes at the World Championships and European championships in sports

disciplines included in the Olympic Winter Games program, in the total number of Russian athletes participating in the World Championships and European Championships" (plan 46.5%, fact 0%) and "The share of Russian athletes who entered the top eight athletes at the World Championships and European Championships in sports disciplines included in the Olympic Summer Games program, in the total number of Russian athletes taking part in the World Championships and European Championships" (plan 46.5%, fact 35.8%).

The main tasks of the Ministry for 2024 are to improve the management system of physical culture and sports, the formation of a unified sports and educational digitalization of the industry, ensuring the competitiveness of Russian sports in the international arena, the implementation of the state program and its targets, as well as federal projects "Sport – norm of life", "Development of physical culture and mass sports", "Businessprint (I choose sport)", implementation of the Concept of development of youth sports in the Russian Federation until 2030, development and approval of regulatory legal acts aimed at implementing the norms of the Federal Law of April 30, 2021. No. 127-FZ "On Amendments to the Federal Law "On Physical Culture and Sports in the Russian Federation" and the Federal Law "On Education in the Russian Federation" (hereinafter – Federal Law on Harmonization No. 127 - Goals and Objectives for 2024 are formulated in the public declaration of goals and objectives of the Ministry for 2024 [3].

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Melnikov Dmitry Vladimirovich, 1st year postgraduate student of the department of History of civilization, physical culture, sports and Olympic education, dmitrymelnikov98@gmail.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

Melnikova Nataliya Yur'evna, doctor of pedagogical science, professor, Head of the department of History of civilization, physical culture, sports and Olympic education, Member of the Executive Committee ROC, President of the Central Olympic Academy, ya.melnikova64@yandex.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

Melnikov Vitaly Vladimirovich, PhD, associate professor, associate professor in the department of Advertising, public relations and social-humanitarian issues, Vice-President of the Central Olympic Academy, Melnikov-vitalik@yandex.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

**ПРИОРИТЕТНЫЕ НАПРАВЛЕНИЯ РАЗВИТИЯ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА
В РОССИЙСКОЙ ФЕДЕРАЦИИ НА СОВРЕМЕННОМ ЭТАПЕ**

Мельников Дмитрий Владимирович, аспирант 1 курса кафедры Истории цивилизации, физической культуры, спорта и олимпийского образования, dmitrymelnikov98@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования «Российский университет спорта «ГЦОЛИФК».

Мельникова Наталия Юрьевна, д.п.н., профессор, заведующая кафедрой Истории цивилизации, физической культуры, спорта и олимпийского образования, член Исполкома ОКР, Президент Центральной Олимпийской Академии России, ya.melnikova64@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Мельников Виталий Владимирович, к.п.н., доцент, доцент кафедры Рекламы, связей с общественностью и социально-гуманитарных проблем, вице-президент Центральной Олимпийской Академии России, Melnikov-vitalik@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Глобальные вызовы современности во многом влияют на физическую культуру и спорт. Растущий спрос на физкультурно-спортивные услуги, динамичное изменение потребительского спроса, структурные преобразования в экономике, проникновение цифровых технологий во все сферы жизни государства и общества, формирование нового технологического уклада, наряду с задачами достижения высоких спортивных результатов, в условиях растущей конкуренции и действующих санкции предъявляют новые требования к государственному управлению.

Ключевые слова: Министерство спорта Российской Федерации, стратегия-2030, физическая культура и спорт

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THE SPORTS INDUSTRY STRUCTURE IN THE CONTEXT OF SANCTIONS POLICY. THE EXAMPLE OF RUSSIAN FOOTBALL

Merzlikin N.A.

Abstract. *The structure of the sports industry, its transformation from a purely sporting field into a spectator-commercial one, determining factors and their interaction, socio-cultural aspects related to the sports industry are considered.*

The influence of politicization of international sports competitions on world sport in the post-pandemic period and sanctions conditions is assessed, using football as the most mass and spectacular sport as an example.

Keywords: *sports industry, spectator sport, commercial activity, professional sport, Russian football, measures to overcome sanctions*

Relevance. The relevance of the study is determined by the situation under the negative and sanctions policy of Western countries, the forced isolation of Russian sports from international competitions and noticeable crisis phenomena on the example of domestic football and the need to find ways out of the situation, the introduction of new methods to ensure comprehensive and dynamic development.

The purpose of the work is to consider the structure of the sports industry, its transformation in modern conditions and the impact of sanctions policy on domestic professional sports. There was considered an example of domestic football and, as a result, the recommendations and proposals for the development of the sports industry in modern conditions were designed.

The sports industry is a sphere of social relations and commercial activity in which revenues are derived from the use of human and public attention to competitive sports and leisure activities. Sport itself is only a component part of the industry, that includes revenues from television broadcasting and media rights, advertising, sponsorship, ticket sales, commercial use of brands, show business, production of various sporting goods, fitness and fashion, training of professional athletes, various lotteries and bookmakers, as well as the commercial operation of sports facilities.

Thus, the defining factor of the sports industry is the combination of an outstanding and exciting performance of the modern sports competitions, while an athlete or a team are achieving the highest results, with the use of the eye-catching sports jerseys, high-class equipment and various colorful paraphernalia, and commercial interest.

Methods. The sports industry is increasingly becoming analogous to the world of cinema and theater and circus performances, having as its main segment the entertainment and sports show business, with the ability not only to generate the largest-scale competitions, but also to include music, light shows and other elements, which are not originally inherent to purely sporting purposes.

The effectiveness of the sports industry is characterized by a harmonious combination of two aspects: commercial, based on professional sports performance for millions of fans, and social, aimed at healthy lifestyle popularization among the population of a country.

Professor V.A. Lednyov, a specialist in the field of sports industry, distinguishes two separate and interacting systems – the non-commercialized sports industry and the industry engaged in commercial promotion in the field of sports. The non-commercial sports industry includes: physical culture and sports organizations, scientific and educational institutions, athletes, teams, and power structures. The commercial sports promotion industry is focused on the promotion and consumption of the main product – a sporting event. The first industry is an integral part of the second.

The state and all the industry participants, in the face of international sanctions affecting Russian sport are taking extraordinary measures to mitigate the consequences and continue development. The primary role will be given to the development of sports cooperation with friendly countries and promotion of the program of domestic sports events. (Forum "Russia – a Sporting Power". Kemerovo). International competitions will be replaced by summer and winter sports festivals and Paralympic competitions in the future.

Measures to overcome sanctions:

1. The creation and tidying up of sports infrastructure across the country.
2. Providing athletes with well-equipped halls for training and competitions.
3. The development of coaching staff. The outflow of personnel is becoming more and more acute, and the industry is experiencing a great lack of inflow of young specialists.
4. Saturation of the competition program of tournaments. Inviting athletes from CSTO countries and other potential participants to take part in competitions. Our athletes should return to international tournaments in full readiness and good sports form.
5. Various forms of cooperation with Asian federations, with the maximum preservation of previously built relationships not implying leaving the international platforms, as the return will be extremely difficult.
6. As an alternative sporting event it is planned to organize a Spartakiade of the strongest, with prize money at the level of World Championships.
7. The presence of "stars" at competitions held in the regions gives motivation to the local population for sports and healthy lifestyles.

Research design. Measures to overcome sanctions and holding such competitions give development to infrastructural facilities. Infrastructure is used directly for the development of sport, but also plays an accompanying role (e.g. construction of hotels, roads, catering facilities, etc.).

Findings after the Covid-19 pandemic confirmed that the dangerous virus is carried more easily by people with strong immunity. It is necessary to strengthen the health of the population through the development of mass sports.

The removal of Russian athletes from most international competitions has finally changed the emphasis from high-performance sports to mass sports. Of course, the main part of the active population was engaged in sports before. But the task is to make mass sports more popular. The attitude of the state to mass sports should become the same as it was to high-performance sports.

The creation and expansion of sports infrastructure is the basis of the strategy for the development of the sports system as such. Priority is given to fast-built facilities that are easy to use. One of the directions of development should be the system of corporate sports. Large corporations have a system of management, financing, competitions and the possibility of bonuses. They are real investors in sports, build sports facilities, organize sports events. This is an active social policy, which, unfortunately, does not have a common standard yet.

Creating a community of corporations could be an excellent solution. And the corporate sports Spartakiade will be a sporting event. The experience of implementing this model can be realized at school and university competitions in the future.

In the conditions of postpandemic and sanctions sports organizations are limited in the choice of foreign bases. Only China, Belarus, Armenia, Kyrgyzstan are possible. In Russia it is necessary to build complex projects combining the possibilities of a sports base and a scientific center with full support and control of athletes. This is one of the factors directly influencing the number of won awards in the modern world.

The issue of import substitution of sports equipment is acute. The problem of equipment in some sports was quickly solved. In others, which, unfortunately, are the

majority, the problem has not been solved. Foreign suppliers refused partnership. In the medium term it is necessary to solve the issue with the production of equipment in Russia, Belarus and China. It is necessary to provide the whole line, both for professionals and for mass sports.

The politicization of international sporting events is doing enormous damage to the global sports industry. It has just begun to recover from a coronavirus pandemic. But there is still hope for the triumph of prudence and healthy pragmatism. Because the biggest television audience, for example in ski racing, is in Russia. The rights holders of the broadcasts suffer huge losses.

Synchronizing domestic competitions with international competitions will help to understand how interest in domestic competitions differs from that in international competitions. In a number of sports, the interest may not be in favor of international sports, while attempts to recover athletes will not stop.

It is known that the most spectacular and large-scale sport in the world is soccer. The football sports industry is seen as the most affected by pandemics, political standoffs, and sanctions. These conditions, which seem fatal, could lead to a healthier football industry and future development. For this, target and task must be accurately formulated and a corporate strategy must be developed.

Indeed, domestic teams have lost the opportunity to participate in the Eurocups. Some foreign players and coaches, whose contracts expired, left the country. At the same time, if we are realistic, nothing critical happened. Domestic players were rarely "sold" abroad anyway. Our clubs have not occupied high places in European cups for a long time, considering even getting out of the group a success. The national team did not look the best at the World Championships. The exception was the "home" 2018, but even there it was sporting luck. So the changes are essentially reduced to the loss of the element of spectacle. Rather, the current situation gives a chance for purification - a forced change of approach will give a new impetus to developing ways to solve the problem.

Discussion. The question of whether a radical rejection of sympathies towards everything Western and European should be considered as a fact for the next 30-50 years remains open. Here, a "pause" in relations with Western (European) football structures is probably acceptable, which still hopes for the victory of common sense.

The main trend for clubs is the reliance on their own players and the recruitment of "foreign players" from friendly countries who are not inclined towards a career in European teams in the future. This approach allows to protect themselves from their sudden departures. This approach can be beneficial for Russian players, providing more opportunities for self-realization and understanding of personal responsibility. Respected football experts consider sanctions a good justification for returning the Russian championship to a regular schedule and expanding the Premier League by 2 or 4 additional football clubs.

Conclusion. There is also a high probability that clubs will face budget cuts, especially private ones. This may involve reducing players' salaries and a clear dependence of high incomes on equally high results, as well as possible redistribution of funds in favor of sports schools and their coaches.

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Merzlikin Nikolay Andreevich, 2nd year postgraduate of the Plekhanov Russian University of Economics, Department of Management Theory and Business Technology, Russia, Moscow, Stremyanny per., 36; e-mail: magic_mirror@inbox.ru

СТРУКТУРА СПОРТИВНОЙ ИНДУСТРИИ В КОНТЕКСТЕ САНКЦИОННОЙ ПОЛИТИКИ НА ПРИМЕРЕ РОССИЙСКОГО ФУТБОЛА

Мерзликин Николай Андреевич, аспирант 2-го курса, Российский Экономический Университет им. Г.В. Плеханова, кафедра Теории менеджмента и бизнес-технологии, Москва, Россия, Стремянный пер-к, д. 36, magic_mirror@inbox.ru

Аннотация. Рассмотрена структура спортивной индустрии, её трансформация из чисто спортивной области в зрелищно-коммерческую, определяющие факторы и их взаимодействие, социально-культурные аспекты, связанные с индустрией спорта.

Произведена оценка влияния политизации международных спортивных соревнований на мировой спорт в пост-пандемийный период и условий санкций, на примере футбола, как наиболее массового и зрелищного вида спорта.

Ключевые слова: спортивная индустрия, зрелищный спорт, коммерческая деятельность, профессиональный спорт, Российский футбол, меры преодоления санкций

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UDC 37.06

MENTORING AS A PART OF THE STUDENT GOVERNMENT SYSTEM

Mikhalev T.A., s/s Myagkova S.N.

Abstract. *The paper examines the concept of mentoring in the student government system. This method plays an important role in the formation of leadership qualities, building trust between students and public organizations, as well as in the effectiveness of internal communication. Using the example of the organization of student self-government, the advantages of mentoring in general are considered and recommendations for its implementation and development are proposed.*

Keywords: *mentoring, self-management, student, group leader, leadership*

Introduction (Relevance). It is believed that the concept of «mentoring» acquired its modern meaning in the mid-60s of the XX century and was considered as an effective form of education and professional training of young people. Mentors, as a rule, were reputable people with good professional training and rich life experience. From the point of view of ensuring the productivity and effectiveness of the mentoring system, the following are among the most important qualities: possession of effective communication skills and solving non-standard tasks, possession of pedagogical tact and emotional intelligence.

The **purpose** of our research is to analyze the main most significant factors in modernizing the mentoring system in the structure of student government. The current state of Russian society and the processes that are taking place in the political, economic, and spiritual life of our country force us to take a fresh look at the problems of education in general and the formation of a harmoniously developed personality in particular [2]. The most important goal of higher education in Russia is to prepare a generation of highly moral, intellectually developed, creatively working professionals. Education during the period of study at a university is a crucial stage in the formation of a personality, as a result of which a system of ideas, ideals, its

worldview and moral and ethical principles is formed [3]. The development of the institution of mentoring is one of the main directions of the implementation of youth policy in accordance with paraFigure 13 of part 1 of article 6 of the Federal Law of December 30, 2020 No. 489-FZ 1.

"O molodezhnoj politike v Rossijskoj Federacii" [1]. Today, mentoring is a trend that reflects a person's need for continuous development, knowledge transfer and adaptation to constantly changing conditions. The practice of mentoring has long been used in various fields: in education, senior students actively help freshmen adapt, in organizations, experienced specialists accompany newcomers, and in sports, successful athletes become successful coaches. Mentors not only help others, but also develop themselves comprehensively, improving existing and acquiring new communication, management and social skills.

Methods. Analysis and generalization. Students at this age are most predisposed to understanding their actions and choosing life guidelines, therefore it is important at this stage of education to achieve a high-quality level of professional training of a specialist. To do this, it is worth paying attention to the creation of new teaching materials on mentoring for implementation in the higher education system. Previously, mentoring activities in universities were carried out by an experienced and responsible teacher who helped students adapt to a new place, introduced them to the history of the university and their chosen specialty, monitored the student progress, their compliance with the rules of conduct at the university and accommodation in the dormitory. Nowadays, student self-government among young people is gaining momentum. Student leaders become prefects, taking responsibility for various aspects that relate to their academic group in the learning process. The headman is the formal head and performs some administrative functions, an intermediate link between students and the administration of the educational institution. One of the most important functions and mandatory ones is the organization of educational activities within one's team. The main feature of student youth as a social-age group is that its members go through the most significant, defining stage of the socialization process. It is at a young age that the most active moral, psychological and social development of a person occurs, the formation of life guidelines, and the individual's assimilation of values, norms, attitudes, and patterns of behavior.

Results (discussion). Paying attention to the topic of mentoring in the student government system, in March 2024, a survey was conducted among students at the GTSOLIFK RUS. In the course of the study, these results were obtained:

- the activities of the student council should contribute to the involvement of all students in the life of the university and form love/loyalty to the educational organization;
- educational programs for student government should mostly be based on the values of caring for others, serving the Motherland and one's university, benefiting society and building communities around active and positive ideas, rather than on personal success and organizing one-time events;
- prefects are the first step in the system of self-government, a key link for informing students and collecting feedback, a reliable source of information about the mood in the academic group;
- it is necessary to further explore the resources and potential of the idea, where

the elders are part of the student government body;

- 63% of students will turn to the headman for help, followed by the following options: the curator of the group from among the teachers, the staff of the dean's office, the teacher whom the student trusts, the staff of the department. This indicates a high loyalty to the elders and high expectations from this role. For comparison, 18% of the students would have turned to the curator or mentor of the group from among the senior students.

Conclusions. The potential of mentoring has recently been recognized by an increasing number of people. Many government and public organizations, enterprises and institutions are launching various mentoring initiatives. Modern students are ready to take the initiative and support their peers. Therefore, it is necessary both to disseminate existing programs operating in accordance with best proven practices, and to develop new, innovative models in the mentoring system.

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Mikhalev Timofey Andreevich, 1st year master's student, mikhalevtim@yandex.ru, Russia, Moscow, Federal state budget educational institution of higher education "The Russian university of sports "GTSOLIFK".

Scientific supervisor – Myagkova Svetlana Nikolaevna, Professor, Russia, Moscow, Federal state budget educational institution of higher education "The Russian university of sports "GTSOLIFK".

НАСТАВНИЧЕСТВО В СИСТЕМЕ СТУДЕНЧЕСКОГО САМОУПРАВЛЕНИЯ

Михалев Тимофей Андреевич, студент 1 курса магистратуры, mikhalevtim@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель - Мягкова Светлана Николаевна, доктор педагогических наук., профессор, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В работе проведено исследование понятия наставничества в системе студенческого самоуправления. Данный метод играет важную роль в формировании лидерских качеств, укрепления доверия между студентами и общественными

организациями, а также в эффективности внутренней коммуникации. На примере организации студенческого самоуправления рассматриваются преимущества наставничества в целом и предлагаются рекомендации по его внедрению и развитию.

Ключевые слова: наставничество, самоуправление, студент, староста группы, лидерство

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THE PHYSICAL REHABILITATION EFFICIENCY OF WOMEN WITH LUMBAR DORSOPATHY

Mikov A.A.

Abstract. *The research shows the results of restoring the flexibility of the lower back in dorsopathy with the help of physical rehabilitation tools. Following the completion of physical rehabilitation cycles, including UGG, LG, exercise equipment, physiotherapy, as well as therapeutic massage. Studies of the selected respondents have demonstrated positive dynamics in the following indicators: increased flexibility in the lumbar spine; reduction of pain, with a simultaneous increase in the amplitude of movements in the lower back and lower extremities, as well as improved balance on the hemisphere.*

Keywords: *women, lumbar spine, dorsopathy, physical rehabilitation, flexibility, pain, amplitude of movements, static balance*

Introduction. Lower back pain ranks first among all non-communicable pathologies in terms of the number of years of life lost due to persistent deterioration of health. Dorsopathy, characterized by back pain, currently worries about 18% of the population, and 70% of people have experienced back pain at least once during their lifetime. In most cases, pain in the lower back disappears after 3 months. People who have suffered acute pain, in most cases, may experience discomfort again within a year, and those who have completely lost their ability to work in 40% lose it again [1].

Nowadays, rehabilitation measures for dorsopathy of the lumbar spine are especially relevant. Despite the variety of means and forms of physical rehabilitation, not all of them can be used for women with spinal diseases due to the anatomical and physiological features of the structure and functioning of the female body as a whole. Therefore, there are questions about the choice of adequate means and forms used in the physical rehabilitation of women with dorsopathy.

The purpose of the study: to evaluate the effectiveness of means and forms of physical rehabilitation for women with lumbar dorsopathy, during functional diagnostics aimed at assessing pain in the affected area, flexibility and mobility of the lumbar spine, as well as the condition of the stabilizer muscles.

Methods and design of the study. The study was conducted on the basis of the V.I. Dikul Medical and Diagnostic Center "Marino" (Moscow) in the period from July to November 2023. The duration of the physical rehabilitation program was three months; classes were held in the gym of physical therapy culture.

The degree of pain was studied in scores according to the questionnaire "PainDetect" [3]. The questionnaire was filled out by an instructor, with his help, the intensity and nature of the pain were determined. The mobility of the lumbar spine was determined using a Minor sample (in cm) [5]. From the initial standing position, the patient was asked to tilt his torso forward and down, while his knees did not bend. Next, the distance from the middle finger of the lowered hands to the floor was measured. At the lower point, the distance (in cm) from the middle finger to the support was measured. The balance assessment, reflecting the dynamics of the state of the muscles of the spine stabilizers, was evaluated on the gymnastic hemisphere-BOSU in the initial standing position. In this position, the patient was asked to keep a straight posture for as long as possible, the result was measured in seconds. Calculations and statistical processing of the results were carried out using the Excel program. The arithmetic mean and standard deviation of the obtained indicators were calculated, and the reliability of the differences was assessed using the Wilcoxon T-criterion (at $P < 0.05$).

The full period of physical rehabilitation in women with dorsopathy was divided into 3 cycles of 12 sessions each. In the first cycle, the following tools were used: UGG, exercise equipment and physiotherapy (interference currents). Morning hygienic gymnastics included general developmental exercises (ORU) and breathing exercises (DU). We conducted classes on Technogym simulators for all muscle groups: back, arms and legs. Light stretching of the lumbar spine was also used on the crossover.

In the second cycle, we used: LH, UGG, exercises on simulators and hemispheres, physiotherapy (neurostimulation) and therapeutic massage. Morning hygienic gymnastics included general developmental exercises (ORU) and breathing exercises (DU). In therapeutic gymnastics, the following were used: general developmental exercises (ORU), breathing exercises (DU) and special exercises (SU). Throughout the rehabilitation period, the following exercises were used as SU: dynamic and isometric exercises for abdominal muscles, exercises to strengthen the gluteal muscles and hips, stretching the gluteal muscles, fitball exercises, core muscle exercises and exercises to restore an optimal motor stereotype. We conducted classes on Technogym simulators for all muscle groups: back, abdominal, arms and legs. Light stretching of the lumbar spine was also used on the crossover.

In the third cycle, we used: LH, UGG, exercises on simulators, a hemisphere and an inclined bench, physiotherapy (magnetic therapy) and therapeutic massage. Morning hygienic gymnastics included general developmental exercises (ORU) and breathing exercises (DU). In therapeutic gymnastics, the following were used: general developmental exercises (ORU), breathing exercises (DU) and special

exercises (SU). In this cycle, SU began to be performed on an inclined bench, instead of a gymnastic mat. Light stretching of the lumbar spine was also used on the crossover. Special coordination exercises using balancing pads and BOSU were used. The exercises were gradually complicated by adding half-squats on balancing pillows and exercises with closed eyes, exercises for stretching the lumbar and back muscles, as well as exercises for abdominal muscles and hip joint mobility on an inclined bench. As part of the training on simulators, exercises for hip joint mobility in crossover, exercises for the lower extremities (quadriceps, calf and anterior tibial muscles) and exercises for spinal extensors (hyperextension) were added to the existing exercises.

Rehabilitation measures were aimed at achieving the following results: elimination of pain, increased mobility of the lumbar spine and normalization of the functional state of the spine.

Therapeutic back massage was used to relieve pain and tension, improve tissue trophism and eliminate stagnation [2]. This procedure was performed three times a week for the second two periods (60 days).

During the full period of rehabilitation, the following forms of physiotherapy were used: magnetic therapy to relieve swelling and inflammation, neurostimulation to relieve pain, and interference currents to reduce muscle spasm [4].

Results discussion. The effectiveness of physical rehabilitation was confirmed by significant changes in the studied indicators (table 1).

Table 1. – Dynamics of parameters before and after physical rehabilitation of women with lumbar dorsopathy

Indicators	Before physical rehabilitation ($\bar{X} \pm \sigma$)	After physical rehabilitation ($\bar{X} \pm \sigma$)	Reliability
Level of pain (by PainDetect), in points	16,1 $\pm$ 2,6	8,6 $\pm$ 2,7	P <0,05
Minor sample, cm.	26,1 $\pm$ 1,9	15,3 $\pm$ 2,3	P <0,05
Assessment of equilibrium, sec.	16,4 $\pm$ 2,2	39,5 $\pm$ 3,6	P <0,05

The level of pain assessed by the PainDetect questionnaire in women with dorsopathy was 16.1 $\pm$ 2.6 points, which indicates the presence of neuropathic pain. After undergoing cycles of physical rehabilitation, the pain level decreased by 47%, reaching values of 8.6 $\pm$ 2.7 points.

Positive dynamics is also observed in the Minor sample. Before physical rehabilitation, the indicator of spinal flexibility in women was 26.1 $\pm$ 1.9 cm, indicating insufficient mobility of the spine and hip joints. After undergoing cycles of physical rehabilitation, the indices of this sample increased by 42%, reaching values of 15.3 $\pm$ 2.3 cm, indicating an improvement in the flexibility of the lumbar spine and an increase in inclination in the sagittal plane.

When evaluating the initial values of the equilibrium test at 16.4 $\pm$ 2.2 s., it can be concluded about the weak effectiveness of the stabilizer muscles (cortex muscles: abs, back, oblique abdominal muscles, posterior thigh and pelvic muscles) in women with dorsopathy. After physical rehabilitation, the indicators increased by 141%,

reaching values of 39.5 ± 3.6 seconds, indicating an increase in the level of muscle development of stabilizers.

Conclusion. In the course of the work, the effectiveness of the selected means and forms of physical rehabilitation for women with dorsopathy of the lumbar spine was assessed by conducting functional studies.

After completing the physical rehabilitation program, it was noted: a decrease in pain in the affected area; an increase in flexibility in the lumbar spine and an increase in the inclination of the trunk in the sagittal plane; an improvement in the functional state of the muscles of the trunk stabilizers.

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Mikov Artemy Alexandrovich, master of the Department of Physical Rehabilitation, Massage and Health-improving Physical Culture named after. THEM. Sarkizova-Serazini, e-mail: aa-mikov@mail.ru; Russia, Moscow, Russian university of sports "GTSOLIFK".

ЭФФЕКТИВНОСТЬ ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ ЖЕНЩИН С ПОЯСНИЧНОЙ ДОРСОПАТИЕЙ

Миков Артемий Александрович, магистр кафедры физической реабилитации, массажа и оздоровительной физической культуры им. И.М. Саркизова-Серазини, e-mail: aa-mikov@mail.ru; Россия, Москва, «Российский университет спорта «ГЦОЛИФК».

Аннотация. В работе отображены результаты восстановления гибкости поясницы при дорсопатии с помощью средств физической реабилитации. По итогам завершения циклов физической реабилитации, включающих УГТ, ЛГ, занятия на тренажерах,

физиотерапию, а также лечебный массаж. Исследования выбранного контингента продемонстрировали положительную динамику у следующих показателей: повышение гибкости в поясничном отделе позвоночника; уменьшение боли, с одновременным увеличением амплитуды движений в пояснице и нижних конечностях, а также улучшение удержания равновесия на полусфере.

Ключевые слова: женщины, поясничный отдел позвоночника, дорсопатия, физическая реабилитация, гибкость, болевые ощущения, амплитуда движений, статическое равновесие

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UDC 796

85 YEARS OF CAMPING OF THE FACULTY OF SPORT AND PHYSICAL EDUCATION FROM BELGRADE

Miletić K.V., Rajković M.Ž, Zornić Z.S.

Abstract. The article closely describes one of the most important segments of the physical culture system in Serbia, which has its roots in the military system. Camping (today Outdoor activities) has been part of the Faculty's program since its establishment. This complex topic, both due to travel, necessary material resources, logistics management and complex program contents and work with personnel, was shown during the path of integration into the educational system. From its full development, through the trials of war, to the slight collapse due to neglect in the same system, it still manages to survive despite all the accompanying difficulties. Despite everything, it survives thanks to the enthusiasm, will and support of professors and students who believe in the sacred values of society. The following is an analysis of the subject of Outdoor activities from the Faculty of Sports and Physical Education of the University in Belgrade, with a transfer to the general state of the entire country and society.

Keywords: outdoor activities, terrain teaching, history, essential values, socialization

Introduction. The subject of Camping has been part of the Curriculum since the establishment of the School of Physical Education in Belgrade (Ministry of Physical Education of the People, 1935). It should be noted that the entire physical culture system of present-day Serbia was taken over from the former Soviet Union.

Terrain teaching of the subject Camping was conducted in a number of different locations during the 85th year of the faculty's existence. During these years, over 13,000 future pedagogues and instructors went through classes at the camp. Since 1974, a permanent educational camp of the Faculty from Belgrade was established in the Džanići location, which is still current today. The location was chosen for this purpose for a number of reasons, which includes established organizational factors (Miletić, 2023): proximity to the main institution, which is only a few hours away by means of transport, proximity to sources of drinking water, unhindered logistics by water, proximity to medical facilities, etc... This locality is located on the northern slope of the Zvijezda Mountain in the Tara mountain system, on the Serbian – Bosnian border which officially received the status of a National Park in 1981.

The ownership structure of the land of the Faculty's camp premises has been dynamic over the past years. Since 1966, when the hydroelectric power plant "Bajina Bašta" was put into operation and Lake Perućac was created, the land belonged to the Hydroelectric Power Plant, and from 2019 it is under the management of the Government of the Republic of Serbia, more precisely the Ministry of Agriculture, Water Management and Forestry. In the meantime, the management structure of the National Park from Bajina Bašta was responsible for the conditions of use, and the Ministry of Environmental Protection provides the required conditions, which were previously the responsibility of the Nature Protection Institute of Serbia. These findings affect the procedures and dynamics of obtaining official permits and, accordingly, complicate the procedures and prolong this administrative process.

The usable area of the educational camp has changed significantly. In addition to the passage of time, a dense forest has grown in place of the meadow. Infrastructural facilities were collapsed over time and "eaten" by vegetation. The available area, the number of students, engaged teaching staff, available equipment, and finances are also reduced significantly.

The time of stay in the field at the beginning of the study and application of Camping was 30 days, with several program contents of the military approach. It was later reduced several times, reaching today's ten days with more varied program content.

Discussion. At the beginning of the 1990s, for a little more than a decade, the faculty camp was abandoned because it was on the border of two warring parties. Unfortunately, due to the threatened security caused by the civil war in the former state union, and consequently the poor material situation, this location was bypassed, and in the meantime, alternative solutions were being found for conducting field lessons.

The entire material base was located in the camp. Some of the funds managed to be saved, but unfortunately, a large amount "disappeared" in the whirlwind of war and over time collapsed like the infrastructure of the camp itself. For more than a decade, this space has been left to nature, which practically "reclaimed" it. From spacious meadows, there was swelling vegetation and the expansion of the forest area. Such a neglected space was later difficult to "take away from the embrace" of wild nature.

In the meantime, the teaching of the course took place at several locations in Montenegro, mostly in the form of staying staff in hotels, caravans, trailers and other accommodation facilities, in minimalist conditions.

In the middle of the 2000s, the Faculty of Sports and Physical Education and the "Sport for All" Belgrades Association, launched a joint project to return to the site of Perućac Lake, i.e. to the part of the camp that was the easiest to arrange for the installation of the camp's infrastructure. The new camp practically represented only one sector of the old camp, which was not as overgrown with vegetation as its other parts.

More than 30 years have passed since the multi-year sanctions and civil war in Yugoslavia, and exactly 25 years since the bombing of Serbia by nato², and we still haven't managed to recover as a subject, and even less as a whole society.

It should be emphasized that despite all the changes and the time interval of 85 years, the most important aspect of the subject remained preserved. The organization of life and work in field conditions isolated from civilization, in the heart of untouched nature, is unchanged (a few years after the complete wartime devastation of the camp, nature really seems wild and untouched).

The specific formula of the camp organization represents the essence, i.e. the protective (recognizable) sign of the Belgrades Faculty, which is prominent teamwork in most program content (Miletich, Rajkovich, Jotov, 2023), tent accommodation, shared meals and the inevitable camp fire with evening programs as a base for a ten-day socializing of camp participants. The aforementioned is crucial for the initiation of significant processes of collectivization, which are most important for students in their future professional work.

Faculties from the nearer region have renounced their long-standing approach and mostly adapt their programs to their capabilities, modern trends and other factors, while the Belgrades Faculty's system at the organizational level has, despite everything, remained basically unchanged for 85 years.

This system is nothing more than an attempt to slow down the study process despite the Bologna system, which was created, unfortunately, for the commercialization of education. Ten-day camping requires duration as a time component. The duration of a shared suffering and work outside the comfort zone as a phenomenon affects a series of changes that occur only if they are implemented in a long time interval, which is otherwise a characteristic of encampment. The designed Bologna system may have a good idea, but unfortunately, it does not provide time for studying due to a series of obligations that are unnecessarily imposed on students. This is followed by a wide area of theoretical discussion about solving tasks in the field of the scientific citation index (sci)³, which are aimed at capturing the attention of the research staff while tectonic changes are taking place in the global system that should go "unnoticeable" to the mentioned population. (Vidaković, Miletić, Rajković, Bogdanović, Miletić, 2017).

Current camp teaching has evolved significantly over the past fifty years,

² This is not a mistake. Some laws should be above the rules of grammar. For two well-known reasons, the abbreviation is deliberately written in lowercase letters.

³ Same as footnote number 1.

arriving at a sustainable model that will allow it to last longer. Possession of personal equipment of camp users significantly reduces the costs of the Faculty. It is not possible to renew the technical equipment due to the dynamics with which it is spent through the limited budget of the faculty and donations from sponsors. With a smaller number of students and the teaching staff in the field, the natural environment are less burdened, thus achieving the principle of ecological sustainability of the natural environment (Miletic, Davidovic, Rajkovic, Tomasevic, 2016).

Camping can be seen as a metaphor of social life where each individual contributes significantly with his role in the overall established system. This is at the same time a sociological experiment which is managed hierarchically, through the represented program contents.

Program contents applied to camping are: basics of camp life, survival, mountaineering, orienteering, alpinism, off-road activities, ecology, fishing, applied swimming, applied paddling, windsurfing, rafting, nautical activities, terrain medicine, excursions, tours, competitions, tournaments, workshops, evening programs (<https://www.aktivnostiuprirodi.com/logorovanje/>).

Conclusion. As heroes of improvisation, thanks to their great knowledge and experience, the selected teaching team manages to survive year after year, thanks to their love for the subject, nature and this philosophical concept of living.

Besides the classic occupation of the country, the remnants of our society struggle to preserve true values despite the prevailing decadence and the slow collapse of a bad imitation of the world order.

In the mentioned conditions, it is very difficult to maintain respect for universal pedagogical principles. Unfortunately, the state has abandoned Faculty as an institution, the importance of the subject has been diminished, which is a big problem, despite the fact that students are enthusiastic about this subject and the knowledge and experiences they carry when they pass it.

The privilege of the teaching profession in general is threatened, and is on the verge of existence, while fight for its survival is being waged! Wide-open eyes are directed towards the Russian Federation as a beacon that illuminates the way to true values, which are slowly but surely disappearing in time and space carried by the insidious western wave of aggressive civilization, which is able to mark everything with finances.

As Serbia served as an experiment for the newest world order and considering our experiences, we beg other countries specially Russia, and Belarus not to allow what happened to us to happen to them. Tens of generations in the former Yugoslavia (today's Serbia) grew up and were properly educated following the example of the physical culture system of the Soviet Union. If we succumb, and fail to maintain the essential values of physical culture and culture in general, please save them for the times when it will be necessary to rebuild modern society on a global level.

Acknowledgment. Authors use this opportunity to thank the scientific and professionals society of Russia for famous Physical culture theoreticians and practitioners of the Soviet Union from the past who, with their humanistic approach, participated in the creation of a healthy and capable nation of the former Yugoslavia, and now the Republic of Serbia, as well as in one period of the entire world.

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Miletich Vladimir, PhD in Sport sciences, Associate Professor of the Department of Theory and Methodic of Physical Education – University in Belgrade – Faculty of Sport and Physical Education, Belgrade, Serbia, vladaprof@gmail.com

Rajkovich Zelko, PhD, in Sport sciences, Associate professor of the Department of Individual Sports, University in Belgrade – Faculty of Sport and Physical Education, Belgrade, Serbia, rajkoviczeljko@yahoo.com

Zornich Sasha – postgraduate student of the Department of Theoretical and Methodological Foundations of Physical Culture and Sports, of the Russian University of Sport «GTSOLIFK», Moscow, Russia, sasa.zornic@gmail.com

85 ЛЕТ КЕМПИНГА ФАКУЛЬТЕТА СПОРТА И ФИЗИЧЕСКОГО ВОСПИТАНИЯ ИЗ БЕЛГРАДА

Милетич Владимир Красноменко, доктор спортивных наук, доцент кафедры Теории и методуки физического воспитания, Белградский университет, Факультет спорта и физического воспитания, Белград, Сербия, vladaprof@gmail.com

Желько Райкович, доктор спортивных наук, доцент кафедры Индивидуальных видах спорта Белградского университета – Факультета спорта и физического воспитания, Белград, Сербия rajkoviczeljko@yahoo.com

Зорнич Саша – аспирант кафедры Теоретико-методических основ физической культуры и спорта, Российский Университет Спорта «ГЦОЛИФК», Москва, Россия, sasa.zornic@hmail.com

Аннотация. В статье подробно описан один из важнейших сегментов системы физической культуры Сербии, имеющий корни в военном ведомстве. В статье показан временной диапазон предмета «Активный отдых», ранее называвшегося «Кемпинг». Кемпинг является частью программы факультета с момента его основания. Эта сложная тема, как за счет поездок, необходимых материальных ресурсов, управления логистикой, так и сложного программного содержания и работы с кадрами, была показана в ходе пути от самой интеграции в систему образования. От своего полного развития, через испытания войны, до небольшого коллапса из-за пренебрежения в той же системе, ему все же удастся

выжить, несмотря на все сопутствующие трудности. Несмотря ни на что, он выживает благодаря энтузиазму, воле и поддержке преподавателей и студентов, верящих в священные ценности общества. В статье проанализирован один из предметов на одном из многочисленных факультетов Сербии и проведена аналогия с общим состоянием всего государства и общества.

Ключевые слова: активный отдых, полевое обучение, история, основные ценности, социализация

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BRAIN TRAINING (NEUROGYMNASTICS) FOR PRESCHOOL AND PRIMARY SCHOOL CHILDREN IN RHYTHMIC GYMNASTICS

Min Ye, Lissitskaya T.S.

Abstract. *The purpose of neurogymnastics is to synchronize the work of the left and right hemispheres, develop the corpus callosum, subcortical structures and the connections between these structures and the cerebral cortex. Rhythmic gymnastics training that includes neurogymnastics content improves the physical and brain development of preschool and primary school students.*

Keywords: *neurogymnastics, rhythmic gymnastics, children*

Introduction. Childhood is one of the most important stages in the formation and development of a person's personality. During this period, the basic life principles and fundamental qualities of a person are laid, which ensure his further development in professional, social, personal development [1].

The development of artistry in combination with the stability of the performance of elements and combinations in rhythmic gymnastics can be solved by expanding the range of means used, in particular, using such a direction as neurogymnastics or, as it is often called, training for the brain [2-4]. Brain gymnastics, with its cross-lateral, fine motor-activating, balancing movements, evenly trains the muscles of both sides of the body. This is directly related to the

integrated and uniform activation of the motor cortex of the frontal lobes of the brain, as well as the basal ganglion and cerebellum. Repeated, regular activation of the motor cortex promotes the development of neural networks in the rest of the frontal lobe, including the premotor and upper premotor cortex. However, neurogymnastics for modern children of preschool and primary school age involved in rhythmic gymnastics is practically not developed.

Objective. The use of neuro-gymnastics in the training process in rhythmic gymnastics is a necessary tool for the development of not only general physical fitness, but also individual elements, such as body expressiveness and movements.

Methods. Neurogymnastics helps to actively engage and improve the work of the corpus callosum, improves mental activity, develops spatial representation and coordination abilities, and increases the ability to voluntary control.

Conclusion. The experimental program was the introduction of elements of neurogymnastics into various parts of the traditional rhythmic gymnastics training session for this age category.

In the preparatory part, a set of exercises was carried out associated with varieties of walking, running in combination with cross work with arms. In addition, elements of "animal gymnastics" were used which were carried out mainly along the diagonals. In addition, exercises with an object were also included, which children usually play in school.

In the training part, the elements accepted for children of this age were chosen. The finger gymnastics movements were added when they learn balances and simple turns. Particular attention was paid to various movements in the wrist, elbow, shoulder, ankle, knee and hip joints, as well as movements to develop flexibility and plasticity of all parts of the spine. Therefore during the training of passive flexibility exercises, it is better to add finger exercises, exercises with a stick, pencil, balls of various sizes and weights to make it be a playful training. Currently, a pedagogical experiment is being carried out to determine the effectiveness of the developed program.

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MinYe, 1st year PhD student, minye_111@163.com, The Russian University of Sport "GTSOLIFK", 4 Sireneviy Blvd, Moscow, Russia

Lissitskaya Tatyana Solomonovna, PhD, Professor, fitfox@mail.ru, The Russian University of Sport "GTSOLIFK", No 4 Sireneviy Blvd, Moscow, Russia

ТРЕНИРОВКА МОЗГА (НЕЙРОГИМНАСТИКА) ДЛЯ ДЕТЕЙ ДОШКОЛЬНОГО И МЛАДШЕГО ШКОЛЬНОГО ВОЗРАСТА ПО ХУДОЖЕСТВЕННОЙ ГИМНАСТИКЕ

МинЕ, аспирант 1 курса, mine_111@163.com, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, д. 4, Москва, Россия 105122.

Лисицкая Татьяна Соломоновна, кандидат биологических наук профессор, fitfox@mail.ru, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, д. 4, Москва, Россия 105122.

Аннотация. Цель нейрогимнастики – синхронизировать работу левого и правого полушарий, развивать мозолистое тело, подкорковые структуры и связи между этими структурами и корой головного мозга. Занятия художественной гимнастикой, включающие содержание нейрогимнастики, улучшают физическое и умственное развитие дошкольников и младших школьников.

Ключевые слова: нейрогимнастика, художественная гимнастика, дети

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THE INFLUENCE OF GAME ELEMENTS ON THE DEVELOPMENT OF COLLECTIVISM AMONG UNIVERSITY STUDENTS

Murina A.E., s/s Koppalova M.A.

Abstract. Physical education plays an important role in shaping a healthy lifestyle and developing physical fitness among students. However, in addition to physical skills, physical education classes may influence the social-psychological aspects of students' personalities, such as the development of a sense of collectivism. The sense of collectivism is an important factor in fostering team spirit, cooperation, and mutual assistance within a group. In this article, we will examine the impact of physical education classes with the inclusion of game elements on the development of collectivism among students at the university.

Keywords: students, collectivism, game elements, physical activity

The proportion of physical activity and game elements in physical education classes is of great importance in shaping collectivism among students. The sense of collectivism contributes to better adaptation to the group, the development of communication skills, teamwork ability, and mutual understanding.

The **aim** of our article is to study the influence of game-based and active

activities on the development of a sense of collectivism among students in physical education classes. The sense of collectivism plays a crucial role in creating a successful learning environment and fostering student community. This concept refers to the ability of students to work together in a group, build relationships, and achieve common goals. Collectivism enhances educational outcomes, increases motivation, and strengthens connections among participants in the learning process [2].

Methods. There are several methods to assess the sense of collectivism among students, allowing to determine their readiness for collaborative activities. One of such methods is surveys [4]. Through surveys, attitudes of students towards group work, their readiness for cooperation, level of trust, and ability to find common ground can be studied. Another method of assessing collectivism is psychological testing. These tests help to determine the level of development of communication skills, students' ability to make decisions in a group, level of empathy, and tolerance. Based on the test results, conclusions can be drawn about students' readiness for collective interaction and identify problem areas that require further work. It is important to note that developing a sense of collectivism among students is an essential part of their education and upbringing. Supporting and stimulating collective work can be done through organizing group projects, seminars, discussions, and other activities that promote the development of teamwork skills and group cohesion [1].

To study the impact of games and active activities on the sense of collectivism among students, a study was conducted among a group of 76 students from Saint Petersburg State University of Veterinary Medicine attending physical education classes. Students were given questionnaires aimed at identifying the level of development of collectivism and evaluating their perception of the physical education classes. During the survey, team games such as football, volleyball, basketball, relay races, and mixed team sports events were considered as game elements for developing a sense of collectivism, where students are required to work together, communicate, make decisions collectively, and support their team to achieve common goals.

During the data analysis, the following results were obtained:

- 72% of students believe that participating in team games helps develop a sense of collectivism, 19% were undecided, 9% disagree;
- 71% of students believe that understanding with colleagues improves after participating in team games, 15% believe it stays at the same level, 12% were undecided, 2% believe it worsens;
- 65% of students believe that trust in the team increases due to participation in team games, 19% believe it stays at the same level, 12% were undecided, 4% believe it worsens;
- 76% of students believe that a sense of collectivism positively influences further participation in joint projects, 17% believe there is no influence, 6% were undecided, 1% believes it has a negative impact.

Results. The analysis of survey results showed that students attending physical education classes note an improvement in relationships within the group, an increase in trust and understanding among students. In addition, students are willing to collaborate and engage in collective activities in future joint projects. The research

revealed that games and active exercises contribute to the development of a sense of collectivism, cohesion, and mutual understanding in students.

Conclusions. Physical education classes can contribute to the development of a sense of collectivism among students in university. Assessing this sense allows to identify its level and areas that need correction. Developing collectivism among students promotes a positive overall atmosphere, effective group work, and achieving common goals. Enhancing social activity, cooperation, and mutual assistance within the group is an important aspect of shaping students' personalities [3]. Therefore, it is recommended to implement additional programs and activities in physical education aimed at developing a sense of collectivism and team spirit among students in the university. Games and active exercises are effective tools for developing a sense of collectivism among students in physical education classes. Further research in this area will deepen our understanding of the mechanisms through which games and active exercises influence the development of collectivism in students.

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Murina Anna Evgenevna, student, a1n2n3a422.mur@xmail.ru, Russia, St. Petersburg, St. Petersburg State University of Veterinary Medicine.

Scientific supervisor – Koppalova Mariya Aleksandrovna.

ВЛИЯНИЕ ИГРОВЫХ ЭЛЕМЕНТОВ НА РАЗВИТИЕ ЧУВСТВА КОЛЛЕКТИВИЗМА У СТУДЕНТОВ ВЫСШЕГО УЧЕБНОГО ЗАВЕДЕНИЯ

Мурина Анна Евгеньевна, студент, a1n2n3a422.mur@xmail.ru, Россия, г. Санкт-Петербург, Санкт-Петербургский государственный университет ветеринарной медицины.

Научный руководитель – Коппалова Мария Александровна.

Аннотация. Физическая культура играет важную роль в формировании здорового

образа жизни и развитии физической подготовки студентов. Однако помимо физических навыков, занятия по физической культуре могут оказывать влияние на социально-психологические аспекты личности студентов, такие как развитие чувства коллективизма. Чувство коллективизма является важным фактором в формировании командного духа, сотрудничества и взаимовыручки в коллективе. В данной статье мы рассмотрим влияние занятий по физической культуре с включением игровых элементов на развитие чувства коллективизма у студентов в университете.

Ключевые слова: студенты, коллективизм, игровые элементы, двигательная активность

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DEVELOPMENT OF CYBERSPORTS AND PHYGITAL SPORTS IN PSKOV REGION

Murylev M.A., Dytko E.V.

Abstract. The article represents a brief a brief history and analysis of cybersports and phygital sports popularity on the regional level during 2023 with the focus on specific qualities of cyber- and phygital athletes, who have already gained gaming experience, namely speed of decision-making, thinking, and reaction. The survey conducted in 2024 among the studying youth of Pskov Region revealed that the chosen characteristics of athletes are typical for the sphere of cyber- and phygital sports and contribute to good prospects of cyberathletes both on the regional and interregional levels.

Keywords: cybersports, phygital sports, regional competitions, development, Pskov region

Introduction. Due to the high rate of development of cybersport and phygital sports there is a need to highlight the history of these sports and popularize them in the Pskov region. Globally, cybersport is actively developing and attracting more and more attention. Major trends include professionalization and commercialization,

growing audience and sponsorship interests, media and broadcasting development, establishment of cybersport organizations and infrastructure, globalization and diversity of competitions, and professional development of players.

Cybersports in Russia. Russia was one of the first countries to officially recognize cybersport. It happened back in 2001. Any tournaments held in cybersport disciplines were subject to a mandatory registration procedure. They were assigned the official status of a sporting event. This allowed players to be awarded titles not only in the game, but also in life.

The development of cybersport in Russia continues to gain momentum, reflecting global trends. Russian cybersport teams and players are becoming increasingly professional and are often successful in the international arena. Participation in international tournaments such as The International in Dota 2 and Major Tournaments in CS2 confirms the importance of Russian cybersport on a global level. Educational programmes and training are being developed to prepare new generations of cyber athletes. Russian universities are going to add courses in cybersport disciplines by the end of 2024. Support from the government and private investors is fuelling the growth of the industry and attracting talent [5].

Cybersports in Pskov Region. In 2023 in Pskov region there were about 15 competitions in various disciplines (CS:GO/CS2, Dota 2, Hearthstone, FIFA 23/24) with a total number of participants of about 600 people. The cooperation between Pskov and Velikie Luki became more profound and creative in 2023. Our athletes from the Pskov region showed decent results in various disciplines [2]:

- 1st place in the XIX Summer Spartakiade of the Union of Cities of the Centre and North-West of Russia in CS:GO,
- 1st place in the zonal stage of the sixth season of the All-Russian Intellectual Cybersports League (School League),
- 3rd place in the PORT North-West #4 CS:GO tournament
- 7th place in the team standings of the sixth season of the All-Russian Intellectual Cybersports League (School League).
- in Dota 2 and Tetris the team reached the 1/4 finals, in electronic chess took the 4th place, in the programme "World of Tanks" – 5th place and in Internet search for time lyceum students took an honourable 3rd place.

In addition we can add the victory of the Pskov CS:GO team in a friendly match against Vitebsk, which was held within the framework of the event "Days of the Pskov region in Vitebsk".

A large number of events were also held to engage new audiences in this field. Representatives of the Federation visited educational institutions and district centres, where they spoke in detail about cybersport and educated young and adult generations. For 2024 in the Pskov region is planned about 10 competitions, such as the Championship and Cup of the Pskov region, the Cup of Pskov and others, which unite several cybersport disciplines [2].

Phyigital sports in Pskov region. On 20 April 2023, the Phyigital Sports Federation was founded in the Pskov region.

The first phyigital championship of Pskov region was held in September of 2023 in Pskov in Just Dance and Phyigital Football (FIFA'23 + 5x5) [4].

The first phygital event in the southern capital of Pskov region was held in spring of 2023 in Velikiye Luki - the tournament was held in CS:GO discipline combined with paintball. First, the teams gathered on the LAN-platform in "Quantorium" to identify the 4 strongest teams, which the next day went to the paintball field to identify the winner. These competitions have a chance to become an annual tradition in our region [3].

Pskov athletes have already managed to attend interregional competitions in Moscow in Phygital Football, Phygital Hockey and Phygital Rhythm Simulator.

Our regional football team took the 2nd place at the interregional stage, losing to the team "Lokomotiv Moscow" in the final and was one step away from travelling to the main phygital event of the year "Games of the Future" [3].

Phygital sports show the popularity rise tendency for university sports students, e.g. 4th year student of VLGAFC Diana Klimova, as a member of the Marathon Tula team, took part in the interactive races at the Games of the Future in Kazan. At the end of the four stages, the team took second place, losing to the team from Belarus with only 53 points [1].

In the second half of 2023, more than 10 events (competitions and thematic lectures concerning various aspects Phygital sport) were organised.

In 2024, according to the Pskov Region Federation of phygital sports schedule, the Pskov City Cup and Championship in Phygital disciplines, as well as the Pskov Region Cup and Championship are already planned [3].

The **aim** of our study is to trace the main stages and events in the development of cyber- and phygital sports in Pskov region as well as to analyse specific qualities of cyber- and phygital athletes, who have already gained gaming experience, that contribute to the development of the above mentioned sports on the regional level.

Methods:

- analysis of literature on the researched problem
- questionnaire poll
- analysis of cyber- and phygital sports statistics

Research design and results discussion. Research took place among 30 students of Pskov region, engaged in syber- and phygital sports, attending educational institutions belonging to various specialization field – agriculture, sport, architecture, information technologies.

Based on the survey statistics, the largest number of representatives in cybersports is men (97.1%). It is also worth noting that the average age of respondents is from 18 to 22 years old (60%). Since the survey was conducted, specifically among the cybersport community of Pskov region it was defined that 94.3% of respondents have experience in cybersport competitions.

Mostly, players learned about the tournament through friends (35.3%) and from the FCS group in VK [2] (32.4%). Thanks to the survey, we managed to find out what qualities and abilities athletes think cyber sports and phygital disciplines develop. They were speed of decision-making (97.1%), thinking (91.4%) and reaction (80%). This choice of qualities and characteristic features is confirmed through the ideas of Alexander Obnovleny, General Director of the Russian

Cybersports League (“It is also important that cyber athletes in the course of their activities acquire so-called soft skills. Cybersports fosters the formation of critical thinking, improves reactions, develops tactical and strategic thinking. Cybersports develops strategic and tactical thinking under time constraints, doing better than other games (e.g. chess): in cyber sports there are many more important variables to consider and therefore more room for imagination.”), Pavel Pimonov, Director of the Moscow Student Cybersports League (“A person has to make certain decisions as quickly as possible, based on all the data of what is happening on the screen. This is a huge array of information that is processed in a fraction of a second.”), Denis Vodov, Director of the Center for Innovative Competences in Physical Education and Student Sports at the Ministry of Education and Science of Russia – a subdivision of Kosygin Russian State University (“Cybersports develops management skills, task definition and decision-making, cyber athletes are able to process large amounts of information, and reaction speed is developed.”) [5].

Conclusion. In recent years, cybersports and phygital sports have been actively developing in Pskov region. In parallel, our regional athletes are starting to show results in these sports at the zonal, All-Russian and international level. Through our study we also realized that cybersports as well as phygital develops various soft skills such as speed of decision making, thinking and reaction.

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Murylev Maxim Arkadievich, 1st year Pedagogical Education student, Russia, Velikiye Luki, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: english@vlgafc.ru

Dytko Ekaterina Viktorovna, senior teacher of foreign languages department, Russia, Velikiye Luki, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: kylie.89@bk.ru

РАЗВИТИЕ КИБЕРСПОРТА И ФИДЖИТАЛ СПОРТА В ПСКОВСКОЙ ОБЛАСТИ

Мурылев Максим Аркадьевич, студент 1 курса направления «Педагогическое образование», Россия, Великие Луки, Великолукская государственная академия физической

культуры и спорта, fentazim06@gmail.com

Дытко Екатерина Викторовна, старший преподаватель кафедры иностранных языков, Россия, Великие Луки, Великолукская государственная академия физической культуры и спорта, kylie.89@bk.ru

Аннотация. В статье представлен обобщенный обзор и анализ привлекательности кибер- и фиджитал спорта на региональном уровне в 2023 году с акцентом на специфические качества кибер- и фиджитал спортсменов, уже имеющих игровой опыт, а именно – скорость принятия решений, мышление и реакция в игровом процессе. Исследование, проведенное в 2024 году среди обучающихся вузов Псковской области, выявило, что ранее обозначенные характеристики спортсменов являются типичными для сферы кибер- и фиджитал спорта и вносят вклад в создание позитивных перспектив для киберспортсменов Псковской области на региональном и межрегиональном уровнях.

Ключевые слова: киберспорт, фиджитал спорт, региональные соревнования, развитие, Псковская область

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INTERNATIONAL SPORTS COOPERATION WITHIN THE FRAMEWORK OF BRICS

Myagkova S.N.

Abstract. The international relations of the countries of the global majority are currently of particular interest. The sphere of physical culture and sports is an important platform for solving many political, socio-economic, and cultural problems. Therefore, the issue of international sports cooperation within the framework of BRICS is very relevant. Including regular Games.

Keywords: sports, sports games, international cooperation, BRICS games

Introduction. BRICS (Brazil, Russia, India, China, South Africa) is an interstate informal association of countries with dynamically developing economies – Russia, Brazil, India, China and the Republic of South Africa [1].

In 2023, the BRICS consisted of the following countries:

- Brazil is a major exporter of agricultural products;
- Russia has rich mineral reserves and has the largest territory in the world;
- India is the most populous country;
- China is the second most populous country after India, the world's main exporter;
- South Africa is the most developed African country, rich in natural resources, including gold and diamonds.

Brazil, Russia, India and China are among the top ten economies in the world.

Since January 1, 2024, Egypt, Iran, the United Arab Emirates, Saudi Arabia and Ethiopia have joined the BRICS. The leaders of the BRICS countries have agreed on a document outlining the principles of admission of new members to the association. The details of the document have not yet been disclosed.

In 2024, the BRICS Games will be held in Kazan before the summit. The capital of Tatarstan was chosen after Russian President Vladimir Putin instructed to develop proposals for holding the Games with the participation of the BRICS countries in Russia.

Research methods. In our study, we are using the analysis of scientific literature.

The results of the study and their discussion. The competition will be held on June 11-24, 2024. 12 sports facilities of the city will be involved. About 5,000 participants from more than 70 countries are expected. The BRICS Games will be attended by athletes from the BRICS member countries, candidates for membership in the organization, and countries that want to join the union. These are Kazakhstan, Mexico, Turkey, Uruguay and a number of African countries.

The program of the Games includes competitions in 30 sports, which will be held in an open mode. Additionally, the organizers suggested that each of the participating countries add one national sport. «So far, they have offered capoeira from Brazil, go from China, juxei from South Africa, kabaddi from India, and from Russia, of course, belt wrestling, our traditional sport that we cultivate in Tatarstan», commented Tatarstan Sports Minister Vladimir Leonov on the initiative.

In 2022, from September 1 to September 30, the BRICS Games were held in an online format in three sports: dance sports (the sports discipline of breaking), chess and wushu [3]. In total, the program of the Games included 14 disciplines in the declared sports. According to the results of the competition, Russian athletes won 18 medals, of which seven gold, five silver and six bronze. In addition to the official competitions, the official website of the BRICS 2022 Games also showcased traditional sports such as yoga, sambo, dragon boat racing and jiu-jitsu.

Within the framework of the third Meeting of the BRICS Sports Ministers in South Africa (June 21-22, 2023, Durban), the Russian delegation presented its proposals for holding the BRICS Games in Russia in 2024.

The Minister of Sports of the Russian Federation supported the proposal of the South African delegation to create a BRICS Sports Charter, which will set out the basic principles of sports development in the association's space, and also suggested considering the possibility of establishing BRICS championships and professional leagues [2].

The Russian Ministry of Sports has developed a draft of the Kazan BRICS Sports Charter, which regulates the principles, goals, directions and types of sports

cooperation in the BRICS space, the mechanism for their implementation and the conditions for holding the BRICS Sports Games. After coordination with the federal executive authorities, it is planned to send the draft document to the sports departments of the BRICS countries for consideration. The Charter is expected to be adopted within the framework of the BRICS Sports Ministers' Meeting on June 22, 2024.

The joint statement following the Meeting on June 21-22, 2023 also recorded a decision to establish a BRICS sports working group for operational cooperation on the preparation and organization of sports events. The participants also discussed strengthening international cooperation in the field of university sports, organizing the BRICS Marathon League and promoting sports and healthy lifestyle ideas through BRICS sports ambassadors at business summits.

The BRICS Games were held in Durban (South Africa) on October 18-21, 2023, in which athletes from Russia, India, China and South Africa took part. A total of 284 athletes took part in the Games, 34 of whom represented the Russian Federation. The Brazilian national team did not participate in the competition.

The sports program of the Games included 6 sports: swimming, tennis, badminton, volleyball (discipline – beach volleyball), table tennis, sports of persons with disabilities (disciplines – table tennis and wheelchair tennis).

According to the results of these Games, Russia took first place in the team competition, winning 59 medals (35 gold, 12 silver and 12 bronze), the second place was won by the Chinese delegation with 55 medals (19 gold, 22 silver, 14 bronze), the third place was taken by the South African team, 51 medals (9 gold, 22 silver and 20 bronze) [4].

The next BRICS Games will be held in Kazan in 2024 (June 11-24, 2024). Competitions in 30 sports will be held in an open format. About 5,000 participants from more than 70 countries are expected.

Of all the BRICS countries, by far the largest is the Brazilian sports delegation. Brazil has applied for 208 people (including 149 athletes) to participate in these competitions in the following sports: gymnastics, athletics, badminton, beach handball, beach volleyball, boxing, dance sports (breaking), chess, diving, judo, karate, sambo, digital basketball, digital-football, rhythmic gymnastics, skateboarding, swimming, table tennis, weightlifting and wrestling [5].

In addition, a Meeting of the Ministers of Sports of the BRICS member states is planned to be held within the framework of the BRICS Games, which will be tentatively held on June 22, 2024.

Conclusion. Thus, considering that BRICS unites more than 4 billion people of the world's population, international sports cooperation is very promising and covers a large number of interested athletes. The number of competitions is increasing. The sports facilities of those countries where the BRICS summits are held used.

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МЕЖДУНАРОДНОЕ СПОРТИВНОЕ СОТРУДНИЧЕСТВО В РАМКАХ БРИКС

Мяжкова Светлана Николаевна, д.п.н., профессор кафедры государственного управления и молодежной политики, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Международные связи стран глобального большинства в настоящее время представляют особый интерес. Сфера физической культуры и спорта является важной площадкой для решения многих политических, социально-экономических, культурных проблем. Поэтому весьма актуальным является вопрос международного спортивного сотрудничества в рамках БРИКС. В том числе, регулярно проходящие Игр.

Ключевые слова: спорт, спортивные игры, политика, Игры БРИКС

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THE VOLUME AND EFFECT OF VARIOUS FENCING ACTIONS IN DUELS AMONG ELITE PENTATHLETES

Neposhlova E.M., Moiseev A.B.

Abstract. *The article presents data characterizing the features of the use of combat actions in the conditions of competitive fights among elite pentathletes.*

Keywords: *volume, effect of fencing actions, elite athletes, modern pentathlon, fencing duel, offensive and defensive movements*

Introduction. Modern pentathlon is a sport that is constantly undergoing changes in its rules and regulations as it continues to evolve. While some of these changes do not directly affect the fencing component of the competition, they do have an impact on the overall concept of athlete readiness for the sport. One of the most recent changes in modern pentathlon involves replacing horse riding to an obstacle course, which has led to adjustments in athletes' preparation for competition. This change affects not only athlete's condition but also her mental preparation. As a result of these changes, the structure of an athlete's preparedness in modern pentathlon has been altered, and these have implications for other types of competitive activities within the sport, such as fencing. Therefore, it is essential to take into account these changes when preparing for competitions. The study of competitive performance in highly skilled pentathletes is crucial in order to understand how these changes impact the sport and to develop effective training methods for athletes.

The current study aims at studying the frequency and effectiveness of different types of fencing actions and the affected body areas in competitive duels between elite pentathletes.

Methods. We have used the following methods in our research: video analysis and methods of math statistics.

Research design. In this study, we have examined the existing methods of training pentathlon athletes in fencing, as well as literature dedicated to the peculiarities of fencing duels within the framework of modern pentathlon competitions. We have also looked at studies concerning the technical and tactical aspects of training pentathletes in fencing. We created tables to record the data we collected, allowing for a more comprehensive and reliable analysis of the parameters we were interested in, such as the number of fencing actions and their effectiveness. We divided the main fencing actions into different categories based on various characteristics, and also took into account the affected body areas. The study was conducted through video recordings of fencing matches at the All-Russian competitions in modern pentathlon. The results of the study were summarized and analyzed.

Results discussion. Analyzing the ratio between the volume of fencing actions and their effectiveness (fig. 1), we can see that the number of offensive actions of pentathletes amounted to 44.52% of the total number of all combat actions, while their effectiveness was close to 60% (57.34%). This situation reflects the confidence of experienced athletes in their movements and the desire for a quick resolution.

Then second place in terms of the use of fencing actions takes counter attacks, which account for about a third of the total volume of fencing actions (28.57%). It should be noted their low efficiency (28.26%), which is due to the high degree of readiness of the opponent. Moreover, during a counterattack, athletes straighten their arm to apply a counter touch, which makes it less mobile and more vulnerable.

The volume of applied response defenses accounted for almost 1/5 of all actions (17.29%), their effectiveness is quite high (61.28%). It should be noted that defenses with a response act as an alternative to the use of counterattacks, with such significant differences in the effectiveness of these counteractions to attacks, it is necessary to model situations in which the use of defenses with a response would find a greater place.

We can also see that, in women's fencing duels, a tenth of all combat actions is remises (9.62%). The effectiveness of using premises by elite pentathletes is almost 50% (48.82%).

The use of counter defenses and counter responses in the duels of highly skilled pentathletes has not been recorded.

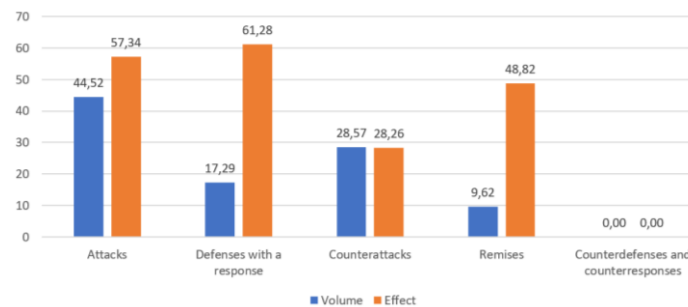


Figure 1. – The ratio of the volume of fencing actions and their effectiveness in competitive fencing duels among elite pentathletes (%)

Thus, the study of the ratio of the volume of fencing actions in competitive fencing duels among elite pentathletes allowed us to conclude that these athletes use more of attacks (44.52%), which is more often than counterattacks (28.57%). Considering the effectiveness of the use of fencing actions, we see that attacks and defenses with a response are the most effective (57.34% and 61.28%, respectively). And the use of remises is due to their effectiveness (48.82%) in countering the defenses and responses of the opponent.

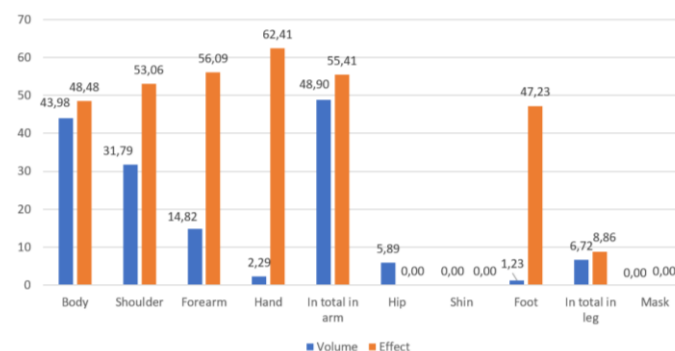


Figure 2. – The ratio of the volume of attacks in the affected body areas and their effectiveness in competitive fencing duels among elite pentathletes (%)

Considering the ratio of the volume of attacks and their effectiveness in different parts of the affected body areas (fig. 2), we can see that almost half of all touches (48.90%) were given in the arm, of which 55.41% were effective. The majority of touches considered are in the shoulder (31.79%), while touches in the forearm are less common (14.82%) and those in the hand are even rarer, accounting for only 2.29% of all touches. The effectiveness of touches in the shoulder and forearm is similar (53.06% and 56.09% respectively), while those in the hand have a slightly higher success rate (62.41%).

Special attention is paid to leg touches in fencing. By studying these indicators, we can see that touches the leg are of the least importance compared to touches to other parts of the body (6.72%). However, their main effectiveness is associated with foot attacks (47.23%). Based on this, it becomes clear that the development of basic skills in foot attacks is preferable for elite pentathletes.

Conclusions. Thus, these ratios are due to the desire of elite pentathletes to perform an accurate action at a low speed and depth of their execution. This trend leads to high volumes of touches to the closest affected body areas of opponent from the tip of the sword (arm), while the effectiveness of attacks in this area is quite high. The revealed attack trends are the most striking examples of conducting fencing duels among elite pentathletes, which must be taken into account in the training process and competitive activities.

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Neposhlova E.M, 1st year master student of Department of Theory and Methods of Fencing, modern pentathlon and shooting sports, RUS « GTSOLIFK », Moscow;

Moiseev A.B., Ph. D., Associate Professor, Russian University of Sport «GTSOLIFK», Russia, Moscow

ОБЪЕМ И ЭФФЕКТИВНОСТЬ РАЗЛИЧНЫХ БОЕВЫХ ДЕЙСТВИЙ В ФЕХТОВАЛЬНЫХ ПОЕДИНКАХ У ВЫСОКОКВАЛИФИЦИРОВАННЫХ ПЯТИБОРОК

Непоилова Елизавета Михайловна, магистрант 1-го курса кафедры теории и методики фехтования, современного пятиборья и стрелковых видов спорта РУС «ГЦОЛИФК», e-mail – elisaveta.zakharova@gmail.com;

Моисеев Александр Борисович, к.п.н., доцент кафедры теории и методики фехтования, современного пятиборья и стрелковых видов спорта РУС «ГЦОЛИФК», e-mail – moisalexbor@mail.ru, Россия, Москва

Аннотация. В статье представлены данные, характеризующие особенности применения боевых действий в условиях соревновательных поединков среди элитных пятиборцев.

Ключевые слова: объем, эффективность фехтовальных действий, высококвалифицированные спортсменки, современное пятиборье, фехтовальный поединок, наступательные и защитные действия

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THE RELATIONSHIP BETWEEN SOCIO-DEMOFIGUREIC FACTORS AND THE SUCCESS OF SPORTS ACTIVITIES OF PROFESSIONAL BASKETBALL PLAYERS

Nesterovich N.N.

Abstract. This article will draw up a socio-demoFigureic portrait of a modern Russian highly qualified basketball player and examine the influence of socio-demoFigureic factors on the success of professional sports activities. The proposed offering that the socio-demoFigureic portrait is formed by external and internal social factors, which play a large role in the success of sports activities, has been studied in detail. Based on the results of the study, it was established that the success of the

sports activities of highly qualified basketball players is most influenced by the social conditions in which the athlete grew up, for example, family composition, economic status of the family, city of residence; and socio-demoFigureic factors such as age, level of education, marital status.

Keywords: *socio-demoFigureic portrait, socio-demoFigureic factors, success of sports activities, professional sports, basketball*

Introduction. Currently in Russia there is not enough research on the socio-demoFigureic portrait of professional athletes, so there is a need to study this topic within the basketball community. In this connection, the relevance of this article lies in the study of the components of the socio-demoFigureic portrait of a modern professional Russian basketball player and in a clear determination of the influence of its factors on the success of sports activities. The existing contradiction between the theoretical aspects of the role of sport in the life of society and the practical features of the influence of socio-demoFigureic factors on the success of playing in professional sports must be resolved.

The goal of this scientific research work is to compile a socio-demoFigureic portrait of a modern professional Russian basketball player and to identify the influence of his constituent characteristics on the success of sports activities.

After conducting a theoretical analysis of specialized literature, a procedure for scientific research of socio-demoFigureic factors of Russian professional basketball players was developed. The following **research methods** were used in the work: pedagogical observation, questionnaire, interview, methods of mathematical processing.

This paper studies the components of a socio-demoFigureic portrait – a description of a social group of people in social and demoFigureic aspects. It includes such parameters as age, gender, education, income, occupation, nationality, religion, marital status, etc. The concepts of “social portrait” and “sociological portrait” began to be used in sociological science in the 70s of the last century, when drawing up a similar portrait was productive in identifying the general characteristics of a group or layer [2].

Understanding socio-demoFigureic profiles can help coaches and clubs better know their players and build teams from diverse cultural and economic backgrounds. It can also serve as a marketing research tool for sports associations or companies. Studying the sociodemoFigureic profile of professional basketball players can help to understand the reasons why some players are successful in their careers and others are not.

A professional athlete is an athlete for whom sports is the main activity and who receives wages and other monetary remuneration in accordance with the contract for preparing for and participating in sports competitions. It is this category that was studied in this work.

The relationship between the socio-demoFigureic characteristics of an individual and the success of sports activities is a phenomenon known as “social differentiation in sports activities.” Social status, income level, education, age, gender and occupation – all these factors influence the success of sports activities [1].

Research design and results discussion. During the period November-December 2022, we conducted 10 pedagogical observations of competitive activity in matches of BC Zenit players (15 people) in the VTB United League in order to identify criteria for the success of sports activities and the influence of various social factors on the profession national career of basketball players.

Primary information was obtained representing 8 socio-demographic criteria and the direction of their influence on the success of the sports activities of professional basketball players. Characteristics that play a positive and negative role were described. Among the factors with a positive influence: age from 22 to 30 years, higher education, place of birth, two-parent family in childhood with an average or high income, registered marriage, as well as the presence of immediate relatives who played basketball or other sports.

Next, to compile a socio-demographic portrait of a modern professional basketball player, a questionnaire containing 22 questions was developed. Professional basketball clubs in Russia acted as the basis for the research during the implementation of a set of research activities within the framework of the implementation of the goals and objectives of the work. The research sample of the survey is targeted, represented by 100 respondents.

Based on the results of the responses received in the survey, the following socio-demographic profile of a modern successful professional basketball player was compiled: an athlete from 22 to 29 years old, of Russian nationality, professing Christianity, from a complete family with an average income, grew up in a large city, has a higher education, most likely in the field of sports, speaks a foreign language, has a sports experience of 10 to 20 years and the title of Master of Sports or Candidate Master of Sports. Successful basketball players can boast of high team and individual achievements at various levels. Also, the surveyed athletes indicated the influence of social factors on the success of their professional career.

As a method of mathematical processing of research results to measure the degree of connection between two variables and determine how much changes in one variable are related to changes in another variable, correlation analysis of data obtained from a questionnaire was used. The essence of correlation analysis is to calculate correlation coefficients. The Cramer's V method was used, which is used to calculate the correlation between nominal categorical variables.

Thus, the relationship between individual characteristics of the socio-demographic portrait of basketball players was tested. Strong degrees of correlation were established between the level of education and knowledge of foreign languages, as well as between the city of residence and the level of family income among the surveyed respondents in childhood. These indicators can be considered particularly important for the results of this study.

Interviews were conducted with 6 expert coaches specializing in the field of professional sports and elite sports. To implement expert interviews, a detailed plan was developed, which included 9 questions of most interest within the framework of the study. The main criteria for selecting experts for interviews were such qualitative indicators as competence and authority.

Analysis of interview responses from expert trainers allows us to supplement the survey responses with the following results. Among the socio-demographic factors, experts considered age, higher education, economic well-being of the family and city of residence to be the most important. With other approximately equal characteristics (physical, technical, tactical readiness), there will be a noticeable difference in the socio-demographic characteristics of individual basketball players, and then we can

talk about the influence of these factors on the success of sports activities.

Our study showed what exactly the socio-demographic portrait of a modern professional basketball player includes and what components of his characteristics play a role in the success of sports activities. A modern professional basketball player is not only a talented athlete, but also a product of the social environment in which he grew up. Success in sports depends on many factors, including socio-demographic characteristics.

Based on the results of the study, the following **conclusions** can be drawn:

1. The socio-demographic portrait of a modern successful professional Russian basketball player can be presented as: an athlete from 22 to 29 years old, from a full family with an average income, who grew up in a large city, has a higher education, speaks a foreign language, has a sports experience of 10 to 20 years and the title of MS or CMS. Also, successful basketball players can boast of high team and individual achievements at various levels.

2. It was revealed that the success of professional activities, including sports, depends on external and internal social factors. The socio-demographic factors that have the greatest impact have been identified: age, higher education, economic well-being of the family and city of residence.

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Nesterovich Nataliia Nikolaevna, postgraduate student of the Department of Theory and Methods of Basketball of the Russian University of Sport «GTSOLIFK», Moscow, Russia, natalijanesterovich@gmail.com

ВЗАИМОСВЯЗЬ СОЦИАЛЬНО-ДЕМОГРАФИЧЕСКИХ ФАКТОРОВ И УСПЕШНОСТИ СПОРТИВНОЙ ДЕЯТЕЛЬНОСТИ ПРОФЕССИОНАЛЬНЫХ БАСКЕТБОЛИСТОВ

Нестерович Наталия Николаевна, аспирантка кафедры Теории и методики баскетбола Российского Университета Спорта «ГЦОЛИФК», Москва, Россия, natalijanesterovich@gmail.com

Аннотация. В данной статье будет составлен социально-демографический портрет современного российского высококвалифицированного баскетболиста и рассмотрено влияние социально-демографических факторов на успешность профессиональной спортивной деятельности. Подробно изучено выдвинутое предложение о том, что социально-демографический портрет формируется внешними и внутренними социальными факторами, которые играют большую роль в успешности спортивной деятельности. По результатам исследования установлено, что на успешность спортивной деятельности высококвалифицированных баскетболистов наибольшее влияние оказывают социальные условия, в которых рос спортсмен, например, состав семьи, экономическое положение семьи, город проживания; и такие социально-демографические факторы, как возраст,

уровень образования, семейное положение.

Ключевые слова: Социально-демографический портрет, социально-демографические факторы, успешность спортивной деятельности, профессиональный спорт, баскетбол

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IDENTIFYING THE LEVEL OF MOTIVATION NRU MGSU SAMBIST STUDENTS TOWARD THE HIGHEST SPORT ACHIEVEMENTS

Nikishkin M.V., s/s Tabakov S.E.

Abstract. *This article presents the results of a survey of sambo students of the National Research University MGSU. The survey was conducted to identify the level of motivation of students to achieve the highest sport results. 43 members of the Moscow State University Sambo team aged 18 to 24 took part in the survey. In the modern system of training sambo students, it is necessary to search for new ways to organize the training process to improve the level of sport results. To determine the main ways of the training process, it is necessary to identify the level of motivation of students for sports achievements. The survey results define the attitude of NRU MGSU students to competitions, their approach to the training process and sport improvement.*

Keywords: *motivation, highest sporting achievements, competitions, questioning, sambo, sport*

Introduction. Currently, university sport is developing rapidly. There are more and more students aiming to compete. More than 30 universities took part in the Moscow Student Sports Games in Sambo in 2023. For the successful performance of technical university students in competitions, it is necessary to improve the training process and the athlete's training system, taking into account the conditions of study at the technical university. But before starting to develop a new training system for students, it is necessary to find out the main focus of this system. To do this, it is necessary to determine the main motivation for practicing sambo for the athletes of the National Research University MGSU sambo team. Investigating the motivation of student-athletes in this context has implications not only for understanding their sporting ambitions, but also for developing effective approaches for supporting and developing them as athletes and individuals. This way it will be possible to determine a direction for the new training system of sambo students: elite sport or mass (student) sport.

The purpose of our research is to analyze the factors influencing the motivation of sambo students and to determine the main trends in their desire for the highest sporting achievements.

Research objectives:

- to determine the level of motivation of university students to practice sambo;
- to identify the main difficulties in achieving of high results in sport;
- to choose the direction of the methodology that needs to be introduced into the training system for sambo wrestlers at NRU MGSU to improve their sport qualifications.

Research design and research methods. 43 students of the National Research University MGSU, members of the national sambo team, took part in the study. Among them: 33% has the rank of Candidate of Master of Sport or the title of Master of Sport, 38% – 1st adult rank, 19% – 2nd rank and 10% – 3rd rank. The respondents were asked to complete a questionnaire consisting of 20 questions. The survey was conducted using Google Forms. Methods of mathematical statistics were used to process the results.

Research results and discussion. Motivation is a state that encourages a person to take actions aimed at satisfying his needs [4].

The research of N.A. Peretz helped to determine the main motives and incentives of students that influence the choice of sport. In this study, it turned out that the majority of students come to the judo and sambo club not to achieve sport results, but to master certain skills, to practice in order to learn something new, to improve both physically and mentally, and to master self-defense techniques to protect themselves and their loved ones. An important incentive is the opportunity to get a credit in physical education class [3].

Based on this data, we can conclude that these students need a methodology aimed at mass sport.

In the research of Krikunova M.A. and Lukiyants A.L. The main motives of students for practicing sambo were identified. It turned out that the main motives are: communication, knowledge, physical perfection, improvement of health and well-being [1, 2].

Having analyzed scientific research, we have identified the level of motivation of NRU MGSU students to practice sambo and achieve high results, and also their main motives.

After the survey, it turned out that more than 70% of students practices 3 times a week or more in the MGSU club. The rest is engaged in clubs at their place of residence.

The main motives for choosing a sambo club are friends and parents. More than 50% of respondents answered that sambo was recommended by friends and acquaintances, 33% answered that they started taking sambo by their parents recommendation.

It was revealed that the majority of sambo wrestlers from the MGSU team (61.9%) is more motivated to participate in competitions and improve their sports skills. Figure 1 shows the main goals that athletes set for themselves.

Respondents noted that the most significant achievements for them are victories in competitions at the university, national and international levels.

Students also noted problems that interfere in achieving their goals, in particular, winning competitions and improving their sports skills. The data is presented in figure 2.

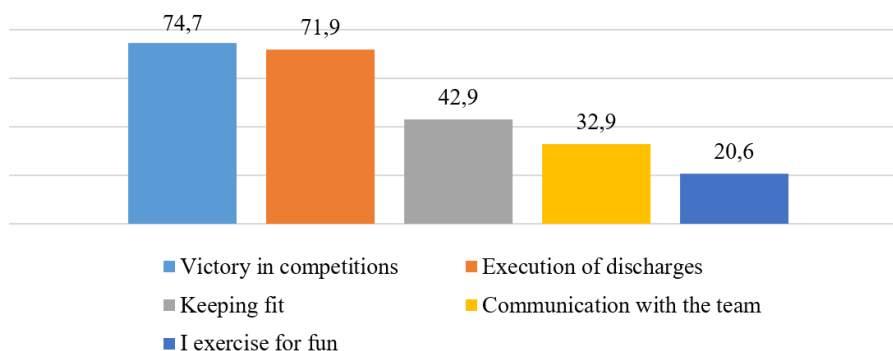


Figure 1. – The main goals of the MGSU sambo team

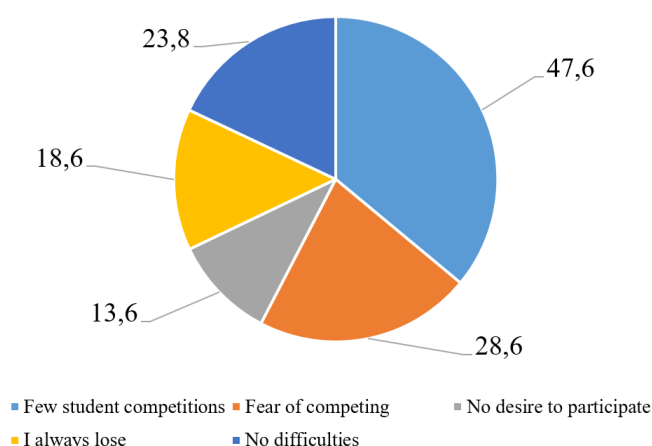


Figure 2. – Problems faced by respondents in their sports career

From the data presented above, we can conclude that the insufficient number of competitions is the main problem for students. This is due to the fact that for adult athletes of the mass categories there are few competitions suitable for their level and they do not have time to accumulate the required number of victories to be assigned sports categories.

The second biggest problem is the difficulty of winning in competitions. Here it is necessary to reconsider the system of training athletes and adapt it specifically for these students.

During the study, sources of motivation of respondents were identified. For the majority (42.9%) the main source of motivation is the coach. For 38.1% of respondents, the support of family and friends is the most significant. 19% of students responded that friends and teammates are the main source of motivation.

When we asked to assess level of motivation for sambo training, we received an average result of 7.9 out of 10, which indicates a high level of student motivation and their interest for training and competitions.

Conclusions. The study revealed the following provisions regarding the level of motivation of students of the MGSU sambo team:

- students showed a high level of motivation to practice sambo. The result was 7.9 points out of 10, which indicates the athletes' interest for training;
- the main difficulties faced by athletes have been identified. The following

obstacles were identified that interfere in achieving students' goals: a small number of student competitions, fear of participating in competitions and frequent defeats in competitive bouts;

– the survey showed that the sambo team of the National Research University MGSU is motivated to participate in competitions and obtain sports ranks, and not only to acquire special knowledge and skills and receive credit in the discipline “Physical Education”. It follows that the training system for the MGSU National Research University team should be aimed at achieving maximum results and victory as in university and Moscow as in all-Russian competitions.

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Nikishkin Maxim Vyacheslavovich, postgraduate student of the Department of Theory and Methodology of Martial Arts, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education “Russian university of sports “GTSOLIFK”.

Scientific supervisor – Tabakov Sergey Evgenievich, Ph.D., Professor of the Department of Theory and Methodology of Martial Arts, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education “Russian university of sports “GTSOLIFK”.

ВЫЯВЛЕНИЕ УРОВНЯ МОТИВАЦИИ СТУДЕНТОВ-САМБИСТОВ НИУ МГСУ К ВЫСШИМ СПОРТИВНЫМ ДОСТИЖЕНИЯМ

Никишкин Максим Вячеславович, аспирант кафедры теории и методики единоборств, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Табаков Сергей Евгеньевич, к.п.н., профессор кафедры теории и методики единоборств, Россия, Москва, «Российский университет спорта «ГЦОЛИФК»

Аннотация. В данной статье представлены результаты анкетирования студентов-самбистов НИУ МГСУ. Анкетирование проводилось с целью выявления уровня мотивации студентов к достижению высших спортивных результатов. В опросе приняло участие 43 члена сборной МГСУ по самбо в возрасте от 18 до 24 лет. В современной системе подготовки студентов – самбистов необходимы поиски новых путей организации тренировочного процесса для повышения уровня спортивных результатов. Для определения основных путей тренировочного процесса необходимо выявить уровень мотивации студентов к спортивным достижениям. Результаты опроса помогли сделать выводы об

отношении студентов НИУ МГСУ к выступлениям на соревнованиях, подходу к тренировочному процессу и повышению их спортивной квалификации.

Ключевые слова: мотивация, высшие спортивные достижения, мотивация, соревнования, анкетирование, самбо, спорт

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RETROSPECTIVE ANALYSIS OF COMPETITIVE ACTIVITY IN HAMMER THROWING IN THE RUSSIAN FEDERATION (ON THE EXAMPLE OF WOMEN)

Nikonov V.I., Dungerov I.D.

Abstract. The article presents an analysis of the competitive activities of Russian hammer throwers at the Russian championships of 1993-2023, and at major official international competitions, such as the Olympic Games and the European and World Championships. Some characteristics of the competitive activity of hammer throwers in Russia are analyzed, which allow us to present a "Figure" of the general state of the Russian school of hammer throwing.

Keywords: retrospective Analysis, Track & Field, Hammer Throw, Olympic Games, World & European Championships, Russian Championships, Russian athletes

Introduction. In 2023 year, the 135th anniversary of Russia athletics is celebrating (a running circle was organized in the village of Tyarlevo in 1888 year).

Also, 2023 year the anniversary for the women's hammer throw. It anniversary is the timed to coincide with the 25th anniversary when the women's hammer throw wash international in clustered in the program of major international competitions – The 17th European Athletics Championships in 1998 years, in Budapest (Hungary).

Research design. The Russian Record in women's hammer throw is currently 78,51 m, by Tatyana Beloborodova – Lysenko in the 2012 year at the Russian Championships in Cheboksary [1].

It should also be notified this until 2016 year, record holder T. Beloborodova – Lysenko, step by the Russian Record, of at the 2013 year at the World Championships in Moscow – 78,80 m, but then result was canceled due to the athlete's violation of anti-doping rules (table 2).

According to table 1, which shows the 15st sports results show by Russian

woman's hammer throwers, it is observed that the majority of the results are show at the age of 30-25 years. There is an exception, A. Grigoreva, at the age of the 21 years, showed a result of 70,18m.

Of the 15 results of Russia woman's hammer throwers, only one result in was showed the XX century (T. Konstantinova – 72,09m – 1999 year), and one at international competitions (E. Tsareva 74,65m – 2023 year, Brest, Belarus) (table 1).

Table 1. – Fifteen strongest female hammer throwers in the history of Russian Federation

No	Result, m	Surname & Name Sportswomen	Date & place the establishment	Date Birth	Years old
1	78,51 (RR)	T. Beloborodova	05.07.2012, Cheboksary	09.10.1983	30
2	77,26	G. Agafonova	12.06.2012, Tula	04.06.1982	29
3	77,13	O. Kondratieva	15.07.2013, Zhukovsky	22.11.1985	28
4	76,72	M. Besspalova	23.06.2012, Zhukovsky	21.05.1986	27
5	76,63	E. Khoroshih	24.06.2006, Zhukovsky	21.01.1983	23
6	76,21	E. Konevtsova	16.05.2007, Sochi	11.03.1981	26
7	76,17	A. Bulgakova	15.07.2013, Moscow	17.01.1988	25
8	75,68	O. Kuzenkova	04.06.2000, Tula	04.10.1970	29
9	75,09	E. Rigert	15.07.2013, Moscow	02.12.1983	29
10	74,65	E. Tsareva	01.07.2023, Brest	26.03.1993	30
11	73,74	S. Palkina	29.05.2021, Sochi	09.06.1998	22
12	72,09	T. Konstantinova	04.06.1999, Moscow	18.11.1970	29
13	70,18	A. Grigoreva	12.02.2023, Sochi	10.09.2002	21
14	70,14	N. Polyakova	17.07.2014, Moscow	09.12.1990	23
15	69,61	N. Volkova	11.02.2015, Sochi	26.08.1984	30

Note to the table 1. RR - the record of Russia; Years old – Is indicated by a total number of years when achieved the specified sports result.

The young Russian of the female hammer throwers, which spent the Olympic Games was E. Rigert (25y.) in Olympic Games 2008 Beijing (8th place – 69,72 m).

At the World Championship, the youngest representative of Russia was S. Palkina (21y.) in 2019y., in Doha (Qatar) she showed the result – 68,53m, and took 19th final place, she a year ago (at the age of 20y.) participated in the European Championship Berlin (Germany) 2018y. (68,64m – 10th place) (table 2).

Table 2. – Chronology of speeches of Russian female hammer throwers at international competitions (Olympic Games, World and European Championships)

No	Surname & Name Sportswoman	Year	Result, M	Place	Years Old
<i>Olympic Games</i>					
1	O. Kuzenkova	2000	69,77	2	30
2	O. Kuzenkova	2004	75,02	1	34
3	E. Rigert	2008	69,72	8	25
4	A. Bulgakova	2008	68,04	20	20
5	E. Konevtsova	2008	67,83	22	27

Table 2 (continued)

No	Surname & Name Sportswoman	Year	Result, M	Place	Years Old
6	T. Beloborodova	2012	78,18	1 (DQ)	29
7	M. Bepalova	2012	71,13	8 (DQ)	26
8	G. Agafonova	2012	69,43	16 (DQ)	30
<i>World Championship</i>					
1	O. Kuzenkova	1999	72,56	2	29
2	O. Kuzenkova	2001	70,61	2	31
3	O. Kuzenkova	2003	71,71	2	32
4	E. Konevtsova	2003	63,00	25	23
5	A. Davydova	2003	61,43	30	37
6	O. Kuzenkova	2005	75,10	1(DQ)	35
7	T. Beloborodova	2005	72,46	2	29
8	E. Khoroshih	2005	-	-	22
9	E. Konevtsova	2007	72,45	5	26
10	G. Agafonova	2007	69,08	10	25
11	E. Rigert	2007	66,84	19	24
12	T. Beloborodova	2009	72,22	5	26
13	T. Beloborodova	2011	77,13	1	28
14	T. Beloborodova	2013	78,80	1(DQ)	30
15	A. Bulgakova	2013	74,62	4(DQ)	25
16	G. Agafonova	2013	71,07	11	31
17	O. Kondratieva	2013	72,76	6	28
18	E. Tsareva	2019	70,35	15	26
19	S. Palkina	2019	68,53	19	21
<i>European Championships</i>					
1	O. Kuzenkova	1998	69,28	2	28
2	A. Davydova	1998	62,36	8	32
3	T. Konstantinova	1998	58,35	16	28
4	O. Kuzenkova	2002	72,94	1	32
5	A. Davydova	2002	65,92	9	36
6	E. Konevtsova	2002	61,22	23	22
7	T. Beloborodova	2006	76,67	1	23
8	G. Agafonova	2006	74,50	2	24
9	E. Khoroshih	2006	62,97	22	23
10	T. Beloborodova	2010	75,65	2	27
11	A. Bulgakova	2012	71,47	3	24
12	A. Bulgakova	2014	-	-	26
13	S. Palkina	2018	68,64	10	20
14	E. Tsareva	2018	68,35	13	25

Note to the table 2: Years old – Is indicated by a total number of years when achieved the specified sports result; DQ – an annulled result

Throwing of hammer among women has been entered in the USSR Championship program in 1990 years.

In the history of the USSR the first and last champion of the USSR in the

woman hammer throw, Larisa Schritognaya (Tajik SSR) – it's result is 60,60 m. [2].

Two years later (in the 1992 year), the CIS Championship (the Commonwealth of Independent States), which was de-facto to the USSR Championship, were again held a competition in the women hammer throwing, at the championship win the Russian sportswoman Olga Kuzenkova 63,86 m.

Table 3. – Indicators and parameter's of competitive activities of the woman hammer's throwers for the results of Russian Championships 1993-2023 years

No	Year	Num. of participants	MSIC MS CMS	Average result championships, m	Result Champion, m	Surname & name Champion	Years old
1	1993	5	0-1-2	54,33	60,34	O. Kuzenkova	23
2	1994	7	1-4-2	56,84	64,40	O. Kuzenkova	24
3	1995	8	1-4-3	57,04	68,16	O. Kuzenkova	25
4	1996	10	2-5-2	57,02	62,66	A. Davydova	30
5	1997	5	1-3-1	58,12	67,30	O. Kuzenkova	27
6	1998	10	4-4-0	58,05	71,49	O. Kuzenkova	28
7	1999	10	3-4-1	56,53	71,92	O. Kuzenkova	29
8	2000	13	3-3-2	58,91	68,51	O. Kuzenkova	30
9	2001	12	3-4-1	58,20	73,40	O. Kuzenkova	31
10	2002	14	0-6-8	60,36	71,70	O. Kuzenkova	32
11	2003	16	6-7-0	58,47	74,98	O. Kuzenkova	33
12	2004	15	7-5-2	61,32	74,54	O. Kuzenkova	34
13	2005	13	4-6-1	61,15	75,95	T. Beloborodova	22
14	2006	13	6-4-3	62,61	77,26	G. Agafonova	24
15	2007	14	4-7-3	60,86	73,95	E. Konevtsova	26
16	2008	12	4-5-3	64,63	75,07	G. Agafonova	26
17	2009	10	4-4-2	62,39	76,41	T. Beloborodova	26
18	2010	11	1-9-1	60,76	70,48	T. Beloborodova	27
19	2011	16	3-11-1	61,43	73,26	T. Beloborodova	28
20	2012	17	5-11-1	65,74	78,51	T. Beloborodova	29
21	2013	20	5-13-1	63,26	78,15	T. Beloborodova	30
22	2014	14	4-8-2	63,40	73,31	A. Bulgakova	26
23	2015	14	3-10-1	62,56	68,60	O. Kondratieva	30
24	2016	14	1-11-1	62,72	68,81	O. Kondratieva	31
25	2017	10	2-5-3	60,28	70,30	E. Tsareva	24
26	2018	12	1-6-4	59,73	70,72	E. Tsareva	25
27	2019	14	2-7-4	59,05	71,94	E. Tsareva	26
28	2020	10	1-5-1	56,36	70,86	S. Palkina	22
29	2021	10	2-6-4	60,81	70,41	S. Palkina	23
30	2022	14	2-4-7	57,56	70,67	S. Palkina	24
31	2023	19	0-4-11	58,35	69,63	S. Palkina	25

Note to the table 3: Years old - this number of years, are when the results are achieved champion of Russia, Number MSIC/MS/CMS – it this number normative sports result achieved at the Russian championships, MSIC – master of sports international class, MS – master of sports, CMS – candidate of master of sports

Looking at Table 3, we can talk about the deteriorating state of affairs in the Russian school of hammer throwing. This is evidenced by the fact that both the sports

results of the current champions are inferior, and the indicators of the results of the level of MSIC, MS and CMS.

Conclusion. From the above, you can do the following conclusions:

1. For the history of modern Russia, Russians women won at international starts 13 awards hammer throw of different dignity and 3 were deprived.

2. The results of Russians hammer throwers female shown in foreign competitions are in most cases, inferior to results on domestic competitions.

3. High results in the throwing of the hammer in most often show the athletes at the age of 25-30 years, but there are exceptions.

4. From the analysis of the average results of Russian championships and champions Russia can be speaking about the separation in stage:

1 Stage – formation of the form – 1993-2002 years;

2 Stage – development of results – 2003-2012 years;

3 Stage – decline of results – 2013 y. – n.t.

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Nikonov Vladimir Igorevich, ph.d. of pedagogic sciences, associate professor at the department of theory and methods athletics them. N.G. Ozolina. vovanikonov1970@mail.ru, Russia, Moscow, Federal state budgetary institution of higher education "Russian university of sports "GTSOLIFK".

Dungerov Ivan Dmitrievich, student of the department of theory and methods athletics them. N.G. Ozolina. ivan1999@dungerov.ru, Russia, Moscow, Federal state budgetary institution of higher education "Russian university of sports "GTSOLIFK".

РЕТРОСПЕКТИВНЫЙ АНАЛИЗ СОРЕВНОВАТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ В МЕТАНИИ МОЛОТА В РОССИЙСКОЙ ФЕДЕРАЦИИ (НА ПРИМЕРЕ ЖЕНЩИН)

Никонов Владимир Игоревич, к.п.н, доцент кафедры теории и методики лёгкой атлетики Им. Н.Г. Озolina, vovanikonov1970@mail.ru, Россия, Москва, Федеральное Государственное Бюджетное Учреждение Высшего Образования «Российский Университет Спорта «ГЦОЛИФК».

Дунгеров Иван Дмитриевич, студент кафедры теории и методики лёгкой атлетики им. Н.Г. Озolina, ivan1999@dungerov.ru, Россия, Москва, Федеральное Государственное Бюджетное Учреждение Высшего Образования «Российский Университет Спорта «ГЦОЛИФК».

Аннотация. В статье представлен анализ соревновательной деятельности российских метательниц молота на чемпионатах России 1993-2023 гг., и на крупных официальных международных соревнованиях, таких как Олимпийские Игры и чемпионаты Европы и мира. Проанализированы некоторые характеристики соревновательной деятельности метательниц молота России, позволяющие представить «картину» общего состояния российской школы метания молота.

Ключевые слова: ретроспективный анализ, легкая атлетика, метание молота, Олимпийские игры, чемпионаты мира и Европы, чемпионаты России, российские спортсмены

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UDC 796

MASTERING OF SIMPLE AND COMPLEX POMMEL HORSE SWING SKILLS

Peganov A.Yu., Khodyreva I.N.

Abstract. The results of the expert survey of the leading specialists in gymnastics are analyzed in the study. The questions touches the problem of pommel horse swing skills of gymnasts and their further improvement.

Keywords: Artistic gymnastics, men's gymnastics, pommel horse, swing elements, expert survey

Introduction. Pommel horse is a conservative sports equipment and the revolutionary changes on it are not often occurred. But the “scissor to handstand” element can be considered an exactly novel element introduced into gymnasts’ combinations. The amount of exercises on pommel horse has been essentially extended in recent years. The new spectacular element “scissor to handstand” has appeared. It is specified as a special requirement and fairly add to the final score of the whole performance and that is why the majority of high rank gymnasts strive to perform this element from the different starting positions.

The analysis of available scientific and methodological literature has revealed the absence of properly described method allowing fast and effective mastering of “scissor to handstand” element. In this regard we conducted a sociological survey among the leading specialists in gymnastics.

The aim of the study is to identify promising elements and methodological

approaches for “scissor to handstand” training with the help of expert survey of the leading specialists in gymnastics.

Methods of the study – literature review analysis, observation, questionnaires

Analysis of the results. The interpretation of results. 32 sport coaches working with the gymnasts of junior and senior degrees have been interviewed. The experience of the coaches ranged from 3 to 30 years and their training category ranged from the second to the highest. All the interviewed coaches have sport degrees from candidates to Masters of sport. The questions touched the approaches of mastering modern swing elements including “scissor to handstand” element.

The obtained results showed that:

a) The majority of coaches (97%) think that mastering of the technique of tempo swing (scissor forward and scissor backward) on the Pommel horse is the second in importance task in the training and educational process.

And the correct technique of scissor performance helps further training of such hard elements as” scissor to handstand” on the pommel horse (100% of respondents), flair in side support and the variety of modern dismounts with the handstand at the end of combination (81,2% of respondents).

b) 94% per cent of the interviewed coaches consider it necessary to master the technique of various scissor elements in every training and educational process regardless of gymnast’s level of preparedness and his qualification.

It is necessary to start training of simple scissors from the youth grades (100% of respondents). And it is better to start” scissor to handstand” from the second and the first adult grades (97,3% of respondents)

c) In order to master such hard elements as “scissors to handstand” gymnast have to possess the following physical traits (78% of respondents): active flexibility in hip joints, active flexibility in the backbone, hand and shoulder girdle strength, movement coordination, back muscle strength and agility.

d) None of the interviewed trainers knew any specially designed simulators for hard pommel horse scissor elements.

In their training and educational processes the trainers use the scissor imitation in more difficult conditions (additional weights and rubber bands, various swings at close range on the shoulders and bars, various swings on the gymnastic wall with the weights on the legs).

Conclusion. There is no clear method or minimal requirements for gymnasts’ preparedness for mastering “scissor to handstand” pommel horse element in coaching practice at present. Only 56.2% of respondents listed two or three strength exercises used in their practice. Among them were pendulum swings on amplitude; tempo high backward and forward scissors; swing on one handle backward, over horizon; strength exercises.

All said above highlights the expediency of development of the efficient method for the pommel horse “scissors to handstand” element training for the high qualified athletes as a high priority problem.

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Peganov A.YU, first-year master's student, Russian University of Sport «GTSOLIFK», e-mail- peganov.aleks2001@yandex.ru, Russia, Moscow

Khodyreva I.N., senior lecturer, Russian University of Sport «GTSOLIFK». e-mail- stranger.68@mail.

ОВЛАДЕНИЕ ПРОСТЫМИ И СЛОЖНЫМИ МАХОВЫМИ ЭЛЕМЕНТАМИ НА ГИМНАСТИЧЕСКОМ КОНЕ

Пеганов А.Ю., магистрант 1 курса, Российский Университет Спорта «ГЦОЛИФК», peganov.aleks2001@yandex.ru, Россия, Москва

Ходырева И.Н., ст.преподаватель, Российский Университет Спорта «ГЦОЛИФК», stranger.68@mail.ru

Аннотация. В статье анализируются итоги проведенного среди ведущих специалистов в области спортивной гимнастики экспертного опроса. Вопросы касались проблемы освоения маховых движений на гимнастическом коне и способы их дальнейшего совершенствования.

Ключевые слова: спортивная гимнастика, гимнасты-мужчины, гимнастический конь, профессиональный обзор, маховые элементы

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REVISITING THE ATHLETE'S MENTAL WELL-BEING IN FOREIGN STUDIES

Perepelitsina S.A., Borisenko E.G., Marokova M.V.

Abstract. *The article presents an analysis of foreign sports psychologists' research in the field of athlete's well-being. An analysis of the psychological factors influencing sports success was made and the psychological tricks used by world-class athletes were determined. It has been shown that winner's positive cogitation helps to show everything that he is capable of, and athlete's positive attitude allows realize in competition all abilities to the full extent.*

Keywords: *cogitation, psychological strategies, sports psychology, mental well-being*

Introduction. The relevance of this work is connected with the need to study the peculiarities of the athlete's mental well-being. Professional sports, as a special type of professional activity, differs significantly from other professions, especially the

compressed model of professionalization which implies early specialization, culmination and end of career. The purpose of this study is to identify and analyze the peculiarities of the athlete's mental well-being in foreign studies. At the present stage, a great deal of researches has been devoted to this issue. Some of them are devoted to the individual typological peculiarities and peculiarities of the nervous system of athletes necessary for them to reach the peak of skill, others – to professionally important qualities of athletes, others – to study their value and mental sphere. The impact of psychological factors on the success of a professional athlete was, however, seen in the context of a substantive and operational approach, outside the context of their possible interrelationship. Therefore, it is necessary to consider how psychology influences on athletes' professional success in sports of higher achievements.

Research results. Analysis of foreign psychological sources showed that the concept of "Psychology of Sport" was introduced by the founder of the Olympic Movement Pierre de Coubertin. However, despite its existence, little attention was paid to the psychology of sport. This situation continued until the Second World War. This was because sport was not considered an important part of human life. After the Second World War, the situation changed dramatically. In the face of unprecedented decline, countries have tried to surpass each other in sports. And as a consequence, winning international competitions was soon seen as an unprecedented achievement.

Many leading foreign psychologists are undergoing additional training or retraining to participate in the development of best practices. This will require psychological training and the development of special cogitation skills, psychological strategies and exceptional wisdom.

The study found, that world-class athletes are using certain psychological tricks. First of all, it is a particular positive thinking. Kari Abdul-Jabbar, the legendary basketball player, expressed the importance of the right attitude in sports very precisely: "The mind forces the whole body to work". The great tennis player Novak Djokovich later made a resounding remark: "The physical training of the best 100 players is not so different. It's all about being able to control the excitement, not let you down at the most important moment". So as we can see, psychology in sports of higher achievement plays an important role. It is obvious that physical qualities are not enough to rise to the pedestal. Even naturally gifted athletes who want to develop all their data have to make enormous physical and psychological efforts, because the secret to their success is not the strength of muscle or impeccable technique – it is in the head.

In our view, whatever each of us takes on, whether it is work or sport, cannot be won without such qualities as self-confidence, concentration and self-control. The key to personal and sporting success is our true "I", it allows to achieve unprecedented heights. It is necessary to remember that one must learn to think as a champion, since the mind of the winner helps to show everything that he is capable of. The correct attitude of the athlete allows realize all abilities in competition. A champion is, according to many foreign sports psychologists, the ideal balance of thinking, athleticism and technique. He is never afraid to show himself in any situation, spares no time and is not afraid to work.

Researches by foreign sports psychologists, as well as the stories of the winners, confirm that self-confidence is invaluable for success in sport. This is because self-confidence means self-control. For example, the legendary tennis player

John McEnroe said: “a great athlete is steadfast in his hour of need. Before you succeed, you have to believe that you can do it. Tell yourself, I’ve done it before, I can do it now”. The focus should be on speech rather than defeat. In order to speak at the champion level, it is important to understand the importance of a good memory for victories and a short one for failures. All athletes once lose, but champions never remember failures. Instead, they anticipate positive experiences and move forward with confidence. You can hate to lose, but you don’t have to be afraid to lose. It’s confidence that leads an athlete to win, not self-confidence. Remember, if you see the perfection of others, then there’s some part of it already in you.

Conclusions. So, the study of psychology of sports is one of the most important areas today, because athletes, compared to other people, are more likely to face psychological and physical demands. Consequently, it is more difficult for them to cope with discomfort and internal personal problems. Therefore, the psychology of sport will not only help to find internal harmony, but will also encourage success, despite all difficulties.

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Perepelitsina Svetlana Andreevna, student, perepelitsinasvetlana02@gmail.com, Volgograd State Physical Education Academy, address: 78, Lenin Prospect, Volgograd, Russia.

Borisenko Elena Georgievna, PhD in Pedagogic sciences, associate professor, associate professor of the Department of Pedagogy, Psychology and Communications, stolbovich@mail.ru, Volgograd State Physical Education Academy, address: 78, Lenin Prospect, Volgograd, Russia.

Marokova Marina Victorovna, PhD in Psychological sciences, associate professor, associate professor of the Department of Pedagogy, Psychology and Communications, marsik_78@mail.ru, Volgograd State Physical Education Academy, address: 78, Lenin Prospect, Volgograd, Russia

**К ВОПРОСУ О ПСИХОЛОГИЧЕСКОМ БЛАГОПОЛУЧИИ СПОРТСМЕНА В
ЗАРУБЕЖНЫХ ИССЛЕДОВАНИЯХ**

*Перепелицина Светлана Андреевна, студент, perepelitsinasvetlana02@gmail.com
Федеральное государственное бюджетное образовательное учреждение высшего образования*

"Волгоградская государственная академия физической культуры", Россия, Волгоград.

Борисенко Елена Георгиевна, к.п.н., доцент, доцент кафедры педагогики, психологии и коммуникативных дисциплин ФГБОУ ВО «ВГАФК», stolbovich@mail.ru, Федеральное государственное бюджетное образовательное учреждение высшего образования "Волгоградская государственная академия физической культуры", Россия, Волгоград.

Марокова Марина Викторовна, к.психол.н., доцент, доцент кафедры педагогики, психологии и коммуникативных дисциплин ФГБОУ ВО «ВГАФК», marsik_78@mail.ru, Федеральное государственное бюджетное образовательное учреждение высшего образования "Волгоградская государственная академия физической культуры", Россия, Волгоград.

Аннотация. В статье представлен анализ исследований спортивных зарубежных психологов в области психологического благополучия спортсмена. Проведен анализ психологических факторов, влияющих на спортивную успешность, и определены психологические приемы, которыми пользуются спортсмены мирового класса. Выявлено, что позитивное мышление победителя помогает показать все, на что он способен, а правильный настрой спортсмена дает реализоваться на соревнованиях всем способностям в полной мере.

Ключевые слова: мышление, психологические стратегии, психология спорта, психологическое благополучие

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UDC 796

COMPARATIVE ANALYSIS OF APPROACHES TO THE RECRUITMENT OF MEN'S NATIONAL TEAMS AT THE HANDBALL EUROPEAN CHAMPIONSHIP 2024

Pikalova K.S., Zhiyar M.V.

Abstract. *The work presents a comparative analysis of staff members of the strongest men's national teams at the 2024 European Championship. The height and age characteristics of handball players of the men's national teams, the experience of the participation in the international competitions are revealed. This analysis allows us to determine the tendency for recruiting and selecting players for national teams participating in major official international tournaments.*

Keywords: handball, men's national teams, height and age characteristics, international competitions

Introduction. The European Championship is one of the main international tournaments for national handball teams. The successful performance of the team in competitions of this rank is significant for the international rating of the country, and moreover it serves as a direct selection for the World Cup. Achieving of a high sport result by the national team, which includes the national top-rank players, is also important for the further development of handball. Therefore, specialists, who work with national teams, constantly carry out analytical work to assess the competitive activities of the strongest teams, as well as determine approaches to the team recruitment system, taking into account the stage of the Olympic cycle [1].

Considering the current trends in handball development on the international stage, it is essential to identify effective strategies for selecting highly skilled handball players for the national team in order to achieve optimal sporting results. This would enable the Russian national handball team to anticipate the staff members of opposing teams and plan physical and technical-tactical preparations for oncoming international tournaments [2].

Research methods: analysis of sources of scientific and methodological literature, analysis of official documents of the European Handball Championship 2024 among men's teams, methods of statistical data processing.

Research results. At the 2024 European Championship, the French national team became the winner, the Danish national team (2nd place) and the Swedish national team (3rd place) became the winners of the championship. The indicators that characterize the composition of national teams include height and age characteristics, weight characteristics and the experience of athletes participating in international tournaments (table 1).

Table 1. – General characteristics of the national teams of the 2024 European Championship

Picked teams	Height, m	Age	Weight, kg	International Matches		
				In team	Max.	Min.
France	1,93	28,9	98,7	90,8	348	4
Denmark	1,94	29,6	100,6	111,2	292	8
Sweden	1,90	28,6	92,8	67,1	150	2
Germany	1,92	26,2	93,5	44,5	145	2
Hungary	1,95	26,6	98,6	54,1	166	3

The analysis of these data allows us to determine the number and ratio of experienced and young athletes in each national team, the growth rates of the players, taking into account their role specialization.

The Danish national team became the oldest team at the 2024 European Championship – the average age was 29.6 years, the youngest, and therefore more promising for the future, the German national team – 26.2 years. (fig. 1). At the same time, the Danish national team has a balanced lineup of young and experienced players – 5 handball players aged 21-25 years, 7 core players aged 26-30 years, 7

players over 30 years old.

The Hungarian national team was the largest in number of young players at European Championship – 10 handball players under the age of 26 (more than 50% of the team), which in men's handball is considered the age at which a successful sports career begins. The German national team presented the youngest team of 15 handball players under the age of 30. According to the existing strategy for the preparation of playing teams in the Olympic cycle, the national teams of Germany and Hungary have begun preparing their teams for the 2028 Olympic Games.

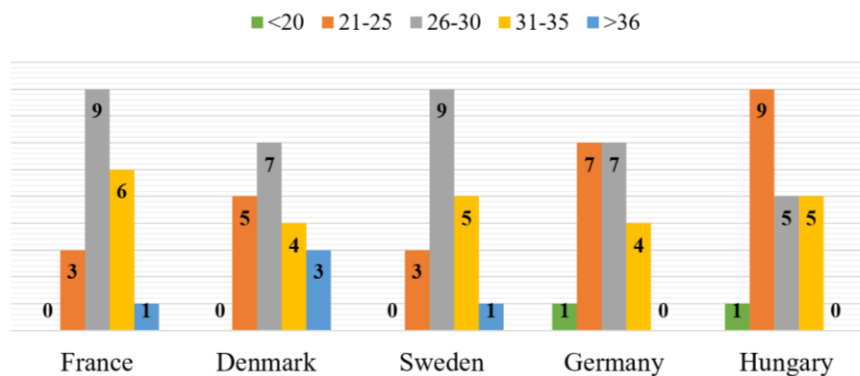


Figure.1. – Age characteristics of the national teams of the 2024 European Championship

The average growth rates of the strongest national teams of the 2024 European Championship have no significant differences (fig. 2).

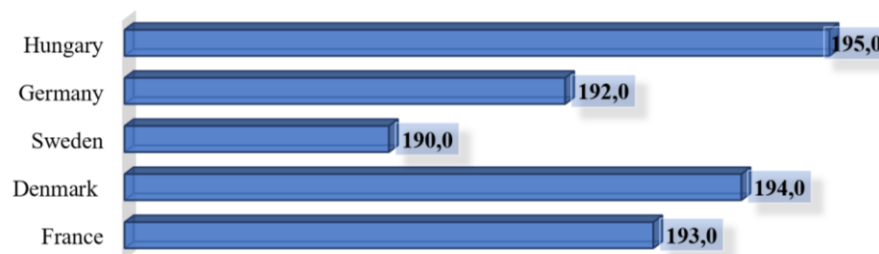


Figure 2. – Average growth rates of national teams at the 2024 European Championship

The Hungarian team has the highest index of tall players– the average height of the players is 195 cm. The bronze medalist in the group of leaders, the Swedish national team has the shortest players – the average for the group is 190 cm. This indicates that the trend is returning to the fact that when selecting players for national teams, preference is given to well-trained tall players.

The most experienced team also turned out to be the Danish national team with an average of 111.2 international matches played (table 2). As part of the Danish national team, the most experienced Hans Ottar Lindberg (right winger) has 292 international matches played in his arsenal. It is impossible to omit the most experienced athlete of the tournament, Nikola Karabatic, a player of the French national team, who played 348 international matches during his career and scored 1,277 goals.

The most experienced players at the tournament were the players of the Danish national team – they have 189.5 international matches in their arsenal, the left back

(161.3 international games on average) and the point guards (138.5 games) of the French national team. The most experienced goalkeepers were the handball players of the Danish national team – 146.0 matches (table 2).

Table 2. – The comparative analysis of the experience of national team handball players at the 2024 European Championship

Teams	Roles of the players							Average per team
	CB	LB	RB	P	LW	RW	GK	
France	138,5	161,3	91,0	95,5	45,5	89,3	14,0	90,8
Denmark	124,0	124,0	44,3	96,0	90,5	189,5	146,0	111,2
Sweden	74,7	35,7	73,5	100,0	72,5	41,5	67,0	67,1
Germany	42,7	19,0	58,3	56,7	31,3	36,5	74,5	44,5
Hungary	71,7	80,7	67,7	77,5	38,5	5,0	8,3	54,1

The analysis of the athletes' playing experience allows us to characterize their skill level and readiness for effective performance of the national team at major international tournaments. Based on the data presented in table 2, the most experienced team is the Danish national team, the least experienced and youngest was the German national team with an average of 44.5 per team. The French national team, which has only 3 athletes under the age of 26, and 7 athletes over the age of 30 with extensive playing experience, on average the team lost to the Danish national team – an average of 90.8 matches. These data indicate that young left-wing players and goalkeepers have successfully joined the team, justifying the approach of the coaching staff to recruiting a team for one of the main international tournaments.

Conclusion. The analysis of the teams at the 2024 European Championship according to various characteristics allows us to identify the main trends in their recruitment and formulate approaches to the strategy of preparing national teams in the Olympic cycle. If a team solves the current goal of winning the tournament, it will rely more on experienced players. The Danish national team at the 2024 European Championship relies on its experienced leaders, gradually introducing young players into the team. The average age of the handball players of the French national team (28.9 years old) suggests that the players already have some experience in playing at international tournaments and their teamwork and ability allowed them to get the gold medals of the European Championship from more experienced athletes from the Danish national team. The national teams of Hungary and Germany are adding young players to the national teams, there are no handball players older than 35 in these teams. This is a process of forming flaming in preparation teams for the upcoming tournament.

The results of the study can be useful for coaches of national teams, as they allow us to take into account the identified trends in preparation for the next international tournaments and develop a strategy for training athletes and the nearest reserve of national teams.

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Pikalova Kristina - graduate student of the Department s of the Department of Theory and Methodology of handball, The Russian University of Sport "GTSOLIFK", Russia, Moscow, e-mail: kris.pikalova99@mail.ru

Zhiyar Marina Vladimirovna - Professor of the Department of theory and methods of handball, doctor of Pedagogical Sciences, The Russian University of Sport "GTSOLIFK", Russia, Moscow, e-mail: doctorsahar2@mail.ru

СРАВНИТЕЛЬНЫЙ АНАЛИЗ ПОДХОДОВ К КОМПЛЕКТОВАНИЮ МУЖСКИХ СБОРНЫХ КОМАНД НА ЧЕМПИОНАТЕ ЕВРОПЫ 2024 Г. ПО ГАНДБОЛУ

Пикалова Кристина Сергеевна – магистрантка, Российский университет спорта «ГЦОЛИФК», kris.pikalova99@mail.ru, Москва, Россия.

Жийяр Марина Владимировна, зав. кафедрой теории и методики гандбола, д.п.н., профессор, Российский университет спорта «ГЦОЛИФК», e-mail: doctorsahar2@mail.ru, г. Москва, Российская Федерация.

Аннотация. В работе представлен сравнительный анализ состава сильнейших мужских сборных команд на Чемпионате Европы 2024 г. Выявлены ростово-возрастные характеристики гандболистов сильнейших мужских сборных команд, опыт участия в международных соревнованиях. Анализ этих позволяет определить тенденцию к комплектованию, отбору игроков в составы сборных команд, принимающих участие в крупных официальных международных турнирах.

Ключевые слова: гандбол, мужские сборные команды, ростовые и возрастные характеристики, международные соревнования

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UDC 796

THE EFFECT OF TRX TRAINING ON THE STRENGTH TRAINING OF SWIMMERS AT THE STAGE OF IMPROVING SPORTS SKILLS

Pismennyi A.P., s/s Solomatin V.R.

Abstract. *The article is devoted to the study of the effect of training with TRX loops on the level of strength training of swimmers engaged in the stage of improving sports skills. The study revealed that the dynamics of strength indicators in tests on land and in water for swimmers using*

TRX loops in training is greater than for swimmers using traditional training equipment. TRX loops in the training of swimmers at the stage of improving sports skills can be used to increase the effectiveness of the training process.

Keywords: swimming, physical fitness, strength training, TRX functional loops

Relevance. Currently, there is a high level of results in swimming [1, 3]. These circumstances necessitate the search for new organizational forms, means and methods of training swimmers, which can significantly increase the effectiveness of their physical training and the entire training process as a whole [5].

In recent years, in the fitness industry [2], as well as in sports [4], there has been an active introduction into the practice of training using TRX loops. However, the use of these loops in the training process of swimmers remains poorly understood.

The purpose of this study was to study the effect of training using TRX loops on the physical fitness of swimmers at the stage of improving sports skills.

Methods. As the main research methods, we used: analysis of scientific and methodological literature, the method of control exercises, pedagogical experiment, the method of anthropometry, methods of mathematical statistics.

Research design. The pedagogical experiment was conducted from October 2023 to December 2023 on the basis of the sports school «Youth of Moscow–TRUD». 14 swimmers took part in the experiment, who are engaged in the stage of improving sports skills, and have the category of candidate for Master of Sports and the title of Master of Sports. The age of the subjects is 16-18 years old.

Prior to the pedagogical experiment, the subjects were pre-tested on land and on water. In the water, the thrust force was measured using the method of B.I. Onoprienko and the coordination coefficient (CC) was calculated. The following tests were carried out on land: pull-ups, flexion-extension from a prone position, long jump from a place, high jump from a place, lifting the body from a supine position, throwing a 1 kg stuffed ball from behind the head. During the preliminary testing, body length and weight, chest circumference were also measured.

According to the results of preliminary testing, all swimmers participating in the experiment were divided into control ($n=7$) and experimental groups ($n=7$). The average values of body length and weight, chest girth, and strength level of the groups in the tests did not have statistically significant differences ($p > 0,05$).

The duration of the experiment was 3 months (12 weeks). On the water, swimmers of both groups trained according to the same program, on land, group training was different. In the experimental group (EG), classes using TRX loops were held twice a week. The program consisted of three complexes consisting of 23 exercises of different directions: 12 exercises aimed at increasing the strength of the muscles of the arms and upper limb girdle; 6 exercises aimed at increasing the strength of the muscles of the legs and lower limb girdle; 5 exercises aimed at strengthening the muscles of the core. One complex was used for one month, then the complex was changed. The complexity level of the complex increased from the first complex to the third. Each week in training, the strength load increased due to: increasing the number of sets, increasing the number of repetitions, reducing the rest time between sets and exercises, changing the angle of load, changing the area of

support, changing the height of the center of gravity.

The classes of the control group (KG) on land were conducted using block simulators, free weights and a Martens-Huttel simulator.

At the end of the experiment, control testing of swimmers of both groups was carried out, identical to the preliminary testing. The dynamics of indicators of strength training of swimmers in groups was studied.

Results. During the period of the experiment, there was an improvement in strength indicators in tests on land and in water in both KG and EG.

Significant differences in indicators before and after the experiment, both in KG and EG, were revealed in the tests «pull-up», «lifting the body from a supine position» and «throwing a 1 kg stuffed ball from behind the head» ($p < 0,05$). At the end of the experiment, the average values of the KG and EG swimmers in the tests were: «pull-up» – 12,71 and 13,57 times, «lifting the body from the supine position» – 46,86 and 49,43 times, «throwing a 1 kg stuffed ball from behind the head» – 5,8 and 5,9 m, respectively (table 1).

The indicators in the «flexion-extension from the prone position» test also improved in both groups ($p > 0,05$). At the end of the experiment, the average value in the test in KG was 32,71 times, in EG – 33,28 times.

By the end of the experiment, the average values of the indicators in the «long jump from a place» and «high jump from a place» tests improved in both groups ($p > 0,05$) and amounted to 197,28 cm and 49,71 cm in KG, respectively, and 198,14 cm and 50,71 cm in EG, respectively.

Table 1. – Indicators of swimmers' strength abilities in tests on land before and after the experiment

Indicator, unit of measurement	Group	Before the experiment	After the experiment	Difference		The t-criterion	Reliability
		$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	in units	%		
Pull-up, number of times	KG	11,43 $\pm$ 1,13	12,71 $\pm$ 1,38	1,29	11,29	1,9	$p > 0,05$
	EG	11,28 $\pm$ 1,38	13,57 $\pm$ 1,13	2,29	20,3	3,37	$p < 0,05$
Flexion-extension of the arms from the prone position, the number of times	KG	30,28 $\pm$ 3,04	32,71 $\pm$ 2,81	2,43	8,02	1,55	$p > 0,05$
	EG	29,86 $\pm$ 3,33	33,28 $\pm$ 2,93	3,43	11,49	2,04	$p > 0,05$
Long jump from a place, cm	KG	196 $\pm$ 2,16	197,28 $\pm$ 2,21	1,29	0,65	1,1	$p > 0,05$
	EG	195,57 $\pm$ 3,21	198,14 $\pm$ 2,21	3,21	1,64	1,27	$p > 0,05$
High jump from a place, cm	KG	48,86 $\pm$ 1,95	49,71 $\pm$ 1,98	0,86	1,76	0,82	$p > 0,05$
	EG	48,71 $\pm$ 2,29	50,71 $\pm$ 2,29	2	4,1	1,63	$p > 0,05$
Lifting the body from the supine position, the number of times	KG	44,71 $\pm$ 1,11	46,86 $\pm$ 1,21	2,14	4,79	3,44	$p < 0,05$
	EG	45,28 $\pm$ 1,60	49,43 $\pm$ 1,13	4,14	9,14	5,59	$p < 0,05$
The throw of a stuffed ball of 1 kg from behind the head, m	KG	5,58 $\pm$ 0,13	5,8 $\pm$ 0,13	0,21	3,76	3,04	$p < 0,05$
	EG	5,56 $\pm$ 0,16	5,9 $\pm$ 0,19	0,34	6,11	3,62	$p < 0,05$

During the period of the experiment, the largest gains in the groups were noted

in the tests: «pull-up», «flexion-extension of the arms from the prone position», «lifting the body from the supine position». In EG, the gains in these tests were 20,3%, 11,49% and 9,14%, respectively, in KG – 11,29%, 8,02% and 4,79% (fig. 1).

The smallest increase was noted in the «long jump from a place» and «high jump from a place» tests. The increase in these tests in EG was 1,64% and 4,1%, in KG – 0,65% and 1,76%, respectively.

The increase in the indicator in the test «throwing a stuffed ball 1 kg from behind the head» in the EG group was 6,11%. In KG, the increase in this test was 3,76%.

At the end of the experiment, the strength indicators in all tests on land turned out to be higher in EG compared to KG. The greatest difference between the groups in gains was noted in the tests «pull-up», «lifting the body from the supine position», «flexion-extension of the arms from the prone position»: the difference was 9,01%, 4,35% and 3,47%. The smallest difference in gains was noted in the «long jump from a place» test – 0,99%. In the tests «high jump from a place» and «throwing a 1 kg stuffed ball from behind the head», the difference was 2,34% and 2,35%, respectively.

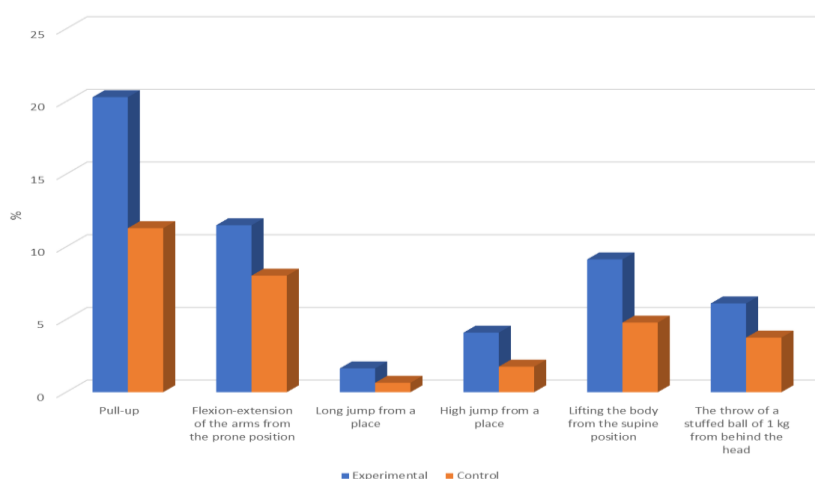


Figure 1. – The increase in the indicators of strength abilities of swimmers in tests on land during the period of the experiment

The increase in the indicator in the test «throwing a stuffed ball 1 kg from behind the head» in the EG group was 6,11%. In KG, the increase in this test was 3,76%.

At the end of the experiment, the strength indicators in all tests on land turned out to be higher in EG compared to KG. The greatest difference between the groups in gains was noted in the tests «pull-up», «lifting the body from the supine position», «flexion-extension of the arms from the prone position»: the difference was 9,01%, 4,35% and 3,47%. The smallest difference in gains was noted in the «long jump from a place» test – 0,99%. In the tests «high jump from a place» and «throwing a 1 kg stuffed ball from behind the head», the difference was 2,34% and 2,35%, respectively.

In water, significant differences in indicators before and after the experiment, both in KG and in EG, were revealed in the thrust force when swimming with the help of footwork and the thrust force when swimming with the help of handwork ($p < 0,05$). At the end of the experiment, the average thrust force when swimming with the help of footwork in KG and EG was 10,97 and 11,13 kg, respectively; when swimming with the help of handwork – 17,04 and 17,04 kg, respectively (table 2).

In the EG, significant differences between the indicators before and after the experiment were also revealed in the thrust force when swimming with full coordination of movements ($p < 0,05$). At the end of the experiment, the average value of the thrust force when swimming with full coordination of movements was 21,48 kg.

The thrust force during swimming with full coordination of movements in KG also increased ($p > 0,05$). By the end of the experiment, the values of this indicator amounted to 20,82 kg.

The coordination coefficient in KG and EG by the end of the experiment was 74 %. The improvement in the groups was 1 %, respectively, at $p > 0,05$.

Table 2. – Indicators of swimmers' strength abilities in tests in the water before and after the experiment

Indicator, unit of measurement	Group	Before the experiment	After the experiment	Difference		The t-criterion	Reliability
		$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$	in units	%		
Traction force when swimming with the help of footwork, kg	KG	10,69±0,11	10,97±0,16	0,27	2,52	3,82	$p < 0,05$
	EG	10,64±0,14	11,13±0,15	0,48	4,51	6,26	$p < 0,05$
Thrust force when swimming with the help of handwork, kg	KG	16,42±0,19	17,04±0,29	0,62	3,77	5,35	$p < 0,05$
	EG	16,40±0,09	17,48±0,33	1,08	6,58	8,31	$p < 0,05$
Thrust force when swimming with full coordination of movements, kg	KG	20,42±0,51	20,82±0,44	0,39	1,9	1,55	$p > 0,05$
	EG	20,37±0,53	21,48±0,52	1,11	5,45	3,91	$p < 0,05$
Coordination coefficient, %	KG	75±0,02	74±0,014	1	1,33	1,18	$p > 0,05$
	EG	75±0,02	74±0,02	1	1,33	0,26	$p > 0,05$

In both groups, the greatest gains were noted in terms of traction strength when swimming with the help of handwork and when swimming with full coordination of movements. In EG, the gains according to these indicators amounted to 6,58% and 5,45%, respectively, in KG – 3,77% and 1,9% (fig. 2).

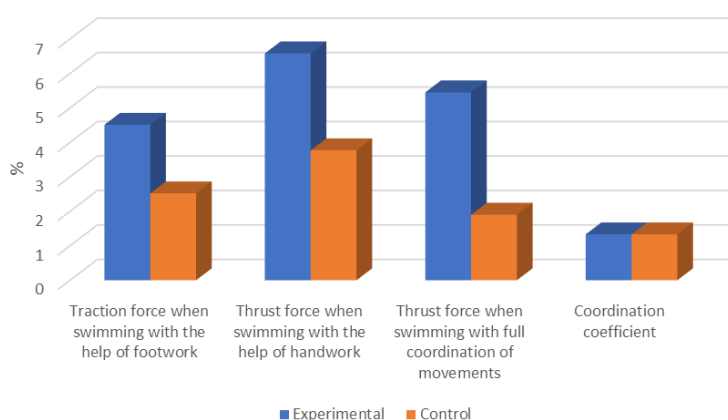


Figure 2. – The increase in indicators of strength abilities of swimmers in tests in the water over the period of the experiment

The smallest increase was noted in terms of the coordination coefficient: the

increase in both groups was 1,33%.

The increase in traction force when swimming with the help of footwork in EG was 4,51%. In KG, the increase in this indicator was 2,52%.

The gains in traction force when swimming with the help of footwork, traction force when swimming with the help of handwork and traction force when swimming with full coordination of movements are greater in EG compared to KG: the difference in gains was 1,9%, 2,81% and 3,55%, respectively.

Conclusions. According to the results obtained, the dynamics of EG indicators in tests on land and in water was better than in KG. The conducted research has shown the effectiveness of using TRX loops as a means of improving the strength training of swimmers at the stage of improving sports skills:

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Pismennyi Alexander Petrovich, student; aleksswim02@mail.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

Scientific supervisor – Solomatin Victor Radievich, Russia, Moscow, Russian university of sports "GTSOLIFK".

ВЛИЯНИЕ ТРЕНИРОВОК С ПЕТЛЯМИ TRX НА СИЛОВУЮ ПОДГОТОВЛЕННОСТЬ ПЛОВЦОВ НА ЭТАПЕ СОВЕРШЕНСТВОВАНИЯ СПОРТИВНОГО МАСТЕРСТВА

Письменный А.П., студент; e-mail: aleksswim02@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Научный руководитель – Соломатин Виктор Радиевич, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

Аннотация. Статья посвящена изучению влияния тренировок с петлями TRX на уровень силовой подготовленности пловцов, занимающихся на этапе совершенствования спортивного мастерства. В ходе исследования выявлено, что динамика силовых показателей в тестах на суше и в воде у пловцов, использующих петли TRX в тренировке, больше, чем у пловцов, использующих традиционные тренировочные средства. Петли TRX в подготовке пловцов на этапе совершенствования спортивного мастерства могут использоваться для повышения эффективности тренировочного процесса.

Ключевые слова: плавание, физическая подготовленность, силовая подготовленность, функциональные петли TRX

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COMPARATIVE CHARACTERISTICS OF PHYSICAL DEVELOPMENT INDICATORS OF BOYS 12 YEARS OLD WITH DIFFERENT DEGREES OF SPINAL DEFORMITY

Popitich D.V., s/s Gerasovich A.N.

Abstract. *The article presents a study of the physical development indicators of 12-year-old boys with poor posture and different degrees of scoliosis. A comprehensive measurement of body parameters was carried out using anthropometric, caliperometric and bioimpedancemetric indicators. The results obtained were compared with indicators of healthy children. Adaptive activity of the boys' body was discovered which manifested itself to a greater extent with an increase in the degree of spinal deformity.*

Keywords: *poor posture, scoliosis, physical development, deformation, spine, anthropometry, caliperometry, bioimpedansometry*

Introduction. In the modern world, the problems of poor posture and scoliosis in children and adolescents are becoming increasingly relevant due to the passive lifestyle of the younger generation. Research shows that such disorders cause serious changes in the working of various organs and systems of the body [5, 8, 9].

Poor posture leads to significant disturbances in the morphology and function of the circulatory organs [2]. Heart disorders are associated with altered gas exchange conditions in scoliosis [4]. Due to respiratory failure and alveolar hypoventilation, a lack of oxygen appears in the body, which is compensated by an increase in cardiac blood output. Such compensation phenomena cause an increase in arterial-pulmonary pressure, overload of the right ventricle, which leads to the development of chronic cor pulmonale [5].

The progression of the disease and complex multi-axial deformation of the spine inevitably leads to changes in the shape of the ribs and the chest as a whole

(costal hump), disruption of the normal relative position of the chest organs and disturbances in the functional of state of the respiratory system [1].

In functional terms the problem of scoliosis comes down to the development of respiratory failure in patients and subsequently – circulatory failure [6].

Studies in children with scoliosis show lower levels of heart rate variability compared to healthy. This is due to lower levels of parasympathetic activity and higher levels of sympathetic activity in the autonomic nervous system (ANS). This may be due to unbalanced muscle tension and spinal curvature in scoliosis affecting the regulation of the ANS [7].

Physical education is an integral part of the educational process at school especially important for children with poor posture and scoliosis. Considering that properly organized classes of physical exercise can help to correct these problems. Conducting research in schoolchildren with these health issues becomes a necessity.

Control the state of the body, including such indicators as integral body dimensions, caliperometry and bioimpedancemetry is important in this process.

The purpose of the work was to study the level of integral body indicators, caliperometry and bioimpedansometry indicators in 12-year-old boys with varying degrees of spinal deformity and their comparative characteristics.

Methods. The study measured integral body dimensions (body weight and length, chest circumference during inhalation, exhalation and pause, as well as chest excursion), caliperometry indicators (fat skin folds in different parts of the body) and bioimpedansometry (percentage of fat and water in the body) in 12-year-old boys with poor posture and varying degrees of scoliosis.

Results. The tables show the average values of healthy 12-year-old boys and changes in physical development indicators of peers with poor posture and varying degrees of scoliosis compared to the average values (tables 1-3).

Table 1. – Average values integral body sizes and their differences in different groups of boys 12 years old

Groups of surveyed	Body weight, kg	Length, cm		Chest circumference, cm			Chest excursion, cm
		standing	sitting	pause	inhale	exhalation	
1	44,96 ±0,57	153,15 ±0,47	78,45 ±0,25	73,12 ±0,45	77,68 ±0,42	70,62 ±0,43	7,07 ±0,13
Differences in indicators compared to a group of healthy children							
1-2	-6,76	-2,88	-2,95	-5,35	-3,66	-4,28	+0,61
1-3	-1,13	+2,81	-1,14	-0,21	+0,29	-0,35	+0,63
Credibility criteria of differences							
t ₁₋₂	3,62	1,01	1,98	5,10	3,05	3,68	0,98
P ₁₋₂	0,001	–	–	0,001	0,01	0,001	–
t ₁₋₃	0,52	1,56	1,24	0,10	0,18	0,21	1,03
P ₁₋₃	–	–	–	–	–	–	–

Note (here and hereinafter). Groups of surveyed: 1 – healthy children; 2 – children with poor posture and grade I scoliosis; 3 – children with II–IV degrees of scoliosis; numbers with a “–” sign indicate a decrease in the value of the indicator, “+” indicate an increase

The results indicate a significant decrease indicators in body weight and chest circumference inhalation, exhalation and pause in children with the initial stage of the

disease in comparison with healthy children (table 1).

In terms of caliperometry indicators (thickness of fat skinfolds), there is also a pronounced decrease in indicators in 12-year-old boys at the initial stages of the disease in comparison with healthy peers ($P < 0.05-0.001$). In the group of boys with more severe spinal deformities fewer significant differences were noted. In addition, an increase in the thickness of the fat skinfolds was noted on the gastrocnemius muscle (table 2).

Table 2. – Average values of caliperometry indicators and their differences in different groups of 12-year-old boys

Groups of surveyed	Fat skinfolds, mm						
	triceps	biceps	at the angle of the scapula	stomach	iliac crest	calf muscle	sum of skin folds
1	15,57 ±0,44	9,48 ±0,37	12,19 ±0,63	15,68 ±0,67	16,12 ±0,74	14,90 ±0,43	83,88 ±2,90
Differences in indicators compared to a group of healthy children							
1-2	-2,45	-3,4	-4,89	-6,71	-9,1	-1,63	-29,22
1-3	+1,01	+0,46	-2,47	+0,43	-3,55	+4,57	+0,21
Credibility criteria of differences							
t ₁₋₂	2,02	4,25	4,88	3,97	7,71	1,07	4,58
P ₁₋₂	0,05	0,001	0,001	0,001	0,001	—	0,001
t ₁₋₃	0,40	0,33	2,12	0,21	2,07	2,98	0,03
P ₁₋₃	—	—	0,05	—	0,05	0,01	—

Table 3. – Average values of bioimpedance measurements and their differences in different groups of 12-year-old boys

Groups of surveyed	Fat, %	Water, %
1	13,91 ±0,33	65,22 ±0,25
Differences in indicators compared to a group of healthy children		
1-2	-2,28	+1,88
1-3	-1,1	+0,06
Credibility criteria of differences		
t ₁₋₂	1,72	3,65
P ₁₋₂	—	0,001
t ₁₋₃	1,24	0,09
P ₁₋₃	—	—

According to bioimpedance indicators a significant increase in the percentage of water was obtained in the group of children with postural disorders and grade I scoliosis in comparison with healthy children.

It is assumed that the body of 12-year-old boys exhibits a high adaptive ability to the emerging spinal deformities due to postural disorders and scoliosis. This is reflected in a decrease in the number of significant differences in children with more pronounced deformities of the spinal column in comparison with the results of boys with less pronounced deformities.

Conclusions. Thus, when comparing the results of 12-year-old boys with the initial stages of spinal deformity with healthy children in terms of integral body dimensions, caliperometry and bioimpedansometry, 11 significant differences were found ($P<0.05-0.001$). There are six significant differences in fat skinfolds indicators, four in integral of body indicators and one on the percentage of water in the body. The values of all indicators were less than those of healthy children. At the same time in children with more severe spinal deformities only 3 significant differences were found in comparison with healthy children ($P<0.05-0.001$), all of them in terms of fat skinfolds indicators. The results obtained probably indicate a fairly high adaptive ability of the boys' body in relation to the emerging spinal deformities. This is reflected in a decrease in the number of significant differences in children with a more pronounced degree of spinal column deformity in comparison with the results of boys with less pronounced deformities.

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Popitich Dmitry Vasilievich, Master of Pedagogical Sciences, teacher of the department of sports disciplines and methods of teaching them, popitichd@mail.ru, Belarus, Brest, educational institution "Brest State University named after A.S. Pushkin".

Scientific supervisor – Gerasevich A.N., Candidate of Biological Sciences, Associate Professor

**СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА ПОКАЗАТЕЛЕЙ ФИЗИЧЕСКОГО РАЗВИТИЯ
МАЛЬЧИКОВ 12 ЛЕТ С РАЗЛИЧНЫМИ СТЕПЕНЯМИ ДЕФОРМАЦИИ ПОЗВОНОЧНИКА**

Попитич Дмитрий Васильевич, магистр педагогических наук, преподаватель кафедры спортивных дисциплин и методики их преподавания, ropitchd@mail.ru, Беларусь, Брест, учреждение образования «Брестский государственный университет имени А.С. Пушкина».

Научный руководитель – Герасевич А.Н., кандидат биологических наук, доцент

Аннотация. В статье представлено исследование показателей физического развития мальчиков 12 лет с нарушением осанки и разными степенями сколиоза. Проведено комплексное измерение параметров тела с использованием антропометрических, калиперометрических и биоимпедансометрических показателей. Проведено сравнение полученных результатов с показателями здоровых детей. Обнаружена адаптивная активность организма мальчиков, в большей мере проявляющаяся с увеличением степени деформации позвоночника.

Ключевые слова: нарушение осанки, сколиоз, физическое развитие, деформация, позвоночник, антропометрия, калиперометрия, биоимпедансометрия

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UDC 796

COMPARATIVE ANALYSIS OF SPEED-STRENGTH ABILITIES OF FEMALE WTF TAEKWONDO ATHLETES OF VARIOUS SPORTS QUALIFICATIONS

Potapova K.A., Epov O.G.

Abstract. For achieving high athletic result in WTF taekwondo it is necessary to have a high level of speed-strength fitness of the knee flexor muscles. Testing was carried on the force-measuring complex “Biodex System PRO-4” to evaluate the speed-strength abilities of the knee extensor and flexor muscles of female WTF taekwondo athletes of various sports qualifications.

Keywords: *strength, speed, extensors, flexors, taekwondo*

Introduction. It is well known that achieving high sports results in striking martial arts is possible with a high level of strength and speed-strength abilities [3]. On the one hand, these requirements are established by the competition rules, which oblige athletes to do high motor activity associated with the manifestation of high speed-strength abilities.

For example, in WTF taekwondo an athlete who is only defending will be punished and also if both athletes are not making attacking movements within five seconds. To prevent this, athletes constantly have to perform preparatory actions and further attack [2]. On the other hand, the specifics of the sport impose requirements for the manifestation of a high level of competitive motor activity during a fight. In this regard, it can be assumed that WTF taekwondo athletes of different sports skills should be characterized by different manifestation of the speed-strength abilities of the knee extensor muscles. In order to ensure the readiness of the musculoskeletal system for special and general speed-strength loads, specialized testing on isokinetic equipment is necessary [1].

The aim of research. Evaluation the speed-strength abilities of the knee extensor and flexor muscles of female WTF taekwondo athletes of various sports qualifications.

Methods and research design. We have used the following methods in our research: testing, comparative analysis, methods of math's statistics. Female WTF taekwondo athletes of sports qualification took part in the testing: Candidates of Master of Sport (CMS, $n=6$), Masters of Sport (MS, $n=6$), Masters of Sport of International Class (MSIC, $n=4$). Average age $X=21,1$, $s=3,3$ years, body length – $C=170,6$, $s=5,9$ years, body weight - $X=64,0$, $s=9,8$ kg. All female athletes were tested on the “Biodex System PRO-4” force-measuring complex, where two attempts were made in a sitting position – flexion and extension in the knee joint with maximum isometric stress at angular speeds of 300, 180 and 60 degrees/s in order to assess speed-strength profile of the extensor and flexor muscles of the knee joint. 3 attempts were made at each speed. The rest between attempts was 1 minute. Before the start of the experiment the subjects have done trial attempts to perform extension and flexion in the knee joint at different angular velocities in order to assess their speed-strength abilities, as well as the comfort of performing a single-joint movement. Registration of the moments of extensors and flexors of the knee joint was carried out in a sitting position, with an angle in the hip joint of 90 degrees. The significance of differences between statistical data was determined using one-way analysis of variance in the “Statistica” program.

Results. Figures 1 and 2 show the strength values of the extensor and flexor muscles of the knee joint. The highest value of contraction force by the knee joint extensors at low angular velocity is 60 degrees/s. At high angular velocities of 180 and 300 degrees/s, the force values are lower.

When the knee joint is extended at a low angular velocity of 60 degrees/s, all female athletes are characterized by the same strength values; no differences were found between skill levels ($p>0.05$). At an angular velocity of 180 degrees/s, the

CMS has lower values ($p>0.1$) compared to the MS and MSIC; no differences were found between the MS and MSIC ($p>0.5$). At a high angular speed – 300 degrees/s, high values are noted for taekwondo athletes of international level MSIC ($p>0.1$) compared to MS and CMS (fig. 1).

When female athletes are bending the knee joint at a low angular speed of 60 degrees/s, all of them are characterized by the same values ($p>0.1$) of force. At an angular velocity of 180 degrees/s, the highest values are observed for taekwondo athletes of the WTF level MSIC, the lowest for CMS ($p>0.1$). The main differences were identified at angular speed – 300 degrees/s; the highest speed values are observed among female MSIC athletes compared to MS and CMS ($p<0.05$) (figure 2).

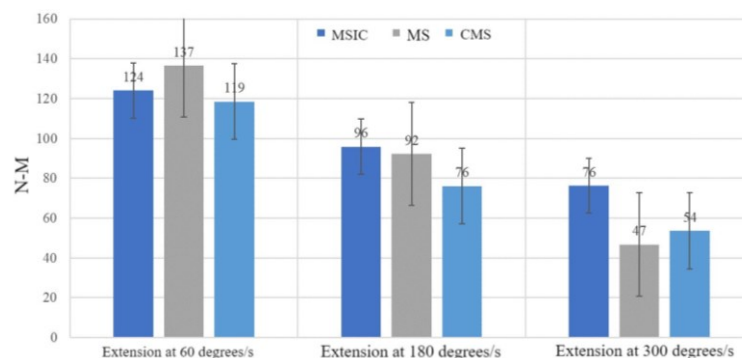


Figure 1. – Speed-strength abilities of the knee extensor muscles of female WTF taekwondo athletes of various sports qualifications

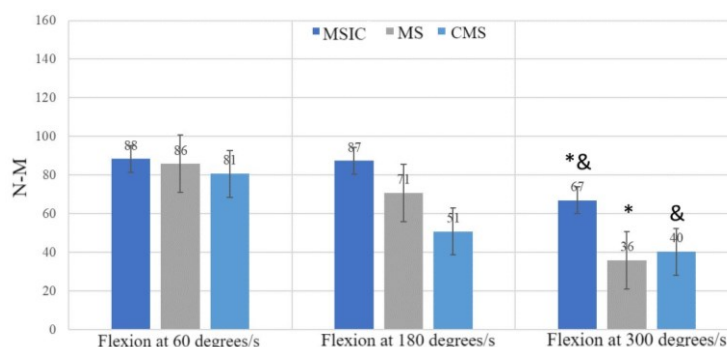


Figure 2. – Speed-strength abilities of the knee flexor muscles of female WTF taekwondo athletes of various sports qualifications

*Note**- differences are significant at $p<0,05$; * - more than MS; & - more than CMS.

Determination of muscle speed-strength abilities in the form of the ratio of flexor to extensor muscles (%) of the knee joint using isokinetic dynamometry showed that at low angular speed (60 degrees/s) there are no differences between the athletes ($p>0.5$). With an increase in angular velocity to 180 degrees/s, there is a decrease in the ratio (%) for CMS to $66\pm8\%$, which is lower compared to MS ($p>0.1$) and MSIC ($p<0.05$), whereas for MSIC the highest ratio is $90\pm6.2\%$. At a speed of 300 degrees/s, equal values of the ratio (%) of flexors/extensors are noted in MS and CMS ($76.7\pm6\%$ and $77.1\pm12\%$, respectively) ($p>0.1$), while in MSIC the value is – $88.3\pm5.1\%$ ($p<0.05$). The results of the comparative analysis are presented in figure 3.

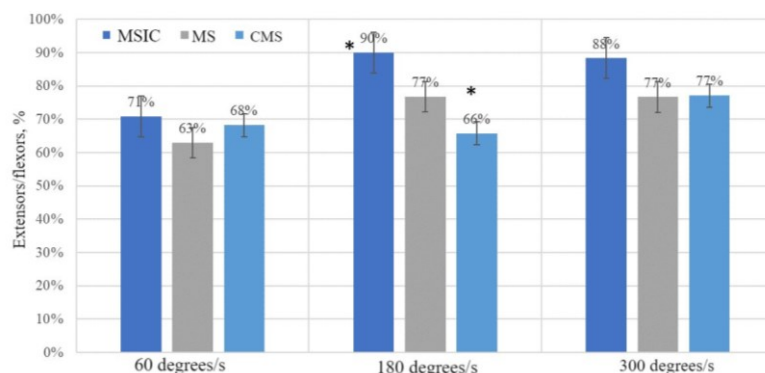


Figure 3. – Speed-strength abilities of the knee joint extensor/flexor muscles of female WTF taekwondo athletes of various sports qualifications

Conclusion. Results were obtained, characterizing the profile of speed-strength abilities of the extensor and flexor muscles of the knee joint among female WTF taekwondo athletes of various sports qualifications. International-level female athletes are characterized by high level of speed of the knee flexor muscle at high angular velocities. The ratio of the moment of force of the flexor muscles to the extensors of the knee joint should correspond to the value of at least 70% at an angular velocity of 60 degrees/s, at least 85% at an angular velocity of 180 and 300 degrees/s.

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Potapova Kristina Andreevna, postgraduate student, crist-potapova@mail.ru, Russia, Moscow, Russian university of sports «GTSOLIFK».

Epov Oleg Georgievich, Doctor of Sciences, Professor, Professor of the Department of Theory and Methodology of Oriental Martial Art, epov.og@gtsolifk.ru, Russia, Moscow, Russian university of sports «GTSOLIFK».

СРАВНИТЕЛЬНЫЙ АНАЛИЗ СКОРОСТНО-СИЛОВЫХ СПОСОБНОСТЕЙ СПОРТСМЕНОВ-ТХЭКВОНДИСТОВ ВТФ РАЗЛИЧНОЙ СПОРТИВНОЙ КВАЛИФИКАЦИИ

Потапова Кристина Андреевна, аспирант, crist-potapova@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Эпов Олег Георгиевич, доктор педагогических наук, профессор, профессор кафедры ТИМ восточных боевых искусств, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Цель исследования: Оценить скоростно-силовые способности мышц разгибателей и сгибателей коленного сустава спортсменок-тхэквондисток ВТФ различной спортивной квалификации. Методы исследования. Тестирование на силоизмерительном комплексе «Biodex System PRO-4», методы математической статистики, сравнительный анализ. Результаты исследования. Выполнение нагрузки на низких угловых скоростях тхэквондистками разной спортивной квалификации не влияет на проявление скоростно-силовых способностей. С повышением угловой скорости до максимальной, тхэквондистки международного уровня превосходят по скоростно-силовому компоненту спортсменок уровня мастера и кандидата в мастера спорта. Выводы. Для достижения высокого спортивного результата в тхэквондо ВТФ необходимо обладать высоким уровнем скоростно-силовой подготовленности мышц-сгибателей коленного сустава.

Ключевые слова: сила, скорость, разгибатели, сгибатели, тхэквондо

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DEVELOPMENT OF A SET OF EXERCISES FOR THE PHYSICAL REHABILITATION OF YOUNG WOMEN SUFFERING FROM OBESITY OF 1-2 DEGREES

Prichalov A.M., Tsitskishvili N.I., s/s Glembotskaya Ya.I.

Abstract. *This material is devoted to the process of physical rehabilitation of middle-aged obese women. The article examines the causes and consequences of obesity, as well as the impact of regular physical exercise on weight loss and improving overall health. Various approaches and methods of physical rehabilitation are described, including anaerobic and aerobic exercises, as well as recommendations on diet and lifestyle changes. A lot of attention is paid to a personalized approach and a smooth increase in workload, as well as consistency in classes to achieve the best results.*

Keywords: *physical rehabilitation, middle-aged women, obesity, diet, lifestyle changes*

Introduction. At the present stage, the most significant and urgent problem is the prevalence of obesity among the population. At the end of the XX - beginning of the XXI century, mankind was closely faced with the problem of increasing the number of overweight and obese people. The obese is currently one of the most common chronic diseases. Epidemiological analysis indicates a rapid increase in the

number of people suffering from obesity of varying severity in almost all economically developed countries of the world. According to statistics, in economically developed countries, including Russia, at least 30% of the population is overweight. Such rapid growth can be associated with the development of technological progress, which contributes to a decrease in human physical activity (physical inactivity), as well as a violation of the diet. According to WHO statistics, the prevalence of obesity in our country among the female population (percentage ratio) is much higher than among men.

The **purpose** of our work was to improve the process of physical rehabilitation of girls with obesity, not accompanied by endocrine pathology.

The **object** of the study is the rehabilitation process of young women with obesity of the 1st-2nd degree.

The **subject** of the study is to study the effect of anaerobic and aerobic physical exercises on the body of women with stage 1 and 2 alimentary obesity.

To achieve this **goal**, we set the following tasks:

1. To determine the level of physical fitness of young girls.
2. To develop a methodology for the physical rehabilitation of girls suffering from alimentary obesity.
3. To experimentally substantiate the effectiveness of the proposed methodology.

The following **methods** were used to solve the tasks: anthropometric; somatoscopy method; caliperometry: determination of the degree of obesity; determination of the level of performance; questionnaires, methods of mathematical statistics.

Discussion. The study involved 20 women of the age category from 24 to 29 years old, with the disease alimentary obesity stage 1, 2. The women followed a rational diet developed by the Institute of Sports Nutrition. Both groups followed the same diet, but the positive effect of both groups differed due to the fact that one of the groups used the set of exercises we developed, i.e. the method with the inclusion of a mixed load.

The control group was engaged in a standard method of strength training.

The experimental group studied according to the set of exercises developed by us. It consisted of the following. The entire training program is divided into three main parts:

1. A strength program, which is aimed at toning and gaining muscle mass. We pump the muscles, remove the water. We strengthen the cardiovascular system. We are starting to lose weight.
2. An aerobic program specifically aimed at reducing fat mass. Aerobics classes normalize the lipid profile and reduce the risk of coronary heart disease. With the help of aerobic exercises, we "dry the muscles", because after a power load, the effect of "bloating" muscles can be observed.
3. A relaxation and stretching program. These exercises calm and relax the body.

We also used mixing of modern rhythms with Latin American music to improve the optimization of the tasks set. Each lesson combined different dance styles, which make the training process more exciting, interesting and at the same time accessible to everyone.

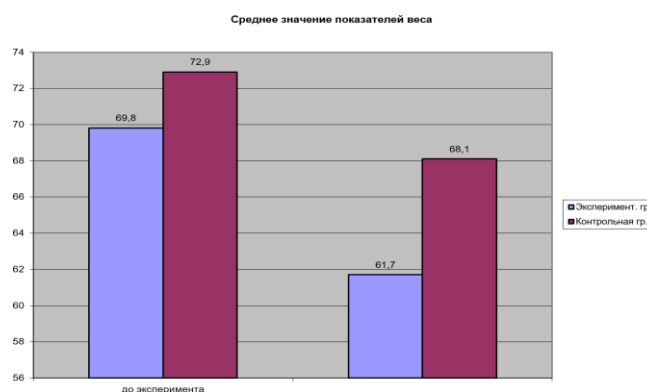


Figure 1. – Dynamics of weight indicators

As can be seen from figure 1, the results of anthropometric measurement, or rather weight measurements in the experimental group before the experiment were, on average, 69.8 ± 3.44 kg, and after the experiment they decreased to 61.7 ± 3.45 kg, with a confidence of 2.29. This can be explained by the inclusion in physical rehabilitation classes of women with the disease alimentary obesity of the 1st and 2nd stages of mixed exercise, with the help of which we increased the level of physical performance against the background of significant weight loss. In the control group, the result was much less significant, on average 72.9 ± 4.7 kg, before the experiment and 68.1 ± 4.37 kg after the experiment.

Table 1. – The initial indicators of HSI (Harvard Steptest Index)

Groups	Before experiment	After experiment	Changes HIS relative to the original	P
Control group N = 10	57,6±2,10	66,0±1,68	8,4	P < 0,05
Experimental group N = 10	58,2±2,46	73,7±1,82	15,5	P < 0,05

Dynamics of HSI indicators. The initial indicators of HSI (Harvard Steptest Index) (table 1) of women in both groups were almost identical, however, an analysis of the dynamics of HSI of women over the entire rehabilitation period showed that the level of performance in women of the experimental group was significantly higher than the level of performance in women from the control group, with a confidence of $P < 0.05$, which is explained by the effectiveness of the proposed technique.

Considering the above, we can conclude that the data obtained as a result of the study fully give us the right to assert that the influence of the proposed comprehensive method of physical rehabilitation allows us to achieve significant results not only in reducing body weight, but also in increasing body tone and working capacity, as well as in improving well-being. The proposed method is accessible and effective.

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Prichalov A.M. - Bachelor of 1 year. training direction - physical rehabilitation, MSAPE

Tsitskishvili N.I., Candidate of Pedagogical Sciences, Associate Professor of the Department of Adaptive Physical Culture and Sports Medicine; "Moscow State Academy of Physical Education"; 140032, Moscow region, Lyuberetsky district, village Malakhovka, Shosseynaya str., 33; e-mail: nonatey@mail.ru

Scientific supervisor – Glembockaya Ya. I., senior lecturer at the Department of Linguistic Disciplines, Moscow State Academy of Physical Education; 140032, Moscow region, Lyuberetsky district, village Malakhovka, Shosseynaya str., 33; e-mail: glembockaja@mail.ru

РАЗРАБОТКА КОМПЛЕКСА УПРАЖНЕНИЙ ДЛЯ ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ МОЛОДЫХ ЖЕНЩИН, СТРАДАЮЩИХ ОЖИРЕНИЕМ 1-2 СТЕПЕНИ.

Причалов А. М. -бакалавр 1к. профиль подготовки-физическая реабилитация, МГАФК

Цицкишвили Н.И., кандидат педагогических наук, доцент кафедры адаптивной физической культуры и спортивной медицины; «Московская государственная академия физической культуры»; Россия, Московская обл., пос. Малаховка, e-mail: nonatey@mail.ru

Научный руководитель – Глембоцкая Я. И. ст. преподаватель кафедры лингвистических дисциплин, «Московская государственная академия физической культуры»; 140032, Московская обл., Люберецкий р-н, пос. Малаховка, e-mail: glembockaja@mail.ru

Аннотация. Этот материал посвящен процессу физической реабилитации женщин среднего возраста, страдающих ожирением. В статье рассматриваются причины и последствия ожирения, а также влияние регулярных физических упражнений на снижение веса и улучшение общего состояния здоровья. Описаны различные подходы и методы физической реабилитации, включая анаэробные и аэробные упражнения, а также рекомендации по изменению диеты и образа жизни. Большое внимание уделяется индивидуальному подходу и плавному увеличению нагрузки, а также последовательности в занятиях для достижения наилучших результатов.

Ключевые слова: физическая реабилитация, женщины среднего возраста, ожирение, диета, изменение образа жизни

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THE IMPACT OF SWIMMING ON THE PHYSICAL DEVELOPMENT OF 9-10 AGED CHILDREN

Privezentseva O.V., s/s Chebotareva I.V.

Abstract. *This article is devoted to the study of the impact of swimming on the physical development and motor abilities of 9-10 aged children. The results obtained during the study allowed us to conclude that this sport has a positive effect on the growing body. Swimming helps to form and strengthen the musculoskeletal system, stimulates the activity of the cardiovascular, respiratory and central nervous systems. In this regard, this sport can be recommended for children 9-10 years old as an effective means of increasing the level of physical development.*

Keywords: *swimming, indicators of physical development, children 9-10 years old, motor abilities, body mass components*

Introduction. The physical development of a growing organism is one of the main and most important indicators of a child's health. Swimming is the most common sport that has a beneficial effect on human health and is an important link in the physical education of children. It promotes versatile and harmonious physical development. The aquatic environment is distinguished by viscosity, density, high specific heat, high thermal conductivity, which has a significant effect on the growing organism. Swimming helps to strengthen the musculoskeletal system, the harmonious development of all muscle groups, and the formation of a "muscular corset". Thus, as a result of swimming, the activity of the cardiovascular system improves:

- the high blood pressure decreases;
- the elasticity of blood vessels increases;
- the systolic blood volume increases;
- the maximum volume of blood circulation of the heart increase.

The beneficial effect is also on the respiratory system. The main respiratory muscles (the diaphragm and intercostal muscles) are actively developing, as they are forced to do their job strenuously under water pressure. Swimming also has a positive effect on the central nervous system of children, increasing their emotional stability.

The purpose of this research is to study the effect of swimming on the physical development and motor abilities of children 9-10 years old.

Research methods. The study was conducted on the basis of the sports school "Planet of Sports" and general education school №6 in Sasovo, Ryazan region, in April 2022. It was attended by 30 boys 9-10 years old. Of these 15 people were engaged in swimming and 15 were engaged only in physical training as part of the school curriculum.

The examination of the subjects was carried out using the following methods:

- literature review;
- anthropometry;
- fractionation of body weight;
- pedagogical testing;
- mathematical statistics.

Results and discussion. A comparison was made of the physical development indicators of children 9-10 years old, engaged and not engaged in swimming (table 1).

Table 1. – The indicators of physical development of swimmers and schoolchildren 9-10 years old

Indicators	schoolchildren (n=15)	swimmers (n=15)	difference in indicators	significance level (p)
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$		
Body Length (cm)	140,0±5,8	144,0±7,2	4,0	<0,05
Body weight (kg)	40,0±8,5	37,0±7,0	3,0	<0,05
Chest circumference (cm)	65,0±3,4	68,0±4,2	3,0	<0,05
Broca's Index (height-weight-100)	0±4,2	7,0±5,6	7,0	<0,05

Swimmers have a body length greater than that of children who do not swim by 4.0 cm, and a chest circumference of 3.0 cm. This is due both to the selection of tall children for swimming, and directly to the effect of activities on the body (chest girth). The body mass index of schoolchildren is 3.0 kg higher than that of children attending the swimming section (40.0 kg and 37.0 kg, respectively). This is due to the fact that swimmers are characterized by a relatively low body weight. This feature is confirmed by the indicators of the Broca index (height-weight-100), which is 7 units for swimmers, and 0 units for schoolchildren. It should be noted that the differences between swimmers and schoolchildren are statistically significant.

In addition to body weight indicators, it is of interest to study the percentage of bone, muscle and fat components of the subjects' body (fig. 1).

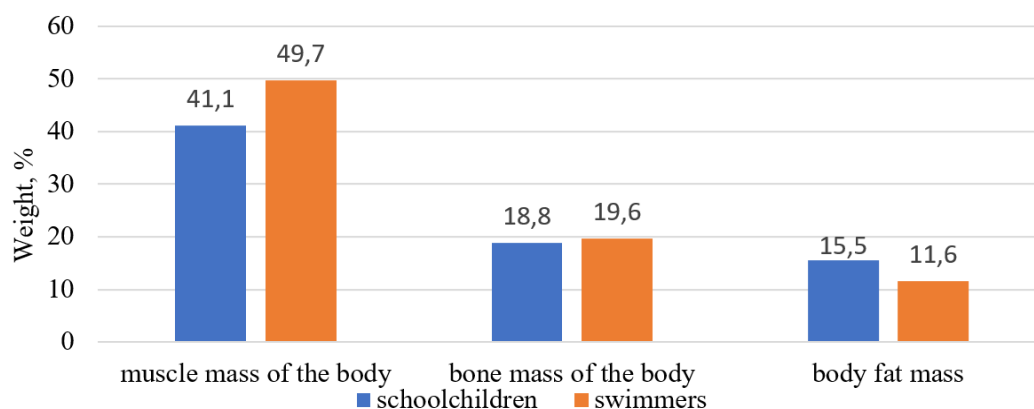


Figure 1. – Body mass components of swimmers and schoolchildren 9-10 years old

There were no differences in the percentage of the bone component of the body weight of both groups of subjects. As for muscle mass, young swimmers have a large amount of it (49.7% versus 41.1%, respectively). There are differences between the groups of subjects and in the fat component. In children who do not swim, the body fat index is 15.5%, and in swimmers – 11.6%. This is due to the fact that active physical activity leads to an increase in muscle tissue. To determine the level of development of children's motor abilities, pedagogical testing was conducted, the results of which are presented in table 2.

Table 2. – Results of pedagogical testing of swimmers and schoolchildren 9-10 years old

Tests	schoolchildren (n=15)		swimmers (n=15)		significance level (p)
	$\bar{x}$	σ	$\bar{x}$	σ	
Running 30m (s)	5,5	+1,1	5,4	+1,4	>0,05
Shuttle run 3x10m (s)	8,45	+1,8	8,3	+1,9	>0,05
Push-ups	24	+5,6	37	+5,2	<0,05
Long jump from a standing position (cm)	155	+11	157	+9	>0,05
Throwing a ball weighing 150 g (m)	25	+7,7	28	+6,5	>0,05
Running 1000m (s)	310	+14	271	+11	<0,05
Forward tilt (cm)	+6	+2,8	+8	+2,1	<0,05
Arm twist (cm)	8	+3,4	3	+1,8	<0,05

Children engaged in swimming performed all motor tests included in the study program better than schoolchildren. However, the relevance of this advantage is largely determined by the nature of the exercise. Thus, the differences between the groups in exercises for assessing speed and speed-strength abilities turned out to be insignificant due to the fact that their peak growth occurred at the age of 15-16 years. At the same time, in motor tasks aimed at identifying strength abilities, endurance and flexibility, the differences in results turned out to be more significant ($p < 0.05$).

Conclusions:

1. According to the main indicators of physical development (body length and chest circumference), swimmers 9-10 years old surpass their peers who do not play sports. And the body mass index is higher among schoolchildren.
2. The analysis of body mass components showed that swimmers surpass schoolchildren in terms of muscle tissue, and schoolchildren in terms of fat tissue.
3. The results of the conducted pedagogical testing indicate that at the age of 9-10 years, swimming lessons have a significant impact on increasing the level of general endurance, strength endurance and flexibility, and to a somewhat lesser extent on the development of speed and speed-strength abilities.

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*Privezentseva Oksana Vladimirovna, a first-year master's student; e-mail: okskokos@bk.ru
Russian university of sports «GTSOLFK», Moscow, Russia*

*Scientific supervisor – Chebotareva Irina Vladimirovna, Russian university of sports
«GTSOLFK», Moscow, Russia*

ВЛИЯНИЕ ЗАНЯТИЙ ПЛАВАНИЕМ НА ФИЗИЧЕСКОЕ РАЗВИТИЕ ДЕТЕЙ 9-10 ЛЕТ

Привезенцева Оксана Владимировна, студентка-магистрант 1 курса; okskokos@bk.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия.

Научный руководитель – Чеботарева Ирина Владимировна, Российский университет спорта «ГЦОЛИФК», Москва, Россия.

Аннотация. Данная статья посвящена изучению влияния занятий плаванием на физическое развитие и двигательные способности детей 9-10 лет. Результаты, полученные в ходе исследования, позволили сделать вывод о том, что этот вид спорта положительно влияет на растущий организм. Плавание способствует формированию и укреплению опорно-двигательного аппарата, стимулирует деятельность сердечно-сосудистой, дыхательной и центральной нервной систем. В связи с этим данный вид спорта может быть рекомендован детям 9-10 лет как эффективное средство для повышения уровня физического развития.

Ключевые слова: плавание, показатели физического развития, дети 9-10 лет, двигательные способности, компоненты массы тела

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UDC 796

THE ROLE OF PHYSICAL EDUCATION IN THE EDUCATION SYSTEM. DEVELOPMENT PROSPECTS

Proshchaeva D.S., Pereverzeva N.A.

Abstract. *Physical education in educational institutions is an integral part of the educational process and is aimed at developing physical qualities and strengthening the health of students. In today's world, where many children spend most of their time on computers and other*

gadgets, physical education has become even more important. Methods for teaching physical education in schools are already beginning to lose their relevance, so more current methods are being introduced into schools that help to establish the educational process.

Keywords: *physical education, sports, methods, prospects, pedagogical process, pedagogical technologies, health*

Introduction. In modern society, more and more attention is paid to physical education and a healthy lifestyle. This is due not only to the need to preserve and improve health, but also to the requirements for the quality of education. Physical education is an integral part of the educational process and plays an important role in shaping the student's personality.

Physical education is a process aimed at developing a healthy lifestyle in students, developing physical qualities and skills, as well as nurturing moral and volitional qualities. It includes various types of physical activity, such as sports, dancing, gymnastics, tourism, etc.

Prospects for the development of physical education are associated with the introduction of new technologies, such as virtual reality, augmented reality, fitness trackers and others. It is also important to develop new teaching methods that take into account the individual characteristics of students and their needs.

The purpose of this article is to analyze the role of physical education in the educational system and identify prospects for its development.

Research methods. In our study, we are using the analysis of scientific literature.

The results of the study and their discussion. In the structure of general secondary education, the subject "Physical Education" should occupy one of the leading places and contribute to the solution of important general pedagogical tasks [4]:

- Health promotion;
- increasing the level of physical development;
- acquisition of knowledge, skills and abilities in the field of physical education and sports;
- physical improvement;
- creating a culture of healthy and safe lifestyle.

To improve the quality of physical education teaching in educational organizations, innovative work is being carried out and the search for new pedagogical technologies is underway.

Physical education is one of the most important components of the education system, contributing not only to the development of students, but also to their overall wellbeing and health. This article discusses current methods of economic education, their impact on the educational process, and also examines the development of this area in the modern world and challenges [2].

In modern society, the appearance of activity plays a decisive role in creating a healthy lifestyle and improving the quality of life. Physical education and sports classes contribute to the development of international movements aimed at contracting muscles, supporting the functioning of the cardiovascular system and increasing immunity. In addition, physical measures are aimed at developing communication skills and socialization, which is especially important for children and adolescents.

Today, there are many physical education methods that can be used in

educational institutions. Some of these include the use of interactive technologies such as virtual reality and gamification to make classes more interesting and effective. Other methods involve the use of group work, such as team games and competitions, which promote social skills and teamwork.

Physical education is a process aimed at developing a person's physical qualities and abilities, developing his/her motor skills and abilities, as well as cultivating the need for physical exercise. In the educational process, physical education plays an important role, since it contributes not only to strengthening the health of students, but also to their mental development, the formation of moral and volitional qualities, and the improvement of motor skills.

Current methods of physical education include [9]:

1. Game technique - the use of outdoor games and game exercises for the development of motor qualities and the formation of skills.
2. Circular training method – performing exercises at various stations with a sequential transition from one station to another. Allows you to increase the intensity of exercise and develop various physical qualities.
3. The method of conjugate influence – the simultaneous development of physical qualities and the formation of motor skills, for example, performing exercises with additional weight to develop strength and endurance.
4. Interval training method – alternating periods of intense exercise and rest to increase overall performance and develop endurance.
5. The method of individual tasks - the development and implementation by students of individual tasks to develop certain physical qualities or improve motor actions.
6. Active rest method - the use of active rest during physical exercise to reduce fatigue and restore performance.

Prospects for the development of physical education in education are associated with the introduction of new technologies and methods, as well as the development of programs aimed at increasing students' motivation to engage in physical education [7].

Physical education plays a key role in the educational process, promoting the physical, mental and moral development of students. However, for the further development of this area, it is necessary to take into account a number of factors and conduct appropriate research.

One of the promising areas is the development of new teaching methods and technologies that will take into account the individual characteristics of each student and will allow more efficient use of time and resources. It is also important to develop cooperation with other educational institutions and scientific organizations to exchange experience and knowledge.

In addition, it is necessary to pay more attention to the health and safety of students, as well as create conditions for physical education and sports throughout the entire educational process. This may include the development of new programs and courses, the holding of sporting events and competitions, and the creation of sportsgrounds and halls on the territory of educational institutions.

Another direction in the development of physical education could be the use of modern technologies and information systems to monitor and control the health and

physical fitness of students. This will allow you to promptly identify problems and develop individual training and nutrition programs.

In general, the prospects for the development of physical education in education are associated with the development of new methods, technologies and approaches to teaching, as well as improving the health and well-being of students.

In addition, physical education should be integrated with other disciplines such as environmental science, biology and chemistry so that students can understand the relationship between physical activity and the human body.

Conclusion. Thus, public education plays a key role in the education system and has great potential for development and development. New technologies and techniques can help make physical education classes more interesting and effective, as well as increase students' motivation to play sports and lead a healthy lifestyle.

Physical education can also help develop students' personal qualities, such as determination, perseverance and police skills. This, in turn, can help them achieve success in their future professional and personal lives.

In conclusion, it can be said that public education is a mandatory component of the education system and has enormous potential for development. New methods and technologies can help make the region more interesting and effective for students, as well as promote change and personal development.

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Proshchaeva Daria Sergeevna, 1st year student of the Pedagogy department. proshhaeva2001@list.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Pereverzeva Nataliya Aleksandrovna, PhD, associate Professor of the Department of foreign languages and linguistics, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK"

РОЛЬ ФИЗИЧЕСКОГО ВОСПИТАНИЯ В СИСТЕМЕ ОБРАЗОВАНИЯ, ПЕРСПЕКТИВЫ РАЗВИТИЯ

Процаева Дарья Сергеевна, студент 1 курса кафедры «Педагогика». proshhaeva2001@list.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»».

Переверзева Наталья Александровна, к.ф.н., доцент кафедры иностранных языков и лингвистики, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Физическое воспитание в образовательных учреждениях является неотъемлемой частью образовательного процесса и направлено на развитие физических качеств и укрепление здоровья обучающихся. В современном мире, где многие дети проводят большую часть времени за компьютерами и другими гаджетами, физическое воспитание стало еще более важным. Методы преподавания физического воспитания в школах уже начинают терять свою актуальность, поэтому в школы внедряются более современные методы, помогающие наладить учебный процесс.

Ключевые слова: физическая культура, физическое воспитание, спорт, методы, перспективы, педагогический процесс, педагогические технологии, здоровье

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PECULIARITIES OF THE INFLUENCE OF ISOTONIC SOLUTIONS ON THE PERFORMANCE OF ATHLETES INVOLVED IN TAEKWONDO ITF

Romanova D.A., s/s Kalashnikov Y.B.

Abstract. *The presented article is devoted to the use of isotonic solutions in training and competitive activity of athletes engaged in Taekwondo ITF.*

Keywords: *isotonic solution, recovery, water balance, electrolytes, training, exertion*

Introduction. Isotonic solutions are aqueous solutions isotonic to blood plasma. The simplest solution of this type is the so-called saline – aqueous solution of sodium chloride (NaCl) with a mass fraction $\omega(\text{NaCl}) \approx 0.9\%$. During high physical exertion and increased sweating the athlete's body loses about 0.5-1 liters of water per hour, important macronutrients such as electrolytes are also lost with sweat.

Main part. We conducted a study aimed at confirming the theory that the use of isotonic solutions during high physical activity promotes rapid recovery in ITF taekwondo athletes.

10 athletes between 18 and 34 years old participated in the study. They were divided into 2 equal groups of 5 people. Both groups received the same exertion and participated in sports competitions. The experimental group used isotonic solutions for thirst quenching and recovery, the control group used drinking still water.

Blood tests were performed at the beginning of the study.

Table 1. – Results of the control group before the study

Sportsman	Lactate dehydrogenase	Total magnesium	Total sodium	Creatinine	Glucose	Total potassium	Hemoglobin
Pavlov	377,8 U/L	0,89 mmol/L	139,7 mmol/L	72,6 $\mu\text{mol/L}$	3,94 mmol/L	3,79 mmol/L	147 g/l
Akimov	349,0 U/L	1,02 mmol/L	148,0 mmol/L	93,5 $\mu\text{mol/L}$	4,71 mmol/L	4,81 mmol/L	139 g/l
Mukhiddinov	299,5 U/L	0,71 mmol/L	143,5 mmol/L	110,0 $\mu\text{mol/L}$	3,68 mmol/L	3,89 mmol/L	154 g/l
Zargarian	279,0 U/L	0,67 mmol/L	157,7 mmol/L	73,5 $\mu\text{mol/L}$	4,51 mmol/L	4,32 mmol/L	136 g/l
Marchenko	285,0 U/L	0,76 mmol/L	136,3 mmol/L	98,1 $\mu\text{mol/L}$	5,10 mmol/L	3,71 mmol/L	141 g/l

Throughout the study, athletes, experimental and control groups, who trained in the same sports group were monitored. They took part in 3 ITF taekwondo tournaments. Throughout the study, athletes, experimental and control groups, who trained in the same sports group and took part in 3 ITF taekwondo tournaments, were monitored. The experimental group used isotonic drinks during training, after training and during performances. While the control group used only non-carbonated drinking water.

Table 2. – Results of the experimental group before the study

Sportsman	Lactate dehydrogenase	Total magnesium	Total sodium	Creatinine	Glucose	Total potassium	Hemoglobin
Ilyin	365,0 U/L	0,81 mmol/L	133,8 mmol/L	87,7 µmol/L	4,39 mmol/L	3,95 mmol/L	153 g/l
Shibilov	423,5 U/L	0,69 mmol/L	149,1 mmol/L	63,4 µmol/L	4,97 mmol/L	4,93 mmol/L	149 g/l
Rudyakov	402,3 U/L	0,95 mmol/L	154,0 mmol/L	93,2 µmol/L	5,53 mmol/L	5,0 mmol/L	137 g/l
Bytka	327,0 U/L	0,93 mmol/L	151,9 mmol/L	72,0 µmol/L	3,86 mmol/L	3,67 mmol/L	143 g/l
Shakhov	254,0 U/L	0,74 mmol/L	142,6 mmol/L	112,9 µmol/L	4,72 mmol/L	4,48 mmol/L	158 g/l

At the end of the study, the athletes' blood was also analyzed. This showed that the experimental group athletes had no electrolyte deficiencies and no indicators of dehydration in the body.

Table 3. – Results of the control group after the study

Sportsman	Lactate dehydrogenase	Total magnesium	Total sodium	Creatinine	Glucose	Total potassium	Hemoglobin
Pavlov	389,4 U/L	0,90 mmol/L	140,3 mmol/L	74,1 µmol/L	3,97 mmol/L	4,28 mmol/L	163 g/l
Akimov	361,7 U/L	1,12 mmol/L	149,9 mmol/L	96,7 µmol/L	4,90 mmol/L	5,13 mmol/L	159 g/l
Mukhiddinov	372,1 U/L	0,93 mmol/L	148,7 mmol/L	113,9 µmol/L	4,73 mmol/L	4,52 mmol/L	173 g/l
Zargarian	402,6 U/L	0,87 mmol/L	164,3 mmol/L	75,1 µmol/L	5,21 mmol/L	4,87 mmol/L	116 g/l
Marchenko	289,3 U/L	1,24 mmol/L	140,9 mmol/L	99,8 µmol/L	5,18 mmol/L	4,36 mmol/L	173 g/l

In the control group, blood test results showed electrolyte deficiency in the body and indicators of dehydration.

Table 4. – Results of the experimental group after the study

Sportsman	Lactate dehydrogenase	Total magnesium	Total sodium	Creatinine	Glucose	Total potassium	Hemoglobin
Ilyin	327,8 U/L	0,78 mmol/L	131,7 mmol/L	87,5 µmol/L	4,21 mmol/L	3,92 mmol/L	153 g/l
Shibilov	421,0 U/L	0,67 mmol/L	139,9 mmol/L	63,0 µmol/L	4,52 mmol/L	4,89 mmol/L	129 g/l
Rudyakov	387,8 U/L	0,89 mmol/L	147,6 mmol/L	75,4 µmol/L	5,50 mmol/L	5,1 mmol/L	132 g/l
Bytka	326,1 U/L	0,76 mmol/L	149,8 mmol/L	70,9 µmol/L	3,74 mmol/L	3,66 mmol/L	123 g/l
Shakhov	239,0 U/L	0,63 mmol/L	140,4 mmol/L	93,5 µmol/L	4,41 mmol/L	4,23 mmol/L	158 g/l

Conclusions. Our experiment confirmed the put forward hypothesis about the effectiveness of isotonic solutions for recovery during training and competitive activity in taekwondo ITF.

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Romanova Daria Alexandrovna, student, The Russian University of Sport «GTSOLIFK», Moscow, Russia.

Scientific supervisor - Kalashnikov Yuri Borisovich, PhD in Pedagogical Sciences, professor, The Russian University of Sport «GTSOLIFK», Moscow, Russia.

ОСОБЕННОСТИ ВЛИЯНИЯ ИЗОТОНИЧЕСКИХ РАСТВОРОВ НА РАБОТОСПОСОБНОСТЬ СПОРТСМЕНОВ, ЗАНИМАЮЩИХСЯ ТХЭКВОНДО ИТФ

Романова Дарья Александровна, студент, romanova0211@yandex.ru, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва.

Научный руководитель – Калашников Юрий Борисович, кандидат педагогических наук, профессор, tkdrgufk@mail.ru, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва.

Аннотация. Представленная статья посвящена использованию изотонических растворов в тренировочной и соревновательной деятельности спортсменов, занимающихся Тхэквондо ИТФ.

Ключевые слова: изотонический раствор, восстановление, водный баланс, электролиты, тренировка, нагрузка

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DEVELOPMENT OF SOCCER PLAYERS' QUICKNESS AT THE INITIAL STAGE BY MEANS OF NON-SPECIFIC EXERCISES

Rudakov D.V., Simonova X.Yu.

Abstract. The article provides data on the use of non-specific exercises for soccer players at the initial stage of training. The article considers quickness, its importance, development, levels. Presented exercises for the development of quickness, tests to determine quickness. Necessary recommendations for coaches to improve physical fitness, efficiency of the training process is given.

Keywords: speed, non-specific exercises, physical qualities, soccer, physical training

Introduction. The **relevance** of this topic is that the rapid pace of development of the sports world makes more and more demands in modern soccer. It is important not only tactical thinking of a soccer player, but also the speed of implementation of tactics to achieve the goal on the soccer field.

Favorable period for the development of speed, from the point of view of physiology, is the younger childhood which is a period of rapid development of functional abilities of the body.

The general term "quickness" is used to describe the physical qualities that directly determine the speed abilities of the athlete. The main means of training soccer players are physical exercises, motor movements, selected methodically correct, and competently used to perform tasks. Depending on the characteristics of soccer and training objectives, all basic exercises can be classified as specific (with the ball) and non-specific (without the ball).

It should be noted that the study of various aspects of soccer players' technique at the initial stage of training is devoted to many scientific works, studies, the problem of development of speed remains one of the paramounts in the training of soccer reserve. At present, the search for optimal methods of development of reaction speed and improvement in young soccer players is actualized. This confirms the relevance of the study of development of quickness at the initial stage of training by nonspecific exercises.

The **purpose** of our study is to evaluate the effectiveness of a set of exercises aimed at increasing speed, through the use of non-specific exercises to improve speed

performance in soccer players aged 9-10 years.

The **methods** of the study includes:

1. Review of scientific literature.
2. Pedagogical testing.
3. Conducting a pedagogical experiment.
4. Application of mathematical statistics methods.

The **research design** was on the basis of the budgetary institution of the Omsk region "Dynamo Olympic Reserve Sports School", department "Neftyanik". 40 soccer players aged 9-10 took part in the work. The study was conducted in the period from November 2021 – February 2023

Table 1. – Test

Name of the test	Control group, seconds		P	Experimental group, seconds		P
	Before the experiment	After the experiment.		Before the experiment	After the experiment.	
1. Long jump (centimeters)	137,5±13,7	132,5±15,7	≥0,05	136,6±15,3	144,2±12,1*	≤0,05
2. 30-meter run (seconds)	6,1±0,4	6,31±0,7	≥0,05	6,1±0,6	5±0,3*	≤0,05
3. Running 60 meters (seconds)	11,6±0,5	12±0,6	≥0,05	11,7±0,6	10,6±0,4*	≤0,05
4. Measurement of simple motor reaction (centimeters)	32,7±4,7	34,3±4	≥0,05	32,4±4,3	17,8±6,8*	≤0,05

Conclusions:

1. During the analysis of scientific and methodological sources, the periods of speed development, anatomical and physiological features that should be taken into account when developing a training program for soccer players aged 9-10 years were identified.

2. We conducted pedagogical testing: running 30m, running 60m, long jump, measurement of simple motor reaction. We determined the initial level of quickness of 9-10 years old soccer players, which is evaluated as low, medium.

3. The experimental complex is effective, the level of quickness of soccer players 9-10 years old improved and is defined as above average, high. The level of preparedness of the control group remained at the same level.

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Rudakov Daniil Vadimovich, 1st year Master's student, kuslivyi@gmail.com, Department of football and hockey, Siberian State University of Physical Education and Sport, B. 144 Maslennikov Street, Omsk, Russia, 644071.

Simonova Ksenya Yurievna, Candidate of Philology, docent, xenyasim@yandex.ru, Department of Social and Humanitarian Disciplines, Siberian State University of Physical Education and Sport, B. 144 Maslennikov Street, Omsk, Russia, 644071.

РАЗВИТИЕ БЫСТРОТЫ ФУТБОЛИСТОВ НА НАЧАЛЬНОМ ЭТАПЕ ПОДГОТОВКИ ПОСРЕДСТВОМ НЕСПЕЦИФИЧЕСКИХ УПРАЖНЕНИЙ

Рудаков Даниил Вадимович, Магистрант 1 курса, kuslivyi@gmail.com, Кафедра футбола и хоккея, Сибирский государственный университет физической культуры и спорта (СибГУФК), Омск, Россия.

Симонова Ксения Юрьевна, Кандидат филологических наук, доцент, xenyasim@yandex.ru, Кафедра общественных и гуманитарных дисциплин, Сибирский государственный университет физической культуры и спорта (СибГУФК), Омск, Россия.

Аннотация. В статье приводятся данные об использовании неспецифических упражнений для футболистов на начальном этапе подготовки. Рассматривается быстрота, ее значение, развитие, уровни. Представлены упражнения для развития быстроты, тесты на определение быстроты. Даны необходимые рекомендации тренерам для повышения физической подготовки, эффективности тренировочного процесса.

Ключевые слова: быстрота, неспецифические упражнения, физические качества, футбол, физическая подготовка

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CAFFEINE SUPPLEMENTATION IN COMBAT SPORTS: RAPID REVIEW

Rybakova P.D., s/s Miroshnikov A.B.

Abstract. *Combat athletes often use nutritional supplements, including caffeine supplementation. The aim of this paper was to analyze research investigating the effects of caffeine supplementation on performance in combat sports and to provide schemes and dosages. Acute doses (5-10 mg/kg body mass) 30-60 minutes before a fight may improve specific skills that rely on glycolytic metabolism for energy, but it may not improve perceived fatigue. Low acute doses of caffeine (2-3 mg/kg body mass) may have a positive effect on cognitive function in martial art athletes. More studies with higher doses of caffeine and focusing on genetic background are needed.*

Keywords: *caffeine supplementation, caffeine, combat sports, martial arts, ergogenic aids*

Introduction. The competitive success in combat sports is measured by technical and tactical performance, supported by a variety of physical, physiological, and psychological factors. Among the available dietary supplements, caffeine (1,3,7-trimethylxanthine) is one of the most consumed substances in sports.

Ergogenic effects of caffeine were observed during endurance tests and during intermittent and strength activities. The observed benefits of caffeine supplementation on athletic performance have been explained by different mechanisms. Particularly in the central nervous system, caffeine acts as a potent adenosine receptor antagonist and inhibits the negative effects that adenosine has on neurotransmission, arousal, and pain perception by blocking adenosine A1 and A2a receptors.

In martial arts the effects of caffeine are dubious, we cannot draw specific conclusions on this topic, particularly ingestion patterns, and dosages of caffeine for performance improvement. Based on the popularity of caffeine use in martial arts, data from current literature, and enquiries from sports physicians, nutritionists, and dietitians, we set out to formulate the aim of the study.

The aim of this paper was to analyze research investigating the effects of caffeine supplementation on performance in combat sports and to provide schemes and dosages.

Methods. The study was based at the Department of Sports Medicine of The Russian university of sports «GTSOLIFK». We used the Cochrane Handbook for Rapid Reviews [3]. The literature was searched in PubMed and Cochrane Library databases. The time of the search was 20 years (from 2004 to 2024). A total of 14 studies were found.

Results. Although caffeine is found in many foods (coffee, tea, cocoa, chocolate, cola nut, yerba mate), there is great difficulty in calculating its content in them. Also, the

way coffee or tea is prepared, its type and the length of time it is brewed can lead to different concentrations of caffeine in a serving of the beverage. Thus, popular, and effective for athlete performance is the use of caffeine in the form of supplements.

Martial arts involve multiple muscle groups; high-intensity intermittent action due to many high force and speed attacks that utilize energy from the anaerobic metabolic route. Decisive action is fueled by anaerobic processes, although research suggests that the aerobic energy pathway is the primary pathway and facilitates the recovery process between rounds [2]. In combat sports, most studies have analyzed caffeine doses of 5 to 10 mg/kg body mass (BM) and reported improvements in various aspects of performance. Improvements in skills based mainly on abilities related to glycolytic metabolism: effort-to-pause ratio, time to punch sequences, number of attacks, reaction and jump times, grip strength, power, static lifts, and time to exhaustion, etc. [5].

The use of caffeine in the range of 4-10 mg/kg BM in several studies improved the perception of fatigue [4]. In other studies, in which participants were given 3-9 mg/kg BM of caffeine and no difference was observed compared to the placebo group, an increase in fatigue was also observed with low doses of caffeine (up to 1.5 mg/kg BM) [1]. At low doses of caffeine (2-3 mg/kg BM), the effects of caffeine on cognitive functions and brain activation were stronger than at moderate and high doses.

The role of CYP1A2 and ADORA2A genes in determining the effect of caffeine on performance also remains to be determined.

Conclusion. Acute doses (5-10 mg/kg BM) 30-60 minutes before a fight may improve specific skills that rely on glycolytic metabolism for energy, but it may not improve perceived fatigue. Low acute doses of caffeine (2-3 mg kg BM) may have a positive effect on cognitive function in martial artists. More studies with higher doses of caffeine and focusing on genetic background are needed.

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Rybakova Polina Denisovna, postgraduate student of the Department of Sports Medicine, rybakova.poly@yandex.ru, Russia, Moscow, Federal state budget educational institution of higher education "Russian university of sport "GTSOLIFK".

Scientific supervisor – Miroshnikov Alexander Borisovich, Russia, Moscow, Federal state budget educational institution of higher education "Russian university of sport "GTSOLIFK".

БИОЛОГИЧЕСКИ АКТИВНЫЕ ДОБАВКИ КОФЕИНА В ЕДИНОБОРСТВАХ: БЫСТРЫЙ ОБЗОР

Рыбакова Полина Денисовна, аспирант кафедры спортивной медицины, rybakova.poly@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования "Российский университет спорта "ГЦОЛИФК".

Научный руководитель – Мирошников Александр Борисович, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования "Российский университет спорта "ГЦОЛИФК".

Аннотация. Спортсмены-единоборцы часто используют биологически активные добавки, в том числе и кофеин. Целью статьи являлся анализ исследований, изучающих влияние добавок кофеина на работоспособность в спортивных единоборствах, а также изучение эффективных схем и дозировок. «Острые» дозы (5-10 мг/кг массы тела) за 30-60 минут до боя могут улучшить специфические навыки, которые зависят от гликолитического метаболизма для получения энергии, при этом не улучшая восприятие утомления. Низкие «острые» дозы кофеина (2-3 мг/кг массы тела) могут оказывать положительное влияние на когнитивные функции у единоборцев. Необходимы дополнительные исследования с использованием более высоких доз кофеина и с учетом генетического фона.

Ключевые слова: биологически активные добавки, кофеин, боевые виды спорта, единоборства, эргогенные средства

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INCREASING THE REHABILITATION POTENTIAL OF SHOOTERS WITH TRAUMATIC SPINAL CORD DISEASE AS A FACTOR IN ENSURING THE SPORTS LONGEVITY OF ATHLETES WITH DISABILITIES

Rybolovleva N.A., Rubtsova N.O.

Abstract. *The article examines the relationship between rehabilitation potential and sports longevity in shooters with traumatic disease of the spinal column and spinal cord. The authors focus on the use of corrective exercises and exercises to unload the musculoskeletal system as part of the sports training of shooters with spinal injury to increase sports performance, prevent injuries and maintain rehabilitation potential.*

Keywords: *rehabilitation potential, bullet shooting, traumatic spinal cord disease, sports longevity, correctional exercises, adaptive sports*

Introduction (Relevance). Rehabilitation potential is a complex of biological and psychophysiological characteristics of a person with a disability, as well as socio-environmental factors that allow to one degree or another to realize his potential abilities [2]. Bullet shooting for people with musculoskeletal disorders is a factor aggravating the existing degenerative-dystrophic changes in the athlete's body [3]. Long-term static work, asymmetric muscle stresses, as well as stress on the nervous system (constant concentration of attention, control of manufacture, breathing and the shot itself) have a negative impact on the secondary deviations of shooters with spinal cord injuries, which in turn reduces the rehabilitation potential of people with musculoskeletal disorders. Currently, there is an insufficient number of programs and methods of sports training for persons with spinal injury, taking into account the rehabilitation potential of shooters with this pathology. The inclusion of correctional exercises aimed at increasing the rehabilitation potential of shooters with spinal cord injuries will make it possible to neutralize the influence of negative factors of adaptive sports, which in turn will ensure the sports longevity of shooters with this pathology.

The purpose of the study is to increase the rehabilitation potential of shooters with traumatic spinal cord disease.

Research methods: literature analysis, pedagogical experiment, pedagogical observation, testing (modified Romberg test, chest excursion, determination of vital capacity of the lungs, lateral tilt, straightening with the upper muscles of the back, throwing a stuffed ball from the chest weighing 2 kg, modified Cooper test 6 min, determination of the endurance coefficient), methods of mathematical data processing by the Man-Whitney criterion.

Research design. The experiment involved disabled shooters aged 25 to 35 years with traumatic spinal cord disease and thoracic lesions, performing in the SH2 category, shooting from an air rifle, performing sports training at the stage of sports improvement. Control and experimental groups included 6 people (men). Sports category of participants – candidate for master of sports, master of sports. Classes were held 3 times a week for 120 minutes, in the control group according to the generally accepted method

of training athletes in bullet shooting with lesions of the musculoskeletal system, in the experimental group – according to the method we developed.

Before starting training sessions according to the developed methodology, we assessed the functional status of shooters with traumatic spinal cord disease.

Table 1. – Functional indicators of shooters with traumatic spinal cord disease in the experimental (n = 6) and control (n = 6) groups before the experiment

Test		Results					
		Experimental group			Control group		
		25%	Me	75%	25%	Me	75%
Modified Romberg Sample (sec)		26,75	29,5	33,75	26,25	29,5	33,5
Chest excursion (cm)		4	4	4,75	3,25	4	4,75
Lung capacity (l)		2,85	3	3,075	2,625	2,85	3,225
Side tilt (cm)	Right	12,5	16,5	9,75	14,25	16	18,5
	Left	14,5	17,5	19	15	16,5	18,75
Straightening with upper back muscles (points)		1	1	1,75	1	1,5	2
2kg Chest Stuffing Ball Throw (cm)		502,5	510,5	19,25	502,75	513	521
Modified Cooper test 6 min (m)		742,5	775	15	757,5	790	800
Endurance factor (conv. units)		20	21	4,25	19	19	22

* The differences are significant: $U = 7$ at $p \leq 0.05$

Results. Analyzing the initial indicators of the functional state of athletes, we found that both groups have weakness of the muscles of the back, abdominal press and postural muscles, impaired functions of the respiratory and cardiovascular systems. No significant differences between the results were found, the groups were selected uniformly.

Rehabilitation potential has 4 levels of assessment: high, medium (or satisfactory), low and practically absent. According to the studies of Bodrova R.A., it was found that with thoracic trauma, 9.9% have low rehabilitation potential and 5.6% have medium RP [1]. This means that in persons with spinal injuries it is possible to ensure the maintenance of rehabilitation potential with the correct organization of the training process. To increase the rehabilitation potential of persons who have suffered spinal and spinal cord injuries, it is necessary to perform exercises aimed at correcting secondary abnormalities.

In this regard, the methodology developed by us to increase the rehabilitation potential of shooters with traumatic spinal cord disease included three correction units:

Exercises aimed at strengthening the postural muscles are necessary so that the athlete can hold a stable manufacture for a long time.

Exercises for unloading the musculoskeletal system were used to relieve muscle tension and axial load after training.

The use of breathing exercises is due to the fact that people with traumatic spinal cord disease mainly have chest breathing, breathing is shallow, lung capacity is

reduced, and in shooting, part of the shot is fired while holding breathing.

Study results. At the end of the experiment, we conducted final testing. The results are presented in table 2.

Table 2. – Functional indicators of shooters with traumatic spinal cord disease in the experimental (n = 6) and control (n = 6) groups after the experiment

Test		Results					
		Experimental group			Control group		
		25%	Me	75%	25%	Me	75%
Modified Romberg Sample (sec)		30,25	33	36,5	27,25	30,5	34,5
Chest excursion (cm)		5	5	5,75	4	4	4,75
Lung capacity (l)		3,3	3,35	3,4	2,7	2,85	3,225
Side tilt (cm)	Right	18	20	32,5	14,25	16	19,5
	Left	19,5	21,5	23	15	16,5	18,75
Straightening with upper back muscles (points)		1	1,5	2	1	1,5	2
2kg Chest Stuffing Ball Throw (cm)		530,25	533,5	548,75	507	515,5	522,5
Modified Cooper test 6 min (m)		822,5	845	875	767,5	795	807,5
Endurance factor (conv. units)		18,25	19	20,5	19	19	22

* The differences are significant: $U = 7$ at $p \leq 0.05$.

It can be seen from the table that in the experimental group they showed significantly better compared to the test subjects of the control group in tests that determine the functions of the respiratory system (chest excursion – 1 cm, lung capacity – 1,5), postural muscle strength (left tilt – 5 cm, stuffing ball throw – 18 cm), total endurance (Cooper test – 50 m). In the body straightening test, in the modified Romberg test and in the endurance coefficient, the indicators are approximately the same in both groups, which is due to the severity and peculiarities of the course of the main pathology. No significant differences were found in these tests. Such results indicate the effectiveness of the developed methodology to increase the rehabilitation potential of shooters with spinal injury.

Conclusions. When developing a methodology for sports training of shooters with injuries of the musculoskeletal system, it is necessary to take into account not only the sport and the characteristics of the main pathology, but also focus on the factors of influence of secondary deviations and carry out their timely and targeted correction. This will help increase the rehabilitation potential of athletes with disabilities. The inclusion of corrective exercises in the training process of shooters with traumatic spinal cord disease will positively affect their sports longevity.

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Rybolovleva Natalia Andreevna, 1st year undergraduate student of the Department of Theory and Methodology of Adaptive Physical Culture, nata.rybolovleva.01@mail.ru, Russia, Moscow, Federal state budgetary institution of higher education "Russian university of sports "GTSOLIFK".

Rubtsova Natalia Olegovna, PhD, Professor, Head of the Department of Theory and Methodology of Adaptive Physical Culture, e-mail: afk_rgufk@mail.ru, Russia, Federal state budgetary institution of higher education "Russian university of sports "GTSOLIFK".

ПОВЫШЕНИЕ РЕАБИЛИТАЦИОННОГО ПОТЕНЦИАЛА СТРЕЛКОВ С ТРАВМАТИЧЕСКОЙ БОЛЕЗНЬЮ СПИННОГО МОЗГА КАК ФАКТОР ОБЕСПЕЧЕНИЯ СПОРТИВНОГО ДОЛГОЛЕТИЯ СПОРТСМЕНОВ С ИНВАЛИДНОСТЬЮ

Рыболовлева Наталья Андреевна, магистрант 1 курса кафедры Теории и методики Адаптивной физической культуры, nata.rybolovleva.01@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Рубцова Наталья Олеговна, к.п.н., профессор, заведующая кафедрой Теории и методики Адаптивной физической культуры, afk_rgufk@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассмотрена взаимосвязь реабилитационного потенциала и спортивного долголетия у стрелков с травматической болезнью позвоночника и спинного мозга. Авторы акцентируют внимание на использовании коррекционных упражнений и упражнений для разгрузки опорно-двигательного аппарата в рамках спортивной подготовки стрелков с травмой позвоночника для повышения спортивных показателей, предотвращения травм и поддержания реабилитационного потенциала.

Ключевые слова: реабилитационный потенциал, пулевая стрельба, травматическая болезнь спинного мозга, спортивное долголетие, коррекционные упражнения, адаптивный спорт

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VIDEO ANALYSIS OF WUSHU-SANDA DUELS TO DETERMINE THE NEED TO INTRODUCE TUISHOU ELEMENTS AS A MEANS OF TEACHING SHORT-RANGE COMBAT IN WUSHU-SANDA

Ryzhkova K.E., s/s Gasanova-Matveeva Z.A.

Abstract. *This article provides a video analysis of the finals of the matches in the age category of men and women of the 2024 Russian Championship and the 2023 World Championship. Based on video analysis, it was determined that at the World Championship, such melee elements as throws and push-out, which bring more points and can also bring victory in the round, were used more effectively than at the Russian Championship. The data we have obtained shows that melee combat is better developed in the world than in Russia. To increase the effectiveness of close combat among Russian athletes engaged in wushu-sanda, it is proposed to use elements of tuishou as a means of teaching short-range combat in wushu-sanda.*

Keywords: *wushu, wushu-sanda, short-range combat, elements of tuishou*

Introduction. Wushu-sanda is one of the sports disciplines in sports wushu, held on a platform, which includes a large set of technical actions (kicks and punches, throws, push-out, etc.), therefore, sanda duels combined elements from various styles of wushu.

Close range for wushu-sanda fighters is often inconvenient, since the blows delivered are not always effective and noticeable for the judges' assessment. But when working at short-range combat, it is convenient to use other technical actions - throws and push-out, which form the basis of short-range combat. The victory of a fighter in a duel often depends on his ability to act correctly at close range, using throws and push-out, since throws bring 2 points each, and push-out can bring an early victory in the round if the athlete manages to push the opponent over the platform 2 times, [2].

However, in Russia, they did not pay due attention to short-range combat techniques before, preferring to develop blow technology. Wushu Sanda is actively developing all over the world, so coaches are looking for new means to teach short-range combat in Wushu Sanda in order to technically and tactically surpass rivals. It is assumed that such a wushu style as tuishou can become one of such means.

The **objective** of our study is video analysis of wushu-sanda duels to determine the need to introduce tuishou elements as a means of teaching short-range combat in wushu-sanda.

Methods. Video analysis of fights, methods of mathematical statistics.

Results. A video analysis was conducted to determine the specific weight of short-range combat techniques (pushing and throwing) in wushu-sanda duels. The video analysis was conducted on the basis of the finals of the 2024 Russian Championship (Russia, Moscow) and the finals of the 2023 World Championship (USA, Texas, Fort Worth) among men and women. The parameters of the technical aspect of combat (punches, kicks, throws and push-out) were analyzed. At the Russian Championship, 15 duels were analyzed, which included 37 rounds, as well as 18 duels at the World Championship – 43 rounds.

Table 1. – The number of technical actions performed in the finals of the Russian Championship, 2024

Technical actions	Number of actions (attempts), number of	The percentage of actions, %	Number of effective actions, number of	The percentage of effective actions from the total number of actions, %	The percentage of effective actions from the number of attempts, %
Hand strikes	1048	35,8	281	9,6	26,8
Kicking actions	1223	41,8	354	12,1	28,9
Throws	487	16,7	70	2,3	14,3
Push-out	166	5,7	18	0,6	10,8
Total	2924	100	723	24,7	

Table 2. – The number of technical actions performed in the finals of the World Championship, 2023

Technical actions	Number of actions (attempts), number of	The percentage of actions, %	Number of effective actions, number of	The percentage of effective actions from the total number of actions, %	The percentage of effective actions from the number of attempts, %
Hand strikes	1358	36,4	302	8,1	22,2
Kicking actions	1461	39,2	379	10,1	25,9
Throws	633	17	190	5	30
Push-out	276	7,5	115	3,1	41,6
Total	3728	100	986	26,3	

In the finals, all effective technical actions were recorded, that is, those that brought points. It is worth noting that for an effective action we took the one that brings 2 points after making a throw or ejection, that is, the athlete remained standing on his feet, and the opponent fell or went out of the platform. We took exactly a score of 2 points, since the tuishou technique, which we want to introduce into the wushu-sanda short-range combat training technique, implies a loss of balance by the opponent, while the athlete himself remains on his feet, which is more effective during the fight.

A video analysis of the finals of the Russian Championship showed that less than 4% of the effective technical actions are throws and push-out: while push-out can bring victory in the round, they account for only 0.6% of all effective actions, [2]. While at the World Cup, these actions were effectively implemented 2 times more – 8.1% of all effective technical actions.

Tuishou is a set of paired wushu exercises characterized by constant interaction of partners through a point of contact. Tuishou is an applied aspect of the Taijiquan style and involves working mainly at short range, [1].

The main feature of tuishou is the unbalancing of the opponent without the use of grips (which is important for sandaists, since they work with gloves) and work not with their own efforts, but with the efforts of the opponent (which saves strength for further combat).

Tuishou techniques can be divided into 2 large blocks: throws and push-out.

According to the rules of Wushu Sanda, any push-out out of the platform earns 2 points (if the opponent left the post, but the athlete himself remained standing on it), and also after 2 perfect push-out in one round, the athlete receives an early victory in the round. During the video analysis of the fights at the 2024 Russian Championship, it was revealed that there were only 18 effective push-out for 37 rounds, which is extremely small, given their significant contribution to the course of the fight. It can be concluded that when training fighters in wushu Sanda, they do not pay as much attention to this type of technical action as they should. Push-out out in a tuishou allows you to bring an opponent to the edge of the court and hold a reception without leaving it and maintaining balance. Therefore, push-out training by tuishou means can be more effective and efficient than training by standard means. In addition, by focusing on push-out, you can improve the short-range combat technique of sandaists, thereby helping them not only gain points, but also finish rounds and fights ahead of schedule.

Throws in wushu-sanda bring 2 points if the athlete remains standing after completing the throw. Tuishou throws imply that the athlete performing the throw remains on his feet while his opponent falls. As part of the wushu-sanda duel, the tuishou technique can become more effective and efficient than the technique of existing throws. Therefore, the introduction of tuishou throwing techniques into wushu sanda training is likely to help athletes improve their existing skills, and novice athletes acquire the necessary skills and skills of short-range combat with greater effectiveness than using standard means.

The tuishou technique involves the development of greater stability in an athlete than other styles require. The development of balance by means of teaching tuishou techniques will help the athlete to be more stable in further combat.

Conclusions. After conducting a video analysis of the competition, we found out that there is a need to improve the short-range combat technique of Wushu Sanda fighters, paying attention to throws and push-out. It can also be concluded that the introduction of tuishou techniques as a means of teaching short-range combat into the training process of Sandaists is possible and can be very effective. Learning how to work at short-range combat, maintaining their stability and being able to throw an opponent off balance, will help tuishou tools – the use of elements (throws and push-out) of this discipline will help a sandaist master short-range combat and fight more successfully at such a difficult distance.

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Ryzhkova Ksenia Evgenevna, master student, ksuyryzhkova@yandex.ru, Russia, Moscow,

The Russian university sport «GTSOLIFK».

Scientific supervisor – Gasanova-Matveeva Zemfira Arifovna, Russia, Moscow, The Russian university sport «GTSOLIFK».

**ВИДЕОАНАЛИЗ ПОЕДИНКОВ УШУ-САНЬДА ДЛЯ ОПРЕДЕЛЕНИЯ НЕОБХОДИМОСТИ
ВВЕДЕНИЯ ЭЛЕМЕНТОВ ТУЙШОУ В КАЧЕСТВЕ СРЕДСТВ ОБУЧЕНИЯ
БЛИЖНЕМУ БОЮ В УШУ-САНЬДА**

Рыжкова Ксения Евгеньевна, магистрант, ksuuryzhkova@yandex.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Гасанова-Матвеева Земфира Арифовна, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье проводится видеоанализ финалов поединков у возрастной категории мужчины и женщины Чемпионата России 2024 года и Чемпионата Мира 2023 года. На основе видеоанализа было определено, что на Чемпионате мира такие элементы ближнего боя, как броски и выталкивания, которые приносят большее количество баллов, а также могут принести победу в раунде, были использованы эффективнее, чем на Чемпионате России. Полученные нами данные свидетельствуют, что ближний бой в мире развит лучше, в России. Для повышения эффективности ближнего боя у российских спортсменов, занимающихся ушу-санда, предлагается использовать элементы туйшоу в качестве средств обучения ближнему бою в ушу-санда.

Ключевые слова: ушу, ушу-санда, ближний бой, элементы туйшоу

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UDC 796.912.012.66

**MODERN METHODS OF DEVELOPING COORDINATION
AND AGILITY IN FIGURE SKATING**

Samoylova N-V.S., s/s Laptev A.V.

Abstract. *The article discusses modern methods of developing agility and coordination abilities in figure skaters at various stages of sports training, the expediency of their use, and a survey of coaches on the use of means and methods for developing agility and coordination in figure skating.*

Keywords: *physical education, sports, figure skating, coordination abilities, agility*

Introduction. Modern figure skating places high demands on the technical preparedness of athletes. The presence of quadruple jumps, ultra-C, combined spins of increased complexity in single figure skating, a high level of rhythm and support with elements of acrobatics in ice dancing, pair skating and synchronized figure

skating – all this implies coordination abilities developed at a sufficient level, in all their manifestations. However, even though figure skating is a highly coordinated sport, the direct execution of the elements of figure skating, general and special physical training and choreoFigurey do not guarantee a high level of development of general agility and coordination. As a rule, in systematic training of figure skaters of different disciplines, means are used aimed at developing and improving the necessary elements and motor actions, special dexterity, while means for the development of general agility are considered appropriate to be used only at the stage of initial training of young figure skaters. The main simulators used for the development of agility, for example, the Mishin and Longa simulator, were developed in the 2000s, now there is a shortage of the latest means of developing dexterity in figure skating.

Consequently, in figure skating there is a problem of developing general agility at the stages of advanced specialization and further.

Since highly developed general agility, apart from special agility, can effectively influence the development of motor tasks, the research topic is relevant.

The purpose of the study is to determine the need to develop the latest means of developing dexterity and coordination abilities in figure skating, the expediency of their use in the opinion of coaches, as well as the search for existing advanced tools and methods for the development of general and special agility in figure skating.

Research objectives:

1. To identify whether figure skating coaches use tools and methods to develop general dexterity in the training process of figure skaters of different disciplines.

2. To determine the availability of modern means and methods for the development of dexterity and coordination abilities in figure skating.

3. Determine the interest of figure skating coaches in creating and developing the latest tools for developing and improving the dexterity and coordination of figure skaters.

The research methods are: the method of analyzing scientific and methodological literature; the method of survey (questionnaire), the method of Figureical display of information.

The **results** of the study. During the analysis of scientific and methodological literature, it was revealed that the latest invention in the field of figure skating, aimed at improving coordination, and really justified its effectiveness in terms of long-term training of figure skaters (mainly in single and pair skating), was the Mishin simulator [1], as well as similar rotators in the development of other authors [2]. Thus, it can be determined that modern figure skating needs careful research on coordination and dexterity, as well as the development of the latest and advanced digitalized technologies in this aspect. Only 27.3% of the respondents conduct systematic testing of general and special dexterity, and 9.1% do not conduct it at all. Most coaches, 78.8%, consider it necessary to develop the latest tools and methods (including simulators) for the development of dexterity and coordination abilities of figure skaters. Among the tools and methods used by coaches in the course of sports training of figure skaters, most often they distinguish the direct execution of figure skating elements and their imitation in the gym (26.9%), as well as the use of static

exercises such as swallow and basic step (25%), and the use of spinner equipment to practice rotations and training differentiation muscle contractions and the ability to control the body under the influence of inertial forces (22.2%). The lowest percentage of use was gained by modern means of improving coordination – the Mishin and long jump simulator – 10.2% and 5.6%, respectively, which may be due to the low availability of this equipment. The coaches also suggested which developments, in their opinion, would be useful in the training activities of figure skaters in the aspect of coordination development: simulators for determining coordination abilities, acrobatic exercises, trampolines, rotators and spinners with electronic stuffing and sensors, improved Bosu, improved spar, take as a basis the relationship with another sport and take from their methods/tools/equipment, a simulator for improved grouping of jumps, exercises with small balls in the gym, various exercises for developing coordination in two directions, jumping barriers, circular training using various simulators, objects (neuro jump ropes, tennis balls, car tires, running barriers, tape, for hockey, a simulator for balancing and strengthening small muscles, a vibration platform, an analog of AGT-800.

Such assumptions put forward by the coaches open more ideas for research in the aspect of dexterity development in figure skating, prove the need to develop the latest equipment.

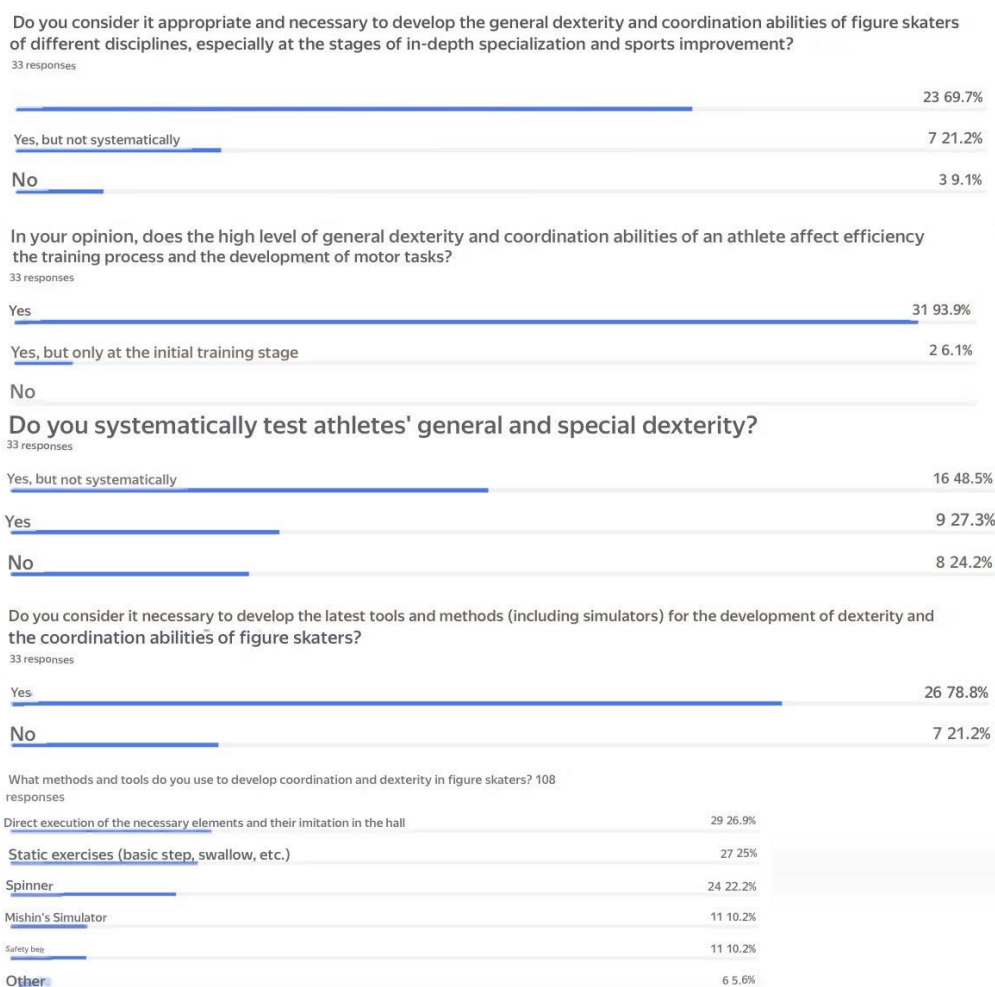


Figure 1. – The results of the survey (questionnaire)

Conclusions:

1. According to the results of the study, most coaches use means to develop special, rather than general dexterity in the system of sports training of figure skaters.
2. During the study, the coaches were found to be poorly equipped with modern means of developing the dexterity and coordination of skaters, as well as a shortage of the latest equipment that has proven itself at a high level of efficiency.
3. 78.8% of the coaches surveyed see the need to create and develop modern tools and methods for developing agility and coordination of skaters at various stages of training.

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Samoylova Nika-Victoria Sergeevna, undergraduate student, xenessy@gmail.com, Russia, Malakhovka, "Moscow State Academy of Physical Education"

Scientific supervisor - Laptev Anatoliy Vladimirovich, Candidate of Pedagogical Sciences, Associate Professor, Russia, Malakhovka, "Moscow State Academy of Physical Education"

СОВРЕМЕННЫЕ СРЕДСТВА РАЗВИТИЯ КООРДИНАЦИОННЫХ СПОСОБНОСТЕЙ И ЛОВКОСТИ В ФИГУРНОМ КАТАНИИ

Самойлова Ника-Виктория Сергеевна, магистрант, xenessy@gmail.com, Россия, Малаховка, «Московская государственная академия физической культуры»

Научный руководитель - Лаптев Анатолий Владимирович, канд. пед. наук, доцент, Россия, Малаховка, «Московская государственная академия физической культуры»

Аннотация. В статье рассматриваются современные методы развития ловкости и координационных способностей у фигуристов на различных этапах спортивной подготовки, целесообразность их применения, опрос тренеров на предмет использования средств и методов развития ловкости и координации в фигурном катании.

Ключевые слова: физическая культура, спорт, фигурное катание, координационные способности, ловкость

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UDC 796

FEATURES OF MORPHOFUNCTIONAL STATUS AND VERTICAL STABILITY IN PROFESSIONAL DANCE SPORT ATHLETES

Savkin G.V., s/s Zakharyeva N.N.

Abstract. The article presents the results of a comparative analysis of the differences in morphological and functional status, as well as vertical stability, in professional dance sport

athletes. These differences reflect the unique morphofunctional characteristics of this group of athletes, as well as their vertical stability. These findings suggest that the training program and the specific demands of the sport influence the morphology and function of these athletes. These differences indicate the different morphofunctional and vertical stability characteristics of female athletes compared to athletes who have been shaped by long-term training under the specific conditions of their chosen sports.

Keywords: complex coordination sports, dancesport, professional sportsmen's, morphofunctional status, vertical stability, anthropometric characteristics, stabilometric indicators

Relevance Based on morphofunctional test data carried out of national and foreign researchers the studies of adaptive changes that occur in athletes' bodies under the systematic influence of training and competition loads are considered to be relevant [4].

Morphofunctional status is a valuable indicator of not only the individual development of an athlete's body and their general health, but also their fitness level and future athletic performance. It allows for a complete assessment of the mode of their sports activity, recovery processes, and physical performance.

It is particularly important for athletes to practice dancesport at all stages of their training process, as it allows for the assessment of coordination abilities [1, 2]. This can be done by measuring the level of vertical stability during stabilometric tests, which help to determine the athlete's level of coordination [3, 5].

The **aim of the study** is to determine the differences between male and female partners in terms of morphofunctional status and vertical stability.

Methods of research:

1. Stabilometric testing – the "Target" test. A computer Stabiloanalyzer with biofeedback, «Stabilan-01-2»
2. Morphofunctional measurement.

Research objectives:

1. To investigate sex differences in morphological parameters among professional dance sport athletes at rest.
2. To examine gender differences in vertical balance among professional dance sport athletes while performing the target stabilometric test at rest.

Study design. 40 professional dance sport athletes took part in the physiological testing – the first adult category, Candidate Masters of Sports and Masters of Sports.

The average age is 19.5 years, 20 boys and 20 girls.

Physiological and Morphological testing was conducted in the laboratory of sports medicine at the research institute of sports sciences and sports medicine of the Russian University of Sport, "GTSOLIFK." The conditions were standardized. The athletes were informed about the safety of the physiological experiment for human health and signed a protocol of consent. The studies took place from September to December 2023. During the hours of physiological Sympathicotonia, from 08:50 to 12:00. At the time of testing, all athletes were healthy and had no acute or chronic diseases.

Results. To highlight the sexual differences in the morphological status of dancers, a study was conducted on the morphological parameters of dancers based on

the analysis of anthropometric data. According to the results, sexual differences are expressed in significant differences in body length and weight between male and female dancers. The body length of male partners was 181.8 ± 0.08 cm, while that of female partners was 165.3 ± 0.04 cm ($p < 0.05$). Similarly, the body weight of male dancers was 70.33 ± 3.38 kg, while that of female dancers was 51.96 ± 7.07 kg ($p < 0.05$) (table 1). The analysis of anthropometric characteristics revealed significant gender differences in the assessment of the circumference of the upper extremities (shoulder and forearm) in male and female dancers. Shoulder circle in male dancers was 27.29 ± 0.95 cm, while in female dancers it was 24.1 ± 2.21 cm. Significantly different results were found in terms of the circumference of forearms – 26.57 ± 0.98 cm for male dancers and 21.4 ± 1.02 cm for female dancers ($p < 0.05$) (table 1).

These differences may be attributed to several factors, including the presence of more muscle tissue in male bodies and the increased hypertrophy of shoulder and forearm muscles during partner training. This helps male dancers better maintain their arms and bodies in pairs during rotational and translational movements.

Table 1. – Anthropometric parameters in professional dance sport athletes

Parameter	Male		Female		P - level
	M	St.dev	M	St.dev	
Body length (cm)	181,8	0,08	165,3	0,04	0,05*
Body weight (kg)	70,33	3,38	51,96	7,07	0,05*
Chest circumference rest (cm)	90,67	1,27	81,7	5,19	0,05*
Chest circumference inhale (cm)	96,29	2,29	86,5	4,5	0,05*
Shoulder circumference (cm)	27,29	0,95	24,1	2,21	0,05*
Forearm circumference (cm)	26,57	0,98	21,4	1,02	0,05*
Right arm muscle strength (kg) rest	37,29	7,34	24,3	5,55	0,001*
Left arm muscle strenght (kg) rest	40	8,06	21,7	3,66	0,01*

Note: * – the significance of the differences is < 0.05 .

An important indicator for analyzing stabiloFigurey data is the quality of the equilibrium function, which describes the properties of a person's postural system. This indicator, "Quality of the Equilibrium Function", is based on analyzing the velocity vectors of a subject's center of pressure in the horizontal plane when maintaining a vertical stance. It provides a comprehensive assessment of the quality of this function, has a high level of sensitivity, and has the lowest variability among other stabiloFigureic measures. The higher the quality of the equilibrium function, the greater a person's ability to maintain balance. Our findings indicate that women have the highest quality of equilibrium function, at $72.12 \pm 9.28\%$, compared to men at $70.63 \pm 7.41\%$ ($p = 0.03$; Table 2). This also confirms that women have better postural stability than men.

Conclusions:

1. Statistically significant sexual differences were found in the morphofunctional status of the body: circumference of shoulder, forearm, and indicators of maximum arbitrary muscle strength of the right and left hand.
2. The benefits of vertical stability were revealed in dancers when performing

the target stabilometric test with significantly higher values for the vector indicators "quality of equilibrium function", lower values for the indicators "length of trajectory of center of pressure along sagittal axis LY" and "area of ellipse EllS, mm²", and the indicator "spread along front of Q (x) mm", compared to partner dancers.

3. Less development of coordination among male dancers, as evidenced by the prolonged performance of a dance load, is confirmed by data from the stabilometric test "Target", with a high level of significant differences in several indicators: a lower value of the "Quality of Equilibrium Function" vector indicator compared to their partners, as well as higher values for the "Length of Center of Pressure Trajectory Along Sagittal Axis LY", "Ellipse Area EllS, mm²", and "Spread Along Front Q(x), mm" indicators.

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Savkin Gleb Victorovich, undergraduate student of department of physiology, savkin.2015@list.ru, Russia, Moscow, The Russian university of sports «GTSOLIFK».

Scientific supervisor – Zakharyeva Natalia Nikolaevna, Russia, Moscow, The Russian university of sports «GTSOLIFK».

ОСОБЕННОСТИ МОРФОФУНКЦИОНАЛЬНОГО СТАТУСА И ВЕРТИКАЛЬНОЙ УСТОЙЧИВОСТИ ТАНЦОРОВ ВЫСОКОЙ КВАЛИФИКАЦИИ

Савкин Глеб Викторович, магистрант кафедры физиологии, savkin.2015@list.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Захарьева Наталья Николаевна, Россия, Москва, Российский

Аннотация. В статье представлены результаты сравнительного анализа различий в морфофункциональном статусе, а также вертикальной устойчивости у профессиональных спортсменов танцевального спорта. Эти различия отражают уникальные морфофункциональные характеристики этой группы спортсменов, а также их вертикальную устойчивость. Эти результаты свидетельствуют о том, что программа тренировок и специфические требования данного вида спорта влияют на морфологию и функции этих спортсменов. Эти различия указывают на различные морфофункциональные характеристики и характеристики вертикальной устойчивости спортсменок по сравнению со спортсменками, которые были сформированы в результате длительных тренировок в специфических условиях выбранного ими вида спорта.

Ключевые слова: сложнокоординационные виды спорта, танцевальный спорт, профессиональные спортсмены, морфофункциональный статус, вертикальная устойчивость, антропометрические характеристики, стабилографические показатели

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UDC 798.011

THE CORRECTION OF POSTURAL DISORDERS IN FENCERS WITH LOWER LIMB AMPUTATION AT THE STAGE OF SPORTS IMPROVEMENT

Sedov I.N.

Abstract. The article examines the issue of postural disorders in fencers with lower limb amputation, which becomes more complicated under the influence of prolonged asymmetrical fencing loads. The article examines the characteristic signs of postural disorders, identified by testing its condition in athletes and collecting anamnesis. The authors give a generalized Figure of the influence of the experimental methodology for correcting this disorder; significant influence is

given to the means, methods and techniques used during the training. The article provides a detailed analysis of changes in the assessment of posture at the end of the experiment.

Keywords: posture disorders, wheelchair fencing, lower limb amputation, correction, physical training, manual muscle testing, experiment

Introduction. Research over the past few years has shown an increase in the number of people with limb amputations [2].

After unilateral amputation of the lower limb, a shift in the center of gravity of the body occurs, a tilt of the pelvis towards the truncated limb and a compensatory curvature of the spine to maintain balance when standing and walking. As a result, posture changes noticeably and its functionality decreases [1, 3].

Wheelchair fencing classes help improve the quality of life and socialization of people with amputations, however, due to prolonged asymmetric load on the muscles and joints, muscle balance is disrupted and thereby complicates the condition of the secondary compensatory deformed spine [4].

Purpose of the study: correction of postural disorders in fencers by amputation of the lower limbs at the stage of sports improvement.

Research methods: analysis of literary sources on the research problem; study of anamnesis; pedagogical observation; pedagogical testing; pedagogical experiment; method of mathematical data processing using the Mann-Whitney criterion.

Organization of the study. The experiment involved wheelchair fencers aged 20-30 years with lower limb amputations, performing saber in category "A". In the control and experimental groups there were 6 people (men), the sports category of the participants was CMS, MS, MSMC. Classes were held 3 times a week for 120 minutes, in the control group according to the generally accepted method of training wheelchair fencing athletes for people with PAD, in the experimental group – according to the method we developed.

Results and discussion. Before the start of training sessions, we assessed the state of posture and assessed the strength of the muscles of the shoulder girdle, back and abdominal muscles using the MMT method.

Table 1. – Initial indicators of posture and manual muscle testing in the control (n=6) and experimental (n=6) groups before the experiment

Test		Results						
		EG			CG			U
		25%	Me	75%	25%	Me	75%	
Moshkov's rhombus (cm)	Difference between the distance from C7 to the shoulder blades	0,6	0,8	0,9	0,7	0,8	1	13
	Difference between the distance from the shoulder blades to L5	0,7	0,9	1	0,8	1	1,1	15
Shoulder index (%)		76	83	85,5	74	82,5	87,7	17,5
Difference between right and left shoulder height (cm)		2	2	2,4	1,9	2,1	2,4	18
Difference between the height of the wings of the iliac crests (cm)		2,5	2,9	3	2,6	2,8	3,1	16,5
Trapezoid m. (descending part) (point)	Right	3,2	4	4	4	4	4	15
	Left	3	3	3	3	3	3,7	15

Table 1 (continued)

Test		Results					
		EG			CG		
		25%	Me	75%	25%	Me	75%
Extensor spinae (score)		2,2	3	3	3	3	3,7
Rectus abdominis (score)		2,2	3	3	3	3	3
Oblique muscle (score)	Right	3,2	4	4	4	4	4
	Left	3	3	3	3	3	3,7

*The differences are significant: Ukr. = 7 at $p \leq 0.05$.

From Table 1 we see that the subjects of both groups have an asymmetry in the position of bone structures and an imbalance of muscle tone between the right and left sides of the body. In this connection, we can conclude that athletes have a violation of posture such as scoliotic (asymmetrical) posture, which is confirmed by anamnesis data.

Conducting a confirmatory experiment allowed us to find out that the initial indicators of the state of posture and manual-muscle testing of subjects in the control and experimental groups were approximately equal. Based on this, it was concluded that no significant differences were found between the subjects of these groups; the groups were selected correctly for the experimental study.

Based on the analysis of scientific and methodological literature and the results of the ascertaining experiment, we developed a method for correcting postural disorders in fencers with lower limb amputations (Figure 1).

Exercises from the general physical training block are aimed at increasing the level of physical fitness and functional capabilities of the body. Athletes with a good level of general physical fitness can more easily tolerate training and competitive loads and recover faster.

Exercises from the SPP block are aimed at improving technical training, as well as for developing and specializing the manifestations of physical qualities. Exercises on the Tyshler simulator (TT) and on the target are used to improve the technique of performing attacking techniques, developing speed of action and final accuracy. TT has also been used to develop complex sensorimotor responses.

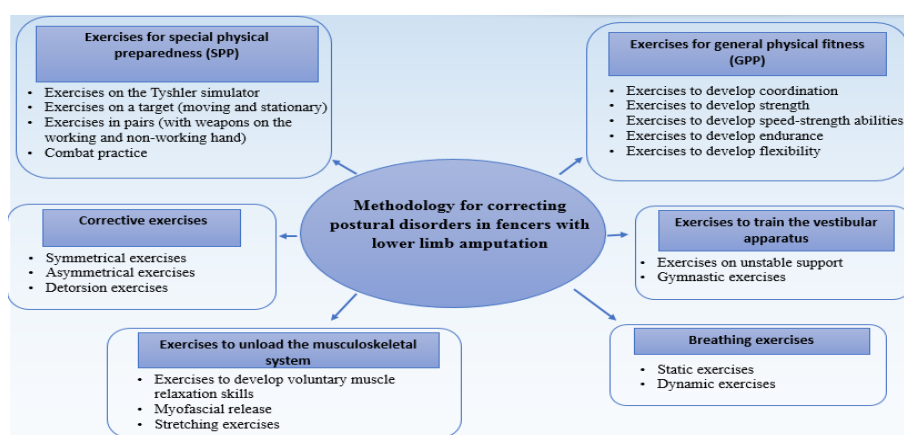


Figure 1. – Contents of the experimental procedure

To correct muscle tone and strengthen weakened muscles, we used symmetrical and asymmetrical exercises. To prevent the transition of scoliotic posture to a disease state, detorsion exercises were used.

Vestibular training was aimed at developing balance, coordination and spatial orientation, which is important both for maintaining correct posture and for fencing.

At the end of the experiment, we conducted final testing. The results are presented in table No2.

From table 2 we see that significant changes were noted in the study of Moshkov's rhombus (indicators in the EG almost reached 0.4 cm, which is the norm), shoulder index (in subjects from the EG the indicator was 7% higher than in the CG and corresponds to the norm), in assessing the difference between the height of the right and left shoulder (0.5 cm better than in the CG) and in the difference between the height of the wings of the iliac crests (0.5 cm better than in the CG).

Table 2. – Comparative indicators of the state of posture and manual muscle testing in the experimental (n=6) and control (n=6) groups after the experiment

Test		Results						
		EG			CG			U
		25%	Me	75%	25%	Me	75%	
Moshkov's rhombus (cm)	Difference between the distance from C7 to the shoulder blades	0,4	0,5	0,6	0,6	0,7	1	5,5*
	Difference between the distance from the shoulder blades to L5	0,5	0,6	0,7	0,8	0,9	1,1	7,5
Shoulder index (%)		85,5	90	92,2	75	83	87,2	7*
Difference between right and left shoulder height (cm)		1,4	1,6	1,9	1,9	2,1	2,3	7*
Difference between the height of the wings of the iliac crests (cm)		2	2,2	2,5	2,7	2,8	3	7*
Trapezoid m. (descending part) (point)	Right	4	4	4,7	4	4	5	15
	Left	4	4	4,7	3	3,5	4,7	6*
Extensor spinae (score)		4	4	4,7	3	3,5	4	6*
Rectus abdominis (score)		4	4	4	3	3	3,7	9
Oblique muscle (score)	Right	4	4	4,7	4	4	4,7	15
	Left	4	4	4	3	3	3,7	8

**The differences are significant: Ukr. = 7 at $p \leq 0.05$.*

Reliably significant improvements are noted in manual muscle testing: in assessing the strength of the trapezius muscle on the left side (0.5 points higher than in the CG), extensor spinae (0.5 points higher than in the CG). The results of testing the rectus abdominis muscle and oblique abdominal muscle on the left side are close to reliable. At the end of the experiment, we do not observe the absence of muscle imbalance between the right and left sides of the body.

Such indicators indicate the effectiveness and positive impact of the developed

technique on the state of posture of fencers with lower limb amputations.

Conclusion. Thus, the results of the ascertaining experiment confirmed the data from literary sources and anamnesis about the presence of postural disorders in persons with lower limb amputations. Taking into account the results of the ascertaining experiment and the identified features, we developed a method for correcting postural disorders in fencers with lower limb amputations. According to the testing results at the end of the experiment, the indicators of posture and manual muscle testing significantly improved in favor of the EG. The effectiveness of the developed method has been proven experimentally and confirmed by mathematical calculations.

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Sedov Ivan Nikitich, 4th year Bachelor of the Department of Theory and Methodology of Adaptive Physical Culture, i.n.sedov@yandex.ru, Russia, Moscow, Federal State Budget Education Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

КОРРЕКЦИЯ НАРУШЕНИЙ ОСАНКИ У ФЕХТОВАЛЬЩИКОВ С АМПУТАЦИЕЙ НИЖНЕЙ КОНЕЧНОСТИ НА ЭТАПЕ СПОРТИВНОГО СОВЕРШЕНСТВОВАНИЯ

Седов Иван Никитич, бакалавр 4 курса кафедры Теории и методики адаптивной физической культуры, i.n.sedov@yandex.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматривается вопрос нарушений осанки у фехтовальщиков с ампутацией нижней конечности, которая усложняется под воздействием длительных асимметричных фехтовальных нагрузок. В статье исследуются характерные признаки нарушений осанки, выявленные путем тестирования ее состояния у атлетов и сбора анамнеза. Авторы дают обобщенную картину влияния экспериментальной методики коррекции данного нарушения, значительное влияние уделяется средствам, методам и приемам, примененным в процессе занятий. В статье дается детальный анализ изменений в оценке состояния осанки в конце эксперимента.

Ключевые слова: нарушения осанки, фехтование на колясках, ампутация нижних конечностей, коррекция, физическая подготовка, мануально-мышечное тестирование, эксперимент

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UDC 796.422.12

STRENGTH TRAINING AIDS IN THE TRAINING PROCESS OF MIDDLE-DISTANCE RUNNERS AT THE STAGE OF IMPROVING SPORTS SKILLS

Seleznev A.Ya., s/s Stepanova A.M.

Abstract. *The article considers the problem of strength training in the training process of middle-distance runners at the stage of improving sports skills to improve athletic performance, ambiguity in methods and means of its implementation, as well as a way to solve it using complexes of strength-oriented exercises, with which we were going to achieve this goal. The effectiveness of using the developed complexes in the training process of middle-distance runners at the stage of improving sports skills is evaluated.*

Keywords: *running, strength training, middle distances, training process, sets of strength exercises, middle distance runners, strength training aids*

Strength training plays a crucial role in enhancing performance indicators for middle distance runners and yet future investigation and optimization of this aspect of training may be required. The relevance of the topic could be explained not only by the importance of using strength training for improving the results, but also by the ambiguity in methods and means of its implementation.

The purpose of our study was to develop and evaluate the effectiveness of the implementation of strength training strategies for middle distance runners at the stage of improving their sport performance in order to get maximum results.

Tasks:

1. To access baseline levels of strength of middle-distance runners at the stage of improving sport performance.
2. To develop a strength building program for middle distance runners.
3. To substantiate the effectiveness of the proposed methods of strength training in middle-distance running.

The study was conducted between September 2022 and August 2023 and based at the The Brothers Znamensky Olympic Centre. 16 competitive middle-distance runners, aged 18 - 20, participated in the research. (those who have met the 1st qualification standard or candidate master.

The first research stage involved the analysis of the existing scientific literature on the chosen topic, and also a survey among leading experts in middle distance training. The results are published in Figure 1.

At this stage we have also selected the participants for the experiment and measured their baseline fitness. The collected data was used for forming experimental

and control groups and designing a set of strength-building exercises. The athletes were divided into two homogeneous group, 8 people in each.

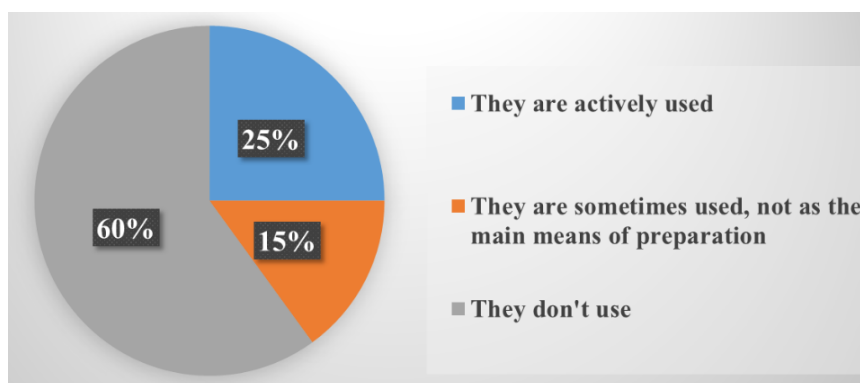


Figure 1. – The results of the survey among leading coaches on using strength training methods for middle distance runners at the stage of improving sport performance

The pre-test results of the control and experimental groups are presented at the fig. 2.

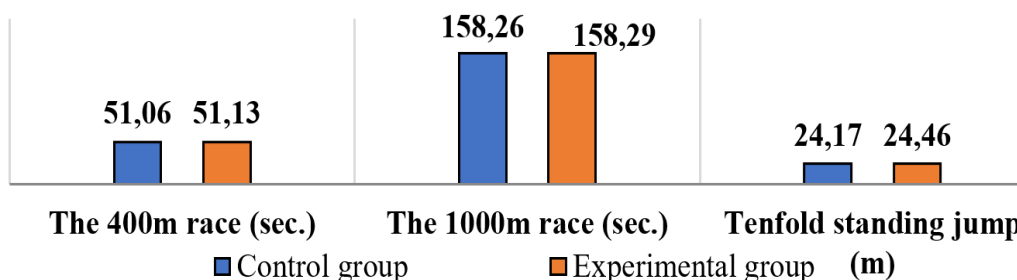


Figure 2. – The results of the testing of the middle-distance runners' level of physical fitness

Data obtained through participant observation served as a basis for carrying out a pedagogical experiment. The designed strength-building routines were later implemented into the experimental group training sessions. Their components are presented in table 1. The control group was provided with typical training plans.

Table 1. – The components of the set of drills designed to build strength for middle distance runners

№	The 1st set	№	The 2nd set
1	«Skied ball» scissors-straddle jump	1	Reverse lunges
2-3	«Skied ball» one leg hopping drill	2	Push ups
4	High knees	3	Knee drives
5-6	Running with an accentuated extension of one	4	Tuck in for abs training
7	Feet-to-feet	5	Lunge hops knee drive
8	Accentuated running with leg substitution	6	Jumps "Sparrow"
9-10	"Flea" jump on one leg	7	Hollow hold
11	"Flea" leg swap jump	8	Pulling up the knees to the chest + lunge in a jump
		9-10	Jumping across a horizontal line on one leg

At the end of the pedagogical experiment, the repeated (final) testing was carried out. The test results turned out to be considerably reliable and were used to assess the effectiveness of the strength training methodology (table 2)

Table 2. – The results of the experimental and control group testing at the beginning and at the end of the experiment

Tests	Control group		Experimental group	
	September 2022	August 2023	Сентябрь 2022	August 2023
1000m race, sec	158.26±0.31	155.13±0.36	158.29±0.37	150.45±0.92
Student's t-test	10.25 p<0,05		7.95 p<0,05	
400m race, sec	51.06±0.20	50.59±0.22	51.13±0.16	49.75±0.29
Student's t-test	3.35 p<0,05		4.52 p<0,05	
Tenfold standing jump, m	24.17±2.94	24.87±2.65	24.46±2.33	26.53±2.75
Student's t-test	12.53 p<0,05		24.79 p<0,05	

At the end of the experiment, a significant difference was found between the performances of the groups. The change in the experimental group was significantly greater compared with the control one: 400m race was increased by 1.6% as opposed to the control group; 100m race by 3%; tenfold standing jump by 6,7%. The data is presented in figure 3, 4 and 5.

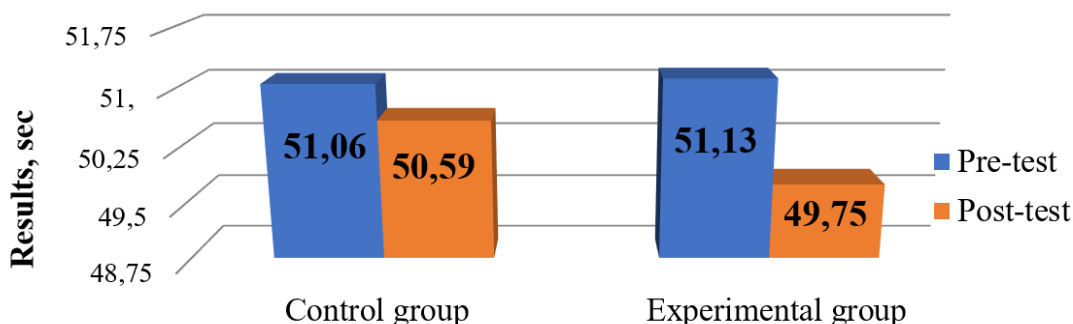


Figure 3. – The increase in indicators in the control and experimental groups in the 400m run

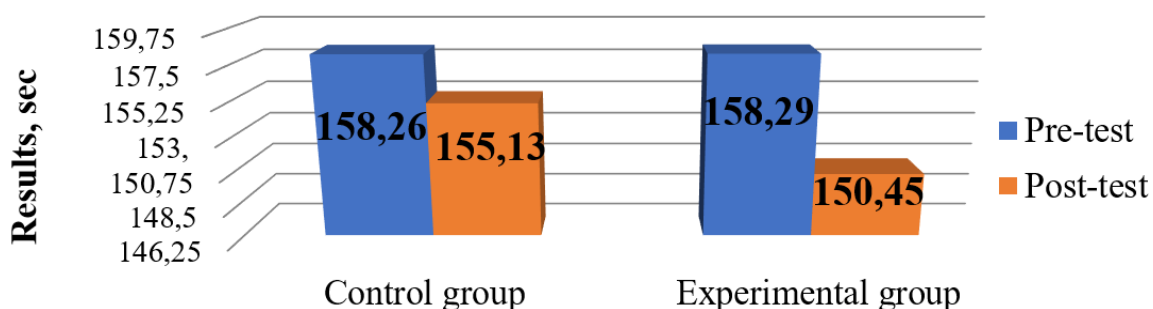


Figure 4. – The increase in indicators in the control and experimental groups and in the 1000m run

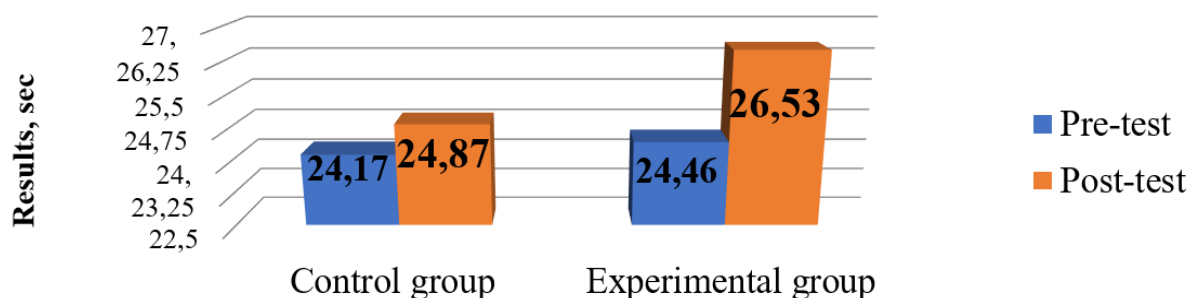


Figure 5. – The increase in indicators in the control and experimental groups in the test "Tenfold long jump from a place"

The analysis of the experimental data (within the research conducted between September 2022 and October 2023) has shown that the experimental group ended up with the best performance. To recapitulate, the implementation of strength training can contribute and improve the results of middle-distance runners at the stage of improving their sports skills.

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Seleznev Alexander Yaroslavovich, 5th year student of the Department of Theory and Methodology of Athletics named after N.G. Ozolin, – selaya_96@mail.ru, Russia, Moscow, federal state budgetary educational institution of higher education "Russian university of sports" GTSOLIFK".

Scientific supervisor – Stepanova Anastasia Maksimovna, Senior lecturer at the Department of Theory and Methodology of Athletics named after N.G. Ozolin, stepanova.am@gtsolifk.ru, Russia, Moscow, federal state budgetary educational institution of higher education "Russian university of sports" GTSOLIFK".

СРЕДСТВА СИЛОВОЙ ПОДГОТОВКИ В ТРЕНИРОВОЧНОМ ПРОЦЕССЕ БЕГУНОВ НА СРЕДНИЕ ДИСТАНЦИИ НА ЭТАПЕ СОВЕРШЕНСТВОВАНИЯ СПОРТИВНОГО МАСТЕРСТВА

Селезнёв Александр Ярославович, студент 5-го курса кафедры теории и методики легкой атлетики им. Н.Г. Озолина, selaya_96@mail.ru, Россия, Москва, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель - Степанова Анастасия Максимовна, старший преподаватель кафедры теории и методики легкой атлетики им. Н.Г. Озолина, stepanova.am@gtsolifk.ru, Россия, Москва, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматривается проблема силовой подготовки в тренировочном процессе бегунов на средние дистанции на этапе совершенствования

спортивного мастерства для повышения спортивного результата, неоднозначности в методах и средствах её осуществления., а также способ ее решения при помощи комплексов упражнений силовой направленности, с помощью которых мы собирались достичь поставленной цели. Оценена эффективность применения разработанных комплексов в тренировочном процессе бегунов на средние дистанции на этапе совершенствования спортивного мастерства.

Ключевые слова: бег, силовая подготовка, средние дистанции, тренировочный процесс, комплексы силовых упражнений, методика силовой подготовки

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UDC 796

THE USE OF VIDEO CONTENT IN NEW MEDIA AS A PR-TOOL IN SPORTS SPHERE

Semenova A.N., Lyulevich I.Yu.

Abstract. *This study analyzed video content as an effective PR tool that sports clubs use to interact with fans. Reviewed different types of video materials and the communication purposes for which they are used, as well as restrictions related to the consumption of audiovisual materials, which should be considered when forming communication strategies in new media.*

Keywords: *cyberspace, video content, PR tool, video production, sport management, communication*

Introduction (Relevance). Human media consumption and communicative behavior are changing in the cyberspace. Every week 92,8% of Internet users at the age of 16 to 64 consume video content, according to the Digital 2023 global overview report [2]. There are different ways to present information in video content, for example, video, animated photos, infoFigureics, GIF-images, etc. Nowadays, not only professional videoFigureers can create videos. Every smartphone owner could shoot and edit a video that can go viral, be a primary source of the news or remake other video materials.

The **purpose** of our study is to identify and substantiate the possibilities of video content as a PR tool for interacting with sport fans in the digital media space.

Methods. The logic of the work is based on an interdisciplinary approach to studying the specifics of working with video content in the digital media space. Both empirical (observation, comparison) and theoretical research methods were used, namely– analysis video materials and communication strategies, content analysis.

The empirical basis of the study is video materials in the following formats: reality shows, highlights, stories, reels/shorts/clips, live broadcasts, etc. on social media VKontakte, Telegram, YouTube (a site that violates the legislation of the Russian Federation), Instagram (owned by Meta, recognized as an extremist organization, and banned in the territory of the Russian Federation).

Results (discussion). The key features of video materials include:

1. simultaneous content of text, image, sound and other components;
2. interactive nature;
3. the delayed viewing function;
4. the ability to consume content live or on demand;
5. non-linear or parallel viewing;
6. unlimited playback of the same video;
7. availability on various devices: PCs, laptops, and mobile devices.

All the above characteristics change the models of traditional video consumption. Now users can independently form and control media consumption, which affects the work of PR specialists in the digital media space. Communicators in the sports environment integrate video formats into communication strategies to "create an image of sports activity, its cognitive and reflective characteristics, the formation and expression of public opinion, public mood about certain sporting events or phenomena, develop ideas about the nature and features of the development of a particular sport, ..., create a model of behavior of sports participants activities, the sports community, various classroom groups, the management and self-management system of the sports sphere" [3, S. 168]. We can also add to these tasks the formation of an image, brand, corporate culture, coverage of current competitions and championships, attracting new groups of audiences, searching for partners and sponsors. It is important to consider the specifics of the platform to create and transform media content in accordance with the requirements.

Video content can satisfy different motives of people "psychological, physiological, behavioral and others: to learn new things, have a fun, satisfy curiosity, relieve stress, use a lifehack, solve a problem" [1, S. 33]. For example, hockey club Avangard launched the reality show "The Game has Begun" in the 2023/2024 season, where players had to complete various tasks: from the usual puck throws to completing a horror quest, searching for books in the central library of Omsk and fulfilling traditions associated with one of the main attractions of the city or the upcoming holiday. The show features invited guests. In addition, hockey players will be able to spend the points earned for completing tasks at the end of the season on charity. Due to the communication practice described above, the club:

1. Closes different motives of users: getting to know the players, the city, a sense of belonging through the ability to remotely participate in completing tasks, for example, solving clues or guessing melodies.
2. Attracts new audiences through tasks-references to other shows ("Guess the Melody", "Fort Boyard", "Total Blackout" and others).
3. Forms the image of a modern brand and a reliable partner who follows trends and implements them in his work.
4. Translates the use of the principles of social responsibility through assistance

to vulnerable social groups.

Due to the interactive nature of video content in the digital media space, the audience becomes an active participant in the production of content. So, during the 2021 Hockey World Youth Championship, spectators were not allowed into the stands, and broadcasters integrated fans into the broadcast of matches through a special Zoom conference. During game breaks, some fans from different parts of the world appeared on the air. They supported their favorite team from home using traditional practices. So, fans online could share their emotions, support the team, and feel like a part of the event. In addition, users can try on different roles through the creation of content with trending sounds and images, allusions, and reminiscences, add new meanings through reposting, commenting, embedding "new" elements in the "source" material.

The appearance of sections with short videos on social media (Instagram, VK, YouTube) indicates the demand for this video format. After all, 40% of users prefer videos lasting 30-60 seconds [5]. Let's analyze, using the example of HC SKA and HC Avangard, how and for what purposes sports clubs can use YouTube Shorts in PR activities.

1. The audience of the SKA channel⁴ prefers videos in which the hockey players of the club try to participate in other sports (short track, American football, soccer, longboard racing) and moments when athletes give fans sticks or pucks after matches. It is worth noting that the club's videos mainly cover the game or training processes, and the main characters are the players, so the average number of views is up to 10 thousand. The top videos scored 7.8; 1.9 and 1.5 million.

2. Users who follow the Avangard⁵ are more likely to view content with fans (lookalike challenge, gifts, emotions when attending matches), referees (an episode through the eyes of a referee) and stories of a humorous nature or incidents (a stick stuck in the net above the goal, a player scored in his own goal, etc.). The club also tries to interact with the viewer, offering a game on video (select a player, count the number of actions, put a like). The average number of views is up to 50 thousand. The top videos received 23; 3.6 and 3.4 million.

Therefore, we can say that shorts videos clips with the variety of actors and topics, the coverage of near-sports episodes are most popular with the audience.

Conclusions:

1. In consequence, we can say that video content is an effective PR tools. The variety of existing formats, the possibilities of production and distribution on different resources, the interactive nature of video content allows sports clubs to form the image of the organization through this communicative practice, attract new audiences or form loyal groups and create partner materials to solve additional tasks.

2. We should also focus on some limitations related to the functioning of video content in the digital media space:

- Every day we face with 3,000 messages, but we are interested in only 10%

⁴ <https://www.youtube.com/@hcska/shorts>

⁵ <https://www.youtube.com/@HCAvangardTV/shorts>

of the received information [4].

- Every 8 seconds YouTube users scroll the audiovisual series. That's why professional communicators have only 8 seconds to capture the viewers' attention [4].
- 54% of users are fully watching the video [5].
- The quality of the Figure and sound are also affecting the perception and desire to familiarize themselves with the materials: «62% of users...will not watch video with bad sound» [6, S. 348].
- Furthermore, the popularity and distribution of videos can be affected by: compliance with copyright, censorship and age restrictions, account or social media blocking, streaming consumption.

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Semenova Anastasia Nikolaevna, student, san0900@yandex.ru, Moscow, Russia, State Autonomous Educational Institution of Higher Education of the city of Moscow "Moscow City Pedagogical University"

Lyulevich I.Yu, PhD, Associated Professor, lyulevichiyu@mgpu.ru, Moscow, Russia, State Autonomous Educational Institution of Higher Education of the city of Moscow "Moscow City Pedagogical University"

ИСПОЛЬЗОВАНИЕ ВИДЕОКОНТЕНТА В НОВЫХ МЕДИА КАК PR-ИНСТРУМЕНТА В СФЕРЕ СПОРТА

Семенова Анастасия Николаевна, студент, san0900@yandex.ru, Россия, Москва, Государственное автономное образовательное учреждение высшего образования города Москвы «Московский городской педагогический университет»

Люлевич Ирина Юрьевна, к.п.н., доцент, lyulevichiyu@mgpu.ru, Россия, Москва, Государственное автономное образовательное учреждение высшего образования города Москвы «Московский городской педагогический университет»

Аннотация. В этом исследовании был проанализирован видеоконтент как эффективный PR-инструмент, который спортивные клубы используют для взаимодействия с болельщиками. Рассмотрены различные типы видеоматериалов и коммуникационные цели, для которых они используются, а также ограничения, связанные с потреблением аудиовизуальных материалов, которые следует учитывать при формировании

коммуникационных стратегий в новых медиа.

Ключевые слова: интернет-пространство, видеоконтент, PR-инструмент, видеопроизводство, спортивный менеджмент, коммуникация

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UDC 796

SCIENTIFIC DEVELOPMENTS IN THE FIELD OF PROFESSIONAL COMPETENCE OF THE EVENT ORGANIZATION MANAGER

Shapiro A.A.

Abstract. The article is devoted to the analysis of the emerging professional group of event managers in various event organizations. Based on existing statistical data, the author constructs a social portrait of an applicant for the position of event manager, analyzes the features of employment of event managers, emphasizes that there is no clear functional differentiation of event managers in Russia.

Keywords: event managers, professional competencies, event management, professionalization

Introduction. Consideration of the problems of professional competencies in the field of personnel management should begin with that of foreign schools that were engaged in the formation of their theoretical foundations. It is important to note that the first mention of the competence approach, as a particular manifestation of the systematic approach, can be attributed to the middle of the 20th century. The whole variety of theoretical positions can be represented in the form of two groups. The first group connects the study of the competence approach with economic problems (American and French schools), the second group considers it as an educational component (English and German schools).

Research methods. In our study, we are using the analysis of scientific literature.

The results of the study and their discussion. Considering the American approach, it can be noted that representatives of this school associate the term "competence" with human behavioral characteristics, which include self-awareness,

self-regulation and social skills; it is believed that their formation occurs through training and development [9].

The French school is characterized by a bipolar direction of the competence approach. Here, competence is considered on the one hand as a universal personal attribute, and on the other – as an individual's abilities manifested in the process of doing work.

As well as other foreign schools, the English school was developed in the 80s of the XX century. It was based on the application of a competence-based approach to vocational education and training in order to systematize professional competencies. During the definition of competencies, English scientists paid attention not to personal characteristics, but to the properties of the activity itself. At the same time, the main role was given to professional standards, which later take the form of competencies.

When considering the various fields of application of the competence approach, it is worth paying attention to the German school, which was also developed in the 80s. For the first time, the concept of "core competencies" appeared in the German education system, which includes individual competencies, they are formulated as the ability to cooperate, flexibility, ethics, independence in solving problems.

In Russian practice, the concept of "competence approach" has become more widespread relatively recently, mainly due to the problems of modernization of Russian education.

Initially, this concept was normatively fixed in a number of official documents. The National Doctrine of Education is based on the principles of training qualified highly competent specialists who, in the context of the development of the information society and high-tech technologies, are capable of professional growth and mobility.

General professional and personal competencies are universal and important for specialists in a wide variety of industries. Mastering them allows an employee to increase the efficiency of professional activity in their industry, and also gives them the opportunity to switch between industries, while maintaining their relevance. Below is a list of some competencies that have been noted by employers as the most important for employees of the event industry.

General professional competencies:

- systematic thinking (this skill consists in identifying complex systems and working with them, including system engineering);
- the ability to intersectoral communication (this competence consists in understanding technologies, processes and the market situation in various related and non-adjacent industries);
- possession of computer and office equipment, the latest technologies in the field of information processing;
- ability to work with consumer requests, customer orientation;
- knowledge of the basics of intercultural communication (consists in understanding the national and cultural context of the partner countries, as well as understanding the specifics of working in industries in other countries);
- knowledge of foreign languages;
- knowledge of psychology and ethics of communication;

- excellent command of literary, business oral and written speech in their native language;
- the ability to manage time;
- leadership skills, team management.

Personal competencies:

- single-mindedness;
- ability to work in a team;
- the ability to work in conditions of uncertainty, the ability to make quick decisions, respond to changes in working conditions, the ability to allocate resources and manage your time;
- initiative;
- the ability to create art, the presence of a developed aesthetic taste.

Foreign experts name six key drivers that accelerate the pace of changes taking place in the world at the present time.

1. An increase in life expectancy – as a result, an increase in the duration of work activity leads to the need for continuous training (lifelong learning or lifelong learning (LLL), as well as to the willingness to completely change profession / career, to get a new specialty.

2. Personalization of services – an individual approach to customers leads to the need to track and process a large amount of information, which requires changing the methods of collecting and analyzing these data arrays (Big Data).

3. The introduction of new technologies, namely: social networks, sharing of information resources leads to the fact that it becomes necessary to change the established organizational structures of companies.

4. Smart Machines – the importance of introducing the intellectual capabilities of computers into the activities of companies is increasing, which leads to demands from a person to work at a higher level. Changes in technology are changing the activities of the middle management of the company.

5. New multimedia – new multimedia communications, including video, require improved content, as users have a shorter period of concentration when receiving information.

6. Internet connection to the global network makes it possible to communicate with each other at any time, instantly exchange relevant information [7].

In addition, to solve the practical goals of organizations, it is possible to use another way to classify the required competencies of employees: the division of competencies into hard skills and soft skills.

The term "hard skills" refers to professional skills that can be taught and measured. To learn hard skills, you need to master knowledge and instructions, the quality of training can be checked, for example, by testing. Examples of hard skills: typing on a computer, knowledge of a foreign language, using computer programs, driving a car, reading, mathematics.

Soft skills is a complex of non-specialized, career-important supra-professional skills that are responsible for successful participation in the workflow, high productivity and are end-to-end.

Conclusion. Based on the analysis of these factors, it is possible to identify a

group of competencies that come to the fore and become extremely necessary. Such competencies are especially important for event industry specialists.

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Shapiro Anna Alexandrovna, Master's student of the Department of Tourism and Hotel Business, anna_anna_shapiro@bk.ru, Russia, Moscow, Federal Budgetary Educational Institution of Higher Education "Russian University of Sports "GTSOLIFK".

НАУЧНЫЕ РАЗРАБОТКИ В ОБЛАСТИ ПРОФЕССИОНАЛЬНОЙ КОМПЕТЕНТНОСТИ МЕНЕДЖЕРА ИВЕНТ-ОРГАНИЗАЦИИ

Шапиро Анна Александровна, магистрант 2 курса, кафедры «Туризма и гостиничного дела», anna_anna_shapiro@bk.ru, Россия, Москва, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Статья посвящена анализу формирующейся профессиональной группы ивент-менеджеров в различных ивент-организаций. На основе существующих

статистических данных автором конструируется социальный портрет соискателя на должность ивент-менеджера, анализируются особенности трудовой занятости ивент-менеджеров, подчеркивается, что в России нет четкой функциональной дифференциации ивент-менеджеров.

Ключевые слова: менеджеры событий, профессиональные компетенции, управление событиями, профессионализация

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UDC 374

THE INFLUENCE OF THE COACH'S PERSONALITY ON THE FORMATION OF PATRIOTISM IN YOUNG ATHLETES

Shapirova R.R.

Abstract. The article examines the features of the formation of patriotism in young athletes and the influence of the coach's personality on this process. The necessity and relevance of the problem of forming patriotism among young athletes in modern conditions in our country is substantiated. Ways and methods of forming patriotism among future champions are presented.

Keywords: patriotism, coach, young athlete, formation

Introduction (Relevance). The conditions of modern reality in which the Russian Federation finds itself are such that it is patriotic education that becomes necessary and in demand in the formation of the value system of the younger generation. State policy in the field of education places significant emphasis on the educational function of the system as a whole, where the leading role is given to the formation of patriotism, both in the system of general and additional education, which is reflected in regulatory documents [5].

In our opinion, turning to the cultural and historical heritage of our great country is significant in the formation of patriotism. Since in modern conditions we are faced in the information media space with a distortion of historical reality, the abolition of «Russian», «Russian» culture, the abolition of the well-deserved achievements of our athletes, as well as their exclusion from competitions at various levels and, in general, belittling the importance of the country, it is necessary to promote the formation of patriotism among the younger generation, young citizens who, after some time, will have to represent and protect the interests of their family, settlement, city, republic and country. In our opinion, in the system of educational work it is necessary to regularly carry out activities for the patriotic education of young citizens, including in the system of additional education.

Many coaches, when organizing work on the patriotic education of young athletes, turn to instilling love for their small Motherland, which, in our opinion, is justified and is the initial step in the formation of patriotism at the state level. Now more than ever it is important to study the traditions and culture of native places, and knowledge and respect for the characteristics of national culture is the basic foundation for the formation of patriotism. It should be noted the contribution to the development and preservation of national traditions on the part of the state authorities, which is significant for state policy in preserving the identity of each ethnic group and people on the territory of our large country.

V.V. Putin, the President of the Russian Federation, in his speech at the international forum «Russia is a sports power» noted «sport for us is an absolute state priority, the most important component of national development goals, he was given the task of involving 70% of the country's citizens in systematic sports activities by 2030»[1]. Achieving the task set by the president is possible only with mass enthusiasm and participation in sports, in which children's sports will play a leading role.

We understand patriotism as a multifaceted system of beliefs, views and feelings of a person towards his homeland, respect for the traditions of his people, readiness to protect them and create conditions for their prosperity. The emergence and development of patriotism occurs as a result of the patriotic direction of education, which is an integral part of the educational process and has its own characteristics.

The Federal Law «On Physical Culture and Sports in the Russian Federation» notes that sports and physical culture contribute to the development of educational potential, which is a mechanism for the development of citizenship and patriotism [5].

The purpose of our study is to study the influence of the coach's personality on the formation of patriotism among young athletes in modern conditions.

Methods. We used such research methods as analysis and generalization of

theoretical positions on the research problem, questionnaires, methods of mathematical statistics and forecasting.

Starshinov V.I. confirms the educational impact of sport with his research, which shows that two-thirds of athletes note the benefits of sport in positive physical development, as well as in the development of strong-willed and moral qualities of the individual. The author identifies three groups of moral qualities that can develop and manifest in athletes:

- qualities that characterize worldview and life attitudes (patriotism, collectivism and solidarity);
- qualities that regulate interpersonal relationships (honesty, responsiveness, unity of word and deed, discipline);
- qualities associated with moral standards (respect for elders, women, modesty, frugality).

Results (discussion). In order to determine the attitude to patriotic education in sports schools, we conducted a survey among 250 young belt wrestlers aged 8 to 10 years in the cities of Yelabuga, Naberezhnye Chelny, Mozhga and Chelyabinsk. The experience of wrestling is from 1 year to 3 years.

When asked about the need for patriotic education, 62.4% of young belt wrestlers answered negatively, 25.2% positively and 12.4% found it difficult to answer. The results obtained on this issue confirm the correctness of the state policy on purposeful educational work, the leading value of which is patriotism. The age of the subjects ranges from 8 to 10 years and is the most favorable in the formation of patriotic feelings of the younger generation.

In our opinion, ambiguous results were obtained on the following question: 52.4% of young belt wrestlers consider themselves patriots, and 47.6% of athletes do not call themselves such.

The greatest pride among young belt wrestlers is caused by sporting achievements and belonging to their nation. In our opinion, such results can be explained by the high level of achievements of wrestlers on the belts of our compatriots, therefore, the history and the path of their achievements are known to children.

When asked about important personality qualities for an athlete, the following results were obtained: 77.6% of young belt wrestlers identified discipline, 64% – responsibility, 43.6% – striving for sporting achievements, 34.8% – following the traditions of the team, 33.6% – knowledge of the bioFigurey of outstanding belt wrestlers, 25.2% – knowledge of the history of physical culture of wrestling on the belts, 16.4% – patriotism, 13.2% – conscientiousness, 12.8% – an active public position, 11.2% – a sense of duty.

The results obtained show that young belt wrestlers are focused on achievements in their chosen sport, but it is necessary to pay attention to the formation of traditional values in educational work.

In our opinion, by means of physical culture and sports it is possible and necessary to solve such educational tasks as education in the spirit of brotherhood of all peoples, social activity, collectivism and mutual assistance, respect for elders and women, the formation of the need for regular physical exercise and sports to increase discipline and performance.

Conclusions. The personality of the coach plays a significant role in the formation of patriotism among young athletes. The influence of a coach on athletes is not limited only to physical training, but also covers the formation of values, including patriotism. Here are several ways how a coach's personality can influence the formation of patriotism in young athletes:

1. Example and authority: The coach acts as an example for athletes, their authoritative leader. His personal attitude towards the country, culture, traditions and history can inspire athletes to develop patriotic feelings.

2. Model of Civic Responsibility: The coach, by demonstrating civic responsibility and respect for the rules of society, helps to develop in athletes an understanding of the importance of participation in society and respect for cultural heritage.

3. Fostering a sense of pride for the country: The coach can conduct conversations, events or training sessions dedicated to the history and culture of the country, its achievements and traditions, which helps to develop a sense of pride in athletes for their homeland.

4. Creating a Patriotic Atmosphere: The coach has the ability to create a patriotic atmosphere in the team, where respect for the country, anthem, flag and symbols become part of the sportsmanship and team unity.

5. Promoting a healthy lifestyle and playing sports: Participating in national sporting events, winning international competitions or achieving national records help athletes feel part of their country and bring honor and success to their homeland.

6. Developing Self-Identity and Self-Esteem: A coach's personality can help athletes develop a sense of pride in their country and their achievements, which promotes a positive self-identity and strengthens patriotic beliefs.

Thus, the personality of the coach has a great influence on the formation of patriotism among young athletes. By setting an example, instilling values, creating a supportive environment and conducting appropriate activities, a coach is able to develop in athletes a sense of pride in their country, respect for its history and culture, which contributes to their full socio-cultural development.

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Shapirova Railya Ravilevna - senior lecturer of the department of pedagogy, railya-s@yandex.ru, Elabuga, Kazan (Volga Region) Federal University, Elabuga Institute

ВЛИЯНИЕ ЛИЧНОСТИ ТРЕНЕРА НА ФОРМИРОВАНИЕ ПАТРИОТИЗМА ЮНЫХ СПОРТСМЕНОВ

Шапирова Раиля Равилевна - старший преподаватель кафедры педагогики, railya-s@yandex.ru, Елабуга, ФГАОУ ВО «Казанский (Приволжский) федеральный университет», Елабужский институт

Аннотация. В статье рассмотрены особенности формирования патриотизма юных спортсменов и влияние на этот процесс личности тренера. Обоснована необходимость и актуальность проблемы формирования патриотизма юных спортсменов в современных условиях в нашей стране. Представлены способы и методы формирования патриотизма у будущих чемпионов.

Ключевые слова: патриотизм, тренер, юный спортсмен, формирование

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CONTRIBUTION OF RUSSIAN KICKBOXING FEDERATION IN THE PREPARATION OF THE SPORTS RESERVE

Shapronas A.G., Maksakovskaya N.S.

Abstract. The organizational structure of the sports reserve training system is based on the functions of sports institutions (children's and youth sports schools, Olympic reserve sports schools, sports training centers, Olympic training centers, training centers for Russian national teams, Olympic reserve schools) subordinate to the Ministry of Sports of the Russian Federation. the Federation, regional ministries and municipal departments, physical education and sports committees. To maintain Russian leading position at the international sports level, high-quality training of the sports reserve is needed.

Keywords: sports reserve the Russian Kickboxing Federation, kickboxing

Introduction. Kickboxing has surged in popularity across Russia in recent decades, marking a significant evolution in the country's sporting landscape. Its

integration into the fabric of Russian sports culture heralds fresh opportunities for enhancing physical fitness, well-being, and spiritual growth among the populace. In this article, we delve into an exploration of the present-day status of the nation's sports reserve, shedding light on its role within the dynamic realm of kickboxing [1].

The following section outlines the historical timeline of the sport's inception. In 1974, sports managers M. Anderson of the USA and G. Brückner of West Berlin collaborated to introduce a series of initiatives in the realm of contact karate. The growing enthusiasm for this form of competition culminated in the establishment of WAKO - the World Association of Kickboxing Organisations (also referred to as the World All-Style Karate Organisation) in 1977. This pivotal moment allowed representatives from various disciplines such as karate, boxing, taekwondo, wushu, and Thai boxing to showcase their prowess and skills on a global stage.

In 1984, the inaugural European Kickboxing Championship took place in Graz, Austria, marking a significant milestone in the sport's history. Subsequently, a plethora of organizations dedicated to advancing kickboxing emerged, among the most prominent being WAKO, WKA, IAKSA, KICK, ISKA, and WPKA. Each of these entities boasts its distinct structure, competition calendar, and rule set, administering its own prestigious titles. A notable aspect of kickboxing is its inclusivity, permitting professionals to vie against amateurs and engage in matches governed by professional regulations [1].

Today, kickboxing in Russia has reached its zenith in popularity. Athletes regularly vie for top honors at world championships, and clubs have proliferated across the country, firmly establishing kickboxing as an integral component of Russian sports culture.

Objective. To analyze the work of Russian Kickboxing Federation with the sports reserve in the period 2016-2021.

Methods:

1. Analysis of literary sources, legal documents and statistical data.
2. Video analysis.
3. Systematic approach
4. Method of mathematical statistics.

Research results. An analysis of materials and statistical data reveals that the advancement of kickboxing in Russia is evolving along two primary avenues:

1. Mass participation: This encompasses publicly accessible sports, including programs tailored for children, youth, and students.
2. High-performance competition: This includes both amateur and professional realms, with a specific focus on participation in prestigious events such as the World Cup and Championships.

The framework of children's sports schools, clubs, and sections is strategically designed to cater to both mass participation and high-performance standards.

The performance outcomes of Russian national team athletes in prominent international competitions (as illustrated in Table 1) serve as an objective benchmark for evaluating the country's sports talent development program [2].

Table 1. – Results (prizes) of performances of boys, girls, young men and women at European and World Championships [2]

Year/Championship/Place	1st place	2nd place	3rd place	Team place among all countries
2016 World Championship, Ireland (Dublin)	57	39	34	1
2017 European Championship, Macedonia (Skopje)	57	45	33	1
2018 World Championship, Italy (Jesolo)	72	57	36	1
2019 European Championship, Hungary (Győr)	63	55	44	1
2020 –	–	–	–	–
2021 European Championship Montenegro (Budva)	68	52	31	1

The data from Table 1 demonstrates that commendable efforts have been made with the reserve, resulting in a significant influx of fresh talent into the adult composition of the Russian national team.

The Russian national kickboxing team consistently demonstrates leadership in all major international competitions, establishing itself as a dominant force in the sport.

At the 2019 European Kickboxing Championship, a total of 1540 athletes from 39 countries competed across three age categories: juniors (17-18 years old), and boys and girls (15-16 years old, and 11-14 years old). The Russian national sports team emerged victorious, securing 162 medals in total: 63 gold, 55 silver, and 44 bronze, thus clinching the top spot in the unofficial team medal standings.

In 2020, due to restrictions related to the spread of coronavirus infection, the championship was canceled [2].

To identify the most promising athletes for international competitions, the Federation hosts annual championships and Russian Cups in every discipline, ensuring thorough selection processes.

To enhance the sportsmanship of kickboxing athletes and ensure compliance with the Unified National Sports Classification standards, a series of national and interregional tournaments are organised. These events are integrated into the Ministry of Sport of Russia's Unified Calendar Plan for interregional, national, and international physical culture and sports competitions.

Regrettably, based on statistical data, numerous individuals depart from the sport without ever exploring the opportunity to compete at the adult national level. This phenomenon is often attributed to the pursuit of higher education, shifting interests, insufficient motivation within the sport, and presently, the constrained availability of international competitions.

To safeguard the integrity of sports reserves, a series of proactive measures are implemented. Firstly, collaborative training camps between junior athletes and the esteemed Russian national team are orchestrated, aimed at enhancing their technical and tactical proficiencies. Furthermore, the establishment of professional leagues catering to various age groups, including boys and girls (15-16), young men and women (16-18), serves as a dual-purpose platform. Here, athletes not only showcase their abilities but also have the opportunity to earn financial rewards, thereby fostering a heightened incentive for them to excel and transition seamlessly into

adult-level competition.

Conclusion. Currently, it can be considered that the most developed sections of preparation of the sports reserve are:

- – methods of education of physical qualities in the age aspect;
- – a system for building long-term training for athletes;
- – methods of selection and comprehensive control of athletes' fitness;
- – organizational and methodological foundations of sports;
- – a network of organizations and institutions that form a sports reserve training system.

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Shapronas Alina Gediminasovna – graduate student of the Department of Theory and Methodology of Boxing and Kickboxing n.a. K.V. Gradoplov, The Russian University of Sport "GTSOLIFK", Russia, Moscow, ashapronas@gmail.com

Maksakovskaya Natalya Sergeevna, PhD., Associate Professor of the Department of the Sports Industry Management and Economics n.a. V.V. Kuzin, e-mail: furman50@hotmail.com , Russia, Moscow, The Russian University of Sport "GTSOLIFK".

ВКЛАД ФЕДЕРАЦИИ КИКБОКСИНГА РОССИИ В ПОДГОТОВКУ СПОРТИВНОГО РЕЗЕРВА

Шапронас Алина Гедиминасовна – магистрантка, Российский университет спорта «ГЦОЛИФК», ashapronas@gmail.com, Москва, Россия.

Максаковская Н.С., к.п.н., доц., доцент кафедры менеджмента и экономики спортивной индустрии им. В.В. Кузина Российского университета спорта «ГЦОЛИФК», e-mail: furman50@hotmail.com , г. Москва, Российская Федерация.

Аннотация. Организационная структура системы подготовки спортивного резерва основана на функциях спортивных учреждений (детско-юношеских спортивных школ, спортивных школ олимпийского резерва, федераций по виду спорта, центров спортивной подготовки, центров олимпийской подготовки, тренировочных центров сборных команд России, училищ олимпийского резерва), подведомственных Министерству спорта Российской Федерации, региональным министерствам и муниципальным управлениям, комитетам физической культуры и спорта. Для поддержания лидирующей позиции России на международном спортивном уровне нужна качественная подготовка спортивного резерва.

Ключевые слова: спортивный резерв, Федерация кикбоксинга России, кикбоксинг

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COMPETITIVE READINESS OF YOUNG FEMALE RUGBY PLAYERS. DYNAMICS OF CONDITION INDICATORS AND «COST»

Shein E.A., Gillard M.V., Minislamov M.I., Temnov A.V.

Abstract. *Just a few years ago, the sports season for 16-18 years old rugby players had 1-2 official competitions. The main criteria for selection into the Russian junior national rugby sevens women's team were the players' compliance with age requirements and the presence of a foreign passport. Now the situation has changed. The training programs and competition calendar of some young athletes are comparable in intensity to the program and calendar of adult rugby players. And this situation is ambiguous.*

Keywords: *women's rugby sevens, young athletes, physical training, competitive readiness, injuries*

Introduction. Over the past 3-4 years, women's junior rugby has been actively developing. Growing competition – both in technical and tactical skills and physical qualities, and in playing experience – allows us to conduct a truly comprehensive selection in the ranks of the junior rugby sevens team. Preparation in the national team becomes one of the necessary stages in the process of professional development of young players. And this emphasizes the importance of the information that we receive in the process of studying and monitoring various aspects of the readiness of selected players.

Experts note a high positive transfer of motor abilities from specific and non-specific exercises to competitive ones in low-qualification athletes, incl. in young athletes [4, 82]. And of course, this effect becomes even more noticeable with increasing of training's volumes and competitive loads [1, 4-10]. We see this, and overall we are pleased with the result – we are getting experienced players who are physically and psychologically ready to fulfill the requirements at the national team level. The research results of talented juniors become a guide for their peers. However, we also cannot ignore the fact that injuries among young rugby players are increasing. Unfortunately, this problem occurs in many sports. And when determining the causes of injuries that occur in athletes, experts most often point to errors in the construction of the training process [3, 150-155; 5, 46-47; 6].

Study design and results. Below are the results of a study of players of the Russian youth team, which was conducted in May 2023 at the training camp. The average participants age is 16 years (born in 2006-2007, one athlete born in 2005).

This event was part of the team's scientific and methodological support program and was intended to determine the level of preparedness of female athletes at the competitive stage of the annual cycle. As part of the surveys, information was obtained on the development of significant physical qualities at the time of testing and on their dynamics for the period February – May 2023. The athletes also shared with us information about their experience of training in rugby sevens, during the survey, incl. about the presence of injuries received during training/competitions. All players invited to the training camp (19 people) had experience participating in all-Russian tournaments within two weeks before the start of this event. Some athletes competed in several competitions, including among women's teams.

To solve the research goals, the following tests were used: countermovement jump (CMJ), squad jump (SJ), countermovement jump with arms swing (CMJ AS), test of maximum anaerobic power (MAP) on a rowing ergometer, Bronco test. The height, weight and body components of the players were also studied. Statistical analysis was carried out using "IBM SPSS Statistics" version 27.0.

A comparative analysis of the results of the current examination and data obtained in February, at the preparatory stage of the annual cycle, showed the presence of statistically significant changes in the studied indicators: decrease in muscle mass ($p=0,002$), time to cover the distance in the Bronco-test ($p=0,001$) and jump height in CMJ ($p=0,025$). Against this background, a significant increase in maximum anaerobic power was found both in absolute values (MAMabs.) ($p<0,001$) and relative ($p<0,001$).

Table 1. – Anthropometric indicators and markers of the level of physical fitness of the Russian national rugby-7 (girls under 19) athletes at different stages of the annual cycle

	1st examination, February 2023, M±SD	2st examination, May 2023, M±SD	P
Height, sm.	167,72±6,83	168,2±6,72	0,084
Weight, kg	63,58±8,58	63,5±8,16	0,888
Fat mass, kg	13,93±3,67	13,66±3,14	0,684
Fat mass, %	21,31±3,42	21,05±3,54	0,767
Muscle mass, kg	28,36±2,88	27,94±2,95	0,002*
Muscle mass, %	44,04±1,85	43,41±1,84	0,176
Bronco-test, sec.	384,71±32,60	368,93±25,05	0,001*
SJ, sm.	25,63±3,39	25,27±3,54	0,207
CMJ, sm.	27,44±3,88	26,27±3,56	0,025*
CMJ AS, sm.	31,94±4,40	31,53±3,68	0,375
MAP abs, Wt	316,38±64,37	491,46±70,86	<0,001*
MAP rel, Wt/kg	4,90±0,76	7,60±0,86	<0,001*

Notes: * – differences in indicators are statistically significant ($p<0,05$); SJ – squad jump (sm); CMJ countermovement jump (sm), CMJ AS – countermovement jump with arms swing (sm); MAP abs – maximum anaerobic power, absolute values (Wt), MAP rel – maximum anaerobic power, relative values (Wt/kg)

The results obtained are generally consistent with how the changes occurring in the athlete's body at the competitive stage of preparation are described. A decrease in muscle mass is associated with a decrease in the volume of strength training; improvement in the Bronco test is an indicator of players' functional development. The positive dynamics in the MAP-test reflects the consequences of increasing the volume of work on the development of explosive strength in the training program at the stage of preparation for competitions, in particular exercises aimed at improving the technique of fighting for the ball.

A questionnaire survey of athletes made it possible to identify their usual training load: the number of training sessions per week (the values in the respondents' answers ranged from 3 to 11), the average duration of one training session (90-120 minutes). Thus, the weekly training load for different athletes ranged from 270 to 1100 minutes. Such significant differences, as we assumed, should have affected the results of the examination of the players' physical fitness. However, it was not possible to establish a connection between the magnitude of test indicators and their dynamics with the weekly training load of the subjects. However, statistical analysis using the Mann-Whitney U test revealed a significantly higher number of injuries among players with a high training load, Me [IQR]: 10,5 [10,0-11,0] sessions per week (injured) versus 6,0 [5,5-6,0] («healthy») ($p=0,010$), 1050 [1000-1100] training hours per week (in injured) versus 720 [520-720] hours ($p=0,007$). The analysis was carried out by comparing the data of athletes who were injured in competitions immediately before leaving for the training camp and during training at the training camp (6 people) with other participants in this study.

An interesting fact was established when comparing anthropometry and bioimpedance measurements. By the time the athletes entered the main competition stage, almost all players who were injured had lost weight, in comparison with the data of previous examinations, Me [IQR]: -1,15 [-1,70-0,10] kg, while the weight of most other players increased, 0,30 [-0,30-0,50] kg. Also, «healthy» and injured players differ in the dynamics of the volume of fat mass, $M\pm SD$: $-1,8\pm 2,0$ kg for injured players versus $0,73\pm 2,1$ kg for «healthy» ($p=0,038$). At the same time, we observe more obvious changes in absolute and relative MAP values in players who were not injured, Me [IQR]: 187,5 [155,0-254,5] W versus 93,0 [77,0-147,0] W ($p=0,045$) (for MAP abs) and $M\pm SD$: $3,14\pm 0,84$ W/kg versus $1,96\pm 0,98$ W/kg ($p=0,041$) (for MAP rel).

Studying the reasons for the identified discrepancies is beyond the scope of this study. However, the problem of reducing the body weight of young athletes with a lack of energy supplied from food is now a big problem in children's and youth sports [3, 148-149; 6].

Thus, while solving the main task of the research – monitoring the level of readiness of young female athletes of the junior national team – we were faced with another issue that requires special attention. Longer training hours may be a factor in increased injury rates among players. At the same time, a significant difference in the volume of training work performed is not reflected in the level of physical fitness indicators of young rugby players.

The high sensitivity of the young body to training influences, the desire of young athletes to show themselves with a penchant for risk, especially among representatives of team sports [3, 142-143; 4, 82] – these features must be taken into account and used with great caution. When preparing a team for a performance, the coach must not only bring the significant qualities of the players into maximum compliance with the requirements of competitive activity, but also save the health of the athletes.

Numerous studies by our colleagues indicate that the majority (71%) of injuries occurring in athletes are minor (when the athlete returns to normal training within 1 week). However, such injuries can have very serious consequences that limit the athlete's further progress. Eleven percent of primary injuries (in most cases, we are talking about sprains) subsequently develop into insurmountable obstacles to continuing a sports career [3, 140].

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Shein Ekaterina Aleksandrovna, Head of the comprehensive scientific group of national rugby 7's teams, coach, ksenofontova.rugby@gmail.com, Russia, Moscow, Federal State Budgetary Institution Training center for national teams, FSBI «STC», Rugby Union of Russia "RUR"

Gillard Marina Vladimirovna, Doctor of Pedagogical Sciences, Professor, Vice-Rector for Research, gillard.mv@gtsolifk.ru, Russia, Moscow, Federal State Budget Education Institution of Higher Education "The Russian University of Sport "GTSOLIFK"

Minislamov Marat Ildusovich, Head coach of the Russian women's junior rugby 7's team, tatar_7777@mail.ru, Russia, Moscow, Federal State Budgetary Institution Training center for national teams, FSBI «STC»

Temnov Aleksandr Vyacheslavovich, Coach of the Russian women's junior rugby 7's team, tem13nov@mail.ru, Russia, Moscow, Federal State Budgetary Institution Training center for national teams, FSBI «STC»

СОРЕВНОВАТЕЛЬНАЯ ГОТОВНОСТЬ ЮНЫХ РЕГБИСТОК. ДИНАМИКА ПОКАЗАТЕЛЕЙ СОСТОЯНИЯ И «ЦЕНА»

Жийяр Марина Владимировна – доктор педагогических наук, профессор, проректор по научно-исследовательской работе, gillard.mv@gtsolifk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский Университет Спорта» «ГЦОЛИФК»

Шейн Екатерина Александровна – руководитель комплексной научной группы сборных команд России по регби-7, тренер, ksenofontova.rugby@gmail.com, Россия, Москва, Федеральное государственное бюджетное учреждение «Центр подготовки сборных команд», ФГБУ «ЦСП», Федерация (Союз) регби России «ФРР»

Минисламов Марат Ильдусович, старший тренер женской сборной команды России по регби-7 (юниорки до 19 лет), tatar_7777@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение «Центр подготовки сборных команд», ФГБУ «ЦСП»

Темнов Александр Вячеславович, тренер женской сборной команды России по регби-7 (юниорки до 19 лет), tem13nov@mail.ru, Россия, Москва, Федеральное государственное бюджетное учреждение «Центр подготовки сборных команд», ФГБУ «ЦСП»

Аннотация. Еще несколько лет назад спортивный сезон регбисток 16-18 лет насчитывал максимум 1-2 официальных соревнования. Главными критериями отбора в ряды женской юниорской сборной команды России по регби-7 было соответствие игроков возрастным требованиям и наличие у них загранпаспорта. Сейчас ситуация изменилась. Тренировочные программы и календарь соревнований некоторых юных спортсменок сопоставим по насыщенности с программой и календарем взрослых регбисток. И эта ситуация неоднозначна.

Ключевые слова: женское регби-7, молодые спортсменки, физическая подготовка, травматизм

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CHANGES IN SOME MORPHOLOGICAL PARAMETERS OF ATHLETES ENGAGED IN AESTHETIC GYMNASTICS IN DIFFERENT PERIODS OF THE TRAINING CYCLE

Shipunov S.D., Ivashina V.V., Ilchenko M.A., Makhalin A.V.

Abstract. *This paper examines the change in the main morphological parameters of athletes engaged in aesthetic gymnastics, under the influence of systematic physical exertion, during various periods of the training cycle. During the analysis of some morphological indicators of female athletes, we noted an increase in body circumference indicators on the upper and their decrease on the lower extremities with a significant increase in all skin and fat folds from the competitions in transition period of 2021-22.*

Keywords: *morphological indicators, sports morphology, aesthetic gymnastics, periods of the training cycle*

Relevance. The impact of training loads on the body of highly qualified athletes in modern sports has increased significantly. At the same time, the number of competitive starts in such a type of sports activity as aesthetic gymnastics has also increased. Girls who engage in this type of sports activity during a one-year training cycle go through different periods of athlete preparation for competitions. Each period (preparatory, competitive, transitional) reflects a different amount and intensity of physical and psychological stress exerted on the athlete, which undoubtedly affects changes in the body.

The purpose of the work is to analyze the changes in some morphological parameters of athletes engaged in aesthetic gymnastics under the influence of different physical activity in different periods of the training cycle.

Organization and research methods. We examined female athletes engaged in aesthetic gymnastics in the period from 30.10.2021 to 29.06.2022.

All the girls (n=9) were representatives of the national team "Aimant" RUS "GTSOLIFK", who have sports qualifications – candidates for the master of sports.

During the longitudinal measurement, we identified three measurement points in accordance with the training periods: the competitive period (30.10.2021), which is characterized by a significant increase in load; the preparatory period (27.12.2021), which is characterized by a gradual increase in the volume and intensity of the load; the transition period (29.06.2022), which is characterized by a gradual decrease in volume and intensity loads.

Anthropometric measurements (total and circumference of the body, as well as indicators of skin and fat folds) were carried out in accordance with the classical methodology adopted at the Lomonosov Moscow State University Research Institute and Museum of Anthropology [1, 5].

The material was collected by longitudinal measurement in compliance with the rules of bioethics and signing protocols of informed consent for each subject. All the materials were exposed to mathematical processing to get the research results

using methods of variation statistics with assistance of STATTECH v4.0.7 package. (Stattech). The significance of the differences between the indicators was determined using the Fisher F-test for repeated measurements, the critical value of the significance level were chosen as $p < 0,05$ and $p < 0,001$ [2]

Research results. When analyzing the dynamics of the total body size of female athletes, we have found that from the competitive (2021) to the transition period (2022), body weight indicators decreased slightly, especially in the preparatory period (by 0,76 kg). We have not detected any changes in body length. According to the chest circumference indicator, we have found that from the competitive period (2021) to the transition period (2022), the indicators increased slightly by 0,8 cm. According to the studied indicators of total body size, we did not find statistical reliability.

Table 1. – Dynamics of the total body size of highly qualified athletes engaged in aesthetic gymnastics

Indicators	Competition period (10.30.2021) (n=9)	Preparatory period (12.27.2021) (n=9)	Transition period (06.29.2022) (n=9)
Body weight, kg	55,56 ± 4,97	54,80 ± 4,45	54,97 ± 5,70
Height, cm	164,91 ± 4,42	164,90 ± 4,55	165,27 ± 4,32
Chest circumference, cm	81,67 ± 4,24	82,34 ± 3,56	82,47 ± 3,60

When analyzing the indicators of the circumference of the body of athletes engaged in aesthetic gymnastics, we have found that according to such indicators as shoulder girth, forearm girth for the period from competitive (2021) to transitional (2022), these body parameters increase, especially in terms of forearm girth by 1,7 cm, and shoulder girth by 0,7 cm. In terms of hip and shin girth, we have noted a decrease in these parameters, namely on the hip by 1,4 cm (during the preparatory period) and on the shin by 0,3 cm (transition period). In terms of forearm girth, we have established statistical reliability from the competitive (2021) to the transitional (2022) period ($p < 0,001$).

Table 2. – Dynamics of girth body sizes of highly qualified athletes engaged in aesthetic gymnastics ($p < 0,001$)**

Indicators	Competition period (10.30.2021) (n=9)	Preparatory period (12.27.2021) (n=9)	Transition period (06.29.2022) (n=9)
Shoulder girth, cm	23,67 ± 2,24	23,84 ± 2,51	24,41 ± 1,58
Forearm girth, cm	19,00 ± 1,50**	20,63 ± 1,49	20,73 ± 1,87**
Hip circumference, cm	56,22 ± 6,67	54,82 ± 4,10	55,71 ± 3,72
Shin circumference, cm	33,78 ± 3,53	33,96 ± 2,03	33,46 ± 2,37

When analyzing the dynamics of the skin-fat folds of athletes engaged in aesthetic gymnastics, we have found that according to all indicators of skin-fat folds in athletes, there is an increase in parameters in the periods under consideration.

According to the indicator of the skin-fat fold on the back, there is an increase of 0,7 mm for the period from 2021 to 2022, as well as during this period, the indicators on the shoulder in front increased by 1 mm, on the shoulder in the back by 4.8 mm, on the forearm by 2,6 mm, on the hip 10,7 mm and on the shin by 2,4 mm.

In turn, according to the indicator of the skin-fat fold on the forearm and thigh, we established static reliability from the competitive to the transition period ($p < 0,001$).

Table 3. – Dynamics of skin and fat folds of highly qualified athletes engaged in aesthetic gymnastics ($p < 0,05$)*

Indicators	Competition period (10.30.2021) (n=9)	Preparatory period (12.27.2021) (n=9)	Transition period (06.29.2022) (n=9)
Cutaneous fat fold on the back, mm	$8,87 \pm 1,39$	$9,19 \pm 1,13$	$9,59 \pm 1,73$
Cutaneous fat fold on the shoulder in front, mm	$4,08 \pm 0,97$	$3,96 \pm 0,98$	$5,12 \pm 1,69$
Cutaneous fat fold on the shoulder from behind, mm	$4,86 \pm 3,55$	$9,09 \pm 9,96$	$9,64 \pm 4,78$
Cutaneous fat fold on the forearm, mm	$3,90 \pm 1,80^*$	$4,33 \pm 1,26^*$	$6,48 \pm 2,41^*$
Cutaneous fat fold on the hip, mm	$9,31 \pm 7,30^*$	$11,49 \pm 6,65^*$	$20,04 \pm 7,23^*$
Cutaneous fat fold on the shin, mm	$7,47 \pm 2,26$	$7,87 \pm 3,31$	$9,83 \pm 3,36$

Conclusions. During the analysis of some morphological indicators of female athletes, we have found that the total body size of female athletes changed slightly during the study period, namely, body weight decreased (by 0,59 kg) and chest circumference increased (by 0,8 cm). We also noted that from the competitive (2021) to the transition period (2022), there was an increase in girth indicators on the upper extremities, namely on the shoulder and forearm (by 1,7 cm) ($p < 0,001$) and a decrease on the lower ones, namely on the hip and shin.

In turn, for all indicators of skin-fat folds, we noted the dynamics of an increase from the competitive (2021) to the transitional (2022) period, especially on the forearm (by 2,6 mm) ($p < 0,05$) and on the hip (by 10,7 mm) ($p < 0,05$). Such dynamics of some morphological indicators of highly qualified athletes most likely reflects the peculiarities of the training process in this type of sports activity.

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Shipunov Savely Dmitrievich, postgraduate student of 3 year of study, shipunov1997@mail.ru, Head of the laboratory of the Department of Tennis, Table Tennis and Badminton, Russian university of sport (GTSOLIFK). address: No 4 Sireneviy Blvd Russia, Moscow.

Ivashina Valeriya Vladimirovna, Senior Lecturer of the Department of Theory and Methods of Gymnastics, valeriya.2406@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

Ilchenko Mariia Anatolievna, specialist in educational and methodological work of the Department of Theory and Methodology of rowing and sailing named after A.F. Komarov, Russian University of Sport (GTSOLIFK). address: No 4 Sireneviy Blvd Russia, Moscow, mariilchenko@yandex.ru

Makhalin Adu Vasilyevich, PhD, fiziologi@mail.ru, Associate Professor of the Department of Theory and Methodology of Sports and Physical Education of the Moscow State Educational Institution "MGUSiT", specialist of the Research Institute and Museum of Anthropology of the Lomonosov Moscow State University, Moscow, Russia

ИЗМЕНЕНИЕ НЕКОТОРЫХ МОРФОЛОГИЧЕСКИХ ПОКАЗАТЕЛЕЙ СПОРТСМЕНОВ, ЗАНИМАЮЩИХСЯ ЭСТЕТИЧЕСКОЙ ГИМНАСТИКОЙ, В РАЗЛИЧНЫХ ПЕРИОДАХ ТРЕНИРОВОЧНОГО ЦИКЛА

Шипунов Савелий Дмитриевич, аспирант 3 года обучения, shipunov1997@mail.ru, заведующий лабораторией кафедры Тум тенниса, настольного тенниса и бадминтона, Российский университет спорта (ГЦОЛИФК), Сиреневый б-р д. 4

Ивашина Валерия Владимировна, старший преподаватель кафедры теории и методики гимнастики, valeriya.2406@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Ильченко Мария Анатольевна, специалист по учебно-методической работе кафедры теории и методики гребного и парусного спорта им. А.Ф. Комарова, Российский университет спорта (ГЦОЛИФК), Сиреневый бульвар дом 4, mariilchenko@yandex.ru

Махалин Аду Васильевич к.б.н., fiziologi@mail.ru, доцент кафедры теории и методики спорта и физического воспитания ГАОУ ВО г. Москвы "МГУСиТ", специалист НИИ и Музей антропологии МГУ им. М.В. Ломоносова, Москва, Россия

Аннотация. В данной работе рассматривается изменение основных морфологических показателей спортсменов, занимающихся эстетической гимнастикой, под влиянием систематических физических нагрузок, в различные периоды тренировочного цикла. В ходе анализа некоторых морфологических показателей спортсменов нами было отмечено увеличение показателей обхватных размеров тела на верхних и их уменьшение на нижних конечностях при значительном увеличении всех кожно-жировых складок с соревновательного периода 2021 года по переходный период 2022 года.

Ключевые слова: морфологические показатели, спортивная морфология, эстетическая гимнастика, периоды тренировочного цикла

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PHYSICAL REHABILITATION AFTER LATARJET SURGERY IN PERSONS 16-25 YEARS OLD

Shlychkov D.V., s/s Ermolaeva Y.A.

Abstract. *The article describes the physiology of shoulder instability and the stages of physical rehabilitation after Latarjet surgery. This article is based on an analysis of the works of domestic and foreign colleagues.*

Keywords: *latarjet operation, physical exercises, postoperative rehabilitation*

Introduction. The issue of eliminating post-traumatic dislocation of the shoulder joint with damage to the scapula joint remains very relevant today, since it occurs both among representatives of the highest achievements of science and among people involved in active physical activity at an amateur level. The shoulder union is capable of providing revolutionary functionality among contact sports athletics due to the increased load during the training process and sparring. Athletes of team disciplines, including basketball, volleyball, gymnastics and athletics, associated with throwing elements (hammer, javelin, discus, shot throwing) are also at risk [1]. Aim of the research. This study was also aimed at assessing the motivation of students to follow the rules of a healthy lifestyle.

Along with athletes and active people are ordinary citizens whose injuries and instability of the shoulder joint were caused by various conditions and environmental irritants.

The proportion of people leading an active lifestyle (fitness, dancing, skating, skiing, etc.) susceptible to injuries in the shoulder joint, according to various authors, is 42%, and among both professionals and amateurs. During a comprehensive examination, in 22% of cases, a deficiency of bone mass is revealed due to a fracture of the articular surface of the scapula of varying severity. People under 30 years of age are prone to the greatest injuries in the shoulder joint. The most common (96-98% of cases) is anterior dislocation of the humeral head, which in 45-50% of cases leads to chronic instability, leading to pain, decreased range of motion, etc. [3].

After the operation, the terms of rehabilitation and return to sports will primarily depend on competent step-by-step rehabilitation, compliance with the prescriptions and recommendations of the doctor and specialist in physical therapy.

The purpose of the study. Study and analyze the works of foreign authors on the topic of step-by-step recovery and rehabilitation of surgical treatment of instability of the shoulder joint using the Latarjet method in people 16-25 years old.

Research methods: analysis of scientific and methodological literature on the research topic.

The results of the study and their discussion: After the operation, the patient is in a special fixing bandage, which slightly abducts the shoulder and bends the elbow to the body 90 degrees. The immobilization phase can last from 2 weeks to 6 weeks. This is necessary so that postoperative inflammation and swelling pass faster, and the primary attachment of tendons to the bone occurs [1]. Often during this period, such

types of physiotherapy are used as: cryotherapy (reduces pain in the early postoperative period), electrical myostimulation (used to prevent muscle atrophy), ultrasound exposure with drugs (analgesic effect). There are many different tactics regarding the methodology of rehabilitation after Latarjet surgery, but the most popular are still strict immobilization for a period of at least 4 weeks and only after that a physical therapy methodologist begins to work. Despite this, the tendency towards an early start of adequate and dosed rehabilitation is beginning to be increasingly found in the recommendations of key clinicians in the direction of rehabilitation [2].

Until the restrictions on wearing a fixation bandage are lifted, the instructor has every right to use training to develop the passive amplitude of the operated arm, hypertrophy and strength of the muscles of the healthy arm and body in principle. This will help reduce pain, accelerate regeneration processes, and increase stress tolerance.

At this stage, physical rehabilitation classes are based on these tasks:

- Increased passive range of motion
- Reduced pain and inflammation
- Patient education
- Increased motor control

The second phase lasts from weeks 5 to 8. During this period, we are engaged in passive and active development of all biomechanical movements in the shoulder. Here we primarily rely on these tasks:

- Do not overstress the healing tissue.
- Stop using the brace/sling at the end of the 6th week.
- Gradually begin active range of motion.
- Begin active assisted range of motion (AAROM) under the guidance of a trainer.
- Start light exercises at waist level.

Also, if necessary, this phase can be accompanied by physiotherapy, manual and massage techniques if necessary [1, 2].

Most authors in their works place an important emphasis on this stage of rehabilitation due to the increased risk of injury, inadequate load dosage and patient non-compliance with the instructions prescribed by doctors and rehabilitation specialists. It follows from this that one of the most important aspects of rehabilitation after Latarjet surgery is competent patient education.

The third phase lasts from 9-12 weeks. During this period, we actively work in all planes, set progression in muscle work, increase strength and endurance. The work includes exercises with various weights, exercise machines, and many exercises accompanied by electrical myostimulation to recruit more muscle fibers.

During this period, attention should be paid to leading the patient to:

- Full range of motion (all biomechanical ranges of the shoulder joint)
- Reducing the difference in the symmetry index of strength indicators of the operated and healthy arm
- Restoration of technology patterns of everyday life, sports, professional activities

The final phase from 13 to 22 weeks is associated with heavy physical activity and is mainly suitable for professional athletes and physically active people. In this period, the emphasis is on special physical exercises for a specific sport, hobby, or

consolidation of specific everyday patterns. In this period, muscular work with heavy weights, resistance and requiring increased endurance prevails [2, 4].

In most protocols and articles, the authors urge their colleagues, regardless of the preferred treatment and rehabilitation tactics, to still adhere to average values, as this will reduce the risk of relapses and re-injury in the future. [2, 4, 5].

Conclusion. An analysis of foreign literature on the problem of physical rehabilitation after the Latarjet operation was carried out. A thorough selection of articles and journals with an evidence-based and scientific approach to recovery from Latarjet surgery was conducted to review the research data.

Thus, we can conclude that rehabilitation after Latarjet surgery has its own important medical aspects, compliance with which is a predictor of high-quality and successful rehabilitation with a lower risk of re-injury.

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Shlychkov Dmitry Vadimovich, 2nd year master's student of the Department of Physical Rehabilitation, Massage and Physical Fitness named after. Sarkizova-Serazini, swampie5000@gmail.com, Russia, Moscow, "Russian university of sports (GTSOLIFK)".

Scientific adviser: Ermolaeva Yulia Anatolyevna candidate of pedagogical sciences, assistant professor, assistant professor department of Physical Rehabilitation, Massage and Health-Improving Physical Culture named after I.M. Sarkizov-Serazini Russian State University of Physical Culture, Sports, Youth and Tourism, Russian Federation, Moscow, ermolaeva.julia.a@yandex.ru.

ФИЗИЧЕСКАЯ РЕАБИЛИТАЦИЯ ПОСЛЕ ОПЕРАЦИИ ЛАТАРЖЕ У ЛИЦ 16-25 ЛЕТ

Шлычков Дмитрий Вадимович, студент 2 курса магистерской подготовки кафедры физической реабилитации, массажа и ОФК им. Саркизова-Серазини, swampie5000@gmail.com, Россия, Москва, «Российский университет спорта «ГЦОЛИФК».

Научный руководитель: Ермолаева Юлия Анатольевна, канд. пед. наук, доцент, доцент кафедры Физической реабилитации, массажа и оздоровительной физической культуры им. И.М. Саркизова-Серазини Российского государственного университета физической культуры, спорта, молодежи и туризма, Россия, Москва, ermolaeva.julia.a@yandex.ru.

Аннотация. В статье описываются патофизиология нестабильности плечевого сустава и этапы физической реабилитации после операции Латарже. Данная статья основывается на анализе трудов отечественных и иностранных коллег.

Ключевые слова: операция Латарже, физические упражнения, послеоперационная реабилитация

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UDC 796.4

PERFORMANCE OF SPORTS TRAINING COMPONENTS IN RHYTHMIC GYMNASTICS

Sidorova D.M.

Abstract. *The study deals with sports training in rhythmic gymnastics which is a long-term year-round pedagogical process aimed at achieving high sports results, which can be successfully achieved only if the training process will increase the functional capabilities of the body of gymnasts and strengthen their health.*

Keywords: *sports training, rhythmic gymnastics, technical training, anticipation*

Introduction. It is known that the success of gymnasts in competitions largely depends on their physical, technical, psychological readiness. Determining the significance of each of the factors influencing the achievement of high sports results, their competent assessment can significantly improve the process of training gymnasts [3, 4].

Discussion. As the data of special literature and scientific research show, the sports activity success of an athlete engaged in rhythmic gymnastics is determined by a complex of personality traits and includes five main components (Figure 1). To find out the factors that determine the successful performance of gymnasts at competitions, theoretical analysis and generalization of data from literary sources devoted to the problem of sports training in rhythmic gymnastics was conducted [3, 5].

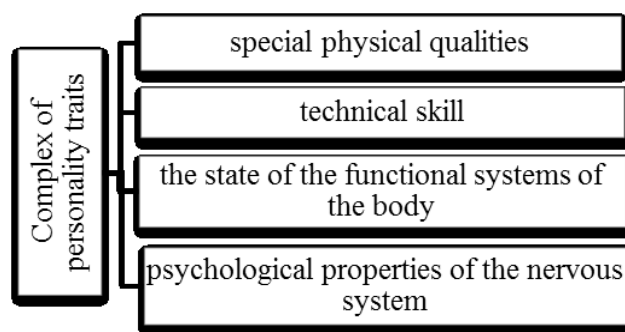


Figure 1. – Factors of personality traits

During the study of special literature, 14 components were identified that, according to experts, play a significant role in the training system of gymnasts. Their responses were ranked. The significance degree of these factors and the relationship between them was determined using the mathematical statistics method.

The results of the data analysis are presented in table 1.

Table 1. – Results of the coaches' questionnaire

Components of the effectiveness of sports training	Rank Number
Technical training	1
Special physical training	2
General physical training	3
Acrobatic training	4
Anticipation	5
The quality of the organization and conduct of the training process	6
Perseverance, hard work	7
Initiative, independence of a gymnast	8
The level of development of coordination abilities	9
The level of development of musical hearing	10
Features of the gymnast's body structure	11
Gymnast nutrition	12
Mode of the day	13
Conditions and schedule of the competition	14

Analysis of the data in Table 1 showed that 85.7% of the surveyed specialists named technical training as the first factor, special physical training as the second, and general physical training as the third.

The responses of coaches with different work experience were compared. It turned out that coaches working from one year to 20 years, put general and special physical training on second and third place, respectively. Specialists who have been working for more than 20 years, along with special and general physical training, put the quality of anticipation, and the organization of the training process, in fifth and sixth places, respectively. Interestingly, there are very experienced coaches in this group. Meanwhile, the component of the competent organization of the training process among all the surveyed specialists came on sixth place.

In general, the survey of coaches revealed that the success of gymnasts is determined by: technical training, general and special physical training, anticipation,

as well as acrobatic training.

The correlation analysis of the interrelation of the components showed that the following correspond to technical training in exercises with subjects (at a significance level of $p = 0.01$): special physical training ($r=0.637$), acrobatic training ($r=0.587$), psychological qualities: perseverance, diligence ($r=0.481$), initiative and independence ($r=0.510$), a well-structured daily routine ($r= 0.452$).

At the same time, statistical processing of the survey data showed a close correlation between: special and general physical training ($r=0.582$); acrobatic and special physical training ($r=0.435$); special physical qualities and psychological qualities: perseverance and diligence ($r =0.465$). This indicates that special physical training in the training process is closely combined with technical training and anticipation.

This is confirmed by the high correlation between these components.

In the course of the study, it was found that very important components affecting the improvement of gymnasts' athletic skills are general physical training, closely related to special physical ($r=0.582$), technical ($r=0.448$), acrobatic training ($r=0.469$), as well as psychological qualities: initiative and independence of gymnasts ($r= 0.488$).

It was revealed that acrobatic training, which is closely related to the level of development of coordination abilities ($r=0.498$), anticipation ($r=0.482$) and structural features of the body ($r=0.471$), has a significant impact on improving the sportsmanship of gymnasts. It should be noted that the gymnast's anticipation is manifested in the ability to predict the object's flight path, to foresee the point and method of catching it, based on her own accumulated sports experience [1, 2].

One of the main components that contribute to the achievement of high results in the technical training of female gymnasts is the high-quality organization of the training process, which is based on the features of sports training in rhythmic gymnastics (fig. 2).

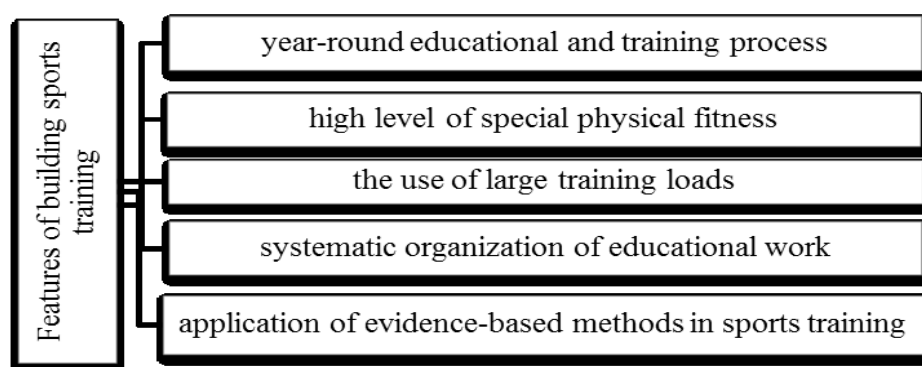


Figure 2. – Features of the construction of sports training

Thus, the dominant factors in the preparation of highly qualified athletes in rhythmic gymnastics are special physical training and technical training, which is carried out in unity with the education of psychological qualities.

Conclusions. In the process of preparing a highly qualified gymnast, the coach needs to create such conditions in the training process that would contribute to the optimization of technical and special physical training, which will ensure the growth

of sportsmanship and, as a result, effectiveness.

One of the main factors contributing to the achievement of high results in the technical training of gymnasts is the competent organization of the training process, which is based on the features of sports training, including: year-round training process, a high level of special physical fitness, the use of large training loads, systematic and purposeful organization of educational work, the use of evidence-based methods [4].

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Sidorova Daria Mikhailovna, 1th year undergraduate student of the Department of Theory and Methods of Gymnastics, daria_sidorova2001@bk.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "Russian University of Sport "GTSOLIFK".

СОСТАВЛЯЮЩИЕ РЕЗУЛЬТАТИВНОСТИ СПОРТИВНОЙ ТРЕНИРОВКИ В ХУДОЖЕСТВЕННОЙ ГИМНАСТИКЕ

Сидорова Дарья Михайловна, магистрантка 1-го курса кафедры теории и методики гимнастики, daria_sidorova2001@bk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. спортивная тренировка в художественной гимнастике представляет собой многолетний круглогодичный педагогический процесс, направленный на достижение высоких спортивных результатов, который может быть успешно достигнут только при условии, что тренировочный процесс будет способствовать повышению функциональных возможностей организма гимнасток и укрепления их здоровья.

Ключевые слова: спортивная тренировка, художественная гимнастика, техническая подготовка, антиципация

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UDC 796

BIOENERGETIC CRITERIA FOR ASSESSING THE ENDURANCE OF QUALIFIED FEMALE SWIMMERS AND WATER POLO PLAYERS AGED 14-16 YEARS

Signit S.S., Laptev A.I., Mekhtev O.V., s/s Mekhteva E.A.

Abstract. *Many swimmers at the stage of in-depth sports specialization leave their sport for various reasons. The main problem is what kind of sport can attract swimmers to continue their sports careers. The study examines from the point of view of bioenergetic indicators characterizing the general and special endurance of athletes, how close they are and whether this factor can be limiting in the considered transition from swimming to water polo. As a result of the study, similarities between both groups in bioenergetic indicators were revealed, which indicates that from the point of view of bioenergetics, the transition from one sport to another is possible at this critical age for career continuation.*

Keywords: *qualified swimmers, qualified water polo players, bioenergetic parameters, general and specific endurance, comparative characteristics*

Introduction. Swimming and water polo has become an important area of sport science research, with the bioenergetic factors assuming a fundamental performance-influencing role. Bioenergetic features are essential in swimming as they determine an athlete's ability to efficiently produce and sustain energy throughout a race or training session [1]. By understanding and optimizing these features, swimmers can improve their performance, increase endurance, and reach their full potential in the water. By optimizing their aerobic capacity, anaerobic power, and metabolic efficiency, swimmers can improve their endurance, power, and efficiency in the water, ultimately helping them reach their full potential and achieve their goals in the pool [3, 4].

Also, bioenergetic characteristics are crucial for the best results of water polo players. By developing and maintaining high aerobic and anaerobic endurance, as well as muscle strength, athletes can excel in this fast-paced and demanding physical activity sport. Success in water polo requires investments in a comprehensive training regime aimed at these bioenergetic features [2].

Many swimmers at the stage of in-depth sports specialization whose sports qualifications range from second adult rank to Candidate of Master of Sports leave their sport for various reasons. For example, fatigue from cyclic exercises, a low level of emotional component, a relatively early period of achieving high results, etc.

The main problem is what kind of sport can attract swimmers to continue their sports careers. It is important to pay attention to the fact that in water polo, one of the important criteria for success is good swimming skills developed at a professional level, accordingly, the transition from swimming to water polo may be relevant and considered by some swimmers as a continuation of a sports career. The study examines from the point of view of bioenergetic indicators characterizing the general and special endurance of athletes, how close they are and whether this factor can be limiting in the considered transition from swimming to water polo.

The **goal** of this study is to investigate and compare the bioenergetic factors characterizing general and specific endurance in qualified female swimmers and water polo players in order to determine how closely these factors are related and whether they limit an athlete's transition from swimming to water polo.

To achieve his goal of investigation the following **objectives** were set-up:

1. To identify the bioenergetic parameters of female swimmers and water polo players using special tests.

2. To identify which bioenergetic indicators have similarities and differences.

For solving these objectives were used the following **methods**:

- analysis of scientific and methodological literature,
- pedagogical supervision and tests,
- methods of mathematical and statistical data processing.

Experiment design. The study was conducted with a group of non-elite female swimmers 14-16 years old and non-elite female water polo players 14-16 years old. Each group consisted of 8 sportsmen different qualifications.

At the beginning of the experiment, girls from both groups were tested to identify their morphofunctional characteristics and aerobic and anaerobic performance. For these tests were used: stadiometer, scales with a body composition determinant, spirometer, a bicycle ergometer and a gas analyser. Athletes performed testing procedures laboratory conditions: test speed-increasing workload; Wingate anaerobic test. The key tested parameters were heart rate, the level of lactate accumulation in the blood, lung ventilation per minute (VE), maximum of oxygen consumption level (VO_{2max}), the values of carbon dioxide released. According to these parameters, the power and efficiency of the aerobic and anaerobic energy supply process were determined. Anthropometric parameters, such as body length, weight, chest circumference and vital capacity of the lungs (VEL) were measured. The percentage of fat, muscle and bone in the body's weight was also calculated using InBody scales. The method of mathematical statistics (Student's T-test) was used to determine the statistical significance of the differences in all parameters.

Result discussion. In this research we compared some morphofunctional characteristics for female swimmers and water polo players. The key morphofunctional parameters such as VEL, body weight, length and body composition of the both groups are presented in table 1. The body length indicators and percentage of fat in both groups were quite similar ($p>0,05$). In the rest

parameters the significant differences were found ($p<0,05$). The group of athletes differed significantly in VEL parameters. The mean value of VEL was $4,15\pm0,38$ L for swimmers and $5,04\pm0,4$ L for water polo players. This fact suggests that swimmers can potentially do more work with the aerobic nature of the energy supply. The mean value of body weight was $59,37\pm7,28$ kg for swimmers and $67,45\pm8,15$ kg for water polo players. Also, significant differences in the percentage of muscle in body composition were found. The mean value in the percentage of muscle was $47,65\pm6,51\%$ for swimmers and $57,27\pm3,51\%$ for water polo players, this may indicate that water polo players can potentially do more work using more muscle fibres. The percentage of bones also had some differences between the groups. The mean value of the percentage of bones was 32,54% for group of swimmers and 20,97% for water polo players.

Table 1. – Morphofunctional indicators for female water polo players and swimmers 14-16 years old

Indicators		Body weight, kg	Body length, cm	VEL, L	The percentage of fat, %	The percentage of muscle, %	The percentage of bone, %
Swimming	X	59,37	167,2	4,15	19,81	47,65	32,54
	σ	7,28	6,07	0,38	4,34	6,51	5,88
Water polo	X	67,45	170,5	5,04	21,76	57,27	20,97
	σ	8,15	3,84	0,4	4,17	3,51	1,06
Diff.	T-test	$p<0,05$	$p>0,05$	$p<0,05$	$p>0,05$	$p<0,05$	$p<0,05$

Table 2 shows the key aerobic performance parameters that were obtained using test with a stepwise increasing load. The maximum indicators of oxygen consumption (VO_{2max}), characterizing the power of aerobic process in swimmers – $2.43\pm0,35$ L/min, in water polo players – $2.65\pm0,34$ L/min. The indicators of the ratio of ventilation to oxygen consumption (VE/VO_2), characterizing the effectiveness of the body respiratory system were $32.71\pm13,02$ for swimmers, $37.23\pm5,36$ for water polo players. The heart rate of swimmers reached $181.5\pm18,61$ bpm and $181.20\pm8,48$ bpm for water polo players. The level of anaerobic threshold (AT) is 77% of the level of maximum oxygen consumption for swimmers and 78% for water polo players. In the result of data analysis, we found no significant differences in all key aerobic performance parameters for sportsmen in both groups ($p>0,05$). This indicates the ability of the cardiovascular system of athletes from both groups to overcome aerobic direction loads at the same level.

Table 2. – Aerobic performance parameters (Test with a stepwise increasing load)

Indicators		Anaerobic threshold (AT)						Maximum oxygen consumption (VO_{2max})				
		HR, bpm	VO_2 , L/min	vs. MAX	VE/VO_2	WR, W	VCO_2 , L/min	HR, bpm	VO_2	VE/VO_2	WR, W	VCO_2 , L/min
Swimming	X	159,9	1,867	0,77	28,79	145,6	1,87	181,5	2,43	32,71	218	2,72
	σ	16,91	0,31	0,08	3,31	26,9	0,35	18,61	0,35	13,02	0,43	16,87
Water polo	X	156,6	2,07	0,78	28,86	168,1	2,03	181,2	2,65	37,23	229,2	2,98
	σ	11,59	0,29	0,06	1,91	32,62	0,28	8,48	0,34	5,36	21,32	0,38
Diff.		$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$	$p>0,05$

In table 3 are presented key anaerobic performance parameters that were obtained using Wingate test. Dynamics of ergometric power indicators over 30 seconds of work, shown in Table 3, shows various individual manifestations of the anaerobic ability of the muscular apparatus of athletes from both groups. The time to reach the maximum amplitude (t.amp.), characterizing the rate of deployment of the anaerobic alactate process, is $5.83 \pm 0,67$ secs for swimmers and $4.1 \pm 0,54$ secs for water polo players. The differences in these indicators are significant. The maximum lactate value characterizing the power of the anaerobic glycolytic process in swimmers was $10.16 \pm 3,19$ mmol, in water polo players $12.66 \pm 1,64$ mmol. This indicator had the differences between the groups ($p < 0.05$). The fatigue coefficient, which shows the rate of fatigue increase during work and characterizes the capacity of the anaerobic process, was 0.02 in both groups, the lower this indicator, the more effective. The data analysis indicates specific of work which characterized each type of sport. For water polo players is typically short and powerfull activities during a game. Accordingly, the water polo players have some higher anaerobic performance indicators than swimmers.

Table 3. – Anaerobic performance parameters (Wingate test)

Indicators		La initial, mmol	La 3min, mmol	W _{M/M} , W/kg	t.amp. secs	t _b secs	t _y	К _{уск.}	К _{утомл.}
Swimming	X	1,04	10,16	13,62	5,83	3,38	3,88	1,75	0,02
	σ	0,61	3,19	3,16	0,67	0,85	1,20	0,99	0,01
Water polo	X	0,95	12,66	11,27	4,1	5,1	11,49	0,76	0,02
	σ	0,14	1,64	1,21	0,54	0,51	3,43	0,10	0,00
Diff.	T-test	p>0,05	p<0,05	p<0,05	p<0,05	p<0,05	p<0,05	p<0,05	p>0,05

According to the results we can make the following **conclusions**:

1. Comparative analysis of obtained data of morphofunctional and bioenergetic parameters in non-elite female swimmers and water polo players shows proof differences in VEL, body weight, body composition and anaerobic indicators, which are related to the specificity of the training and competition process of each sport under consideration. However, the bioenergetic parameters of aerobic performance representatives of the two sports are similar.

2. From the point of view of bioenergetics, the transition from one sport to another is possible at this critical age for career continuation. This is evidenced by the similarity of bioenergetic indicators of the sports considered in the study.

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Signit Sofia Sergeevna, 2nd year bachelor student, sofisignit@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

Laptev Alexey Ivanovich, PhD, Associated professor, Laptalexej@yandex.ru, The Russian University of Sport (GTSOLIFK), No. 4 Sirenevyy Blvd., Moscow, Russia

Mekhteleev Oleg Viktorovich, 2nd year PhD Student, Mekhteleev1976@yandex.ru The Russian University of Sport (GTSOLIFK), No. 4 Sirenevyy Blvd. Moscow Russia 105122

Scientific supervisor - Mekhteleva Elena Alexandrovna, PhD, Associated Professor, Mekhteleva1978@mail.ru, The Russian University of Sport (GTSOLIFK), No. 4 Sirenevyy Blvd. Moscow, Russia 105122

БИОЭНЕРГЕТИЧЕСКИЕ КРИТЕРИИ ОЦЕНКИ ВЫНОСЛИВОСТИ КВАЛИФИЦИРОВАННЫХ ПЛОВЧИХ И ВАТЕРПОЛИСТОК В ВОЗРАСТЕ 14-16 ЛЕТ

Сигнит София Сергеевна, студентка, sofisignit@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Лантев Алексей Иванович, кандидат технических наук, доцент, Laptalexej@yandex.ru Российский университет спорта (ГЦОЛИФК), Сиреневый бульвар, 4. Москва Россия 105122

Мехтелев Олег Викторович, аспирант 2-го года обучения, Mekhteleev1976@yandex.ru Российский университет спорта (ГЦОЛИФК), Сиреневый бульвар, д. 4, Москва, Россия 105122, Москва, Россия

Научный руководитель - Мехтелева Елена Александровна, кандидат педагогических наук, доцент, Mekhteleva1978@mail.ru, Кафедра теории и методики спортивного и синхронного плавания, аквааэробики, прыжков в воду и водного поло, Российский университет спорта «ГЦОЛИФК», Сиреневый бульвар, дом 4, Москва, Россия.

Аннотация. Многие пловцы на этапе углубленной спортивной подготовки уходят из спорта по разным причинам. Основная проблема заключается в том, какой вид спорта может привлечь пловцов для продолжения спортивной карьеры. В исследовании рассматриваются с точки зрения биоэнергетических показателей, характеризующих общую и специальную выносливость спортсменов, насколько они близки и может ли этот фактор быть ограничивающим при рассматриваемом переходе от плавания к водному поло. В результате исследования были выявлены сходства между обеими группами по биоэнергетическим показателям, что свидетельствует о том, что с точки зрения биоэнергетики переход из одного вида спорта в другой возможен в этом критическом для продолжения карьеры возрасте.

Ключевые слова: квалифицированные пловчихи, квалифицированные ватерполистки, биоэнергетические параметры, общая и специфическая выносливость, сравнительные характеристики

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UDC 796.8

APPLICATION OF MODERN INFORMATION TECHNOLOGIES OF FEEDBACK IN IMPACT MARTIAL ARTS ON THE EXAMPLE OF TAEKWONDO WTF

Sirotkina Y.A., Epov O.G.

Abstract. *The article deals with topical issues related to the use of feedback information technologies. Since there are not so many studies on this topic, the review includes information on the example of other sports where research is already being carried out, as well as preliminary own research obtained on the example of athletes of percussion martial arts, taekwondo WTF. The study examines the main parameters of the kinematics of the movement of athletes, the study of which allows us to evaluate their effectiveness, and the magnitude of the impact, primarily when assessing the external side of the load. Feedback information technologies for continuous monitoring of motor activity are currently informative, reliable tools in the work of coaches, the information from which helps to plan the training process and carry out the continuous process of training an athlete both in different periods of the annual cycle and during the recovery period.*

Keywords: *athletes, technology, feedback, percussion martial arts*

Introduction. At present, a lot of information has been accumulated about the management of the training process based on feedback technologies. For a long time, technology was built on the basis of heart rate monitoring. The criterion for the magnitude of the load was the target value of the pulse, which must be achieved and held for some time to achieve the required energy supply mode [1]. Based on this, a conclusion is made about the physiological or pedagogical orientation of the lesson, and the load performed. This feature is typical for representatives of both cyclic and team sports. With the growth in the number of information technologies, and new systems for recording the movement of athletes, it becomes possible to obtain new information about the external load value and compare it with the internal one, for example, with the heart rate, the most accessible for measurement and evaluation, that is, use a different approach in assessing the load value. Over the past decades, motion activity monitoring systems have become an integral part of obtaining information on the most important physiological indicators, contributing to injury prevention, and improving adherence to exercise in various sports fields, from professional athletes to patients in rehabilitation centers. Modern integrated systems make it possible to conduct high-quality and informative experiments for the

quantitative assessment of the athlete's neuromuscular load.

Material and Methods. In order to test the hypothesis and the feasibility of using modern information technologies, a preliminary experiment was conducted with the participation of athletes of highly qualified percussion martial arts, taekwondo WTF. Qualification of the master of sports 8 athletes were examined. The GPS/LPS system, RealTrack System, Wimbu Pro, Spain, was chosen as the system for recording motion parameters. The system has a builtin accelerometer (1000 Hz), a magnetometer (100 Hz), a gyroscope (1000 Hz), a barometer (100 Hz), an internal data storage device, and the duration of continuous operation is 3 hours. All information is transmitted in real-time to a device located in a special vest-shirt on the back, in a specially made pocket, between the shoulder blades. If necessary, data can be transmitted in real-time with a resolution of 0.5 s. The sensor size is 4x8 cm. Bastida-Castillo studied the data acquisition technology for informativeness, reproducibility and reliability [2]. The fight was recorded on digital media using a Go Pro HERO8 Black camera. Further, the resulting image was integrated into special software for subsequent data synchronization and analysis. At the same time, the heart rate was recorded using a Garmin chest heart rate monitor, which has synchronization with the WIMU device, and also allows recording cardio intervals of the heart rhythm. Athletes performed the task in the form of sparring according to the rules of the competition, with a judge, 3 rounds of 2 minutes.

Results and Discussion. The results of the study are shown in Figures 1-3. As shown in Figure 1, on the left side, there is a heat map of the volume of space which athletes occupy during the fight. The perimeter of the circle is indicated by different colors corresponding to the front (blue), side and back (gray line) lines. The advantage of using this method is to obtain objective information by measuring the main kinematic characteristics of movement in the process of continuous performance of various motor actions, including translational and rotational movements. The measurement of temporal characteristics reveals a movement in time: a moment in time, pace and rhythm of movement. The classification of biomechanical characteristics related to kinematics is subdivided into displacement, acceleration and speed, which are parameters of the external load value. Thus, knowing the parameters of the external value of the load, it becomes possible to study the factors that determine the effectiveness (efficiency) of movements (fig. 1).

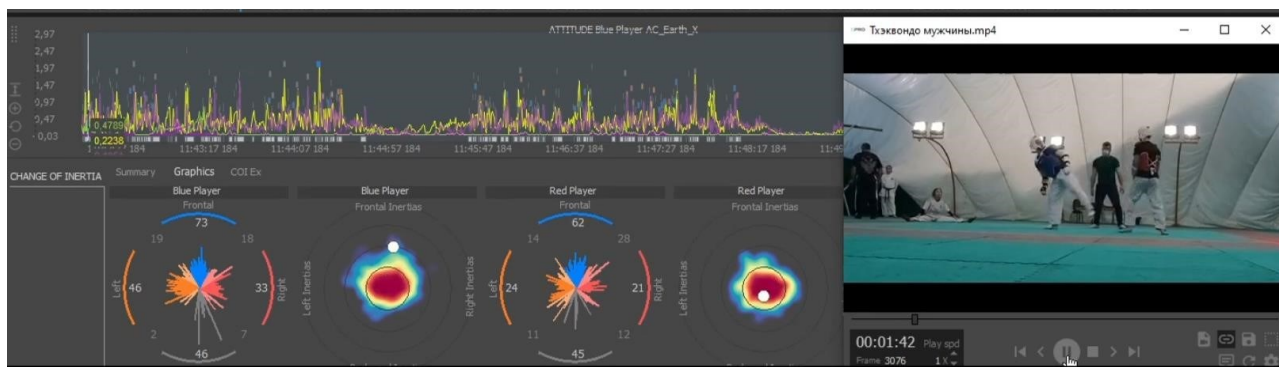


Figure 1. – A copy of the screen with heart rate data (upper line), vertical speed (middle line), angular velocity (lower line)

One of the advantages of using modern feedback information systems is the evaluation of the parameters of translational and rotational movements. It can be seen from the figures presented that the duration of a single movement is very short and can be less than 2 sec, while in cyclic movements it can last from 10-50 sec to several hours. In 2 sec the athlete can perform a technical-tactical defensive, provocative, or attacking action, a series of motional actions with both hands and feet. In fact, for two minutes of the round, heart rate indicators reach a plateau only at the end – 177 beats/min, and recovery by the beginning of the second round – 140 beats/min (figure 2). The magnitude of the load, in this case, will be determined not by the quantitative value of the heart rate, but by the applied muscle efforts (power) during the movement.

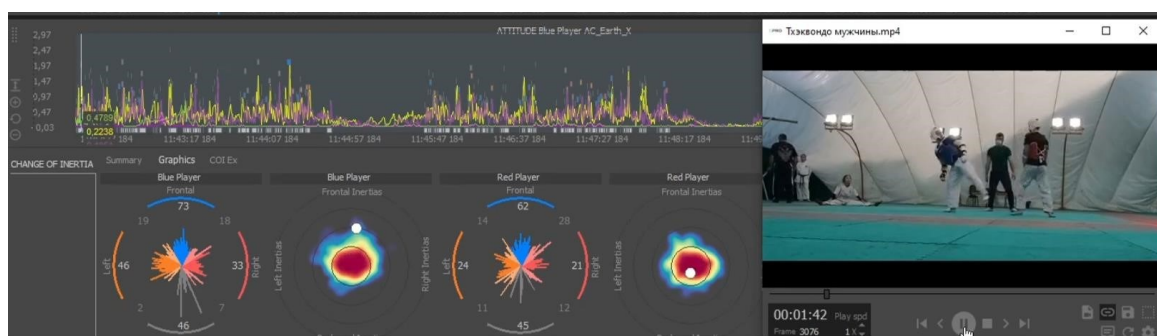


Figure 2. – A copy of the screen with data corresponding to the end of the first round

The following studies will focus on the study of the range of motion of various segments. As well as obtaining statistical data of various motion parameters. The information obtained in the process of this type of training exercises, their quantitative and qualitative distribution in both competitive and training activities, including integral training, which is relevant. Godik classified motor activity according to intensity: slow, accelerated, sprint, and also represented the energy parameters of some motor actions, however, the author does not provide information about the distribution of motor activity parameters and the method of its measurement, since information means for monitoring the fixation of these parameters appeared relatively recently. Modern information tools that record movement parameters make it possible to obtain new information about, and classify according to intensity ranges [3, 4]. García [5] with coauthors showed the distribution of motor activity parameters on the example of basketball: maximum speed, km/h; total distance, km; running at high speeds above 18 km/h; jumps above 3g (a unit of free-fall acceleration); collisions above 8G; high-intensity acceleration ($\geq 2 \text{ m/s}^2$) and deceleration ($\leq 2 \text{ m/s}^2$), the authors pay attention to these parameters as the main parameters characterizing motor activity. Vazquez-Guerrero with co-authors obtained similar results and focused on measuring acceleration, that is, the player's ability to quickly change speed, which ultimately determines his speedstrength abilities. Reche-Soto et al. made an attempt to study the parameters of metabolic power in various intensity exercises, since this line of research is currently relevant [3, 4]. Evaluation of the basic movements of athletes, classified by the kinematics of movement, allows us to evaluate their effectiveness in a new way. The main advantage when working with feedback information technologies is that the assessment of actions is carried out

immediately for two athletes who are in a pair, and therefore, those techniques and actions that they perform against each other.

Thus, we obtain reliable information about the quality of the exercise being performed, and we evaluate the actual integral type of training, minimizing the subjective approach in assessing the exercise by «eye».

Conclusion. The essence of the management of the training process is expressed in the change in the state of the controlled object (system) in accordance with a given criterion for the effectiveness of its functioning and development. The effective development of such a dynamic system as an athlete is possible only with a competent construction of the training process, which must first of all include the determination of the initial parameters of the system. The more parameters of the system are known and the clearer are the patterns of relationships between these parameters, the more predictable for the coach are the results that an athlete can achieve in the near and distant future. When managing the training process, it is unacceptable to refer to the system-athlete as a "black box", where there are only input data in the form of a training load, and output data - the result of work in the form of results of competitive activity. Thus, the use of innovative systems for recording the movement of athletes is relevant at the present time and is used to increase the effectiveness of the training process.

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Sirotkina Yulia Alekseevna, laboratory of the Research Institute of Sports Russian State University of Physical Education, Sport, Youth and Tourism (GTSOLIFK), Moscow, Russia.

Epov Oleg Georgievich, Doctor of Pedagogical Sciences, Professor, Head of the Laboratory, Scientific Research Institute of Sports, Russian University of Sport (GTSOLIFK), Moscow, Russia.

ПРИМЕНЕНИЕ СОВРЕМЕННЫХ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ ТЕХНОЛОГИИ ОБРАТНОЙ СВЯЗИ В УДАРНЫХ ЕДИНОБОРСТВАХ ВИДЫ ЕДИНОБОРСТВ НА ПРИМЕРЕ ТХЭКВОНДО WTF

Сироткина Юлия Алексеевна, лаборант, лаборатория НИИИ спорта, Федеральное государственное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», Москва, Россия

Эпов Олег Георгиевич, доктор педагогических наук, профессор, заведующий лабораторией НИИИ спорта, Федеральное государственное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. В статье рассматриваются актуальные вопросы, связанные с использованием информационных технологий обратной связи. Поскольку исследований на эту тему не так много, обзор включает информацию на примере других видов спорта, где исследования уже проводятся, а также предварительные собственные исследования, полученные на примере спортсменов ударных единоборств, тхэквондо WTF. В исследовании рассматриваются основные параметры кинематики движений спортсменов, изучение которых позволяет оценить их эффективность, а также величину воздействия, в первую очередь при оценке внешней стороны нагрузки. Информационные технологии с обратной связью для непрерывного мониторинга двигательной активности в настоящее время являются информативными, надежными инструментами в работе тренеров, информация из которых помогает планировать тренировочный процесс и осуществлять непрерывный процесс подготовки спортсмена как в разные периоды годового цикла, так и в период восстановления.

Ключевые слова: спортсмены, технология, обратная связь, ударные единоборства

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ELECTRICAL STIMULATION IN THE TREATMENT OF LATERAL ANKLE LIGAMENT TEARS: A REVIEW OF STUDIES

Sirozh A.U., s/s Ermolaeva J.A.

Abstract. The article analyzes the results of studies describing the influence of EMS on the healing process of traumatized tissues, restoration of the ankle joint functionality, as well as reduction of pain sensations and improvement of the general condition of patients. The mechanisms of EMS action on muscles and ligaments are considered.

Keywords: physical rehabilitation of soccer players, traumatization, lateral ligaments of ankle joint, ligament rupture, electromyostimulation

Objective. To analyze the effectiveness of electromyostimulation application in rehabilitation of patients with ankle lateral ligament rupture. To analyze and describe the results of EMS application, its influence on the healing process of the ligament-tendon apparatus, restoration of the joint functionality, as well as on the reduction of pain sensations

Research methods: analyze scientific studies.

Introduction. Rupture of the lateral ligaments of the ankle joint is a common injury that often occurs in athletes and active individuals. This condition can lead to significant limitations in movement, pain, and reduced quality of life for the patient. In recent years, electromyostimulation (EMS) has become a widely used modality in the rehabilitation of sports injuries, including lateral ankle ligament tears.

Understanding the effectiveness and mechanisms of EMS in ankle lateral ligament rupture is of great practical importance for specialists in the field of traumatology, rehabilitation and sports medicine. The study of this issue will allow to optimize the recovery processes and increase the effectiveness of therapy in patients with such injuries.

We consider the application of electromyostimulation on the example of damage to the lateral ligaments of the ankle joint, but the application of EMS can be applied to any structures of the tendon-ligamentous apparatus.

Main part. Medical research shows that the use of Electrical Muscle Stimulation (EMS) can be an effective method of pain relief in various conditions and diseases. EMS is used to stimulate nerve and muscle cells, which can lead to a reduction in pain [1, 2].

In studies, it has been found that EMS can reduce pain intensity in patients with various chronic and acute conditions such as muscle pain, back pain, arthritis, etc. This is especially important for patients who have contraindications to conventional pain management methods such as medications [2, 4].

When reviewing and searching for scientific articles on the topic of analgesia using EMS, a predominant number of publications were noticed where an animal experiment was described. When conducting a meta-analysis of animal studies, researchers found that electrical stimulation does have a positive effect on tendon healing and regeneration. They note that this effect is associated with an increase in collagen synthesis, improved organization of collagen fibers, and stimulation of angiogenesis (formation of new blood vessels) [3].

In medical practice, EMS is widely used in rehabilitation after injuries and surgeries, treatment of chronic pain, etc. According to the Institute of Physical Therapy, EMS is used in more than 70% of clinics in the United States to relieve pain and improve functionality. In sports medicine, electrical stimulation is often used to relieve pain in athletes. For example, in a study by Cheng and colleagues (Cheng et al., 2018), 92% of athletes showed a reduction in pain intensity after EMS application [1].

Cheng, Smith, and Lee (2018) conducted a study including two groups: an experimental group that received electrical stimulation and a control group that received standard treatment without EMS. Patients receiving EMS demonstrated faster healing and recovery of joint function after lateral ligament rupture compared to the control group. Study participants receiving EMS also reported decreased pain and improved joint function. In addition to decreased pain, accelerated healing resulted in faster recovery of walking ability [1, 2].

A study by Hong, S. K., Han, K. H. (2011) found that electrical stimulation increased fibroblast proliferation in the skin and enhanced collagen synthesis in stretched fibroblasts [3].

An extensive study by Fary, C. and Järvinen, T.A. of various articles on the subject

leads to the conclusion that electrical stimulation can be an effective method to accelerate the tendon healing process due to its effect on collagen fibers and tissue structure.

Maffiuletti's (2013) article delves into the physiological and methodological aspects of using neuromuscular electrical stimulation (NMES). The review provides valuable insights into the considerations necessary when utilizing NMES, offering a comprehensive overview of its potential benefits and applications in the realm of muscle physiology and rehabilitation [1].

The review by Janssen and Vogelaar (2015) focused on the effectiveness of electrical stimulation in speeding up bone healing. They analyzed existing studies to understand how electrical stimulation impacts the healing process of bones. Their review discussed the positive effects of electrical stimulation on bone healing. They cited a review of studies that reported a 25-50% reduction in healing time when using EMS compared to traditional methods.

This prospective randomized study by Lee and colleagues investigates the effects of electrical stimulation (EMS) on muscle regeneration and functional recovery in patients with musculoskeletal injuries. The researchers conducted a randomized study where patients were assigned to receive either EMS or a control intervention. The study aimed to assess how EMS impacts muscle regeneration and functional recovery in individuals with various musculoskeletal injuries. The study probably found that patients who received EMS had improved muscle regeneration and faster functional recovery compared to the control group [3].

The application of Electrical Muscle Stimulation (EMS) in ankle lateral ligament tears has the potential to accelerate the healing process, improve joint functionality and shorten the rehabilitation period. Electrical stimulation has a positive effect on the healing process and functional recovery in ankle lateral ligament tears. A systematic review showed that patients receiving EMS had faster recovery and improved joint functionality compared to control groups [1].

Studies show that EMS helps increase collagen synthesis in tissues. Collagen is a major component of the ligament and tendon apparatus, and its improved synthesis has a favorable effect on healing.

Conclusion:

1. Electromyostimulation (EMS) has become a widely used modality in the rehabilitation of sports injuries, including ankle lateral ligament tears. Research shows that the use of EMS can be an effective method of pain management in a variety of conditions and diseases.

2. Studies show that EMS helps increase collagen synthesis in tissues, which is beneficial to tissue healing. This may be especially important for ligament and tendon repair after lateral ankle ligament tears and other ligamentous-tendon injuries.

3. The use of EMS for lateral ankle ligament tears has the potential to accelerate the healing process, improve joint functionality, and shorten the rehabilitation period. Participants in various studies whose rehabilitation program included EMS demonstrated faster regeneration and improved joint function compared to control groups.

4. Thus, EMS can be considered as a promising method for the treatment of

ankle lateral ligament tears, which can not only relieve pain, but also accelerate the recovery process and improve the functional status of the joint. All analyzed studies indicate the effectiveness of EMS analgesic non-drug means, which can be used as an additional and separate from drug therapy. When working with EMS, it is necessary to take into account individual characteristics and interact with the patient throughout the therapy to monitor the effect of the current and the patient's well-being.

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Sirozh Artur, student of Department of physical rehabilitation, massage and health physical culture named after I.M. Sarkizov-Serazini. Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK», artur.siroj@mail.ru

Scientific supervisor – Ermolaeva Julia Anatolievna, candidate of pedagogical Sciences, associate Professor of the Department of Physical rehabilitation, massage and health-improving physical culture named after I.M. Sarkizov-Serazini, Russia, Moscow; Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK», ermolaeva.julia.a@yandex.ru

ЭЛЕКТРИЧЕСКАЯ СТИМУЛЯЦИЯ В ЛЕЧЕНИИ РАЗРЫВОВ ЛАТЕРАЛЬНЫХ СВЯЗОК ГОЛЕНОСТОПНОГО СУСТАВА: ОБЗОР ИССЛЕДОВАНИЙ

Сирож Артур Юрьевич, магистрант 1 курса кафедры физической реабилитации, массажа и оздоровительной физической культуры И.М. Саркизова-Серазини, Россия, Москва, «РУС «ГЦОЛИФК», artur.sirozh@mail.ru

Научный руководитель – Ермолаева Юлия Анатольевна, к.п.н, доцент кафедры физической реабилитации, массажа и оздоровительной физической культуры им. И.М. Саркизова-Серазини, Россия, Москва; РУС «УЦОЛИФК», ermolaeva.julia.a@yandex.ru

Аннотация. В статье анализируются результаты исследований, описывающих влияние EMS на процесс заживления травмированных тканей, восстановление функциональности

голеностопного сустава, а также уменьшение болевых ощущений и улучшение общего состояния пациентов. Рассмотрены механизмы действия EMS на мышцы и связки.

Ключевые слова: физическая реабилитация футболистов, травматизация, латеральные связки голеностопного сустава, разрыв связок, электромиостимуляция

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RHYTHMIC GYMNASTICS IN THE XXI CENTURY: RESULTS OF THE RUSSIAN TEAM'S PERFORMANCE AT THE OLYMPIC GAMES

Skripkina A.N.

Abstract. The article is devoted to the analysis of the results of the Russian rhythmic gymnastics team's performance at the Olympic Games in the 21st century. The performance indicators of the leading gymnasts have been discussed in the article, as well as the development direction of rhythmic gymnastics in the Russian Federation has been identified.

Keywords: rhythmic gymnastics, Olympic Games, Russian team's performance, XXI century, Games of the Olympiad

Introduction. The price of the Olympic gold medal is high in any sport, but it is the highest in rhythmic gymnastics.

Firstly, the sports career of gymnasts does not last long - most participants will only have one Olympic Games in their lives.

Secondly, the competition within the Russian team is much stronger than at the main world-class competitions. And thirdly, every year the competition rules undergo changes, as a result of which more and more serious tasks are set for gymnasts again and again [2].

The research purpose is to determine the direction for improving the results

of Russian rhythmic gymnasts at the Olympic Games.

Methods: analysis of scientific and methodological literature, comparative method, special historical methods.

Discussions. Since the Games of the XXVII Olympiad of 2000 in Sydney, Russian athletes have not lost in group and individual all-around events for 20 years. But at the Games of the XXXII Olympiad of 2020 in Tokyo, Russia lost the individual tournament in rhythmic gymnastics for the first time in two decades, breaking its series of victories. In this regard, the issue of returning Russia's leadership in rhythmic gymnastics is of particular relevance now.

Each performance of the gymnasts is a real performance - spectacular, interesting, eye-catching. The new rules set a goal for gymnasts: not only to perform the program technically correctly, but also to convey the emotions invested in the composition. Rhythmic gymnastics appeared as a sport relatively recently, but it is deservedly popular among spectators and it is an Olympic sport.

In ancient society, female beauty was considered imperfect if the girl did not know how to move gracefully and control her body perfectly. Throughout all periods of human history, people have expressed their emotions through dance. Movements and musical accompaniment changed in dances from era to era. Dance and theater studios appeared. At the end of the 19th - beginning of the 20th century, Francois Delsarte, Isadora Duncan, Georges Demeny, Emile Jacques-Dalcroze made a great contribution to the creation of a special technique for expressing feelings and thoughts through the movements of the human body. Olympic rhythmic gymnastics was added to the Olympic program in 1984 at the Games of the XXIII Olympiad in Los Angeles.

The idea to include rhythmic gymnastics in the Olympic program arose at the end of the 19th century, but that official regulations for this sport only appeared in the 1950s. The first international competitions in rhythmic gymnastics were held in 1953 in Budapest, and 31 years later it became part of the Olympic Movement for the first time.

The basic rules and requirements for Olympic rhythmic gymnastics are established by the Rhythmic Gymnastics Federation (FIG). Each gymnast performs an exercise taking into account technical and artistic aspects. The judges evaluate the performance for each exercise using a set of criteria that includes difficulty of the elements, technique, choreography, musicality and overall impression.

At the Games of the Olympiad rhythmic gymnastics consists of two types of competition: exercises with a specific apparatus (hoop, ball, ribbon or clubs) and exercises with group composition. Athletes compete in various age categories and receive scores according to the judging system. The most successful gymnasts receive medals, and the best teams receive prizes and the title of Olympic champion.

In order to consider the results of the Olympic medalists, we will analyze the performances of the Russian national rhythmic gymnastics team in the individual all-around from 2004 to 2020 and evaluate the results of the medalists:

- The Games of the XXVIII Olympiad of 2004 in Athens:
 - 1st place – Kabaeva Alina (Russia) – 108,400 points
 - 2nd place – Chashchina Irina (Russia) – 107,325 points
 - 3d place – Bessonova Anna (Ukraine) – 106,700 points
- The Games of the XXIX Olympiad of 2008 in Beijing:

1st place - Kanaeva Evgenia (Russia) - 75,5 points;
 2nd place - Zhukova Inna (Belarus) - 71,925 points;
 3d place - Bessonova Anna (Ukraine) - 71,875 points;
 - The Games of the XXX Olympiad of 2012 in London:
 1st place - Kanaeva Evgenia (Russia) - 116,900 points;
 2nd place - Dmitrieva Daria (Russia) - 114,500 points;
 3d place - Cherkashina Lyubov (Belarus) - 111,700 points;
 - The Games of the XXXI Olympiad of 2016 in Rio de Janeiro:
 1st place - Mamun Margarita (Russia) - 76,483 points;
 2nd place - Kudryavtseva Yana (Russia) - 75,608 points;
 3d place - Rizatdinova Anna (Ukraine) - 73,583 points;
 - The Games of the XXXII Olympiad of 2020 in Tokyo:
 1st place - Linoy Ashram (Israel) - 107,800 points;
 2nd place - Averina Dina (Russia) - 107,650 points;
 3d place - Gornosko Alina (Belarus) - 102,700 points [1].

As it can be seen from the results presented above, this is not the first time that Russian gymnasts have become deserved champions in this sport, moving several points ahead of their competitors from Ukraine, Belarus, and Bulgaria.

Beginning with the Games of the XXVIII Olympiad of 2004 in Athens Alina Kabaeva performed the program phenomenally, winning the first place. Thus, she beat out not only Irina Chashchina, but also Anna Bessonova from Ukraine.

At the Olympic Games of 2008 and 2012 Evgenia Kanaeva became the Olympic champion.

In 2016 the winner unexpectedly became Margarita Mamun.

Until 2016, Russian gymnasts took gold medals every time. And, at the Olympic Games in Tokyo, we also expected our team to return with gold. But this did not happen, Dina Averina was beaten by Lina Ashram by less than 0.2 points. Linoy became the winner of the Games of the XXXII Olympiad of 2020 in Tokyo despite the loss of the ribbon [3].

As it can be seen from the above data, our main competitors in the 21st century have traditionally been gymnasts from Belarus and Ukraine, but in 2021 unexpectedly for everyone the winner of the Olympic Games was an Israeli, because, according to the scores in the final table, Linoy Ashram's performance program was full of complex technical elements, which made it possible to win a gold medal even with a loss.

Conclusions. Thus, at present there is a need to complicate the program of gymnasts due to the ever-increasing competition and improvement of the skills. Every year increasingly high demands are placed on gymnasts, and in order to maintain leadership, it is necessary not only to meet the demands of the sport, but also to be better than required by the rules and judges. Therefore, it is worth conducting further research and paying attention to the performance program of gymnasts from other countries in order to study their preparation and approach.

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Skripkina Anastasia Nikolaevna, 4th year bachelor student, Department of Gymnastics, skripkina.122@list.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

ХУДОЖЕСТВЕННАЯ ГИМНАСТИКА В XXI ВЕКЕ: РЕЗУЛЬТАТЫ ВЫСТУПЛЕНИЯ РОССИЙСКОЙ СБОРНОЙ НА ИГРАХ ОЛИМПИАД

Скрипкина Анастасия Николаевна, бакалавр 4 курса, кафедра гимнастики, skripkina.122@list.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Статья посвящена анализу результатов выступления российской сборной на Играх Олимпиад в XXI веке. В статье рассмотрены показатели выступлений ведущих гимнасток, выявлена вектор развития художественной гимнастики в Российской Федерации.

Ключевые слова: художественная гимнастика, Игры Олимпиад

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UDC 796.421

THE SPECIAL EXERCISES IN THE TRAINING OF HIGHLY QUALIFIED RACE WALKERS

Slivar A.D., Stepanova A.M.

Abstract. *The article deals with the problem of discomfort, stiffness in the body when passing a long distance by highly qualified athletes specializing in race walking, as well as a way to solve it using complexes of special exercises aimed at removing blocks and clamps. The already studied methods of solving this problem, which are currently used by coaches in their work, are considered. The effectiveness of the developed complexes in the training process of highly qualified race walkers is evaluated.*

Keywords: *race walking, special exercises, training of race walkers, highly qualified athletes, myofascial release, fascia, a set of exercises*

Introduction. Relevance. The purpose of training in race walking is to complete a competitive distance at the highest possible speed. Athletic walking is a

discipline of athletics that requires the manifestation of the maximum capabilities of the body while observing technical rules [1]. The athlete must walk economically, without excessive tension, maintaining contact with the track and straightening the knee of the supporting leg from the moment of setting up until the moment of passing the vertical [3, 4]. In competitive practice, race walkers often face the problem of excessive tension in the body during the distance. At the same time, their coaches often give instructions at competitions that it is necessary to "relax". This task turns out to be difficult for most athletes. There is a need to use exercises that allow their to work on the problem of discomfort and stiffness when walking a distance.

The purpose of the study. To develop and substantiate the effectiveness of the use of special exercises in the training of highly qualified athletes specializing in race walking.

Tasks:

1. To identify the most effective means used in the training of highly qualified race walkers.
2. To develop complexes of special exercises aimed at removing blocks and clamps from athletes.
3. Experimentally substantiate the effectiveness of the developed exercise complexes.

The study was conducted in three stages, on the basis of the Russian university of sports and the Sport school of the Olympic reserve named after br. Znamenskie. Two masters of sports, specializing in race walking, took part in the pedagogical experiment, including the author of this publication. The duration of the pedagogical experiment was 5 months. To confirm the relevance of our research, a survey was conducted of 10 athletes and 10 coaches. Figure 1 shows Figures with questions addressed to athletes and results of survey.

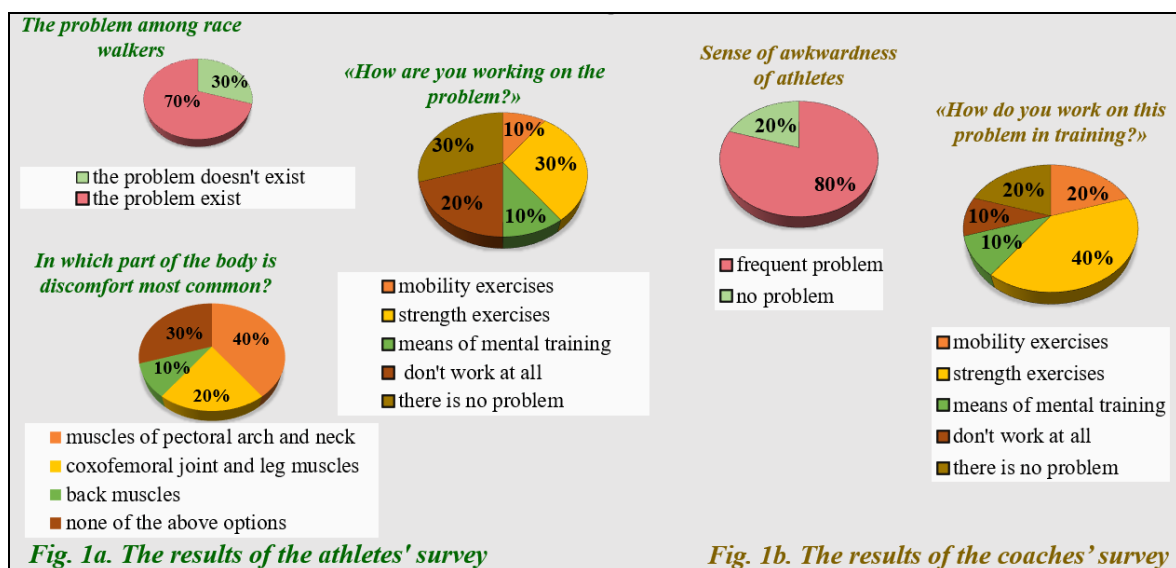


Figure 1. – Survey results

Based on the results of the survey, we selected tests aimed at assessing flexibility and mobility in muscles and joints that are most involved in race walking,

namely: tests for flexibility, for mobility in knee joints and ankle joints, mobility of the vertebral column, hip joints and shoulder joints. The conducted pedagogical testing allowed us to establish a high initial level of flexibility and joint mobility in highly qualified race walkers. At the same time, athletes face the problem of discomfort and stiffness in the body when passing the distance.

Based on the data of the questionnaire and pedagogical testing, 4 developed sets of special exercises aimed at removing blocks and clamps from highly qualified athletes specializing in race walking were introduced into the training process. The contents of the complexes are presented in table 1.

Table 1. – Developed sets of exercises

Set №1	Set №3
1. Lifting straight arms up through the sides (30 sec) 2. «Rolling» the foot (1 minute of each leg) 3. Standing on the ball with impact on the feet (2 minutes of each leg) 4. Squatting on your knees with the MFR ball (1 minute) 5. «Rolling» the ankle joint + squatting emphasis on the ankle joint with a MFR ball (2 minutes on each leg + 30 sec both of them) 6. Rolling of the gluteal muscles with the MFR-roll (2 minutes) 7. Rolling of the calf muscles with the MFR-roll (2 minutes) 8. Rolling of the the front surface of the thigh with the MFR-roll (2 мин) 9. Rolling of the the back of the thigh with the MFR-roll (2 minutes) 10. Rolling of the the outer surface of the thigh with the MFR-roll (2 minutes)	1. Lifting straight arms up through the sides (30 sec) 2. "Rolling" the foot (1 minute of each leg) 3. Standing on the ball with impact on the feet (2 minutes of each leg) 4. "Tapping" the MFR-ball of the muscles of the arms, neck, back (1 minute for each article) 5. Stretching the trapezius muscle (1-2 minutes) 6. "Rolling" of the pectoral muscles lying on your stomach (1 min for each article) 7. "Twisting" in hip joint with an MFR-ball lying on your stomach (1 minute) 8. "Twisting" lying on your side (30 sec) 9. Lifting extension + back stretching (2 minutes)
Set №2	Set №4
1. Lifting straight arms up through the sides (30 sec) 2. «Rolling» the foot with the MFR-ball (1 minute of each leg) 3. Standing on the ball with impact on the feet (2 minutes of each leg) 4. The impact of the MFR-ball on the area under the shoulder blades (2 minutes) 5. "Tapping" the MFR-ball of the muscles of the arms, neck, back (1 minute for each article) 6. Downward tilt with chest opening (2 series x 30 sec) 7. Chest opening exercise (2 series x 30 sec) 8. "Twisting" in the thoracic region while lying on your back (1 minute)	1. Lifting straight arms up through the sides (30 sec) 2. «Rolling» the foot with the MFR-ball (1 minute of each leg) 3. Standing on the ball with impact on the feet (2 minutes of each leg) 4. Downward tilt (30 sec) 5. Head turns up and down (1 minute) 6. Head turns from right to left (1 minute) 7. "Twisting" in hip joints with the MFR-ball lying on your back (1 minute) 8. "Twisting" with the arms out to the side (30 seconds) 9. Lifting extension + back stretching (2 minute)

The complexes were performed by athletes at home. The content of the sets depended on the content of training period. In our complexes, the following equipment was used: a roll for MFR, 2 massage balls, a gym mat and a non-stretchable strap. Complexes No. 1 and No. 2 are aimed at toning muscles, complexes No. 3 and No. 4 are aimed at restoring and relaxing "clogged" muscles. All exercises in the complex were performed without interruption at a slow pace, one after the other, each from 30 seconds to 2 minutes. The exercises are focused on the myofascial release (MFR) technique, which is used to work with local muscle spasms that have increased sensitivity in the muscle area. Such spasms are called "trigger points". Due to the irritation of sensory receptors located on the skin, fascia, ligaments, tendons, and muscles, it's possible to regulate the rate of inclusion of muscle fibers in work, and because of the application of myofascial release, the muscle relaxes [2].

MFR is actively used in rehabilitation, therapeutic physical education, as well as in fitness. It is worth noting that in athletics, this technique is just beginning to be used in the training process, while in athletic walking it is not used at all. The MFR technique for influencing the neuromuscular apparatus is similar to massage, but not all athletes have access to massage therapist services, and MFR is available to everyone.

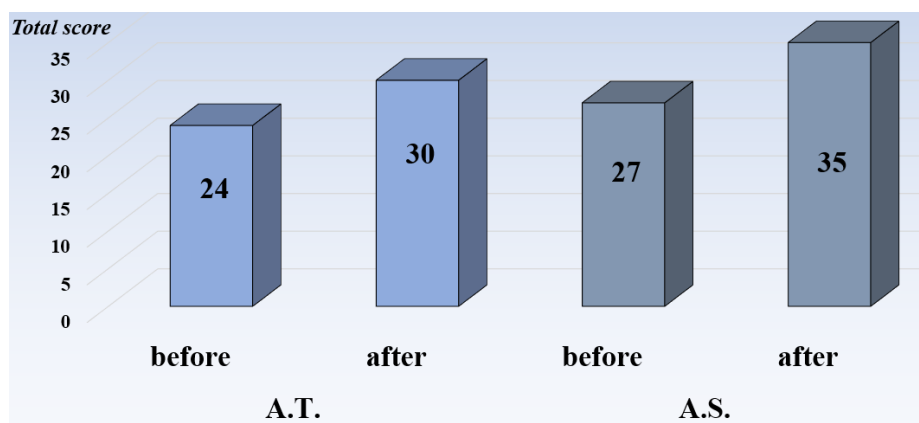


Figure 2. – The results of the final testing (score in points)

At the end of the pedagogical experiment, a final test was conducted. In the groups of tests with a point score, the result increased for the first subject by 6 points, for the second subject by 8 points (fig. 2).

In the group of tests with a score in centimeters (fig. 3), the average increase in indicators for the first subject was 5 cm (A.T), for the second subject – 7 cm (A.C).

The results of video analysis are presented on the figure 4. In the first subject (A.C). after the introduction of the complexes, slouching and tension in the muscles of the shoulder girdle disappeared, the hands began to work more "freely", the walking technique as a whole became more economical. The competitive result after the experiment improved by 1 min 29 sec. In the second subjects (A.T) the competitive result after the experiment improved by 1 min 47 sec, and the changes in technique were as follows: the feeling of discomfort and tension in the body disappeared, according to the athlete; excessive head tilt disappeared, as well as restrained hand work, and mobility in the hip joint improved.

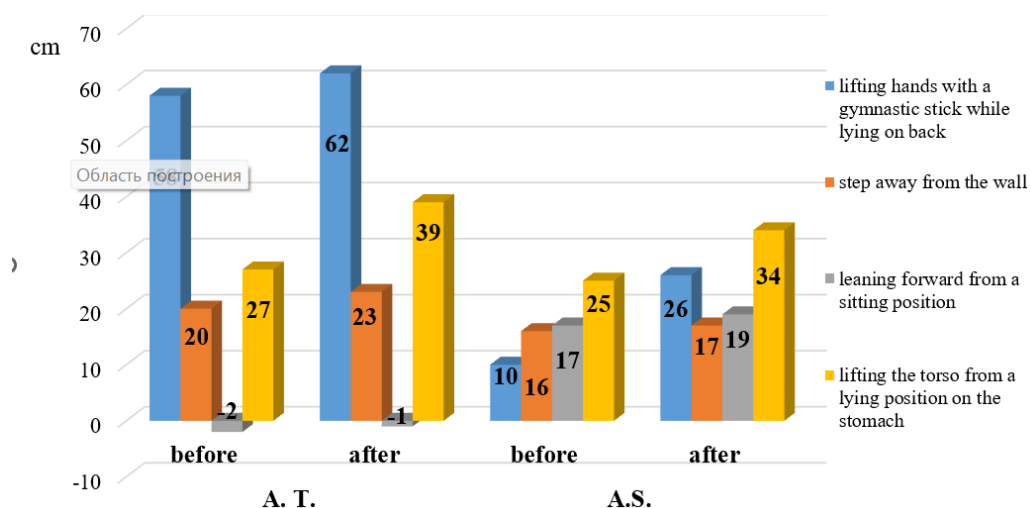


Figure 3. – The results of the final testing (score in centimeters)



Figure 4. – Comparison of the subjects' walking technique before and after the experiment

All of the above allows us to conclude that the use of special exercise complexes in the training process of highly qualified race walkers contributes to an increase in athletic performance by 1.26% – 1.42%.

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Slivar Anastasia Dmitrievna, 4th year student of the Department of Theory and Methodology of Athletics by N.G. Ozolin, nastya.slivar@mail.ru, Russia, Moscow, federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK".

Stepanova Anastasia Maksimovna, Senior lecturer at the Department of Theory and Methodology of Athletics named after N.G. Ozolin, stepanova.am@gtsolifk.ru, federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK"

ИСПОЛЬЗОВАНИЕ СПЕЦИАЛЬНЫХ УПРАЖНЕНИЙ В ТРЕНИРОВОЧНОМ ПРОЦЕССЕ ХОДОКОВ ВЫСОКОЙ КВАЛИФИКАЦИИ

Сливарь Анастасия Дмитриевна, студентка 4 курса кафедры теории и методики легкой атлетики им. Н.Г. Озолина, nastya.slivar@mail.ru, Россия, Москва, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Степанова Анастасия Максимовна, старший преподаватель кафедры теории и методики легкой атлетики им. Н.Г. Озолина, stepanova.am@gtsolifk.ru, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»

Аннотация. В статье рассматривается проблема дискомфорта и скованности в теле при прохождении спортивной дистанций высококвалифицированными спортсменами, специализирующимися в спортивной ходьбе, а также способ ее решения с помощью комплексов специальных упражнений, направленных на снятие блоков и зажимов. Рассмотрены уже изученные методы решения этой проблемы, которые в настоящее время используются тренерами в своей работе. Дана оценка эффективности разработанных комплексов в тренировочном процессе высококвалифицированных ходоков.

Ключевые слова: спортивная ходьба, специальные упражнения, подготовка ходоков, высококвалифицированные ходоки, миофасциальный релиз, фасция, комплекс упражнений

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EFFECTIVENESS OF STATIC EXERCISE IN SINGLE AND PAIR FIGURE SKATERS TRAINING AT THE MASTERY STAGE OF DEVELOPMENT

Smirnova A.V.

Abstract. *In the Olympic cycle 2022-2026, the process of gradual increase in the age limit for athletes' admission to participate in the adult category of the International Skating Union (ISU) competitions continues based on the decision of the 58th ISU Congress [2]. The increase in the age range of athletes in single and pair skating to 17 years old in the pre-Olympic season and the 2026 Olympic season, contributes to the actualization of the process of finding and checking the effectiveness of the use of technical, conditional and special conditional training [1]. The developed tools will be aimed at optimizing and improving the training system for skaters in order to adapt to the new requirements of international rules and demonstrate high sports results in competitions.*

Keywords: *figure skating, mastery stage of development, static exercises*

Introduction. In preparation of single and pair skaters, the process of searching and checking the effectiveness and specifics of using means to improve and maintain the skaters' level of technical, general and special physical fitness at the mastery stage of athletic development, considering international modern requirements (ISU) for the admission of participants aged 17 in the new Olympic cycle, is actively underway. Currently, the literature shows insufficient scientifically based, relevant information about the result and specifics of applying static exercises as a tool for different types of preparation in the training of figure skaters considering specific features of motor activity in different types of figure skating [4].

The aim of the study is to develop and experimentally test the effectiveness of applying a set of static exercises that will help to boost the fitness level of single and pair figure skaters at the mastery stage of development.

Methods and organization of the research. The pedagogical experiment was carried out on the premises of the state-financed institution Moscow Academy of Figure Skating rink Medvedkovo in Moscow. 44 figure skaters were involved in the experiment: representatives of single and pair skating at the mastery stage of development, girls and boys aged 11 – 13 with a sports qualification – first sports category and Candidate of Master of Sports.

Results and discussion. As a result of testing, the assessment was conducted based on the initial level of physical fitness according to the norms of the Federal Standard of Sports Training in Figure Skating, 2022, including the technical requirements of the Unified Sports Classification System for qualification standards [3]. The level of technical preparedness of single and pair skaters in competitions was determined using the expert assessment method according to the criteria of the ISU international judging system. The results of the research enabled identifying the level of technical preparedness of the figure skaters before the experiment, evaluating the effectiveness of applying the developed experimental series, and acquiring the final data after conducting the pedagogical experiment. The assessment of the effectiveness of the experimental series was carried out by comparing the results which the figure skaters showed in the conducted tests. Having completed the testing which evaluated the initial fitness, the figure skaters were divided into two groups: a

control group and an experimental group with 12 people in each. The preparation of the control group was led according to the standard plan without any changes, while a series of static exercises was added to the preparation of the experimental group. With the help of the analysis of scientific methodological literature and pedagogical observations, an experimental set of static exercises was compiled and introduced to the preparation of the experimental group after completing the initial testing at the stage of a pre-season period. The set of static exercises was used in the main part of special fitness practice 3 times a week. This set includes 10 main exercises which are particularly emphasised during training and 7 offloading exercises which are used to relieve tonic and coordination tension, excessive muscle stiffness and tension, and to develop psychological and emotional stability and attention switch. The set features some exercises, sets, routines, intervals of rest and basic methodological aspects of the exercise techniques.

The results of the conducted experiment are presented in figure 1, with a Figure of the average increase in fitness of the representatives of single and pair skating in the control group (CG) and the experimental group (EG) at the mastery stage of development.

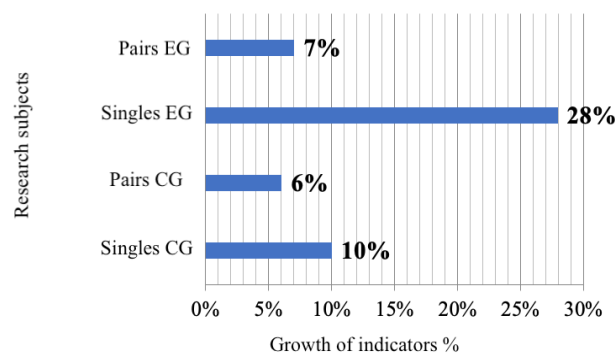


Figure 1. – A Figure of the average increase in fitness of the representatives of single and pair skating in the CG and the EG at the mastery stage of development

The results shown by the athletes in both groups undergoing fitness testing in the figure above say that there is an increase in the scores. Thus, after doing current and final tests, the CG has shown 16% difference in the results, whereas the EG has shown 35%.

Figure 2 presents a Figure of the average increase in special fitness of the representatives of single and pair figure skating in the control group (CG) and the experimental group (EG) at the mastery stage of development.

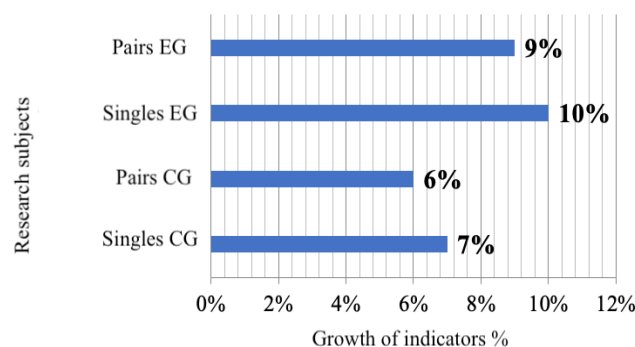


Figure 2. – A Figure of the average increase in special fitness of the representatives of single and pair skating in the CG and the EG at the mastery stage of development

Having analyzed the special fitness test results, which are presented in the Figure above (fig. 2), we can identify the increase in the results of both groups. In this case, after doing current and final tests, the CG has shown 13% difference in the results, whereas the EG has shown 19%.

Fig. 3 presents a Figure of the average increase in fitness and special fitness of the representatives of single and pair figure skating in the control group (CG) and the experimental group (EG) at the mastery stage of development.

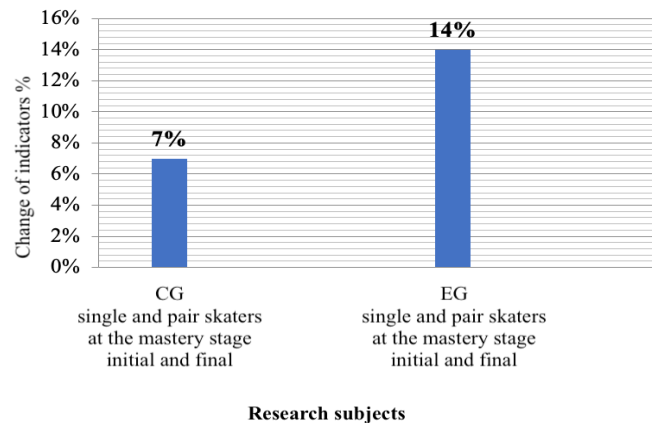


Figure 3. – A Figure of the average increase in fitness and special fitness of the representatives of single and pair skating in the CG and the EG at the mastery stage of development

After implementing the developed set of static exercises in the training process of the experimental group at the mastery stage of development, the average result in fitness and special fitness tests has increased by 14%. The control group has shown a worse result of 7%.

The assessment of technical preparedness was carried out to make a conclusion of the pedagogical experiment and to compare the results indicated in the control and experimental groups.

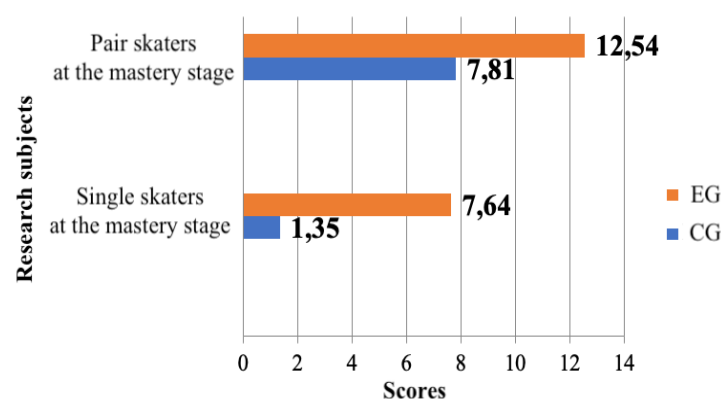


Figure 4. – A Figure of the changes in the scores of free skating programs of the representatives of single and pair skating in the CG and the EG at the mastery stage of development

Comparing the results of the two groups in the final testing, we can see that the single figure skaters at the mastery stage of development have improved their free

skating program scores by 7.64 points (the EG) and 1.35 (the CG). If we consider pair skaters at the mastery stage of development, we will see a 12.54 (the EG) and 7.81 point (the CG) increase.

Conclusion. Therefore, the information received during the experiment allowed us to make a conclusion that both the control (CG) and the experiment groups (EG) managed to improve their performance. The increase in the control group was achieved by traditional means of training, whereas the experimental group showed the highest increase in the results due to implementing a set of static exercises in training. Based on the outcomes, the biggest growth was seen in the representatives of single skating, since static exercises were not used as often in the process of their training before the pedagogical experiment, while representatives of pair skating showed a smaller increase, which can be considered more reliable, as the use of static exercises before the experiment was almost constant in this group. In the process of comparing the final indicators, the use of the set of static exercises in the training process of single and pair skaters at the mastery stage of development was proven effective.

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Smirnova Anastasia Vladimirovna, master's student, art@smirnova4na5t.ru, Russia, Moscow, the Russian university of sports "GTSOLIFK".

ЭФФЕКТИВНОСТЬ ПРИМЕНЕНИЯ КОМПЛЕКСА СТАТИЧЕСКИХ УПРАЖНЕНИЙ В ПРОЦЕССЕ ПОДГОТОВКИ ФИГУРИСТОВ, СПЕЦИАЛИЗИРУЮЩИХСЯ В ОДИНОЧНОМ И ПАРНОМ КАТАНИИ НА ЭТАПЕ СОВЕРШЕНСТВОВАНИИ СПОРТИВНОГО МАСТЕРСТВА

Смирнова Анастасия Владимировна, магистрант, art@smirnova4na5t.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В Олимпийском цикле 2022-2026, продолжается процесс поэтапного повышения возрастного ценза допуска спортсменов для участия во взрослой категории соревнований Международного союза конькобежцев (ISU) на основании решения 58-го Конгресса ISU [2]. Изменение возрастного диапазона спортсменов в одиночном и парном катании в сторону увеличения, с 17-ти лет в предолимпийском сезоне и олимпийском сезоне 2026 года, способствует актуализации процесса поиска и проверки эффективности применения средств технической, общей и специальной физической подготовки [1].

Разработанные средства будут направлены на оптимизацию и совершенствование системы подготовки фигуристов с целью адаптации к новым требованиям международных правил и демонстрации высоких спортивных результатов на соревнованиях.

Ключевые слова: фигурное катание, этап совершенствования спортивного мастерства, комплекс статических упражнений

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DEVELOPING A NEW VISION FOR MASS AND HIGH PERFORMANCE SPORT INTEGRATION USING THE CASE OF INDIAN SPORT PROGRAM 'KHELO INDIA'

Smolianov Peter, Dolmatova Tamara, Star Shaun

Abstract. *The governments all over the world pay increasing attention to the policy of mass sport participation and popularization of physical education and sports. India, as a fast developing economic power and a member of the BRICS with a population of more than 1.4 billion people, does not lag behind global trends and also actively implements a policy aimed to increase the physical activity of the population within the framework of the key national state program "Khelo India".*

The Khelo India program deserves a special consideration, because unlike other national programs, it is aimed simultaneously at the development of both mass sports and high-performance sports through a system of integrated national competitions – national games. In addition, it promotes mass participation in both indigenous sports and Olympic sports.

The annual Youth Games, University Games and Winter National Games make it possible not only to involve school and university students in sports, but also serve as a platform for searching and selecting talented sports reserves, who are subsequently selected to undergo sports training programs in public sports schools and academies also operating under the auspices of the Khelo India program.

Thus, the program serves as an effective tool for the integration of mass and elite sports, providing a comprehensive approach to the development of sports in India, which requires monitoring and analysis as good practice within the international experience of integrating mass sports and high-performance sports programs.

Keywords: *mass participation, national program, physical activity and sports in India*

Introduction. Increasing the level of physical activity of population and grass roots sports has been a priority of national governmental policy of the many states for several decades.

The study of this experience in such an actively developing country, the power of the South Asian region, a member of the BRICS association, as India, with a population of approximately 1.4 billion people, which is the most populous country in the world today, surpassing China according to the latest data, deserves a special attention.

According to a report by Fitbit, India is the least-active country among the 18 countries in the study, including the US, the UK, Japan and Singapore, walking an average of 6,533 steps daily [1]. While this data is a cause of concern, recent Indian government reform provides an active national policy on popularization of physical activity and mass participation. For instance, since 2016, the national federal program "Khelo India" has been initiated [2]. Khelo India literally means, Play India, and is the National Program for Development of Sports.

To study the existing relationship between mass and elite sport within this program, we analyzed the current documents of "Khelo India" program as well as the documents and policies practiced at the regional level on the example of the Indian state of Haryana.

Being one of the youngest national sport programs aimed at the integrated simultaneous development of mass participation and high performance sport in India, it seems to be an interesting case of using a holistic approach for development of a national sport system.

Discussion. Khelo India is an umbrella program aimed at the sports development at the local level through the search and selection of talented athletes, organization and conduct of sports events and modernization of sports infrastructure. The program was launched in 2016-2017 on the initiative of Prime Minister Narendra Modi after the merger of two programs - the program dedicated to the development of Urban Sports Infrastructure Scheme and the National Sports Talent Search System Program. The "Khelo India" program is periodically updated and supplemented with various events. The last revision of the program took place in 2021, and adopted for the period from 2021 to 2026.

The national program "Khelo India" is aimed at achieving two goals at once, the development of both mass participations and the high-performance sports through increasing the competitiveness of Indian athletes [3].

The "Khelo India" program includes 5 main areas: creation and modernization of sports infrastructure, support for sports training centers and sports academies, promotion of inclusion through sports, development of a system of sports competitions, which is aimed at organization of annual national "Khelo India" games - Youth Games, University Games and Winter Games; search and selection of talented athletes; and training of coaching staff.

Khelo India Youth Games are national-level sports competitions that are held annually in January and February with more than 5,000 athletes from 36 states and union territories of India, who compete in 26 sports. In the 2024 iteration of the Khelo India Youth Games, held in Tamil Nadu, the sports ranged from indigenous sports such as gatka, kabaddi, kalaripayattu, kho kho, mallakhamb, and thang-ta, to Olympic sports such as archery, athletics, badminton, basketball, boxing, cycling (road and track), fencing, football, gymnastics, hockey, judo, shooting, swimming, table tennis, tennis, volleyball and weightlifting.

There are two categories of participants in the competition: school students under the age of 17; and college and higher education students under the age of 21 who represent their state or district. According to the selection rules for the 2024 Games, all residents of India who meet these criteria could register to participate in the games, but before the competition, qualifying stages are held, at which the best athletes from among the registered participants are selected.

Other major competitions held at the national level under the Khelo India program are the University Games organized by the Ministry of Youth Affairs and Sports of India in conjunction with the Association of Universities of India, the Sports Authority of India, the Indian Olympic Committee and national sports federations.

Established in 2020, the Khelo India University Games are aimed to identify and train talented student athletes aged from 18 to 25 to participate in international competitions, including the Asian and Olympic Games. The Games are annually attended by about 4,000 athletes from more than 200 universities from across the country competing in 20 different disciplines, including traditional ethnic sports such as mallahamba and yogasana.

Another type of national integrated competition supported under the Khelo India program is the Winter Games. These are national sports games among athletes of winter sports. The third Games held in February 2023 in Gulmarg, Jammu and Kashmir were attended by more than 1,500 athletes from 32 states and union territories of India, who competed in 11 sports, including alpine skiing, curling, bobsleigh, skeleton, snowshoeing, cross-country skiing, snowboarding, ski mountaineering, speed skating, hockey and bandy.

In addition to promoting mass participation and high performance in sport, it has been argued that Khelo India School Games and Khelo India University Games “may be an opportunity to promote anti-doping education to school and university students”, given the concerns with anti-doping within Indian elite sport [4].

In addition to these three comprehensive national competitions, the Government of India, within the framework of the Khelo India program, since 2019 has carried out other initiatives aimed at mass sport participation including bike rides, marathons and indigenous games. In October 2019, as part of the program, an eco-race "Plogging" (plogging is a type of physical activity, running combined with garbage collection) was held throughout India, which was attended by about 1.9 million young people from 55,945 rural youth clubs, 45 representatives of federal and regional authorities [5].

Another notable initiative was the Cycleton bike ride in 2020, the main purpose of which was to introduce residents to physical activity and sports in everyday life: 1.3 million young people from 601 districts took part in the bike ride [5]. The 5-kilometer bike marathon was attended by national leaders including The Minister of State for Youth and Sports of the Government of India, the Chief Minister of Goa, the CEO of Nehru Yuva Kendra Sangathan (the organization managing a network of youth clubs in rural areas) and other high-ranking officials. The Cycleton can be organized at the state level, as well as by groups of cyclists, schools, colleges, organizations, councils, panchayats, corporations, societies, residents' associations, non-governmental organizations, special interest groups and other organizations

through an application on the website.

Within the framework of the Healthy India program, in January 2020, walking competitions, marathons and races under the banner of "Beti Bachao - Beti Padhao", which literally translated means "Save the Daughter, Educate the Daughter", which were designed to empower girls and women in India, as well as to draw attention to the problem of the gender imbalance (about 105 males for every 100 females in India) that has led to a range of social and economic problems, including an increase in violence against women, child marriage, and human trafficking [5]. District youth clubs held sports walking events, a marathon and races, after which women athletes were awarded with the active participation of national youth volunteers and leaders of youth clubs. Almost a million people from rural youth clubs from 589 districts took part. It is also worth noting that in October 2021, the "Freedom Run 2.0" (Fit India Freedom Run 2.0) was held dedicated to the 75th anniversary of India's independence, from August 13 to October 2, 2021, a total of 9 races were organized. The races were held in 64,699 rural settlements in 744 districts across the country, attended by 5.7 million young people and residents of India [5].

In 2017, the Technical Support and Capacity Building Services Fund (TSCBS) was established as part of the program, whose main function is to attract Indian specialists, international experts and consultants, as well as conduct national information and advertising campaigns. The fund with a budget of 300 million rupees is managed by the Ministry of Youth Affairs and Sports of India [5].

Generally, the activity within the "Khelo India" program is not limited to holding only the three largest sporting tournaments in the country, but is aimed at building the entire calendar of sports competitions to improve the skills of athletes and popularize sports among the population including fans, spectators and volunteers at these tournaments.

Conclusions. The success of the program is determined not only by its scale, but also by a well-coordinated system of multi-level management and financing that should be highlighted separately.

In general, the national umbrella program "Khelo India" has sufficient flexibility in terms of financing, including the redistribution of government allocations between the directions and objectives of the program as necessary. The Government of India has increased the estimate by more than 65%, from \$6 billion rupees in fiscal year 2023 to 10.4 billion rupees in fiscal year 2024 [5].

Thus, "Khelo India" is one of the key national programs for the development of sports in India. Thanks to the continuous support from the Government, the program endeavors to strengthen and develop the country's sports culture both at the grassroots level, in the segment of mass participation in physical activity and sports, and in the field of high-performance sports. Its flexibility and at the same time multicomponent character allows it to reach many segments of the Indian population, including children and adolescents, women, and people with disabilities, involving them in systematic physical activity and sports, as well as providing them with opportunities to develop a sports career and maintain a healthy lifestyle starting from school age. At the same time, the program contributes to the foundation for a system of searching and selecting a talented sports reserve for high-performance sports, creating

opportunities for training highly qualified Indian athletes capable of defending the honor of the country at major international sports competitions.

The analysis of the "Khelo India" program allows to formulate a new vision and a comprehensive approach in understanding integrated development of mass and high performance sport on the example of sport in India.

In order to further understand and possibly borrow successful features of the Indian model of integration of mass and high-performance sport, the study should be continued and results could be analyzed in comparison with other national sport programs. To this end, it is important that a comprehensive research agenda be conducted, wherein primary research on the successes (and areas of improvement) of the "Khelo India" program be analyzed. While there is no date that the Indian case study is a useful point of comparison for other jurisdictions by way of mass participation in sport, there is plenty that Indian policy makers can learn from other jurisdictions in terms of reform and implementation of such policies as well.

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Smolianov Peter, PhD, Professor psmolianov@salemstate.edu Sport and Movement Science Department, Salem State University, Salem, MA, USA

Dolmatova Tamara, PhD, leading researcher, Dolmatova.t.v@vniifk.ru Federal Science Center of Physical Culture and Sport (VNIIFK), Moscow, Russia

Star Shaun, PhD, Professor, Associate Dean, sstar@jgu.edu.in Jindal Global Law School, O.P. Jindal Global University, Sonipat, Haryana, India.

ИЗУЧЕНИЕ НОВЫХ ПОДХОДОВ К ИНТЕГРАЦИИ МАССОВОГО СПОРТА И СПОРТА ВЫСШИХ ДОСТИЖЕНИЙ НА ПРИМЕРЕ ИНДИЙСКОЙ НАЦИОНАЛЬНОЙ ГОСУДАРСТВЕННОЙ ПРОГРАММЫ «КЕЛО ИНДИЯ»

Долматова Тамара Владимировна, канд. полит. наук, ведущий научный сотрудник, ФГБУ «Федеральный научный центр физической культуры и спорта» (ФГБУ ФНЦ ВНИИФК), г. Москва, Россия.

Смольянов Петр, д-р наук, профессор департамент спортивной науки, Государственный университет Салем, г. Салем, Массачусетс, США

Стар Шон, д-р наук, профессор Международной школы права Джиндал, Международный университет Джиндал, г. Сонипат, штат Харьяна, Индия

Аннотация. Правительства многих современных государств уделяют важное внимание политике вовлечения населения в занятия физической культурой и спортом. Индия как активная развивающаяся экономическая держава и член БРИКС с населением в более чем 1,5 млрд человек не отстает от общемировых трендов и также активно реализует политику по повышению двигательной активности населения в рамках ключевой национальной государственной программы «Кело Индия».

Программа «Кело Индия» заслуживает особого внимания, т.к. в отличие от других национальных программ направлена одновременно на развитие как массового спорта, так и спорта высших достижений через проведение системы комплексных национальных соревнований – национальных игр.

Проводимые ежегодно школьные, студенческие и зимние национальные игры позволяют не только вовлекать в занятия спортом учащихся школ и студентов вузов, но и служат площадкой для поиска и отбора талантливого спортивного резерва, которые в дальнейшем приглашаются для прохождения программ спортивной подготовки в государственных спортивных школах и академиях, действующих также под эгидой программы «Кело Индия».

Таким образом, данная программа служит эффективным инструментом для интеграции массового и элитного спорта, обеспечивая интегрированный подход к развитию спорта в Индии, что заслуживает дальнейшего пристального внимания в качестве примера для изучения международного опыта интеграции программ массового спорта и спорта высших достижений.

Ключевые слова: массовое участие, национальная программа, физическая активность и спорт в Индии

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UDC 159.9

FACTORS OF PSYCHOLOGICAL RESISTANCE OF EXPERIENCED FENCERS THAT DETERMINE THEIR PSYCHOLOGICAL RELIABILITY

Sokoltsov I.K., Shumova N.S.

Abstract. To increase the psychological reliability of the competitive activity of highly qualified fencers, a complete, generalized and detailed image is needed-an idea of the spatial and temporal structure of movement. The formation of such an image makes it possible to reduce the latent period of motor reaction by improving the processes of movement anticipation.

Keywords: psychological reliability, fencing, competitive period, high qualification

Introduction. To increase the psychological reliability of the competitive activity of highly qualified fencers, a complete, generalized and detailed image is needed. It is an idea of the spatial and temporal structure of movement, which allows you to quickly choose an effective action in certain situation. The formation of such an image makes it possible to reduce the latent period of motor reaction by improving the processes of movement anticipation.

Relevance. Fencing is the art of armed combat involving cutting, stabbing weapons directly manipulated by hand. For successful duel performance, a fencer needs to master a variety of methods of attack and defense, to apply tactics skillfully and to have a high level of physical and mental condition. Mental processes such as perception, memory, thinking and imagination, as well as attention characteristics play an important role in fencing due to the peculiarities of this sport.

In fencing, according to a number of authors [D.A. Tyshler, 1978; A.V. Rodionov, 2003, etc.], specialized perceptions such as "sense of distance", "sense of time" and "sense of weapons" play the most important role.

The adequacy of these types of perception is determined by the completeness, generality and at the same time, the detail of the spatial and temporal structure of the image the idea of movement formed by fencers.

To increase the completeness, generalization and detail of the spatial temporal structure of the idea of movement, it is necessary to identify specific features of individual images that are most important for the effectiveness of the cognitive process (in this case, for choosing a specific attacking or defensive action) and performing a motor task. Increasing the proportion of these specific features in the emerging reference images-representations of movement allows you to quickly select an effective program of action in a given situation. [Shumova, N.S., 2024].

Purpose of this work. To analyze the spatial temporal structure of the idea of the movement of highly qualified fencers.

Research objective. Psychological factors of stability of experienced fencers.

Methods. We used the following methods of the research:

1. Analysis of methodological literature;
2. Compilation of scientific and methodological literature.

Results discussion. Classical studies by D.A. Tyshler [1978] and modern ideas [Shumova, N.S., 2024] allow us to identify the following components of a complex psychological status that determines the psychological reliability of highly qualified fencers:

- individual characteristics of reaction type, mechanisms that determine the duration of the latent period of motor reactions, including speed and thinking algorithms that increase the diversity of the arsenal of techniques and counter techniques used by the fencer while reducing the latent period of motor reactions;
- degree of concentration and speed of attention switching, the use of a second signal regulation system to reduce the proportion of impulsive actions;
- replacement of visual functions by the motor analyzer to ensure correction of movements, so that the bandwidth of the visual analyzer does not limit the possibility of taking into account the situation;
- completeness, generalization and detail of the idea of the spatial and

temporal structure of movement, which allows you to quickly choose an effective actions on a spot, reducing the latent period of motor reaction by improving the approximate research actions, processes of anticipation of movement, prediction of the intentions of opponents;

- courage to make and execute your own tactical decisions;
- stability of emotional reactions with an increase in critical situations, which does not reduce the desire for achievements;
- psychophysiological state of athletes during the competition period.

The psychological status can be assessed using these components:

- indicators of sensorimotor reactions (simple reactions, reactions of choosing from several alternatives, reactions of alteration, reactions to a moving object), "sense of space" (assessment of the accuracy of reproduction of reference parameters of movements in space, provided by muscular orientation in space and visual memory of the point at which the object must be placed), accuracy of perception of short time intervals. To obtain these indicators, specialized software is required or equipment for psychodiagnostics (for example, Universal psychodiagnostic complex);

- indicators of speed and quality of thinking (the method "Individual characteristics of thinking");

- indicators of emotional-sensory, emotional motor and emotional associative stability (methodology "Emotional stability" V.L. Marishchuk, Y.M. Bludova, V.A. Plakhtienko, L.K. Serova);

- indicators of the psychophysiological state of athletes in the competition period (M. Lusher's test based on the perception of eight colors, a method for determining well-being, activity). Diagnostics can be carried out both on the day of the competition and right during the start period. A significant decrease in the normative values of the indicator of psychovegetative activity (the optimal coefficient for an athlete is in the range from 1.2 to 1.8) should be a reason for refusing to participate in competitions or for an inappropriate setting to achieve a result.

Conclusions. Mentioned above techniques can be applied repeatedly in training and competitive conditions, followed by an analysis of the relationship between individual test scores and competition results to monitor the dynamics of the psychophysiological state of an athlete in the competition period and for short term forecasting of athlete's success.

Since it is assumed that the research will be conducted during the competitive period, one of the criteria for selecting psychological tests, surveys, express methods may be the time it takes to study, the complexity of the answers and verification (interpretation) of the results.

For the purpose of mobility and proximity to obtain objective results, it is important to conduct studies that take a short period of time, no more than 5-10 minutes, the possibility of organizing research in a remote format and does not require special training to analyze the respondent's answers. For such a survey of the psychological reliability of the activities of highly qualified athletes, it is possible to limit ourselves to two interval jackals of Shumova N.S.: The scale of assessment of the psychological reliability of competitive activity and the Scale of self-assessment of psychological stress.

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Sokoltsov I.K. Postgraduate Student of the Department of Psychology, Philosophy and Sociology at the Russian University of Sport «GTSOLIFK», Moscow, Russia, sokoltsovivan@mail.ru

Shumova N.S. PhD in Psychology, Associate professor of the Department of Psychology, Philosophy and Sociology at the Russian University of Sport «GTSOLIFK», Moscow, Russia, shumova.ns@gtsolifk.ru

ФАКТОРЫ ПСИХОЛОГИЧЕСКОЙ УСТОЙЧИВОСТИ ОПЫТНЫХ ФЕХТОВАЛЬЩИКОВ, ОПРЕДЕЛЯЮЩИЕ ИХ ПСИХОЛОГИЧЕСКУЮ НАДЕЖНОСТЬ

Сокольников Иван Константинович, аспирант кафедры психологии, философии и социологии, Российский Университет Спорта «ГЦОЛИФК» г. Москва, Россия, sokoltsovivan@mail.ru

Шумова Наталия Сергеевна, к.п.н., доцент кафедры психологии, философии и социологии, Российский Университет Спорта «ГЦОЛИФК», Москва, Россия, shumova.ns@gtsolifk.ru

Аннотация. Для повышения психологической надежности соревновательной деятельности фехтовальщиков высокой квалификации необходим полный, обобщенный и детальный образ – представление о пространственной и временной структуре движения. Формирование такого образа позволяет сократить скрытый период двигательной реакции за счет улучшения процессов предвкушения движения.

Ключевые слова: психологическая надёжность, фехтование, соревновательный период, высокая квалификация

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UDC 796

ONLINE COMMUNICATIONS AS A TOOL FOR INTERACTING WITH THE AUDIENCE OF STUDENT SPORTS CLUBS (CASE STUDY OF GAOU VO MGPU)

Soldatova D.D., Dzigua D.V.

Abstract. *This research analyzes the use of online communications in student sports clubs, identifying limitations and potential for audience development and improvement of PR-practices compared to commercial fitness clubs.*

Keywords: *student sports clubs, online communications, PR tools, audience, fitness clubs*

Introduction. The system of both mass and professional sports today is largely based on the activities of student sports clubs (hereinafter – SSC). Sports is a unique resource of attraction, mobilization and inspiration by its nature and is considered as an effective tool for fundraising, propaganda, expanding public awareness of current problems of international relations [1, p. 7]. SSCs act as a foundation for the formation of a base of professional athletes, concomitantly influencing the maintenance of physical health of young people and the development of positive attitudes towards healthy lifestyle. This means that improving the functioning of student sports clubs, which is directly related to the expansion of the interested audience, is a significant step both for public society and the government as a whole.

The **objective** of our study is identification of effective technologies for online promotion of sports clubs of higher education organizations.

Methods. Theoretical methods (collection and analysis of scientific literature on the research topic, synthesis); empirical methods (measurement of quantitative and qualitative indicators, content analysis, comparative analysis).

An important aspect in considering the work of SSCs is the specifics of their functioning. Sports clubs, according to the definition of the Federal Law "On Physical Culture and Sports in the Russian Federation", are legal entities engaged in training, competition, physical culture and educational activities. They can be created by legal entities and individuals in the form of physical culture and sports clubs at the place of residence, work, school sports clubs, student sports clubs, professional sports clubs and other sports clubs [3]. A significant difference in the functioning of student

sports clubs is the implementation of their sports and educational activities in conditions of small budget or its complete absence. Less resources entail the problem of low attendance and interest of the audience in such structural units in general.

In such circumstances, we consider it particularly important to study the use of online communications in cases of promoting student sports and expanding the audience of sports clubs from strictly student-based, since sports discourse in the conditions of the new reality is almost entirely covered via the Internet communication tools. This fact also gives decent reasoning to turn to the study of the possibility of transferring the experience of commercial fitness clubs in online promotion of services to small-scale sports unions, such as sports clubs existing on the basis of higher education institutions.

The authors additionally selected 4 organizations for the analysis of its online communication, preserving the objective commonality between these units, while trying to reflect the diversity of existing structures of this type at the moment.

The majority of definitions of the concept "sports club" seem to us insufficiently complete and need additional categorization by main directions of their functioning. We have taken a classification that clarifies the status of SSC among similar organizations by goal-setting and structure: fitness clubs and health-centers; professional sports clubs; amateur sports clubs; territorial sports clubs; corporate sports clubs; sports clubs at educational organizations (school sports clubs; student sports clubs). This is necessary in order to clarify the peculiarities of student sports clubs, which are not taken into account in the current vague descriptions of this phenomenon.

Results. With the use of comparative analysis our research showed that student sports clubs have significantly fewer opportunities to use PR-tools in comparison to classic fitness centers due to a number of related factors. That is why the use of Internet promotion for SSCs is optimal option in terms of resource consumption and efficiency. Based on the results of the analysis, we identified several criteria that became the basis for comparing the tools used by student sports clubs similar in form of organization to the Sports and Educational Center of Moscow City University (hereinafter – SEC MCU).

By taking into an account several approaches to effectiveness assessment, we came to the conclusion that none of them can provide a clear and universal plan for the selection of tools. As an indicator of the effectiveness of a PR tool, suitable for the niche under study, we recognize the ratio of the complexity of the use of communication practices with the level of fulfillment of the set goal.

Communicative practices of dissemination in digital media through "likes", "shares", "reposts", "hashtags", which allow to optimize the search of content by keywords and create a unique system of information delivery to a potentially interested audience, have been called the viral editor of the Internet. The work of the viral editor of the Internet testifies to the colossal involvement of a private person in the production of media, as well as the "dying" of the unique author and the creation of a collective author [2, p. 169].

The development of the service area of SEC MCU is unimaginable without constant communication work aimed at expanding the audience of the organization. Before analyzing PR-tools, we studied the general conditions of the organization's

presence in the information field. Sports and Educational Center of MCU carries out its information presence mainly by using social media. The Figure provides information that illustrates the thematic diversity of the group's content published during the last year of its functioning (fig. 1).

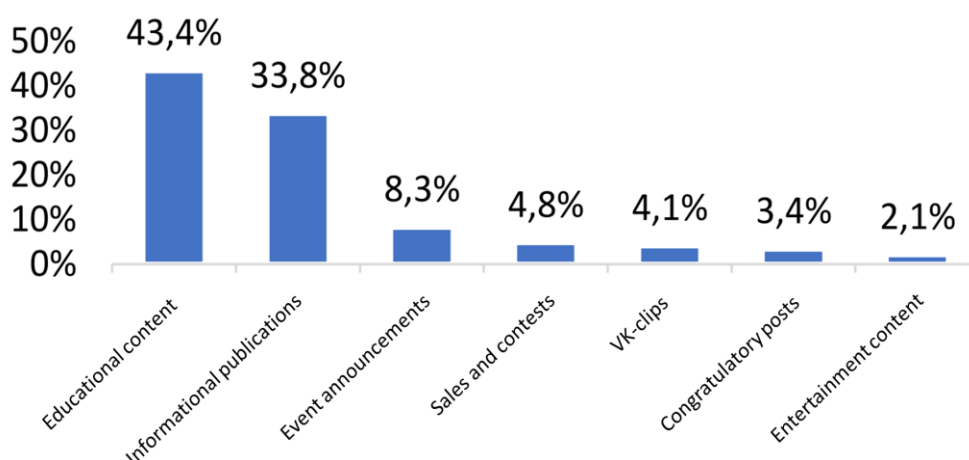


Figure 1. – Analysis of the content of SEC MCU group in VK for the period from 10/30/2022 to 12/24/2023

The organization under study uses plenty PR-tools from the arsenal of sports organizations of different types in its information work. In addition, SEC MCU is not inferior in the number of tools used to similar organizations (which can be named student sports clubs based on their core functions) (tab. 1).

Table 1. – Comparative analysis of tools used by other sport centers (SC)

	SEC MCU	SC of MGUSIT	SC of Bauman MSTU	SC of MIET	SC of MPEI
Website and SEO-optimization	-	+	+	+	+
Contextual and targeted advertising	+	-	-	-	-
Content marketing on social media	+	+	-	-	+
SMM	+	-	+	+	+
Crowd-marketing	+	-	+	+	+
Collaborations	+	-	-	-	-
Direct-marketing	+	-	-	-	+
Promotion using geoservices	+	-	+	+	+

The side-outcome of our research is the fact that we have managed to identify the set of factors that hinder the fastest and best achievement of the goals of a particular organization. Among them: insufficient involvement in the work with comments, poor handling of negativity and technical failures.

Conclusions. In conclusion, it is needed to be highlighted that with the derived formula for assessing the effectiveness of PR tools, in the process of creating communication strategies for sports student organizations of similar plan, it is necessary to consider the set of tools described in the paper, taking into account the peculiarities of

human and technical resources of the organization. In this case, the issue of qualitative and quantitative expansion of the audience will be solved most fruitfully.

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Soldatova Darya Denisovna, master's student in Advertising and Public Relations, soldatovadd@mgpu.ru, Russia, Moscow, Moscow City University

Dzigua Dmitry Valterovich, lecturer of the chair of Advertising and Public Relations, dziguadv@mgpu.ru, Russia, Moscow, Moscow City University

ОНЛАЙН-КОММУНИКАЦИИ КАК ИНСТРУМЕНТ ВЗАИМОДЕЙСТВИЯ С АУДИТОРИЕЙ СПОРТИВНЫХ СТУДЕНЧЕСКИХ КЛУБОВ (НА ПРИМЕРЕ ГАУО ВО МГПУ)

Солдатова Дарья Денисовна, магистрант направления подготовки «Реклама и связи с общественностью», soldatovadd@mgpu.ru, Россия, Москва, Московский городской педагогический университет

Дзигуа Дмитрий Валтерович, доцент направления подготовки «Реклама и связи с общественностью», dziguadv@mgpu.ru, Россия, Москва, Московский городской педагогический университет.

Аннотация. Исследование анализирует использование онлайн-коммуникаций в студенческих спортивных клубах, выявляя ограничения и потенциал для развития аудитории и улучшения PR-практик в сравнении с коммерческими фитнес-клубами.

Ключевые слова: студенческие спортивные клубы, онлайн-коммуникации, PR-инструменты, аудитория, фитнес-клубы

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USE OF DOPING IN SPORTS

Solodkova A.V., s/s Ershova N.G.

Abstract. *The work focuses on the problem of doping in sports. Currently, an athlete's performance depends, among other things, on the use of pharmacology and medications. The dynamics of anti-doping violations are growing every year, violating the morality of sports and competitions. We analyzed the reports of the World Anti-Doping Agency (WADA) and the Association of the Russian Anti-Doping Agency (RUSADA). Based on an analysis of literary sources on the topic of our research, we identified a trend towards the use of doping in sports in Russia.*

Keywords: *doping, violations, anti-doping rules*

Introduction. Nowadays the success of athletes to some extent depends on the use of pharmacology. But we should not forget about the prohibited list of drugs and methods - DOPING. The fight against doping has been waged for a long time, but not quite successfully. Doping is a problem. Doping destroys the morals and ethics of sport and competition.

The aim is to investigate the problem of doping scandals in high top sport.

The object of the research is doping scandals in world sport.

The subject of the study is the state of doping scandals in the top sport and in the Pskov region in particular.

Research design and results discussion. During the analysis of information sources, it was revealed that the history of mostly. The German channel ARD released a film by Hajo Seppelt about doping in Russian athletics with the participation of spouses Yulia and Vitaly Stepanov and using hidden camera footage of Russian runners and coaches. This film helped to attract attention to Russian athletes. In 2016, the board of the International Association of Athletics Federations decided not to allow the Russian team to participate in the Olympic Games in Rio.

When analyzing reports that were published every year on the RUSADA website, we obtained data indicating a large number of doping violations in Russia until 2016. The number of doping violations is presented in table 1.

Table 1. – Dynamics of anti-doping rule violations according to RUSADA

Years	2013	2014	2015	2016	2017	2018	2020	2022
Violations rule	194	148	181	21	59	146	108	135

Currently, doping violations occur in a large number of cases. And according to the results of the analysis of reports published by WADA, Russia for 2020 is in first place among all countries. The number of anti-doping rule violations among countries as of 2020 is presented in figure 1.

In analysing news sources, it appears that there have been no anti-doping rule violations against the Pskov region. With one exception. In 2018, Ivan Ershov, a defender of the football club "Pskov 747", was disqualified for four years for violating anti-doping rules.

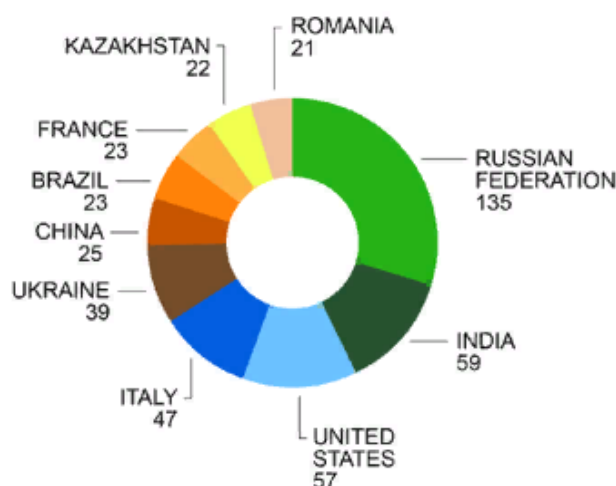


Figure 1. – Anti-doping rule violations among countries (2022)

WADA laboratory reports include information on the number of doping violations by sport. Based on the data, it can be seen that the predominant number of violations is in sports with a strength focus. The number of doping violations by sport is presented in figure 2.

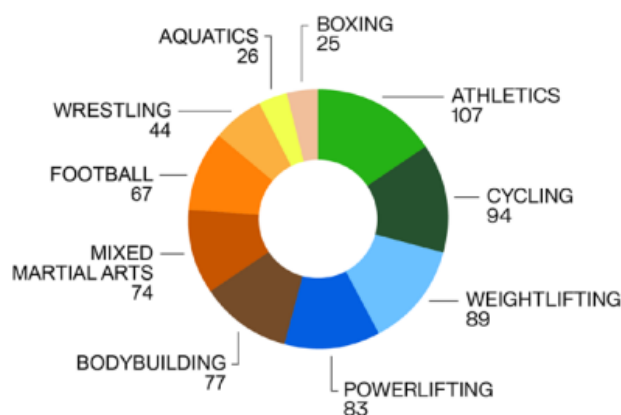


Figure 2. – Anti-doping rule violations by sport (2020)

Conclusion. There are limits to human capabilities. It is no longer possible to break records with training alone. Results in various sports are approaching the maximum of human capabilities. That is why it is impossible to show the highest result without additional means.

There are limits to human capabilities. It is no longer possible to break records with training alone. Results in various sports are approaching the maximum of human capabilities. That is why it is impossible to show the highest result without additional means.

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Solodkova Anastasia Vyacheslavovna, 1st year student master's degree, Russia, Velikiye Luki, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: english@vlgafc.ru

Scientific supervisor – Ershova Natalia Genrikhovna, Dr. Hab., professor, Russia, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: ershovanatal@yandex.ru

ПРИМЕНЕНИЕ ДОПИНГА В СПОРТЕ

Солодкова Анастасия Вячеславовна, студентка 1 курса магистратуры, Россия, Великие Луки, Великолукская государственная академия физической культуры и спорта, english@vlgafc.ru

Научный руководитель – Ершова Наталья Генриховна, доктор наук, профессор, Россия, Великолукская государственная академия физической культуры и спорта, ershovanatal@yandex.ru

Аннотация. В работе речь пойдет о проблеме применения допинга в спорте. В настоящее время результат спортсмена зависит, в том числе от применения фармакологии и медицинских средств. Динамика антидопинговых нарушений с каждым годом растёт, нарушая мораль и нравственность спорта и соревнований. Нами были проанализированы отчёты Всемирного антидопингового агентства (ВАДА) и Ассоциации Российского антидопингового агентства (РУСАДА). На основе анализа литературных источников по теме нашего исследования мы выявили тенденцию к применению допинга в спорте в России, но Псковская область имеет лишь один случай нарушения.

Ключевые слова: допинг, нарушения, антидопинговые правила

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UDC 378.2

ANALYSIS OF THE DIFFICULTIES OF NOVICE PHYSICAL EDUCATION TEACHER AT THE UNIVERSITY

Solodova E.A., Levchenkova T.V.

Abstract. The article conducted a study among entering physical education teachers at the University of Chemistry. The survey was related to the difficulties faced by novice teachers during their professional teaching activities in physical education.

Keywords: novice teacher, professional pedagogical training, pedagogy, higher school

Introduction. The organization of the educational process is an important element of the education system at any level. Preparation for the lesson is the most important stage of the teacher's work. Currently, one of the tasks in the Russian higher professional education system is to increase the level of professionalism of graduates, which is also due to the fact that with the continuous development of science and technology, the requirements for the level and quality of graduate training are increasing. It is known that during the competitive selection for the position of a teacher, the documents emphasize the compliance of specialized basic education with the taught course and research activities. Practice shows that specialists with specialized physical education or pedagogical education are not always allowed to teach physical education at the university. They often have extensive experience in sports or fitness classes and therefore have some difficulties in preparing and conducting classes.

The purpose of the study is to identify the difficulties faced by novice teachers of physical education at the University of Chemistry.

Methods of research. In this study methods of observation, survey and analysis were used.

Organization of the research. The study involved 24 teachers who have been working at the Department of Physical Education and Sports at the University of Chemistry for less than two years and did not have any other previous working experience. The teachers answered the questions in an open form.

The results of the study. As a result of the survey, three main groups were identified, which turned out to be difficult. Three groups are identified: educational and methodological, emotional and psychological and disciplinary difficulties.

1) Educational and methodological difficulties:

1. The difficulty in allocating time in the classroom to the types of tasks, to the theoretical and practical part.

2. Difficulties in determining logical transitions between tasks.

3. The difficulty in correlating the real level of knowledge of the trainees and the prepared sample material, for all groups.

2) Emotional and psychological:

1. There are not enough skills in regulating disagreements, conflicts, and removing misunderstandings in the classroom. It is difficult to react calmly to rudeness.

2. Lack of knowledge about the psychological characteristics of the age and gender of the trainees.

3. The inability to push aside personal issues and "claims" that arise as a result of likes/dislikes.

4. Insecurity, fear of speaking, lack of ability to keep attention.

5. A young teacher is faced with the well-known opposition "expectation - reality". You have to learn a lot from scratch, because applying university knowledge is not enough.

6. Adaptation to a new work team.

7. The difficulty in making a quick decision on the current situation.

8. Multinational students. Language barriers are emerging.

3) Disciplinary difficulties:

1. Delays.
2. At the initial stage, it is difficult to maintain discipline in the group during physical education classes.
3. Frequent illnesses, absences.
4. The forced involvement of students in volunteering or activities, which is why couples are skipped.

Conclusions. The main difficulties faced by novice teachers are related to psychological and pedagogical, disciplinary, and educational features. Therefore, a program of professional additional education is needed, which will help novice physical education teachers gain knowledge and skills in the process of organizing sports and fitness classes with students of different age and gender groups and different levels of physical fitness at the university.

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Solodova Elena Aleksandrovna, Postgraduate Student, Federal The Russian University of Sport «GTSOLIFK», Senior Lecturer of the Department of Physical Education, Mendeleev University.

Levchenkova Tatiana – Doctor of Pedagogical Sciences, Professor, Head of the Department of Pedagogy at the Russian University of Sport «GSTOLIFK», Moscow, Russia

АНАЛИЗ ТРУДНОСТЕЙ НАЧИНАЮЩИХ ПРЕПОДАВАТЕЛЕЙ ФИЗИЧЕСКОГО ВОСПИТАНИЯ В УНИВЕРСИТЕТЕ

Солодова Елена Александровна, аспирант, Российский университет спорта «ГЦОЛИФК», старший преподаватель кафедры физического воспитания, Российский химико-технологический университет имени Д.И. Менделеева, Россия, Москва

Левченкова Татьяна Викторовна – доктор пед. наук, профессор, заведующий кафедрой педагогики, Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье проведено исследование среди начинающих преподавателей физического воспитания в химическом университете. Опрос был связан с трудностями, с которыми сталкиваются начинающие преподаватели во время своей профессиональной преподавательской деятельности в работе по физическому воспитанию студентов в университете.

Ключевые слова: начинающий преподаватель, профессиональная педагогическая подготовка, педагогика, высшая школа

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UDC 796

DEVELOPING EXPLOSIVE POWER IN 10-12 YEAR-OLD KYOKUSHIN KARATE ATHLETES USING PLYOMETRIC TRAINING

Solovev E.V., s/s Gasanova-Matveeva Z.A.

Abstract. The article is dedicated to the research and analysis of data on the development of "explosive power" in 10-12 year-old Kyokushin karate athletes using plyometric training methods.

Keywords: kyokushin karate, explosive power, plyometric training methods, stretch-shortening cycle, speed-strength abilities

Introduction. Kyokushin karate is a full-contact sport. For athletes practicing Kyokushin, the key criterion for winning a bout is the total damage inflicted during the entire fight. The speed-strength potential of striking action is one of the key components in determining the total damage. "Explosive power" is one of the components of speed-strength abilities.

Different sources studying the "Theory and Methods of Physical Education" provide somewhat differing concepts of "explosive power":

- "**Explosive power**" is the ability to achieve maximum external force indicators in exercises performed in the shortest possible time. [Matveev L.P.]

- "**Explosive power**" is speed strength manifested under conditions of significant resistance. [Platonov V.N.]

According to sports theorists (such as L.P. Matveev, N.G. Ozolin, etc.), the age of 10-12 years old is considered a sensitive period for the development of speed-strength abilities in boys and girls.

Given that the age of 10-12 years old has recently been officially recognized in Kyokushin, and considering the factors mentioned above, this age is considered optimal for the development of "explosive power".

However, we encountered a problem during the analysis of scientific-methodical literature: there is a lack of literary sources on the research topic.

The aim of the study is to theoretically substantiate and practically confirm the effectiveness of plyometric training methods for developing "explosive power" in 10-12 year-old Kyokushin karate athletes.

Research object: explosive power of 10-12 year-old Kyokushin karate athletes.

Research subject: application of plyometric training methods to develop explosive power in 10-12 year-old Kyokushin karate athletes.

Tasks:

1. To study scientific-methodical literature, modern techniques of physical

training for athletes aged 10-12.

2. To develop methods of targeted impact of effectively usage of explosive power.
3. To confirm the effectiveness of developed methods.

Research methods:

1. Analysis of literary sources
2. Pedagogical testing
3. Pedagogical experiment
4. Methods of mathematical data processing.

Research organization. The research is conducted from September 2023 to May 2024. The experiment lasts for 9 months. The experiment involves 16 male and female athletes (12 boys and 4 girls). The participants were divided into 2 equal groups of 8 people each (6 boys and 2 girls in each): experimental group (EG) and control group (CG).

By this time, 2 tests have been conducted: the first one – before the start of the experiment (in early September), the second one – in the middle of the experiment to obtain interim results (mid-January). Another test is planned to be conducted at the end of the experiment to obtain final data on the effectiveness of the developed methodology.

The methodology was divided into 3 mesocycles (stages):

1. Stage I (September-November 2023). This stage is characterized by a low level of training loads aimed at the adaptation of athletes' bodies to specific loads. Simple exercises were selected to get acquainted with plyometric training.
2. Stage II (December 2023 - February 2024). This stage included compound exercises. This type of exercises is more complex in execution due to the inclusion of several movements at once. Due to introducing compound exercises, we plan to achieve the following adaptations:
 - To increase the speed of direction changes
 - To improve neuro-muscular connection
 - To have a greater effect compared to the previous stage on the development of explosive strength in athletes
3. Stage III (March - May 2024). The final stage of the developed methodology includes specific exercises that biomechanically correspond to strikes in Kyokushin karate. To achieve the best results in the development and improvement of physical abilities in various sports, it is necessary to perform exercises similar in their biomechanical structure to specialized exercises. Exercises plyometric impact, resembling striking actions in karate kyokushin, were selected and developed based on this rule.

Intermediate results. The first testing was conducted on September 17, 2023, before the experiment. The following exercises were included:

- High jump
- Number of "dzedan mawashi geri" strikes on pads in 10 seconds
- Long jump
- Speed of a single "dzedan mawashi geri" strike on pads

The results of this testing showed a low level of explosive strength development in children aged 10-12 who practice Kyokushin karate. The pedagogical testing allowed to determine the initial level of "explosive strength" of athletes, as

well as to monitor the dynamics of growth of the indicators studied by us.

The next testing (intermediate) was conducted on January 14, 2024, to obtain interim results of the experiment. Comparative characteristics can be made from the results obtained in September 2023 and January 2024.

1. High jump

- The average result of the control group at the beginning of the experiment was 21.7, and in January, after 4 months, the result increased to 23.5.
- The average result of the experimental group at the beginning of the pedagogical experiment was 21.3. In January, the result of the athletes in the experimental group increased to 22.0.
- Comparing the results of both groups, it was found that the athletes of the experimental group showed greater improvement.

2. Number of kicks "dzedan mawashi geri" strikes on pads in 10 seconds

- The average result of the control group at the beginning of the experiment was 7.75 kicks, and in January, after 4 months, the result increased to 8.25.
- The average result of the experimental group at the beginning of the pedagogical experiment was 8.25. In January, the result of the athletes in the experimental group increased to 9.25.
- Comparing the results of both groups, it was found that the athletes of the experimental group showed greater improvement.

3. Long jump

- The average result of the control group at the beginning of the experiment was 162.5, and in January, after 4 months, the result increased to 170.5.
- The average result of the experimental group at the beginning of the pedagogical experiment was 169. In January, the result of the athletes in the experimental group increased to 184.
- Comparing the results of both groups, it was found that the athletes of the experimental group showed greater improvement.

4. Speed of a single kick "dzedan mawashi geri" to pads

- The average result of the control group at the beginning of the experiment was 2.32, and in January, after 4 months, the result increased to 2.04.
- The average result of the experimental group at the beginning of the pedagogical experiment was 2.45. In January, the result of the athletes in the experimental group increased to 2.29.
- Comparing the results of both groups, it was found that the athletes of the experimental group showed greater improvement.

Conclusions:

I. Analyzing the scientific and methodological literature, it was found that there are few scientific studies and recommendations on the use of plyometric training in martial arts. After approving the exercises, a methodology was developed for a period of 9 months. This methodology aimed at developing the "explosive power" of athletes aged 10-12 through the use of plyometric exercises.

II. The methodology was designed in such a way that the entire workload depended on the mesocycle, as well as the Unified Calendar Plan. Accordingly, in each mesocycle, a certain percentage of our methodology was implemented over the

time of the entire training session. At the beginning of the experiment, the volume and intensity of the workouts are low – this is necessary to get familiar with the movements presented and master the execution of technique. Over time, the load of some exercises increases, while the load of others decreases.

III. Pedagogical testing was conducted at the beginning and end of the experiment to verify the reliability of the results and the effectiveness of the developed methodology. In the middle of the experiment, the results of all test exercises of the experimental group increased, indicating a positive trend towards the desired result.

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Solovev Egor, Theory of physical culture and technology of physical education, se231001@gmail.com, Russia, Moscow, The Russian university of sport «GTSOLIFK»

Scientific supervisor - Gasanova-Matveeva Zemfira Arifovna, Russia, Moscow, The Russian university of sport «GTSOLIFK»

ВОСПИТАНИЕ ВЗРЫВНОЙ СИЛЫ У СПОРТСМЕНОВ КИОКУСИНКАЙ 10-12 ЛЕТНЕГО ВОЗРАСТА С ИСПОЛЬЗОВАНИЕМ СРЕДСТВ ПЛИОМЕТРИЧЕСКОГО ВОЗДЕЙСТВИЯ

Соловьев Егор Владимирович, студент, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва

Научный руководитель, Гасанова-Матвеева Земфира Арифовна, доцент, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва

Аннотация. Статья посвящена исследованию и анализу данных по развитию «взрывной силы» спортсменов киокусинкай 10-12 летнего возраста с использованием средств плиометрического воздействия.

Ключевые слова: каратэ киокусинкай, взрывная сила, средства плиометрического воздействия, цикл растяжения-сокращения, скоростно-силовые способности

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DEVELOPMENT OF COORDINATION ABILITIES OF HOCKEY PLAYERS AGED 7-8 YEARS USING MODERN FITNESS EQUIPMENT

Solovev S.Yu., Simonova X.Yu.

Abstract. The goal is to develop the coordination abilities (next – CA) of 7-8-year-old hockey players based on the usage of modern fitness equipment. To achieve this goal, a number of tasks were completed: the level of development of CA of young hockey players was determined; the dynamics of the studied indicators (specific and non-specific) CA of hockey players with and without using modern fitness equipment during the training process was experimentally revealed; the effectiveness of modern fitness equipment – TRX, BOSU, step platforms – for the development of CA of 7-8 years old hockey players was analyzed and proved.

Keywords: coordination abilities, hockey, TRX, BOSU, step platform

Introduction. To achieve high sports results, hockey players need to have a high level of development of CA. In our opinion, the solution to this problem lies in the scientific grounding of the approach to the use of modern fitness equipment in the training process, aimed at developing the CA of hockey players [1, 2].

In working with young athletes, experts recommend including various equipment in training sessions: the Balametrix board, the Siberian board, etc. [2]. Meanwhile, at the initial stage of training hockey players, they are not used enough, due to the lack of methodological developments for their implementation. Namely, we have not found theoretical data and empirical studies on the use of such effective equipment as the BOSU, TRX and step platform in the training process of 7-8 year old hockey players.

The purpose of the study is to develop the CA of hockey players 7-8 years old using modern fitness equipment.

The object of the study is coordination training of hockey players 7-8 years old.

The subject of the study is modern fitness equipment for developing CA of hockey players.

The objectives of the study are: 1) to determine the level of development of CA of hockey players 7-8 years old; 2) to identify the dynamics of CA indicators of hockey players with or without using modern fitness equipment during the training process; 3) to evaluate the effectiveness of modern fitness equipment used for the development of CA of hockey players aged 7-8 years.

Organization of the study: the study was conducted at the Alexander Kozhevnikov Ice Sports Palace, and lasted for 6 months, from October 2023 to April 2024; at the first stage, the analysis of scientific literature on the theoretical and methodological foundations of the development of CA of hockey players aged 7-8 years was carried out; at the second stage, an experimental and control group of 11 hockey players each were formed. After that, the initial level of development of the CA of the hockey players of both groups was determined. Classes using modern fitness equipment were introduced into the training process of the experimental group and were held 2 times a week, the average time of each class is 30 minutes. The distribution and number of study hours during the year in both groups were identical. After the experiment, the CA of the hockey players of both groups were tested; the third stage was devoted to the analysis and processing of the data obtained on the indicators of the development of specific and non-specific CA of hockey players.

The analysis of literature sources allowed us to identify the most optimal and effective means for solving the tasks set in the work. We chose the BOSU, TRX and step platform, shown in Figure 1-3, as the main modern fitness equipment. It is moderate, well-studied, multifunctional and, importantly, the least traumatic.



Figure 1, 2, 3 – Modern fitness equipment (BOSU, TRX and step platform)

The set of exercises began with warm-up elements of different variations of movements on the step platform: steps (up and down, with/without turns), leaps and jumps

Then we performed basic and specialized exercises on the BOSU platform [2]:

- new motor actions unfamiliar to the child (keeping the puck in place, tracing chips, shots on goal, passes to the stick hook);
- performing an unexpected and sudden motor action (improvisation);
- exercises with fixation and modification of various poses and starting positions;
- special exercises for developing a sense of balance;
- exercises to develop the ability to control your body;
- specialized hockey exercises;
- coordination exercises with a stick.

Adapted variations of basic motor elements for the initial training group, shown in Figure 4, were used as exercises for developing CA using TRX.

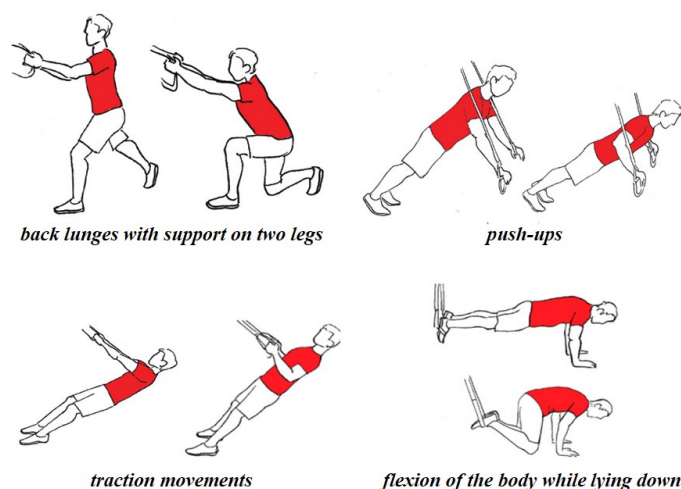


Figure 4. – The following movements formed the basis of a set of exercises using TRX

Before the experiment, there were no significant differences in the quality of the control exercises performed by the groups. At the same time, the level of CA of hockey players in general can be described as average, based on the comparison with normative indicators for such control exercises as ice-skating at 30 m, slalom at 30 m, and running backward.

During the experiment, there were positive changes in the indicators in both groups (Figure 5). In the experimental group all changes reach a statistical level of significance ($p < 0,05$).

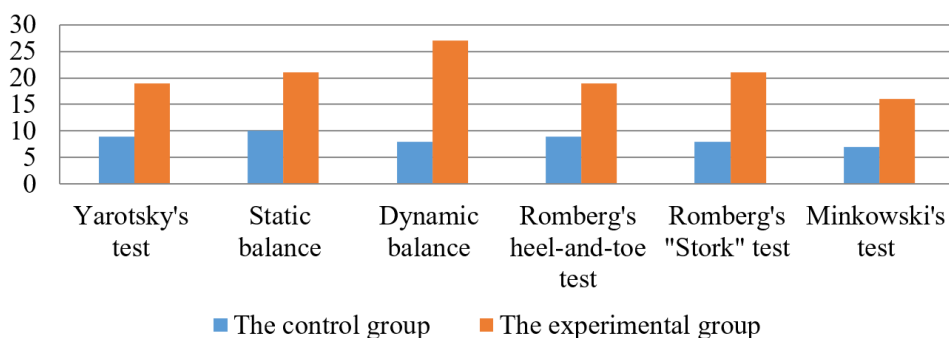


Figure 5. – The growth rate of the studied indicators during the experiment (in % of the initial)

After the experiment, there were significant differences between the two groups in most control exercises (see table 1). However, only in the run of 30 meters and running backward, these differences were not significant. As a result, the speed abilities of the hockey players in both groups changed at a similar pace. Nevertheless, the difference in performance between both types of slaloms and, consequently, the difference between slalom running and straight running indicates that the CA of the hockey players in the experimental group significantly increased.

Table 1. – Indicators of the level of specific CA after the end of the experiment ($M \pm \sigma$)

Tests	The experimental group (n=11)	The control group (n=11)	t	p
Run 30 m, s (t1)	5,40±0,51	5,37±0,60	0,05	>0,05
Slalom, 30 m, s (t2)	6,90±0,69	7,51±0,52	2,15	<0,05
t2 – t1	1,50±0,55	2,14±0,56	2,32	<0,05
Running backwards, s, (t3)	7,29±0,65	7,39±0,59	0,41	>0,05
Back-to-front slalom, s (t4)	8,59±0,69	9,41±0,80	2,37	<0,05
t4 – t3	1,30±0,67	2,02±0,69	2,22	<0,05
Running on the "eight" (s)	13,59±0,98	14,71±1,30	2,13	<0,05
Shooting the puck into the goal (point)	3,10±0,45	2,70±0,50	2,17	<0,05

The results of the study showed that the training process used for 6 months in the experimental group at the initial training stage contributes to a more pronounced increase in the level of development of basic and specific coordination abilities. This allows us to conclude that the use of modern fitness equipment is highly effective for the development of CA of young hockey players aged 7-8 years.

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Solovev Semen Yurievich, 2st year Master's student, Simon12251999@icloud.com, Department of football and hockey, Siberian State University of Physical Culture and Sport (SibGUFK), No. 144 Maslennikova Street, Omsk, Russia, 644009.

Simonova Xenya Yurievna, Candidate of Philology, docent, xenyasim@yandex.ru, Department of Social and Humanitarian Disciplines, Siberian State University of Physical Culture and Sport (SibGUFK), No. 144 Maslennikova Street, Omsk, Russia, 644009.

РАЗВИТИЕ КООРДИНАЦИОННЫХ СПОСОБНОСТЕЙ ХОККЕИСТОВ 7-8 ЛЕТ С ИСПОЛЬЗОВАНИЕМ СОВРЕМЕННЫХ СРЕДСТВ ФИТНЕСА

Соловьев Семен Юрьевич, Магистрант 2 курса, *Simon12251999@icloud.com*, Кафедра футбола и хоккея, Сибирский государственный университет физической культуры и спорта (СибГУФК), Омск, улица Масленникова, 144.

Симонова Ксения Юрьевна, Кандидат филологических наук, доцент, *xenyasim@yandex.ru*, Кафедра общественных и гуманитарных дисциплин, Сибирский государственный университет физической культуры и спорта (СибГУФК), Россия, Омск.

Аннотация. Цель – на основе использования современных средств фитнеса развить координационные способности (далее – КС) хоккеистов 7-8 лет. Для достижения данной цели были решены следующие задачи: определён уровень развития КС юных хоккеистов; экспериментально выявлена динамика исследуемых показателей – специфических и неспецифических КС хоккеистов, использующих и не использующих современные средства фитнеса в ходе тренировочного процесса; проанализирована и доказана эффективность современных средств фитнеса – TRX, BOSU, степ-платформы – для развития КС хоккеистов 7-8 лет.

Ключевые слова: координационные способности, хоккей, TRX, BOSU, степ-платформа

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DEVELOPING FITNESS-MARATHON PROGRAMME FOR 30-35-YEAR-OLD WOMEN

Sozontova O.V.

Abstract. This article reveals the importance of physical fitness and health-improving activities for women of 30-35 years old. One of the most popular forms of organizing such classes is fitness marathon. We present a fitness marathon program for 30-35-year-old women, which was carried out according to the age and morphofunctional features of this age group. The marathon programme aims to reduce weight through group training.

Keywords: physical education and wellness program, fitness marathon, weight loss, group training, women 30-35 years old, overweight, strength training, combined training, functional training and body&mind training

Introduction. The issue of preserving and improving health of mature women as an active part of the population has always been and remains in the focus of attention. Women fulfill a variety of social, reproductive, educational, industrial and public functions, so the health of the nation is largely determined by women's health. In connection with the accelerated pace of life, increased emotional stresses in the course of activity against the background of a deficit of motor activity, nowadays there is a tendency for the health deterioration of the adult population, including women. The main means of preventing most diseases and overweight is physical activity [3].

One of the most popular forms of organising physical fitness and health-improving activities are fitness marathons, which are held in various ways: online or offline. The purpose of these marathons is, most often, weight loss, as the problem of overweight and obesity is global and has worldwide extension. According to the latest estimates of the United Nations Organisation, today 2.6 billion people in the world are overweight, or almost 30% of the world's population, and more than 13% are obese. Fitness marathons posted on the Internet are not always conducted by people who are not always competent enough in the field of fitness and physical recreation, and very often the physical load does not correspond to the age features and capabilities of this cohort. In this regard, there is a need to develop programmes of fitness offline marathons, where the trainer and the trainees contact with each other. The development and implementation of these fitness marathons can contribute to solving the global problem of obesity, which leads to many diseases, improve the standard of living, improve the general state of health, as well as physical fitness of the participants [1, 2, 4].

Research problem is in insufficient number of quality fitness marathon programmes for 30-35-year-old women, taking into account their fitness level and other characteristics of this group.

The aim of the study is to develop a fitness-marathon programme for women aged 30-35, taking into account their age characteristics and needs.

The aim of the programme is to reduce body weight in 30-35-year-old women over 12 weeks through group exercise and balanced nutrition.

To reach the aim we set the following programme's objectives:

Educational:

- to contribute to the formation of the correct technique for performing basic exercises;
- to teach women to make a balanced diet for themselves and apply this knowledge in everyday life;

Developmental:

- to develop strength, speed-strength, coordination abilities, as well as contribute to increased flexibility and overall endurance;
- to develop a sense of rhythm;

Pedagogical:

- to instill the need for regular physical activity;
- to promote the formation of self-discipline.

We used the following groups of **methods**:

- Teaching methods: visual, verbal; practical.

- Training methods: interval, circular.
- Educational methods: encouragement method, persuasion method, example method.

Research design. The programme we developed included 6 sections: theoretical training, strength training, combined training, functional training and body&mind training, as well as control standards.

Theoretical training consisted of two hours of video lectures.

All other sections were learnt by the participants in practice. Each week of the fitness marathon included 4 group training sessions corresponding to the following sections: strength, combined, functional training and body&mind training. The training sessions were held in the evening on Mondays, Wednesdays, Fridays and Sundays. On the other days, training sessions were absent in order to recover the body and prepare for the next training load. Each training session consisted of three parts: preparatory, main and final. The main means of training were physical exercises, which were carried out by various methods of sports training mainly by means of circular and interval training.

On Mondays there were strength training sessions: "Body Pump" with mini barbells or "Body Strong" with dumbbells and ring expanders.

On Wednesdays there were combined workouts, i.e. combining strength and cardio exercises.

Functional training was performed on Fridays. Every week we alternated between functional step aerobics, Functional combination training without equipment, and Tabata.

The functional step aerobics training uses a step platform as equipment. The whole training was based on learning functional ligaments, the main exercises of which were squats, push-ups, lunges, planks. Basic steps of step-aerobics were used for initial learning of ligaments. As a result, one big ligament was obtained, which was repeated at the end of the main part several times. Functional combination" training is very similar to functional step aerobics, the most important difference is the absence of a step platform on which to ascend and descend, there is more freedom in moving and performing various exercises and even dance elements. Learning of ligaments begins with basic aerobics steps. The complication is the simultaneous work of hands and legs, adding jumps, etc. Each participant has the right to choose at what stage of learning to stop due to her abilities or health limitations.

On Sundays there was "body&mind" training, which is focused on integrating mental and physical training in order to improve overall physical and mental health.

Results. Testing was conducted before and after the implementation of the programme. In addition to assessing the subjects' physical fitness and physical qualities, we evaluated changes in body girth sizes and body mass index.

Using the Harvard Step Test, we assessed the subjects' physical performance.

To assess the strength, speed and power abilities and the level of flexibility we used some of the standards of the All-Russian physical training and sports complex "Ready for Labour and Defence" of the 7th stage for women (30-34 years old) as tests.

Conclusion. The developed fitness marathon programme is currently in the process of implementation, but we can conclude:

1. fitness marathon programme for women aged 30-35 was developed taking into account their age characteristics and needs.

2. the developed programme helped to reduce body weight in 30-35-year-old women over 12 weeks through group exercise and balanced nutrition.

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Sozontova Olga Vladimirovna, 4-year student, olya_soizontova02@mail.ru, Russia, Omsk, Siberian State University of Physical Education and Sports

РАЗРАБОТКА ПРОГРАММЫ ФИТНЕС-МАРАФОНА ДЛЯ ЖЕНЩИН 30-35 ЛЕТ

Созонтова Ольга Владимировна, студентка, olya_soizontova02@mail.ru, Россия, Омск, Сибирский государственный университет физической культуры и спорта

Аннотация. Эта статья раскрывает важность физической подготовки и оздоровительных мероприятий для женщин в возрасте 30-35 лет. Одной из самых популярных форм организации таких занятий являются марафоны по фитнесу. Мы представляем программу фитнес-марафона для женщин 30-35 лет, который был разработан в соответствии с возрастными и морфо-функциональными особенностями данной возрастной группы. Программа марафона направлена на снижение веса с помощью групповых тренировок.

Ключевые слова: физкультурно-оздоровительная программа, фитнес-марафон, похудение, групповые тренировки, женщины 30-35 лет, лишний вес, силовые тренировки, комбинированные тренировки, функциональные тренировки и тренировки тела и ума

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METHODOLOGY OF TEACHING ATTACKING ACTIONS TO ATHLETES 12-14 YEARS OLD DOING TAEKWONDO ITF

Spirin Y.A., s/s Kalashnikov Y.B.

Abstract. This article is devoted to the methodology of teaching attacking actions to 12-14-year-old athletes involved in taekwondo ITF.

Keywords: taekwondo ITF, methodology, attacking actions

Introduction. Technical improvement and rational tactical use of attacking, defense and counterattack techniques should be interconnected. Therefore, when improving technical and tactical actions in the process of training sessions, it is necessary to pay special attention to the rational use of various situations of the fight that arise on the court, when sparring with different opponents. In our study, we worked out complexes of exercises aimed at forming the beginning of the attack (entering the distance), practicing the correct completion and exit from the attack and improving various combinations.

The main part. We have developed and experimentally substantiated the methodology of teaching attacking actions to athletes 12-14 years old engaged in taekwondo ITF.

A pedagogical experiment was conducted with the participation of 2 groups: control group and experimental group of 15 people in each group. Athletes of each group were of the same age, qualification and level of preparation. During the experiment, the preliminary statistical data were carried out by the method of dispersion analysis.

As practice shows, the first mistake is that athletes' legs are often not mobile enough, as a result of which they can lag behind the movements of the arms and trunk. This leads to loss of the balance, violation of the combat stance, as a result of which the athlete opens up and becomes vulnerable to the opponent's attack.

The second serious mistake associated with poor leg performance is placing the feet in a single line parallel to each other. In Taekwondo ITF, just as in other martial arts, one foot should always be in front and the other behind. If the feet are in the same line, it is easy for an athlete to be knocked down by a kick, even if he or she

puts the correct block in place.

A third common mistake is that the athlete at some point begins to stand or move on straight legs, which deprives the athlete of mobility and the ability to attack and defend effectively.

The following sets of exercises were developed to improve the technique of attacking actions.

Attack preparation exercises:

1. Moves back and forth and sideways in a combat stance. This task is designed to enable the athlete to move easily and quickly without losing his combat stance.

2. Moves in a circle around the opponent to one side with an abrupt change of direction. The purpose of this exercise is to confuse the opponent and throw him off balance.

3. Moving in a combat stance with a change of stand. The meaning of this exercise is as follows: the athlete performs movements, and at some point, abruptly changes his combat stance, thereby confusing his opponent. While the athlete is adjusting to the new situation, he can quickly approach him and attack.

Exercises to practice getting out of the attack:

1. Performing a quick sidestep after an attack. The purpose of the side-step exercise is to allow the athlete to move away from the line of attack in an instant.

2. Performing an exit attack kick. An exit punch allows you to break the distance between the fighters. The most common way of doing this in Taekwondo is with circular kicks. A circular leg kick on the way out of an attack is a good combination with a side-step.

3. Performing an abrupt backward step after an attack is completed.

A set of attacking techniques and combinations. In our complex, the emphasis was on combinations using high kicks, approaches and false moves that allow you to bypass the opponent's defense. As examples, here are a few combinations.

1. Double round kick with different legs in a jump.

2. False display of a kick to the corpus + approach to the opponent with two hand punches to the head.

2. Feint with a circular kick to the body with a leg past the opponent and a heel kick to the head from the other side: false show Dollyo Chagi with the subsequent execution of Nerio or Goro Chagi.

4. Combination of 4 kicks: double with hands + circular kick with left foot + twirl in jump with right foot. (all kicks are performed in the head).

Table 1. – Evaluation of the effectiveness of the athletes' attacking actions for 50 rounds of 2 minutes each

Measurable indicators	Beginning of the study		End of the study		Increase (%)	
	Exp. gr.	Contr. gr..	Exp. gr..	Contr. gr..	Exp. gr.	Contr. gr.
Number of punches performed (number)	46	44	54	53	17%	20%
Number of successful punches (number)	9	10	17	14	88%	40%
Punch accuracy (%)	19%	23%	31%	27%	–	

Table 2. – Total statistics of effective punches for 50 rounds of 2 minutes each

Measurable indicators	Beginning of the study		End of the study		Increase (%)	
	Exp. gr.	Contr. gr..	Exp. gr.	Contr. gr..	Exp. gr	Contr. gr..
Punches rated at 5 points	–	–	3	1	–	–
Punches rated at 4 points	14	12	42	25	200%	101%
Punches rated at 3 points	76	78	265	150	248%	92%
Punches rated at 2 points	199	195	294	275	49%	41%
Punches rated at 1 point	161	171	246	239	52%	40%

Conclusions. Our experiment confirmed the put forward hypothesis about the effectiveness of the implementation of such a method of teaching attacking actions to athletes 12-14 years old engaged in Taekwondo ITF. The intra-group comparison between the preliminary and final tests showed that the improvement of attacking actions in the experimental group became more effective.

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Spirin Yu.A., student of The Russian University of Sport "GTSOLIFK", spirin.yuri1@mail.ru, Russia, Moscow.

Scientific supervisor – Kalashnikov Yuri Borisovich, PhD in Pedagogical Sciences, professor The Russian University of Sport «GTSOLIFK», Moscow, Russia

МЕТОДИКА ОБУЧЕНИЯ АТАКУЮЩИМ ДЕЙСТВИЯМ СПОРТСМЕНОВ 12-14 ЛЕТ, ЗАНИМАЮЩИХСЯ ТХЭКВОНДО ИТФ

Спирин Юрий Алексеевич, студент, spirin.yuri1@mail.ru, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва.

Научный руководитель – Калашников Юрий Борисович, кандидат педагогических наук, профессор, tkdrgufk@mail.ru, Российский Университет Спорта «ГЦОЛИФК», Россия, Москва.

Аннотация. Данная статья посвящена методике обучения атакующим действиям, спортсменов 12-14 лет, занимающихся тхэквондо ИТФ.

Ключевые слова: тхэквондо ИТФ, методика, атакующие действия

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MORPHOFUNCTIONAL INDICATORS OF PHYSICAL QUALIFICATION OF 16-17-YEAR-OLD GIRLS SPECIALIZING IN RACE WALKING

Stepanova A.M., s/s Syachin V.D.

Abstract. *The training process in race walking is closely related to a sharp increase in the competitive distance, for which athletes aged 16-17 are not always ready. In modern sports, the training process of girls in race walking is based on a generally accepted method for men, in which the dominant direction is to increase the volume of training loads. This often causes an overstrain of the female body. There is a need to optimize the system of sports training for girls specializing in race walking.*

Keywords: *morphofunctional indicators, physical qualification, race walking, aerobic performance, long-legged athletes, short-legged athletes*

In training practice, the principle of individualizing the training process often turns out to be a difficult task for one coach working with a group of athletes. This became the basis for our research. We were tasked to establish the individual characteristics of female athletes and their demonstration in the training process, to determine the indicators of aerobic performance of female athletes aged 16-17 years specializing in race walking and to elaborate recommendations for programming the training process taking into account the findings.

The study was conducted on the basis of Moscow sports schools in athletics. The study involved 16-17-year-old girls specializing in race walking. At the early stages of our study, anatomical and morphological features of female athletes and their demonstration in the training process were revealed. The experimental group included 10 athletes training in Moscow and inside of this group 6 athletes were classified as "short-legged" athletes, and 4 athletes were classified as "long-legged" athletes. The control group included 10 girls of the same age and level of qualification from the Kemerovo region.

In addition to anatomical and morphological features, we have established the parameters of the steps of both groups of athletes, presented in table 1 [2, 3].

Table 1. – Parameters of technical competence of female race walkers

Parameters	Highly qualified race walkers	testees	
		Long-legged race walkers	Short-legged race walkers
speed (m/sec)	3,73	1,72	2,83
speed.1km (min.sec)	4.28	5.10	5.22
quantity of steps (perdistance 3000m)	2654	2678	2941
length of the step (sm)	114	108	86
frequency (step/min)	196,4	170	200
frequency (step/sec)	3,27	1,6	3,3

The training programs of girls aged 16-17 were analyzed in comparison with 14-15-year-old race walkers. The total amount of loads performed by athletes during 52 weeks was considered (fig. 1).

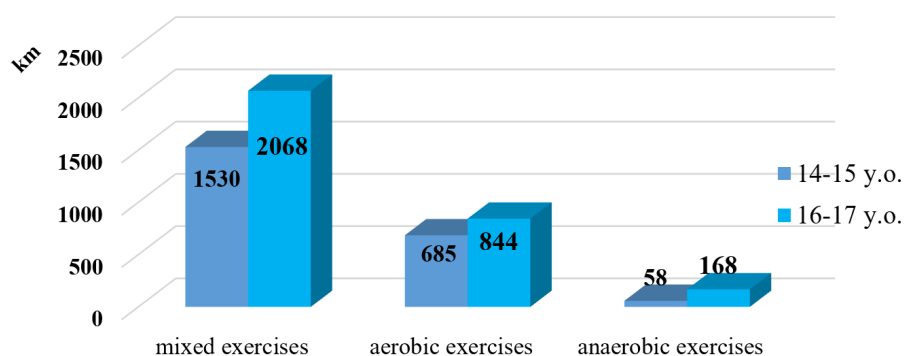


Figure 1. – The structure of training loads in the annual cycle of training girls in race walking

It follows from fig. 1 that in the annual training cycle of girls aged 16-17, loads in mixed mode increase 1.4 times compared to the previous stage of training, loads in aerobic mode increase 1.2 times, loads in anaerobic mode increase 2.9 times. In general, we can conclude that there is a rather sharp increase in the intensity of the training process against the background of an increase in the total volume. Due to the peculiarities of the technique (as follows from the table. 1), it is more difficult for long-legged athletes to absorb intense training loads compared to short-legged athletes at this stage of training.

In general, all training process in race walking is built up depending on the length of the competitive distance, which is constantly increasing with the transition to each older age group. It is also necessary to remember that the result of performance at competitions directly depends on the technique of race walking, in case of violation of which the athletic result suffers up to disqualification. Thus, athletes aged 16-17 compete in the U18 category at a distance of 5,000 m, which is 1.7 times more than the main distance of the previous age group (U16). When

moving to the U20 age group, the distance increases by 2 times to 10,000 m, when moving to the U23 category - up to 20 or 35 km, which exceeds the previous distance by 2, and even 3.5 times! At the same time, in childhood, coaches tend to prefer short-legged athletes due to the fact that they have a higher walking pace. There is an opinion among coaches that technical errors are less noticeable in short-legged athletes. However, with the transition to the older age groups, short-legged athletes begin to face the problem of maintaining their inherent high step frequency for 20 or 35 km, which often leads to violations of the rules of race walking technique. Long-legged athletes do much better at distances of 20 and 35 km, however, they often do not stand up to competition compared to short-legged athletes at earlier stages of training, which leads to the dropout of athletes. There is a need to determine the criteria for the prospects of girls specializing in race walking.

The next stage of our research was the assessment of aerobic performance indicators. The athletes performed a test with a stepwise increasing load on the treadmill. Performance was assessed in 4 zones: aerobic metabolism threshold, anaerobic metabolism threshold, and maximum oxygen consumption. The detailed results obtained during the application of this technique are presented in Figure 2.

The findings during testing of aerobic performance allowed us to establish that long-legged athletes had higher parameters such as: relative oxygen uptake, minute ventilation of the lungs, oxygen pulse, speed and power of the load, oxygen absorption and carbon dioxide release, respiratory rate, shock volume. Short-legged athletes had high respiratory volume and heart rate compared to long-legged athletes. The inhaled oxygen concentration (F_IO₂) was high in both groups of athletes.

There are reasons to believe that both long-legged and short-legged athletes are able to achieve success in race walking. On average, long-legged female athletes have a higher tendency to maintain high aerobic performance. In competitive practice, this type is often successful at distances of 20 and 35 km.

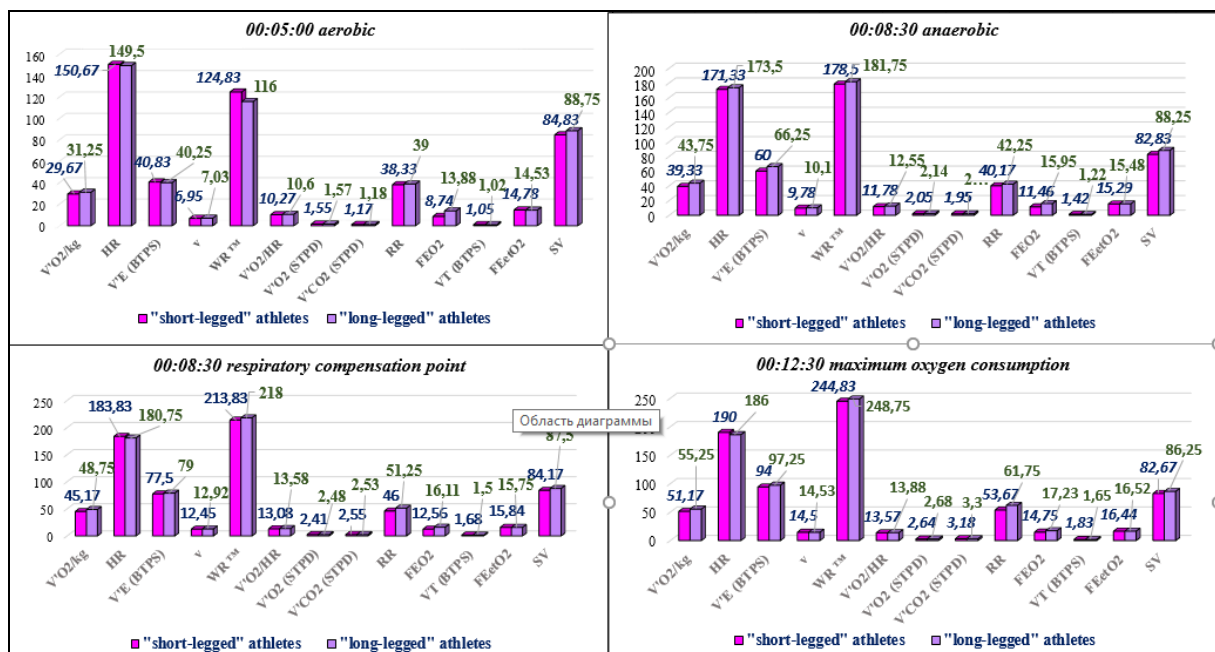


Figure 2. – The results of the assessment of the athletes' performance

For short-legged athletes, distances of 3000 and 5000 m are more promising. For example, among men, a striking example is M. Schennikov, for whom these distances were "crown". These competitive distances are often held at winter championships, as well as at commercial starts.

Girls who have a high relative leg length are more promising in race walking. In the early stages of training (U16, U18), short-legged athletes demonstrate high results. However, in the future, long-legged athletes are ahead of them due to longer steps, high mobility in joints and increased aerobic performance.

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Stepanova Anastasia Maksimovna, senior lecturer at the department of theory and methodology of athletics named after N.G. Ozolin, federal state budgetary educational institution of higher education, Russian university of sports "GTSOLIFK", stepanova.am@gtsolifk.ru, Russia, Moscow.

Scientific supervisor - Syachin Vladimir Dmitrievich, doctor of pedagogical sciences, professor of the department of theory and methodology of athletics named after N.G. Ozolin, federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK", syachin.vd@gtsolifk.ru, Russia, Moscow

МОРФОФУНКЦИОНАЛЬНЫЕ ПОКАЗАТЕЛИ, ОПРЕДЕЛЯЮЩИЕ ФИЗИЧЕСКУЮ ПОДГОТОВЛЕННОСТЬ ДЕВУШЕК 16-17 ЛЕТ, СПЕЦИАЛИЗИРУЮЩИХСЯ В СПОРТИВНОЙ ХОДЬБЕ

Степанова Анастасия Максимовна, старший преподаватель кафедры теории и методики легкой атлетики им. Н. Г. Озолина, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», stepanova.am@gtsolifk.ru, Россия, Москва

Научный руководитель - Сячин Владимир Дмитриевич, доктор педагогических наук, профессор кафедры теории и методики легкой атлетики им. Н.Г. Озолина, федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», syachin.vd@gtsolifk.ru, Россия, Москва.

Аннотация. Тренировочный процесс в спортивной ходьбе тесно связан с резкими увеличениями соревновательной дистанции, к которым спортсменки 16-17 лет не всегда оказываются готовы. В современном спорте тренировочный процесс девушек в спортивной ходьбе строится по общепринятой методике для мужчин, в которой доминирующим направлением являются повышение объемов тренировочных нагрузок. Часто это служит причиной перенапряжения женского организма. Возникает необходимость в оптимизации

системы спортивной тренировки девушек, специализирующихся в спортивной ходьбе.

Ключевые слова: морфофункциональные показатели, физическая подготовленность, спортивная ходьба, специальная работоспособность, длинноногие спортсменки, коротконогие спортсменки

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UDC 796

SPEED-STRENGTH TRAINING AT THE INITIAL STAGE IN TENNIS

Stepanova M.E.

Abstract. *Tennis places high demands on the level of speed-strength preparedness of tennis players, and improving the quality of this type of training can serve as an important factor in the growth of sportsmanship. In tennis, predominantly fast and strong movements are very important, so a type of strength ability such as explosive strength, which is the ability to exert great force in the least amount of time, is of particular importance. It ensures the manifestation of speed in starting jerks and jumps.*

Keywords: *tennis, young tennis player, speed-strength training, the initial stage*

Introduction. Leading domestic and foreign experts in their research pay considerable attention to the study of speed-strength characteristics at various stages of sports training.

According to experts, a high level of speed-strength fitness helps to improve coordination abilities, increase the efficiency of movements, which helps not only to win competitions, but also to withstand the amount of training work required by a tennis player, and can significantly reduce the likelihood of injury [3].

At the initial training stage, there is a need to select special effective means of speed-strength training that do not affect the biomechanical structure of motor actions, but purposefully affect the strength and accuracy of strikes, as well as the speed of movement around the court [1, 2].

Aim. To develop the content of an experimental set of exercises for speed and strength training of tennis players at the initial stage.

Research objective – to develop the content of high-speed strength training for tennis players of initial training groups

Materials and methods. 16 players took part in the pedagogical experiment, 8 people in each group. The average tennis experience of each athlete was about three years.

Classes in the control group were conducted according to a long-term training program in accordance with the FSSP for groups of the 1st year of training stage preparation.

Toning classes in the experimental group were conducted in accordance with the FSSP with an emphasis on the developed experimental complex.

The content of speed-strength training of tennis players of initial training groups of the 3rd year of study, represented by two training complexes, has been developed. Complex No. 1 is based on the use of tools such as rope, weights, tennis balls, and complex No. 2 is based on the use of the "high-speed ladder" simulator and weights. The developed training sets of exercises were used alternately at each lesson after warming up in the main part, i.e. 4 times a week for 20 minutes.

Results. For completeness of the study, we will consider separately the dynamics of indicators between the initial and final testing in the experimental and control groups. The results of the initial and final testing of the speed and power abilities of the tennis players of the experimental group are presented in table 1.

Table 1. – Results of initial and final testing of speed and strength abilities of tennis players of the experimental group

№	Indicators	Test		Δ _{rel} , %	t-Test	p
		initial	final			
		X+ σ	X+ σ			
1	Long jump from the spot with a push of two legs, cm	108,4±4,4	118,3±3,2	9,1	4,81	<0,05
3	Stuffing ball throw, m	5,6±2,3	7,2±2,2	28,6	2,33	<0,05
4	Triple jump from the spot with a push with two legs "frog," m	5,1±0,7	6,8±0,2	33,2	6,43	<0,05
5	30 m run, s	5,3±0,5	4,7±0,2	11,2	2,90	<0,05
6	"Shuttle" 6x8 m, cm	15,9±0,9	14,8±0,3	6,9	3,07	<0,05

According to the results of the final pedagogical testing, it was found that the results of the final testing of speed and strength preparedness in the experimental group tested significantly differ from the indicators of the initial stage ($p < 0.05$). The maximum relative deviation between the initial and final testing in EG tennis players was noted in the test "Triple jump from a place with a push with two legs" – 33.2% ($p < 0.05$). After the pedagogical experiment, EG tennis players began to reliably perform the triple jump (6.8 ± 0.2 m) further than before the experiment (5.1 ± 0.7 m). A slightly smaller relative and statistically significant deviation is the test result in throwing a stuffed ball – 28.6% ($p < 0.05$). Also, the EG indicator among tennis players increased significantly by 20.8% ($p < 0.05$) during the pedagogical experiment in the "Jump up from the spot with a push of two legs" test.

The relative deviations in the difference between the results of initial and final EG testing are statistically significant and fall within the range of 6.9-11.2% ($p < 0.05$).

The results of the initial and final testing of the speed and power abilities of the tennis players of the control group are presented in table 6.

Table 2. – Results of initial and final testing of speed and strength abilities of tennis players of the control group

№	Indicators	Test		Δ_{rel} , %	t-Test	p
		initial	final			
		$\bar{X} + \sigma$	$\bar{X} + \sigma$			
1	Long jump from the spot with a push of two legs, cm	109,6+5,6	110,2+2,4	0,5	0,26	>0,05
2	Jump up from the spot with a push of two legs, cm	15,2+2,6	15,3+2,1	0,7	0,08	>0,05
3	Stuffing ball throw, m	5,6+1,1	5,8+1,4	3,6	0,30	>0,05
4	Triple jump from the spot with a push with two legs "frog," m	5,1+0,5	5,5+0,4	6,8	1,57	>0,05
5	30 m run, s	5,4+0,4	5,2+0,3	2,8	0,79	>0,05
6	"Shuttle" 6x8 m, cm	15,8+0,8	15,6+0,5	1,3	0,56	>0,05

According to the results of the presented dynamics, it can be seen that for 6 months of the pedagogical experiment, the CU subjects did not exceed their indicators in the tests of speed-force preparedness by more than 6.8% ($p > 0.05$). Moreover, the difference in all indicators of speed and strength preparedness between the initial and final testing is unreliable ($p > 0.05$).

Conclusion. The developed content of speed-strength training of tennis players of the initial training groups of the 3rd year of study, represented by two training complexes, will increase the level of speed-strength training of tennis players at the stage of initial training of the 3rd year of study

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Stepanova Maria Evgenievna, Ph.D. Associate Professor of the Department of Theory and Methodology of Tennis, Table Tennis and Badminton, stepanovam@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education «The Russian University of Sport «GTSOLIFK».

СКОРОСТНО-СИЛОВАЯ ПОДГОТОВКА НА НАЧАЛЬНОМ ЭТАПЕ В ТЕННИСЕ

Степанова Мария Евгеньевна, к.п.н. доцент кафедры ТуМ тенниса, настольного тенниса и бадминтона, stepanovam@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Теннис предъявляет высокие требования к уровню скоростно-силовой подготовленности теннисистов и улучшение качества этого вида подготовки может служить важным фактором роста спортивного мастерства. В теннисе очень важны преимущественно быстрые и сильные движения, поэтому особое значение имеет такая разновидность силовых способностей, как взрывная сила, представляющая собой способность проявлять большую силу в наименьшее время. Она обеспечивает проявление быстроты в стартовых рывках и прыжках.

Ключевые слова: теннис, юные теннисисты, скоростно-силовая подготовка, начальный этап

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FEATURES OF THE METHODOLOGY FOR DEVELOPING SPEED-STRENGTH ABILITIES IN TEAMGYM

Streletskaya Ya.S., Ershova N.G., Semenov D.V.

Abstract. Team gymnastics is becoming increasingly popular in our country. The process of physical training in this sport is different from other types of gymnastics. In this regard, a study was conducted to clarify the features of the process of development of speed-strength qualities in TeamGym.

Keywords: team gymnastics, speed-strength abilities, acrobatic elements, vault (mini-trampoline jump), tumbling, group floor exercises, physical training

Introduction. At present, team gymnastics is gaining increasing popularity in our country, which includes three disciplines: vault (mini-trampoline jump), tumbling and group floor exercises. The predominant content of acrobatic elements, performed under conditions that differ in many respects from other types of gymnastics, indicates the need to pay special attention to physical training in TeamGym.

Unfortunately, at present, not enough research has been carried out in the field of TeamGym, including on the content of the educational and training process. There are no uniform requirements for the process of physical training of team gymnasts in the country, which indicates the relevance of searching for specific means and methods for developing physical qualities in team gymnastics.

Object of study is the content of developing speed-strength abilities in team gymnastics.

Subject of study: means and methods of speed-strength training in team

gymnastics.

Research hypothesis: the use of methods for developing speed-strength abilities, taking into account the features characteristic of team gymnastics, helps to improve the preparedness of athletes.

The **purpose** of our study is to determine the effectiveness of special means and methods for developing speed-strength qualities on the success of training athletes in team gymnastics in general.

Research objectives:

1. Study pedagogical and methodological literature on the problem of developing speed-strength abilities in gymnastics, as well as regulatory documents on TeamGym and similar types.

2. Determine the level of development of speed-strength abilities of the gymnasts participating in the experiment and compare with the level of development of a group of artistic gymnasts.

3. To identify the features of the process of developing speed-strength qualities in team gymnastics.

Methods:

- analysis of literature on the researched problem;
- survey;
- gymnastics test exercises.

Research design and results discussion. Team gymnastics combines many sports types of gymnastics. Therefore, when talking about physical training in TeamGym, it is advisable to refer to types similar to it. This can be verified by analyzing the classification program for team gymnastics and the requirements for competition venues.

Let's start with exercises on the acrobatic track. Having analyzed the requirements of the European TeamGym Federation for competition venues and compared them with the national standard for "Tumbling", it can be understood that in team gymnastics a larger run-up area is provided (16 m) than in tumbling (10 m). This allows you to gain greater speed for performing elements. Although the work area itself in TeamGym is 10 m shorter (15 m). The landing area is 1 m larger in width and length (4 * 7 m)

Let's pay attention to the classification program for TeamGym.

In youth categories, the jumping program on the acrobatic track includes the following exercises: forward/backward somersaults, forward somersaults with a run, jump up 180/360, side flip with a run (2 and 1 youth), rondat (1 youth). In adult categories, it is also necessary to perform several combinations consisting of 2-3 more complex elements.

The program for a particular type of gymnastics, "Jumping on an acrobatic track", is much more complex. There is a wheel and a rondat in the third youth level and a somersault and a flap in the 2nd youth.

The next discipline of team gymnastics is the vault (mini trampoline jump) which is similar to the "Double mini trampoline jump" and the vault in artistic

gymnastics. The run-up area is 25 m long and 1 m wide, as in artistic gymnastics. The difference is in the height of the table: in artistic gymnastics it is 125 cm for women, 135cm for men, and in team gymnastics this height is 145-165 cm. This is due to the repulsion conditions. In TeamGym, the take-off is carried out from a mini-trampoline, and not from a gymnastic bridge. The exception is for 3-2 youth categories (jumping from a bridge onto a mat hill). In addition, many jumps are performed simply from a mini-trampoline without a table.

A more elastic place of take-off provides greater opportunities for the manifestation of speed-strength abilities in team gymnastics.

The interaction of a jumper with an elastic support as a “landing-repulsion” system occurs according to the minimax principle: maximum results with minimum energy consumption.

Speed-strength abilities are also of great importance in group floor exercises, due to the inclusion of acrobatic and choreoFigureic jumps in them.

This discipline is similar to the following types of gymnastics: aesthetic, Cheer Sports, sports aerobics, artistic gymnastics. The floor exercise mat has dimensions of 14*16 m, thickness 35mm (+5mm). This area is larger than in artistic gymnastics (14*14), aesthetic (13*13), cheerleading groups (12.8-16.5 m) and sports aerobics 12*12 m. Consequently, such conditions create more space for performing long combinations of speed-power elements. But at the same time, the carpet in team gymnastics does not imply the presence of springs, as in artistic gymnastics, which makes it difficult to perform complex acrobatic exercises. That is, the support is more rigid, which places greater demands on physical fitness.

The group exercise program is more similar to Cheer Sports, as it requires a large number of acrobatic elements to be performed by all team members. In youth categories these are somersaults, bending upward jumps with a turn, somersault stand, headstand and handstand. In sports categories, speed-strength elements include jumping, acrobatic elements (one for 3rd, 2nd category, two for 1st category), combinations of elements.

In order to determine the features of the methodology for developing speed-strength qualities in team gymnastics, we conducted a survey of gymnastics specialists. It was carried out in absentia using a special questionnaire, which included 13 questions of a theoretical and methodological nature.

The majority of respondents – 80% consider speed-strength abilities to be the most important for development in team gymnastics. Slightly fewer respondents – 75% chose coordination as one of the significant qualities in TeamGym. Flexibility can be considered the third most important – it was noted by 60% of specialists.

When asked about the existence of differences in the methods of speed-strength training in artistic and team gymnastics, 75% of respondents answered positively.

As a result of the survey, it was revealed that to increase the level of speed-strength training of gymnasts, according to respondents, the most preferable exercises are:

- exercises by hanging your own body – 55%
- exercises with light weights – 45%
- exercises without weights similar in structure to the main technical elements – 35%

Specialists were interviewed answered that they use the following exercises for education speed-force:

- repeated method – 80%,
- dynamic effort method – 45%
- Impact (plyometric) – 15%

In order to determined comparisons level of speed-strength training performance of a group of team and artistic gymnasts was carried out the preliminary testing. A set of tests was compiled based on a literature review and analysis of regulatory requirements of federal standards of sports training for gymnast types, similar to TeamGym.

15 artistic gymnasts and 15 team gymnasts aged 9-11 years took part in testing. All of them are pupils of Youth Sports School No. 1 “Athletica”.

It was found that no significant differences between groups in indicators of high jump from a solid support. Consequently, there are no significant differences in the height of jumping from a rigid support between artistic and team gymnasts.

However, there are significant differences in height when jumping from an elastic surface (mini-ramp). The jumping height of team gymnasts is on average 15 cm higher than that of artistic gymnasts. That is connected with the peculiarities of the training process in TeamGym.

To compare the level of speed-strength readiness of team and artistic gymnasts, several more tests were conducted

The jumping rope test for 30 seconds did not show significant differences between the groups of female athletes. However, there are significant differences at the level $p = 0.05$ in jumping to a height of 30 cm in 30 seconds. Artistic gymnasts showed the results on 2 times more.

From the test “sit up at an angle from a supine position for 20 seconds” is seen that a group of artistic gymnasts is superior to team gymnasts in the development of speed-strength abilities of the torso. There are significant differences with a probability of 99%. ($3.5 > t_{cr} = 2.76$ $P = 0.01$)

The test “flexion and extension of the arms while lying on the floor, number of times in 30 seconds” indicates that in the group of artistic gymnasts the speed-strength abilities of the upper extremities are also better developed compared to team gymnastics ($5.27 > t_{cr} = 2.76$ $P = 0.01$). This indicates that artistic gymnasts have a highly developed shoulder girdle, which is associated with work on apparatus, and to a large extent on uneven bars. When, like team girls, most of the training process is spent on acrobatics on the track, where good jumping ability is required.

Conclusions:

1. The effectiveness of training in TeamGym is influenced by a good level of development of speed-strength abilities, the method of training which differs from artistic gymnastics. Especially, according to experts, the importance of these qualities is manifested in vaults and jumps on the acrobatic track. To increase the level of speed-strength training, it is necessary to use exercises with your own body weight and light weights, methods of repeated exercises and dynamic efforts. Exercises to increase the level of development of speed-strength qualities must be given at least

15-20 minutes at the beginning of the main part of the training session.

2. The elasticity of the supporting surface for the vault in team gymnastics makes it necessary to adapt to the conditions over time, redifferentiating the efforts during take-off, which results in a higher jump.

3. To a large extent, team gymnasts need to develop the speed-strength abilities of the lower extremities, which must be emphasized in the further development of means and methods of education.

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Streletskaia Yana Stanislavovna, 3rd year student, Russia, Velikiye Luki, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: streletskaia.yana@yandex.ru

Ershova Natalia Genrikhovna, Dr. Hab., professor, Russia, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: ershovanatal@yandex.ru

Semenov Denis Viktorovich, PhD, professor, Russia, Velikiye Luki State Academy of Physical Culture and Sports, e-mail: english@vlgafc.ru

ОСОБЕННОСТИ МЕТОДИКИ РАЗВИТИЯ СКОРОСТНО-СИЛОВЫХ СПОСОБНОСТЕЙ В TEAMGYM

Стрелецкая Яна Станиславовна, студентка 3 курса факультета физического воспитания и спорта ФГБОУ ВО «ВЛГАФК», streletskaia.yana@yandex.ru, Россия, Великие Луки, ФГБОУ ВО «ВЛГАФК»

Ершова Наталья Генриховна, доктор наук, профессор, Россия, Великолукская государственная академия физической культуры и спорта, ershovanatal@yandex.ru

Семенов Денис Викторович, кандидат педагогических наук, профессор Россия, Великие Луки, ФГБОУ ВО «ВЛГАФК», english@vlgafc.ru

Аннотация. Командная гимнастика становится все более популярной в нашей стране. Процесс физической подготовки в этом виде спорта отличается от других видов гимнастики. В связи с этим было проведено исследование с целью выяснения особенностей процесса развития скоростно-силовых качеств в TeamGym.

Ключевые слова: командная гимнастика, скоростно-силовые способности,

акробатические элементы, опорный прыжок (прыжок на мини-батуте), акробатика, групповые вольные упражнения, физическая подготовка

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PHYSICAL EDUCATION AND SPORTS ACTIVITIES OF ELDERLY CITIZENS AS ONE OF THE DIRECTIONS OF STATE SUPPORT IN THE RUSSIAN FEDERATION

Sudakova A.A., s/s Barienikova E.E.

Abstract. The article considers state programs and projects dedicated to the development of physical education and sports activities among elderly citizens of the Russian Federation.

Keywords: elderly people, physical education, sports, active longevity, state program, national project, federal project

Introduction. Supporting physical education and sports activity of the elderly people in Russia is highly important nowadays. By showing concern for the health and active lifestyle of this age group, the state seeks to contribute to the improvement of their physical and psychological well-being. In this regard, the analysis of state programs aimed at the development of sports among elderly citizens and the assessment of their effectiveness are important for scientific study.

Results discussion. Today, the Russian Federation implements state programs related to the development of physical culture and sports. The Decree of the President of the Russian Federation defines national goals planned to be achieved by 2030, including: an increase in life expectancy to 78 years and an increase in the proportion of citizens who systematically engage in physical culture and sports to 70 percent [1]. Also, due to the increase in the retirement age and the need to maintain long-term working capacity of the population, the requirements for increasing the duration of

socially and economically active life have increased, taking into account the aging of the population and low involvement in physical education and sports of middle and older age groups. The state program of the Russian Federation «Development of physical culture and sports until 2030» mentions the insufficient level of involvement of the middle-aged population – 32.6% and older – 14.2% in physical culture and sports [2]. Such low figures have led to the fact that the state and almost every region of Russia sets itself the goal of increasing these indicators in accordance with the content of the objectives of this program.

To achieve this goal, first of all, the state began to create various projects. A significant role is played by the national project «DemoFigurey», which includes a number of federal projects [4]. The national project is aimed at increasing the proportion of citizens who lead a healthy lifestyle and systematically engage in physical education and sports.

In this regard, the federal project «Sport - the norm of life», which is part of the national project, creates conditions for all categories of citizens to engage in sports and physical education. Sports and recreation centers and complexes, sports grounds, and swimming pools are being built all over Russia. According to Dmitry Chernyshenko, Deputy Prime Minister of the Russian Federation, 70 sports facilities were built in 2022. In total, 346,239 sports facilities operate in Russia, which can be used by 11 million citizens of the Russian Federation.

One of the most accessible places where older people can play sports are sports fields in courtyards and parks. According to data on the state of physical culture and sports, from 2019 to 2022 in Russia, the number of urban and recreational infrastructure facilities adapted for physical education and sports, including sports grounds with simulators and special tracks, increased by almost 34%. At the end of 2019, there were 30,809 thousand such facilities, at the end of 2022 – 45,608 thousand [5]. Increasing the number of available places for sports can help attract older people's interest in physical activity.

Another federal project «The Older Generation», together with the «Strategy for Actions in the interests of Older Citizens in the Russian Federation until 2025» (hereinafter referred to as the Strategy until 2025), are aimed specifically at the older age category. The strategy until 2025 has set the directions of modern state policy in the field of active longevity, the concept of which considers it important to promote a healthy lifestyle through the organization and dissemination of physical education programs for the older generation, including sports activities conducted on the basis of social service agencies, cultural centers, parks, courtyards, etc. [3]. In accordance with the action plan for the implementation of the federal project «The Older Generation», regional programs are being created in 85 regions of the Russian Federation aimed at solving the above-mentioned tasks. So, there is a project of the Governor of the Moscow region «Active longevity». The project includes providing social services to the elderly of the Moscow region, organizing excursions and conducting various activities, including a wide variety of sports activities: game sports, Nordic walking, curling, petanque, dancing, etc. For convenience, the project has its own website with a schedule of classes in each municipality of the Moscow region, as well as online classes. In 2022, the number of elderly people in the

Ministry of Defense amounted to 1,909 thousand people. of which more than 220,000 people – about 10% are participants in the Active Longevity project. Since every year there is a tendency to increase the directions of activities, information coverage, as well as the number of «Active Longevity» centers in the Moscow region, a large number of new older people are expected to participate in this project in the future.

In addition, competitions are held every year within the framework of the federal project «The Older Generation». One of these is the «Spartakiad of pensioners of Russia». In 2023, 697 people from 76 regions of Russia took part in the competition, as well as elderly athletes from Kazakhstan, Belarus and Finland. Amateur athletes participate in the Spartakiad: women from 55 years old, men from 60 years old. About 20% of the participants of the Spartakiad are people over 70 years old. Athletes participate in swimming, volleyball, athletics, bullet shooting, compete in darts and chess, and comply with the standards of the TRP.

It is worth noting that since 2020, with the support of the national project «DemoFigurey», a competition for the best practices of active longevity has been held. The selection is carried out in 4 categories: «Active life», «Medical and social care, public care and prevention», «Healthy lifestyle», «Education and employment». In 2022, 923 applications were submitted from 59 regions, of which 113 practices entered the final. The practice of the game «Playstick» from St. Petersburg became the winner in the nomination «Healthy lifestyle», which involves a game combined with elements of gymnastics, dance, outdoor games with a special racket (dowel) and a ball using a unique technique with the ability to restore normal brain function. According to this practice, 1000 people are constantly engaged in the halls, and after training, more than 3000 people play «Playstick» independently and in groups. The project of dance and movement therapy for the older generation «Dances of the peoples of the world», which aims to correct motor disorders and stimulate the creative development of older people, won in the nomination «Active Life». The results show that more than 100 people are already involved in the practice. In their opinion, this practice helped them to improve their motor activity and increase self-esteem, thanks to performances on stage and familiarization with folk cultures of various dances.

Based on all of the above, we can **conclude** the fact that at the moment Russia is actively developing a state policy aimed at involving older people in physical culture and sports. New opportunities are being created for older people to engage in physical activity to improve and maintain their health: new sports facilities are being opened that are accessible to the elderly, active longevity projects are being implemented in the regions of Russia, various physical culture and sports events are being held.

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Sudakova Alice Andreevna, bachelor of 4 years of Study of the Department of Public Administration and Youth Policy, alisasudakova@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

Scientific supervisor - Barienikova Ekaterina Evgenievna, senior lecturer of the Department of Public Administration and Youth Policy, ebarienikova@mail.ru, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

ФИЗКУЛЬТУРНО-СПОРТИВНАЯ ДЕЯТЕЛЬНОСТЬ ПОЖИЛЫХ ГРАЖДАН КАК ОДНО ИЗ НАПРАВЛЕНИЙ ГОСУДАРСТВЕННОЙ ПОДДЕРЖКИ В РОССИЙСКОЙ ФЕДЕРАЦИИ

Судакова Алиса Андреевна, бакалавр 4 года обучения кафедры государственного управления и молодёжной политики, alisasudakova@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель - Бареникова Екатерина Евгеньевна, старший преподаватель кафедры государственного управления и молодёжной политики, ebarienikova@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассмотрены государственные программы и проекты, посвященные развитию физкультурно-спортивной деятельности пожилых граждан Российской Федерации.

Ключевые слова: пожилые люди, физическая культура, спорт, активное долголетие, государственная программа, национальный проект, федеральный проект

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UDC 796

COMPARATIVE ANALYSIS OF THE EFFECT OF KETTLEBELL LIFTING AND GROUP FITNESS PROGRAMS OF STRENGTH ORIENTATION ON THE COMPONENT BODY COMPOSITION OF 20-30 YEAR-OLD WOMEN

Tavlikhanova O.R., s/s Gromov V.A.

Abstract. *This article examines the dynamics of body composition components in 20-30 year old women who are engage in kettlebell lifting and strength-oriented group fitness training. According to the results of the study, it was concluded that kettlebell training contributed more to the reduction of body fat mass and the increase of muscle mass than fitness training.*

Key words: *kettlebell lifting, fitness, body composition, fat mass, muscle mass*

Introduction. Today, more and more people are concerned about their appearance and health, and gyms and fitness programs of all kinds are becoming increasingly popular. One of the indicators of the success of a particular physical activity is the composition of the body. The most common method of assessing body composition is bioimpedance analysis – a contact method of measuring the electrical conductivity of biological tissues, which provides the opportunity to assess a wide range of morphological and physiological parameters of the body, such as fat, lean, cellular, and skeletal muscle mass, volume, and distribution of water in the body [1]. Although the characteristics of physique are genetically determined, physical activity can significantly influence specific macromorphological aspects, which are directly expressed in the change of body composition components in terms of fat and muscle mass, as well as in the peculiarities of the development of individual segments of the human body, which makes our work relevant.

The aim of the study: To evaluate the dynamics of body composition indices in women engaged in kettlebell lifting and strength-oriented group fitness training.

Methodology and design of the study. To achieve the objective, we used the following methods: analysis of literary sources, pedagogical observation, pedagogical experiment, bioimpedance symmetry, methods of mathematical statistics.

The pedagogical experiment involved 20 women between the ages of 20 and 30 who had been involved in fitness for at least a year and were divided into 2 equal groups. The first group (KLG) was involved in kettlebell lifting, the second group (FG) was involved in strength-oriented group fitness programs. The duration of the experiment was 6 months. In the first month, both groups underwent a study of

exercise technique and general physical training. Then, for 5 months, both groups exercised 3 times a week. The number of calories consumed per day was 2100-2300, the distribution of proteins, fats and carbohydrates was 25%/25%/50%. The participants did not take any additional supplements. Body composition was measured using the InBody" device.

Results and discussion. Before the educational experiment, we performed a bioimpedance analysis of the body composition of the experimental participants. The data obtained are shown in table 1.

Table 1. – Analysis of body composition in KLG and FG before the educational experiment.

Index	KLG ($X \pm \sigma$)	FG ($X \pm \sigma$)	t-Stud. crit. ($t=2,88$)	P
BM	71,2+1,1	70,9+1,1	0,5	$\geq 0,05$
BFM, kg	18,8+0,8	18,8+0,8	0	$\geq 0,05$
% BFM	26,4+0,9	26,5+1,0	0,2	$\geq 0,05$
VF	7,5+0,5	7,6+0,7	0,4	$\geq 0,05$
MM, kg	25,8+1,2	25,9+1,2	0,1	$\geq 0,05$
% MM	36,3+1,9	36,5+1,8	0,2	$\geq 0,05$

Analysis of the data obtained showed that there were no statistically significant differences between KLG and FG. It is also worth noting that the height of all subjects is 168-172 cm, and the body mass index is normal, so we did not compare it before and after the experiment.

According to the data in Table 1, we can say that the body mass (BM) is at the upper limit of the norm. However, we should consider that muscular mass (MM) was slightly higher than the norm (30-35% for those who do not exercise). Body fat mass (BFM), both in percentage and in kg, was also at the upper limit of normal. The level of visceral fat was acceptable.

After the educational experiment, the bioimpedance analysis of body composition was repeated and the results are presented in table 2.

Table 2. – Analysis of body composition in KLG and FG after the educational experiment

Index	KLG ($X \pm \sigma$)	FG ($X \pm \sigma$)	Differences		t-Stud. crit. ($t=2,88$)	P
			Abs. units	%		
BM	65,7+0,3	69,2+0,4	3,5	5,3	21,9	$\leq 0,01$
BFM, kg	11,2+0,4	16+0,5	4,8	42,9	22,6	$\leq 0,01$
% BFM	17,4+0,8	23+0,8	5,6	32,2	17,1	$\leq 0,01$
VF	3,1+0,6	4,4+0,7	1,3	41,9	4,6	$\leq 0,01$
MM, kg	31+0,2	28,8+0,7	2,2	7,6	9,5	$\leq 0,01$
% MM	47+0,4	41,5+1,1	5,5	13,3	15,5	$\leq 0,01$

As can be seen from the data presented, the results in both groups have changed for the better but are significantly higher in the kettlebell lifting group. The body mass of the subjects in KLG decreased by 5.5 kg, while in FG it decreased by only 1.7 kg. BFM decreased by 7.6 kg in KLG and by 2.8 kg in FG (the difference between the groups after the educational experiment was 42.9%). The percentage of

girls with BFM was 17.4% in the KLG group and 23% in the FG group. Visceral fat decreased by 4.4 kg in the KLG group and by 3.2 kg in the FG group. Muscle mass increased by 5.2 kg in KLG and by 2.9 kg in FG.

Conclusions:

1. Kettlebell training is more effective in reducing body fat than strength-oriented fitness training. The difference between the groups after the pedagogical experiment was 42.9%. The level of visceral fat is also lower in the HS group. Its reduction reduces the risk of varicose veins, heart attacks and hormonal disorders.

2. Kettlebell training increases body muscle mass more than group strength training. The level of MM was 13.3% higher in the KLG than in the FG.

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Tavlikhanova O.R. – master student of Department of Theory and Methodology of Weightlifting sports n.a. A.S. Medvedev, Russian university of sport «GTSOLIFK», Moscow, Russia, oksanataavlikhanova@yandex.ru.

Scientific supervisor: Gromov Vasily Andreevich, Russian university of sport «GTSOLIFK», Moscow, Russia

СРАВНИТЕЛЬНЫЙ АНАЛИЗ ВЛИЯНИЯ ЗАНЯТИЙ ГИРЕВЫМ СПОРТОМ И ГРУППОВЫМИ ФИТНЕС-ПРОГРАММАМИ СИЛОВОЙ НАПРАВЛЕННОСТИ НА КОМПОНЕНТНЫЙ СОСТАВ ТЕЛА ЖЕНЩИН 20–30 ЛЕТ

Тавлиханова О.Р., магистрант кафедры теории и методики тяжелоатлетических видов спорта им. А.С. Медведова, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Научный руководитель: Громов Василий Андреевич, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. В данной статье рассматривается динамика компонентов состава тела женщин 20-30 лет при занятиях гиревым спортом и групповыми фитнес-тренировками силовой направленности. По результатам исследования был сделан вывод, что занятия гиревым спортом в большей степени способствуют снижению жировой массы тела, чем фитнес тренировки, а также увеличению мышечной массы.

Ключевые слова: гиревой спорт, фитнес, состав тела, жировая масса, мышечная масса

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VISUALIZATION OF EDUCATIONAL CONTENT AS A MEANS OF INCREASING INTEREST IN THE EDUCATIONAL ACTIVITIES OF STUDENTS OF A PHYSICAL EDUCATION UNIVERSITY

Tazetdinov M.D., s/s Aronova T.V.

Abstract. *This article discusses the importance of using visualization of educational content in physical education institutions to increase students' interest in learning activities. The benefits of visualization are discussed, such as improving information assimilation, stimulating creative thinking and increasing student interest. The features of the use of visualization in the educational process and its impact on the quality of learning are investigated.*

Keywords: *visualization, educational content, physical education universities, student interest, educational process, creative thinking, motivation, information assimilation*

Introduction. Visualization of educational content is an effective tool that can significantly increase students' interest in learning activities at a physical education university. Physical education institutions have special features in training, as they require not only theoretical knowledge, but also practical skills. Visualization allows students to better understand and memorize the material, as well as apply it more effectively in practice [1, 2].

One of the main advantages of visualization of educational content is that it makes educational material more accessible and understandable for students. Instead of just listening to lectures or reading textbooks, students can see illustrations, Figures, Figures and other visual materials that will help them better assimilate information. This is especially important for students of a physical education university, where knowledge is not only theoretical, but also practical [5].

In addition, visualization contributes to a deeper and more emotional perception of information. When students see vivid Figures, animations or videos, their attention is attracted more strongly, which contributes to better learning of the material. It also makes the learning process more interesting and exciting for students, which can increase their interest in learning activities [3].

Moreover, the use of visualization in the educational process allows students to stimulate creative thinking. They can see different solutions to problems, analyze information from different points of view and apply their knowledge in practice. This contributes to the development of critical thinking and the ability to make informed decisions [1].

Thus, visualization of educational content plays an important role in increasing

students' interest in learning activities at a physical education university. It makes the learning process more accessible, interesting and effective, promotes better assimilation of information and the development of creative thinking. Therefore, the use of visualization should be considered as an integral part of modern education in universities.

At this stage of our research, the process of questioning and processing the received data is underway. With the help of data processing, visualization methods will be formulated and applied, which will increase the interest of students.

In this regard, **the purpose** of the study was formulated – to determine the interest of students in educational activities conducted at the university.

Research methods: analysis of scientific and methodological literature, questionnaires.

To determine the interest of students in educational activities conducted at the university, a survey of students was conducted, at this stage, only a survey of students of the 3rd year of "Pedagogical Education" (men and women) of 14 people was carried out.

Figures 1, 2, 3, 4 show the results of the student survey.

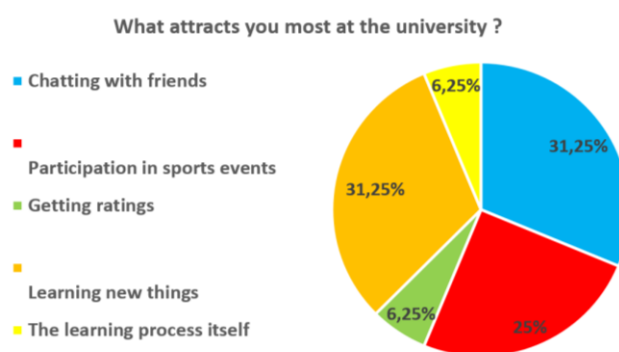


Figure 1. – The results of the answers to the question "What attracts you most at the university"

To the question *"What attracts you most at the university"*, the students' answers were distributed as follows: 31.25% replied that they are attracted to socializing with friends, 25% replied that they are attracted to participating in sports events, 6.25% replied that they are attracted to getting grades, 31.25% replied that they are attracted to learning something that's new and 6.25% answered that they are attracted by the learning process itself. From this, it can be concluded that students are interested in learning activities, on average.

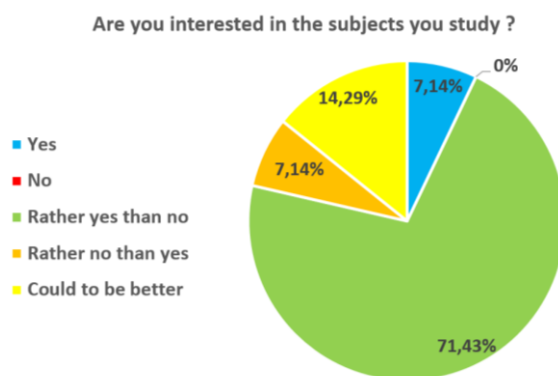


Figure 2. – The results of the answers to the question "Are you interested in the subjects you study"

To the question *"Are you interested in the subjects you study"*, the students' answers were distributed as follows: 7.14% of students answered "Yes", 0% answered "No", 71.43% answered "Rather yes than no", 7.14% answered "Rather no than yes" and 14.29% answered "Could to be better". From this, it can be concluded that the subjects studied are more interesting to students.

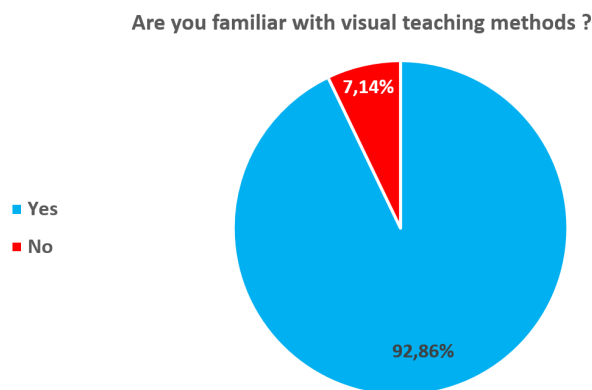


Figure 3. – Results of the answers to the question "Are you familiar with visual teaching methods"

To the question *"Are you familiar with visual teaching methods"*, the students' answers were distributed as follows: 92.86% of students replied that they knew such methods, and 7.14% replied that they did not know. In general, it can be concluded that students are familiar with such methods and they can be used in classes at the university.

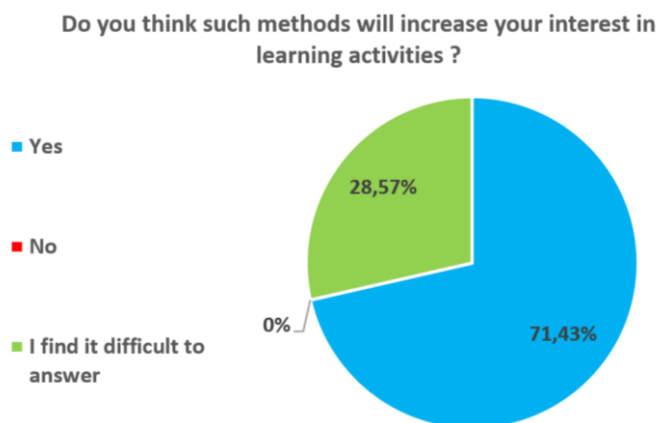


Figure 4. – The results of the answers to the question "Do you think such methods will increase your interest in learning activities"

To the question *"Do you think such methods will increase your interest in learning activities"*, the students' answers were distributed as follows: 71.43% answered "Yes", 0% "No" and 28.57% "I find it difficult to answer". Thus, it can be concluded that visual methods will increase interest in learning activities to a greater extent.

To the open question *"Write your wishes, which in your opinion could increase interest in educational activities"*, the students' answers were distributed as follows:

"Everything is fine" – 2 answers;

"We need clear criteria to get a credit" – 1 answer;

"Examples from the life of teachers" – 2 answers;
"More practical tasks" – 1 answer;
"Meetings with successful people" – 1 answer;
"Showing videos" – 1 answers;
"More creative approach to teaching" – 8 answers;
"New approaches to learning" – 2 answers;
"Communication with students" – 2 answers.

As you can see, students most of all want to see more creative approaches to teaching and new approaches to learning. From this, it can be concluded that the use of visual teaching methods can work and increase interest in learning activities.

Thus, the following **conclusions** can be drawn: the conducted survey made it possible to determine that students are interested in the educational process on average, which is not unimportant, and also that visual methods, in the opinion of students, will increase interest in educational activities.

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Tazetdinov Maxim Dmitrievich, master's student of the Department of Pedagogy, e-mail: tazetdinov-m@mail.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

Scientific supervisor - Aronova Tatyana Vladimirovna, PhD, Pedagogical Sciences, Associate Professor, Russia, Moscow, Russian university of sports "GTSOLIFK".

ВИЗУАЛИЗАЦИЯ ОБРАЗОВАТЕЛЬНОГО КОНТЕНТА КАК СРЕДСТВО ПОВЫШЕНИЯ ИНТЕРЕСА К УЧЕБНОЙ ДЕЯТЕЛЬНОСТИ СТУДЕНТОВ ФИЗКУЛЬТУРНОГО ВУЗА

Тазетдинов Максим Дмитриевич, магистрант кафедры педагогики, e-mail: tazetdinov-m@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Научный руководитель: Аронова Татьяна Владимировна, кандидат педагогических наук, доцент кафедры педагогики, Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье рассматривается важность использования визуализации образовательного контента в физкультурных вузах для повышения интереса студентов к учебной деятельности. Обсуждаются преимущества визуализации, такие как улучшение усвоения информации, стимулирование творческого мышления и повышение интереса студентов. Исследуются особенности применения визуализации в образовательном процессе и её влияние на качество обучения.

Ключевые слова: визуализация, образовательный контент, физкультурные вузы, интерес студентов, учебный процесс, творческое мышление, мотивация, усвоение информации

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THE ROLE OF SKATING SKILLS IN PASSING AND PUCK CONTROL PERFORMANCE IN ELITE JUNIOR ICE HOCKEY

Tsepelevich M.M.

Abstract. The purpose of the study is to determine skating skills that significantly predict passing and puck control performance in junior hockey. A total of 356 ice hockey forwards (age: 14.71 ± 0.36 years) participated in the study. The percentage of giveaways and passing accuracy were collected using video analysis of matches of the Russian National Hockey Championship U15. On-ice testing included Forward and Backward sprint tests, Transition agility test, and Weave agility test executed while dribbling the puck. Regression analysis identified transition agility skill as a key predictor of passing and puck control performance. However, the influence of teamwork on individual performance is also substantial and should be considered in the interpretation of these findings.

Keywords: ice hockey, adolescents, on-ice testing, skating skills, passing, puck control, match performance

Background. Ice hockey is a highly dynamic sport that demands exceptional technical and physical abilities from players [2]. Technical skills such as skating, passing, and puck control skills are paramount for the game. On-ice testing serves as a valuable tool in assessing these skills, providing coaches and scouts with essential information about players' performance and potential. While previous research has explored the overall impact of these abilities on gaming performance, recent technological advancements now enable a more detailed analysis of how individual performance components are influenced [3]. This information can help to specify the content of training and testing, taking into account the various competitive prerequisites of hockey forwards and defensemen [5, 6].

In our review of the existing literature, we identified a scarcity of research investigating the correlation between on-ice testing outcomes and gaming proficiency. The limited body of literature consisted of only six studies [1, 3-7], five of which

focused on individuals aged 16 years and above. Furthermore, these studies employed a restricted range of assessments, primarily focused on forward and repetitive sprinting. Notably, none of the studies explored gaming performance using passing and puck control metrics. Thus, the purpose of this study is to determine skating skills that significantly predict passing and puck control performance in junior hockey.

Materials and methods. A total of 353 male forward players (age: 14.71 ± 0.36 years) completed a battery of on-ice skating tests and were observed during competitive matches of the Russian National Hockey Championship U15. The study included only players who accounted for more than 5% of their team's total ice time during tournaments. Informed consent was obtained from participants' parents prior to the experiment. The study was approved by the Sirius University Ethics Board.

The research employed data from four tournaments structured as a nine-team round robin format. Each individual player took part in only one tournament. The percentage of giveaways and passing accuracy were collected from match video recordings, utilizing the Iceberg Sports Analytics tool. Giveaways percentage was calculated for each player by dividing the number of giveaways by the number of possessions, while passing accuracy was determined by the ratio of successful passes to unsuccessful passes. Furthermore, the tournament standings of each team were documented.

Prior to each tournament, on-ice testing was conducted, consisting of Forward and Backward sprint tests, Transition Agility test, and Weave Agility test executed while dribbling the puck. These tests were utilized to evaluate the speed and agility of the hockey players. Time registration was carried out using the SmartSpeed Timing Gate System (Fusion Sport, Australia). The Forward Sprint Ice Test required participants to perform a 30-meter forward straight-line sprint. The Backward Sprint Ice Test involved participants executing a 30-meter backward straight-line sprint. The Weave agility test includes a forward sprint, two slalom parkours, and another forward sprint back to the finish line. The Transition Agility Test involved participants skating around agility poles in a specific pattern, incorporating forward, backward, and pivoting movements.

Statistical analysis was performed using RStudio (version 4.3.0). Prior to the primary analysis, Kendall's correlation was employed to examine the relationship between passing and puck control efficiency and team ranking in the tournament to assess the significance of the performance measures used in the study. A Lasso regression analysis was utilized to determine which skating abilities serve as the most significant predictors of passing and puck control performance, taking into account the ranking of the team. For the skating skills that turned out to be significant predictors, mixed effect models were finally built with team placement as a random effect. Given the intercorrelation between the results of skating tests, only one skill with the highest beta coefficient from the Lasso analysis was included in each final model. To improve pairwise linearity, skating test results and the percentage of giveaways were log-transformed prior to modeling. Additionally, all independent variables were standardized to z-scores.

Results. The findings suggest a significant correlation between the ranking position and the percentage of giveaways (Kendall's $\tau = 0.38$; $p < 0.01$) as well as the passing accuracy (Kendall's $\tau = -0.40$; $p < 0.01$) of forwards. Transition agility was

found to be the most important skating skill affecting the passing accuracy and giveaways of forwards. Additionally, lasso regression analysis revealed a weaker but still significant relationship between match performance indicators and all other skating abilities. The final mixed effect models incorporated Transition agility speed as an independent variable, and the results of these models are presented in Table 1.

Table 1. – Effects of Transition Agility Speed on Puck Control Performance: Mixed Effect Model Analysis

<i>Predictors</i>	Giveaways, %		Passing accuracy, %	
	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>
(Intercept)	3.45 (3.37 – 3.53)	<0.001	65.62 (62.24 – 69.01)	<0.001
Transition agility	0.05 (0.03 – 0.07)	<0.001	-1.64 (-2.52 – -0.77)	<0.001
ICC	0.26		0.33	
Conditional R ²	0.30		0.35	

Discussion. Transition agility has been identified as the most significant predictor of forwards' passing, and puck control performance. Additionally, weaker but still significant relationships between match performance indicators and all other skating abilities were shown. The findings enhance the comprehension surrounding the relationship between on-ice testing and match performance in junior hockey. This is particularly significant as there is limited research on the relationship between skating agility and performance, with only two studies in adult athletes found in existing literature. One of these studies did not find a significant correlation with game performance [6], while the other identified a link with the defensive contribution [5]. It is plausible to infer that these research findings may be attributed to the absence of puck dribbling during the tests.

Additionally, the remarkably high intraclass correlation coefficients identified in this study indicate a significant link between game performance and team membership. This finding may elucidate the lack of correlations between test outcomes and performance in prior research [1, 3, 5-7] utilizing comprehensive performance metrics, which rely significantly on team actions and therefore may have lacked sufficient individualization. In relation to the current study, it can be concluded that passing and puck control performance of a player is significantly influenced not only by the individual's skills, but also by the interactions with teammates, and the overall gameplay strategies.

Conclusion. The results of this study suggest a significant relationship between the passing and puck control performance of hockey forwards and their performance in on-ice testing. Transition agility with a puck was identified as the most important predictor. Considering team membership as a variable is essential when predicting competitive performance, as team actions have a substantial impact on individual performance outcomes.

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Tcepelevich Margarita M., Junior Researcher, PhD student, e-mail: riks00022@gmail.com, Sirius University of Science and Technology, Sirius, Krasnodar region, Russia

ИССЛЕДОВАНИЕ РОЛИ НАВЫКОВ КАТАНИЯ НА КОНЬКАХ ДЛЯ СОРЕВНОВАТЕЛЬНОЙ ЭФФЕКТИВНОСТИ ВЛАДЕНИЯ КЛЮШКОЙ И ШАЙБОЙ ХОККЕИСТОВ-ПОДРОСТКОВ

Цепелевич Маргарита Михайловна, младший научный сотрудник, аспирант, e-mail: riks00022@gmail.com, Научно-технологический университет «Сириус», пгт. Сириус, Краснодарский край, Россия

Аннотация. Исследование нацелено на определение тестов специальной физической подготовленности, результаты которых значимо предсказывают соревновательную эффективность владения клюшкой и шайбой в юношеском хоккее. В исследовании приняли участие 356 хоккейных нападающих (возраст: 14.71 ± 0.36 лет). Выполнялся видеоанализ матчей первенства России для расчета процента потерь шайбы и точности передач. Тестирование включало спринтерский бег на коньках спиной вперед и лицом вперед, тесты “Слалом” и “Переходы по диагонали” с ведением шайбы. Регрессионный анализ выявил, что тест “Переходы по диагонали” является наиболее значимым предиктором точности передач и процента потерь шайбы, которые, в свою очередь, зависят от командных действий, что следует учитывать при интерпретации результатов.

Ключевые слова: хоккей, подростки, тестирование, техника катания на коньках, передачи, владение клюшкой и шайбой, игровая производительность

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THE AGE FEATURES OF THE MORPHOFUNCTIONAL STATE IN YOUNG SAMBO WRESTLERS FROM RUSSIA AND CHINA

Tian Kun, Zakharyeva N.N.

Abstract. This article presents a comparative analysis of the morphofunctional indicators of young athletes – sambo wrestlers from Russia and China. A cross-section of 32 athletes divided into 4 comparison groups of 8 people each according to ethnicity and age of puberty and puberty. Differences in the parameters of morphological status established to reflect the harmonious physical development of adolescents from Russia in the prepubertal period according to body length data. body weight and chest circumference and disharmony of physical development in Chinese adolescents with early onset of metabolic syndrome. The priority for the development of the cardio-respiratory system and a slightly higher speed of completing tasks of the “Target” test among young sambo wrestlers from Russia have been established, which allows them to have sufficient aerobic capabilities and successfully perform in sports sambo competitions.

Keywords: sambo wrestlers, prepuberty, puberty, stabilometry, anthropometry, spirometry, average angular velocity, maximum pulmonary ventilation

Relevance. Sambo wrestling is currently gaining popularity all over the world, including in Russia and China. Training of sambo wrestlers should be carried out taking into account the data of their morphofunctional state [1]. Well-known coaches

[2, 4, 5] have established that achieving record sports results in sports sambo is possible only on the basis of high morphofunctional capabilities of the athletes' body. Only under such conditions is the high technical and tactical skill of sambo wrestlers achieved. Sports sambo originated in Russia (USSR). However, at present, many athletes in different countries, including China, are actively involved in it. We found it very interesting to compare the features of adaptive changes that occur in the bodies of athletes from Russia and China, under the influence of many years of training during sports sambo. Establishing differences in the morphofunctional state of young sambo wrestlers from Russia and China formed the basis of the presented work.

Purpose of our study is to determine the features of differences in the morphofunctional state and physical qualities of young sambo wrestlers of various ethnic groups, ages, qualifications and to develop model characteristics of the physical fitness of sambo wrestlers.

The tasks are. 1. To study the features of the morphofunctional state and physical qualities of young sambo wrestlers of various ethnic groups, ages and qualifications during the preparatory period of sports training.

2. To conduct a comparative analysis of the parameters of the morphofunctional state and physical qualities of young sambo wrestlers of the European and Mongoloid races during the preparatory period of sports training.

Methods. 1. analysis of scientific and methodological literature; 2. physiological survey; 3. method of physiological observation; 4. study of physical development: bioimpedansometry, body weight, body length; chest circumference. 5. physiological testing: spirometry, tonometry; study of heart rate variability using the hardware and software complex "Varicard 2.51", Ryazan; 6. study of the physical qualities of young sambo wrestlers: hand muscle strength (dynamometer DMER-120); trunk muscle strength (backbone dynamometry), flexibility: bending test on a bench and other tests; coordination abilities: test "Stability time in the Romberg pose"; stabilometry method – "Target" test, performed on the Stabilan-01-2 device; 7. psychophysiological testing was carried out using the IVPS2.1 software and hardware complex. Koryagina Yu.V. (2001), Nogin S.V. (2001-2003). Methods of mathematical statistics performed using Microsoft Office Excel and Statistica 7.

Research design. We examined 36 young male athletes from Russia and China. All athletes are actively involved in sports sambo and perform successfully in competitions. Physiological testing was done with the participation of the Sports Medicine Laboratory of the Research Institute of Sports and Sports Medicine Russian State University "GTSOLIFK" Moscow, Russian Federation. Physiological testing were carried out at Sambo Sports in School No 1, Moscow. In total, 16 young European sambo wrestlers examined: *first group* (Gr1) - prepubertal age: 8-11 years - 8 young athletes; *second group* (Gr2) - puberty - age 13-14 years - (10 adolescent males). In China, an examination of young sambo athletes were carried out in a private club in Zhikadze. In total, 16 young sambo wrestlers examined in China. The *third group* (Gr3) - prepubertal - age 8-11 years (8 young athletes); *the fourth group* (Gr4) – puberty - age 13-14 years (10 adolescent males).

Discussion. We examined 32 young athletes actively involved in sports sambo. Our sociological surveys and questionnaires had shown, that young sambo wrestlers from China have musculoskeletal injuries in 100% of cases. It should be noted, that we

can see a greater number of injuries in young sambo wrestlers from both Russia and China during the prepubertal period. This indicates more advanced technical and tactical training and fitness of young sambo wrestlers from the Russian Federation and China at the age of 13-14 years of puberty. According to the survey data, young sambists from Russia in the prepubertal period (Gr1) had an average age of 11.5 ± 0.8 years; The average length of sambo training was: 2.3 ± 1.5 years; The average volume of training load was: 8.33 ± 1.9 hours per week. Young athletes from the People's Republic of China from Gr3 had an average age of 11.1 ± 0.5 years. The average length of sambo training was: 2.7 ± 0.6 years; The average volume of training load per week was: 7.8 ± 1.1 hours. The physical development of adolescents was assessed in accordance with the average values of the sex and age group according to the “Standards for assessing anthropometric indicators in children from 0 to 19 years old in accordance with the recommendations of the World Health Organization” edited by Professor N.L. Chernaya. et al (2018) [3]. Significant intergroup differences in the parameters of morphological status were revealed among young sambo wrestlers from Russia and China in prepubertal groups Gr1-Gr3 ($p < 0.0001$). It has been established, that the physical development of young sambo wrestlers from Russia during prepuberty (Gr1) in terms of body length (cm) and body weight (kg) is generally *harmonious* and is within the 4th -5th corridor of the centile system, making up the range H min 142.2 – H max 155.8 (cm), which in comparison with body weight (kg) reflects harmonious development. The physical development of young sambo wrestlers from the People's Republic of China (Gr3) during prepuberty and puberty is generally *disharmonious*, which is in 60% of cases confirmed by pronounced deviations of signal signs: -2 SD values of body weight in relation to body length. According to the centile system, this corresponds to a low rating. Thus, young sambo wrestlers from CNR, both in prepuberty and puberty, have accelerated physical development, which must be taken into account during their training process, since with this type of physical development, overtraining and an unfavorable form of fatigue can easily occur; disruptions in the adaptation of the functional systems of the young athlete's body to physical activity (which can be expressed by shifts in the cardiorespiratory system during training and competitions). Young sambo athletes from Russia can train according to regular training programs, with careful monitoring of the parameters of their morphofunctional state. Comparative characteristics of the parameters of the cardiovascular system of young sambo wrestlers from Russia and China during prepuberty and puberty are presented in table 1.

Table 1. – Comparative characteristics of the parameters of the cardiovascular system in young sambo wrestlers from Russia and China during prepuberty and puberty periods

Indicators	Gr 1	Gr 3	p-level	Gr 2	Gr 4	p- level
Heart rate(bpm)	$90,6 \pm 14,8$	$91,5 \pm 2,1$	–	$76,9 \pm 10,2^*$	$81 \pm 3,7$	0,01
Systolic blood pressure (mmHg.)	$121,5 \pm 15,2$	$126,3 \pm 11,2^*$	0,05	$126 \pm 15,4^*$	$129,6 \pm 8,5$	0,01
Diastolic blood pressure (mmHg.)	$76,3 \pm 7,4$	$74,2 \pm 5,6$	–	$75,6 \pm 14,3$	$84,2 \pm 4,7^*$	0,01

The parameter *Breathing frequency* (per 1 min) at rest has significant

differences in the comparison groups of puberty and prepuberty in favor of more economical breathing of Russian athletes in the comparison groups. In general, the respiratory rate at rest corresponds to the age norm for healthy, untrained children and adolescents and does not reflect economization at rest, which corresponds to training. Obviously, with this short training period, adaptive changes in the body during sambo training have not yet been economized. We marked the differences were noted in the functional reserves of the respiratory system and resistance to hypoxia among young sambists from Russia of different ages ($p < 0.05$). When comparing the parameters of respiratory tests with age standards, it was noted that young sambo wrestlers both in the period of puberty and prepuberty, when practicing sambo, develop large respiratory reserves in comparison with age standards of healthy, untrained children and adolescents. Stange test (breath holding time (s)) in Gr1- $48,4 \pm 12,2$; in Gr2- $57,5 \pm 14,6$ ($p < 0,05$). We identified differences in the maximum pulmonary ventilation indicator in comparison groups 1 and 2: MVL (l/min) $51,5 \pm 16,5$ $73,3 \pm 10,1$ ($p < 0.05$). The highest level of significant differences in Gr1 and in Gr2 revealed when comparing the “Inspiratory capacity” indicator ($p < 0.01$), which emphasizes both the age-related features of the development of the respiratory system organs of adolescents in the ontogenesis of development, and the influence of training influences, which implies an increase in tidal volumes and containers when practicing sports sambo. Were noted the pronounced intergroup differences in comparison Gr1 and Gr2 during the psychophysiological test “Reaction to a moving object”. There was more faster response to a moving object in Gr2 in 2.5 compared to group 1 (Gr2- $63,2 \pm 44,4$ (ms) - Gr2- $170,5 \pm 49,6$ (ms) ($p < 0,05$). When we analyz stabilometry indicators, performed on the domestic stabiloanalyzer Stabilan 2.1., we noted no differences in baseline performance on the «*Target*» test. Significant differences in comparison Gr1 and Gr2 were revealed in the indicator “*Average angular velocity*”. The indicator “*Quality of balance function*” (QEF) among sambists from the Russian Federation in Gr1: $55,3 \pm 24,5$; in Gr2: $71,5 \pm 14,4$; which allows us to talk about the improvement of coordination abilities in general under the influence of sports sambo training with increasing training.

Conclusions:

1. We prepared the comparative analysis of the morphofunctional indicators of young athletes - sambo wrestlers from Russia and China. A cross-section of 32 athletes divided into 4 comparison groups of 8 people each according to ethnicity and age of puberty and puberty. The differences in the parameters of morphological status established to reflect the harmonious physical development of adolescents from Russia in the prepubertal period according to body length data, body weight and chest circumference and disharmony of physical development in Chinese adolescents with early onset of metabolic syndrome.

2. The priority for the development of the cardio-respiratory system and a slightly higher speed of completing tasks of the “Target” test among young sambo wrestlers from Russia have been established, which allows them to have sufficient aerobic capabilities and successfully perform in sports sambo competitions.

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Tian Kun, Master's student of 1 year of study, Department of Physiology RUS "GTSOLIFK", tiankun439@gmail.com, PRC, Suzhou, Zizhu Road 78.

Zakharyeva Natalya, Professor, Department of Physiology, RUS "GTSOLIFK", Chief Specialist, Research Institute of Sport and Sports Medicine zakharyeva.natalia@mail.ru, Russia, Moscow, Russian university of sport "GTSOLIFK",

ВОЗРАСТНЫЕ ОСОБЕННОСТИ МОРФОФУНКЦИОНАЛЬНОГО СТАТУСА ЮНЫХ САМБИСТОВ ИЗ РОССИИ И КИТАЯ

Тянь Кунь, магистрант 1 года обучения кафедры физиологии РУС «ГЦОЛИФК», tiankun439@gmail.com, КНР, Сучжоу, Зыжурод 78

Захарьева Наталья Николаевна, профессор кафедры физиологии РУС «ГЦОЛИФК», главный специалист НИИ Спорта и Спортивной медицины, zakharyeva.natalia@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК»

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INJURY PREVENTION AMONG 6-9 YEARS OLD SKATERS WITH JOINT HYPERMOBILITY SYNDROME

Trubochkina E.Y., s/s Strelnikova I.V.

Abstract. *In the article, the authors consider the concept of children's joint hypermobility syndrome. Attention is focused on the fact that young figure skaters with joint hypermobility syndrome require an individual approach when creating a training plan. Also, the authors develop approaches and ways to solve this problem.*

Key words: *athletes, figure skating, joints, joint hypermobility, syndrome, flexibility*

Relevance. When studying modern scientific literature for injuries and injuries, no statistical data was found on the manifestation of young figure skaters' joint hypermobility. Due to the fact that in figure skating, injuries such as ruptures and sprains of the knee ligaments, destruction of the hip joint, and curvature of the spine are the most common, and joint hypermobility aggravates the situation, there is a need to identify joint hypermobility syndrome as a separate type of damage and/or injury in figure skating for further study.

In figure skating, flexibility is one of the most important physical qualities. Without the proper level of stretching, athletes will not be able to perform elements such as rotations and spirals with high quality, and in general, the "component score" will be lower. However, hypermobility of the joints during professional sports can be harmful to the child. In this regard, it is important to consider a special approach to such athletes when creating a training plan at all stages of preparation.

Purpose of our study is to investigate the existing means and methods of preventing young figure skaters' injuries with hypermobility syndrome.

Research methods:

1. Analysis of literary sources (scientific articles, chapters of textbooks, abstracts of dissertations on the subject of research)
2. Pedagogical supervision.
3. Pedagogical testing (Beighton method)

In the large structure of diseases of the musculoskeletal system, non-inflammatory diseases of the joints occupy a leading place. Joint hypermobility syndrome is a genetically determined condition with a dominant pattern of inheritance, the clinical manifestation of which is musculo articular pain in individuals with excessive range of motion in the joints in the absence of signs of other traumatic diseases [4]. Joint hypermobility is characterized by a condition with excessive range of motion of one or more joints in natural physiological directions of movement and in abnormal directions compared to the average norm [3].

The federal sports training standard for the sport "figure skating" states that flexibility has a significant impact on performance in an athlete's physique.

Flexibility is a person's ability to perform movements with maximum amplitude. It is characterized by the degree of joint mobility, the expression of which

is the amplitude of movements (in degrees).

The elasticity of the joint-ligamentous apparatus and muscles is directly dependent on the content of dense substances, structural features of the musculoskeletal system, water and a number of other factors [2].

Athletes with joint hypermobility are in most cases motor-gifted and can achieve high results. At the same time, generally accepted means and methods of the training process for developing physical qualities (strength, flexibility, speed, endurance, coordination) for these athletes may turn out to be ineffective. Providing that the workload in the initial figure skating training groups is given the same to everyone, then means and methods for developing certain qualities for the children with this syndrome can be found ineffective. In addition, if the training load is distributed incorrectly, spontaneous sprains and dislocations become highly possible. Also, various inflammatory processes in the joints might take place - for example, arthritis, bursitis, meniscus dysfunction and other pathologies. They cause pain, discomfort and can seriously limit mobility.



Figure 1. – Testing range of motion in joints

You can determine joint hypermobility yourself without special equipment.

Testing the range of motion in the joints was carried out using the Beighton method. The method is a nine-point scale that evaluates the athlete's ability to perform five movements (four paired for the limbs and one for the torso and hip joints):

1. Passive extension of the little finger more than 90 degrees (right and left) – 2 points.
2. Passive adduction of the thumb to the flexor surface of the forearm (right and left) – 2 points.
3. Hyperextension of the elbow joint over 10 degrees (right and left) – 2 points.
4. Hyperextension in the knee joint over 10 degrees (right and left) – 2 points.
5. Bend the torso forward with straight legs with palms touching the floor – 1 point.

According to the degree of severity, hypermobility is divided into mild – 3-4 points, moderate – 5-6 points, severe – 9 points.

VHMS is a fairly common joint pathology in both adults and children. The pathology is expressed by weakness of the joints, accompanied by pain, discomfort after exercise, as well as subluxations repeated over and over again.

Prevention of hypermobility injuries.

Modern medicine cannot offer medications that will relieve a person from joint

hypermobility syndrome. The main treatment is not aimed at eliminating the pathology, but at adapting the patient, making his life easier and preventing complications due to hypermobility. Lifestyle changes and physical activity are the keys.

When it comes to using physiological methods to bring an athlete's condition back to normal, a comprehensive strategy is important. In order to do this, it is recommended to create an optimal daily routine, including: regular nutritious meals; alternating periods of work and rest; healthy sleep.

In ensuring the stability of the joint, not only the ligaments play a significant role, but also the muscles surrounding the joint. In case it is impossible to affect the condition of the ligamentous apparatus through exercises, then strengthening and increasing muscle strength is a primary task. Since figure skating is a traumatic sport, with a large number of jumping elements, the greatest load falls on the back, hips, and knees, therefore, for athletes with hypermobility syndrome, it is necessary to introduce an additional regular set of exercises to strengthen the knee joints.

Conclusion. Prevention consists of early detection, constant monitoring and a special approach to athletes with joint hypermobility, selection of the right physical exercises and methods of recovery after training loads.

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*Trubochkina Elizaveta Yurievna, 2nd year postgraduate master's degree student, l_trubochkina@list.ru, Russia, Malakhovka, Moscow State Academy of physical education
Scientific supervisor – Strelnikova Irina Vladimirovna,*

ПРОФИЛАКТИКА ТРАВМ У ФИГУРИСТОВ 6-9 ЛЕТ С СИНДРОМОМ ГИПЕРМОБИЛЬНОСТИ СУСТАВОВ

*Трубочкина Елизавета Юрьевна. магистрант 2 года обучения, l_trubochkina@list.ru
Россия, п. Малаховка, Московская государственная академия физической культуры
Научный руководитель – Стрельникова Ирина Владимировна*

Аннотация. В статье авторы рассматривают понятие синдрома гипермобильности суставов (СГМС) у детей. Авторы акцентируют внимание на том, что для юных фигуристов с синдромом гипермобильности суставов необходим индивидуальный подход при формировании тренировочного плана занятий. Также, авторы рассматривают подходы и способы решения данной проблемы.

Ключевые слова: спортсмены, фигурное катание, суставы, гипермобильность суставов, синдром, гибкость

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DYNAMICS OF GROUP AVERAGE INDICATORS OF POINTS IN LONG JUMP OF RUSSIAN AND FOREIGN DECATHLETES

Tsybulevsky N.S, s/s Syachin V.D.

Abstract. *The age-related dynamics of sports results in the athletics decathlon is an important indicator that reflects the training strategy in a multi-year cycle. Analysis of these indicators allows us to find the reasons for the lag in the results of domestic all-around athletes from the results of the leading decathletes of the present time.*

Keywords: *decathlon, dynamics of sports results, training of young all-around athletes, long-term training cycle*

Introduction. Track and field multiathlon is a type of track and field athletics, in which it is necessary to maintain a harmonious ratio of results in individual events [4]. Any "bias" in training in a certain direction violates the principle of multathlon and negatively affects the long-term sports career [2, 3]. At the same time, the training of young track and field athletes should also take into account individual characteristics and, taking this into account, not to allow the forced development of certain aspects of training [1, 2, 5]. One of the reasons for the stagnation in the training of domestic high-level all-round athletes is the irrational use of training means at the training stage. To conduct a full-fledged analysis of the dynamics of results depending on age changes will help to identify reserves in the training sessions of Russian all-round athletes.

Objective. To identify optimal options for the dynamics of competitive performance of young all-around athletes in the world and Russia who are capable of achieving better results.

Methods. Analysis of scientific and methodological literature; Analysis of the dynamics of the best results of decathletes; methods of mathematical statistics (MS Excel).

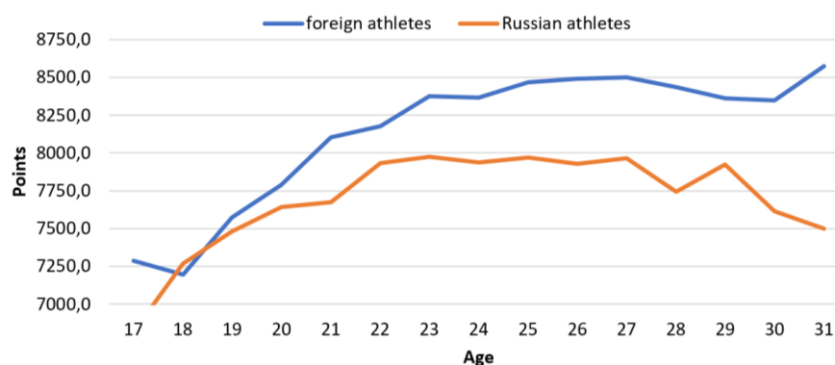
Discussion. Practice shows that Russian all-round athletes, having at the junior age a sufficient level of physical fitness and high sports results over time lose their positive results dynamics and only a few of them reached international starts [6]. In this regard, the results of 14 strongest domestic and 14 strongest foreign decathletes specializing in decathlon were analyzed (tab. 1).

Table 1. – Comparison of group average values of the best results in decathlon in the studied groups

№	Parameters	The strongest track and field athletes	
		foreign elite athletes	Russian athletes
1	Mean	8621,4 points	8100,9 points
2	Dispersion	270,0	359,0
3	Variance, %	3,1	4,4
4	Difference in mean values	T = 3,10	P < 0,01

Comparisons were made between competition results as a total points and group average of athletes when they competed under 18 y.o. (children), under 20 y.o. (junior) and under 25 y.o. (adult categorie). This age range is the key in understanding the problem under study. According to the presented data, it follows that Russian athletes, as well as foreign athletes, have positive dynamics in performance, but it is unstable. Such a phenomenon does not allow them to fully struggle in the international arena. Comparison of average indices of the best results in decathlon of Russian and foreign athletes shows their obvious difference ($T = 3.10$, $p < 0.01$).

On the basis of statistical indicators, the strongest foreign and Russian all-around athletes were analyzed, which made it possible to determine the rate of growth in the performance of the studied all-around athletes. This made it possible to draw further conclusions concerning the rate of growth of results both in the sum of all-round events and in its individual events. The relevance of such a study is presented in table 2, which reflects the catastrophic lag between the results of the strongest domestic all-rounders and their foreign rivals. Domestic all-rounders can compete with foreign athletes up to the age of 20, then the gap increases, and it becomes especially large (fig. 1).

**Figure 1. – Dynamics of sports results (points) of foreign and Russian decathletes**

The average duration of active multisport training in Russian athletes is 8.4 ± 3.4 years, while in foreign athletes this period averages 11.8 ± 2.3 years, which is a statistically significant difference in the studied groups ($p < 0.05$).

To study the influencing factors and causes in the difference of results in more detail, the dynamics of results and annual growth of points by individual disciplines was analyzed. Further, to categorize them into groups of disciplines:

- sprint and hurdling;
- jumps;

- throwing;
- 1500 meters running.

In this article, the sport results of all-round athletes in long jump were analyzed. Figure 2 shows the rate of decline in the performance of foreign and Russian all-round athletes.

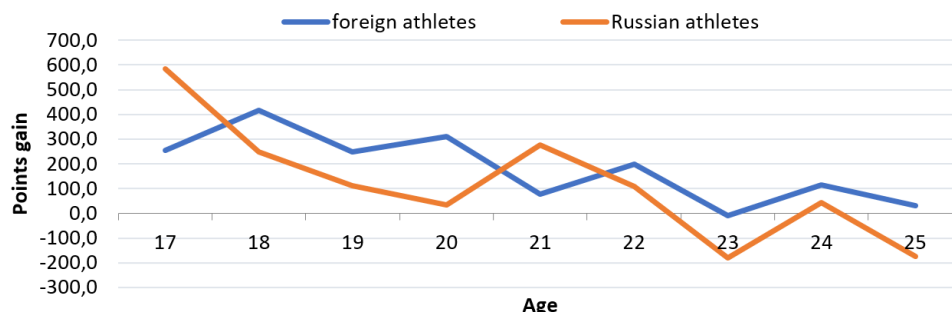


Figure 2. – Rate of decline in performance of foreign and Russian all-round athletes

We found from reliable sources the results of athletes in the above mentioned sports, the calculations of "arithmetic mean", "statistical deviation", "variability" and "difference" by years between the groups of athletes were carried out.

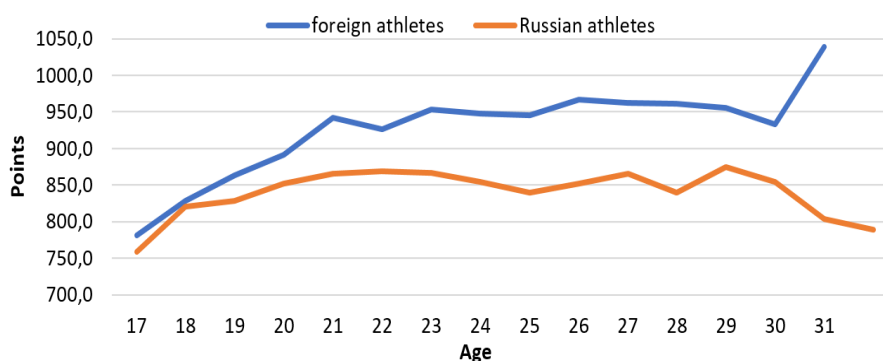


Figure 3. – Dynamics of long jump results

Here (fig. 3) is a similar Figure to the one that shows the dynamics of growth of indicators in the 100m race (the main discipline that determines the speed abilities of athletes). But it is necessary to note the failure in the dynamics of growth of results at the age of 20-22 years (figure 4), which is observed in both groups of athletes. However, the failure is less significant in foreign athletes.

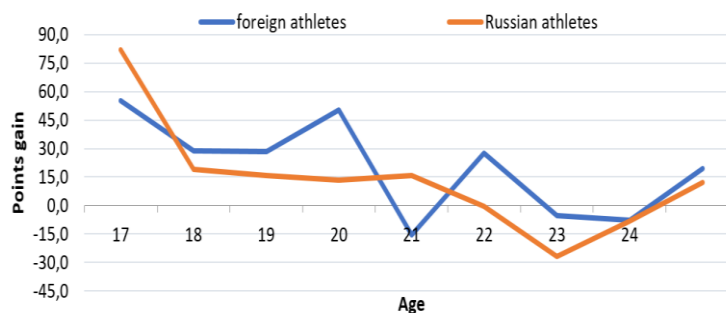


Figure 4. – Dynamics of annual growth of points in the long jump

This failure is probably due to the problems of coordination that athletes faced in long jump. After all, in this sport it is very difficult to keep the correct rhythm of the run-up, which is associated with the accuracy of hitting the place of push-off. And practicing the rhythm of the run-up at this age should be the main focus. A long athletic career should be an indicator of effective and correct training. It is obvious that higher rates of growth of results in long jump in Russian athletes in most cases can have a negative impact on the further career.

As it follows from the presented data, foreign athletes have a higher level of results in long jump. They retain positive dynamics longer, which allows them to maintain optimal dynamics of results (table 2).

Table 2. – Average and maximum score gains in two study groups

№	Age of athletes	Increase in points in foreign athletes		Increase in points in Russian athletes	
		average	max	average	max
Long Jump					
1	17-18 age	42	55	50,5	81,8
2	19-20 age	21	50,2	15,1	16
3	20-21 age	8,4	19,6	-4,5	17,6

Unlike the age limits proposed earlier in the article, we have adjusted the limits based on our research. In long jump, an athlete can progress initially up to 50 points. However, with age this dynamic tends to decrease – to 10-20 points. In general, the growth of results in the first years of foreign and domestic track and field athletes is not so different from each other. But, all-round athletes from abroad keep this growth longer.

Conclusions:

1. The results of the study allowed us to determine the optimal zones of dynamics of results growth in multi-year training for long jump.

2. The difference between the dynamics of results of domestic and foreign athletes was revealed. Foreign athletes have lower results in the decathlon at a young age, unlike Russian athletes. At subsequent stages of training the "Figure" changes in favor of foreign decathletes.

This allows to solve planning issues more effectively and to carry out a smooth transition of Russian all-around athletes from one age group to another.

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Tsybulevsky Nikita Sergeevich – postgraduate student of the Department of Theory and Methodology of Athletics named after. N. G. Ozolin, Federal State Budget Education Institution of Higher Education «The Russian University of Sport «GTSOLIFK», Moscow, Russia, nick.tsyb@mail.ru

Scientific supervisor – Syachin Vladimir Dmitrievich - PhD in Pedagogy, Professor of the Department of Theory and Methodology of Athletics named after N. G. Ozolin, Federal State Budget Education Institution of Higher Education «The Russian University of Sport «GTSOLIFK», Moscow, Russia, vdsya@mail.ru

ДИНАМИКА СРЕДНЕ-ГРУППОВЫХ ПОКАЗАТЕЛЕЙ ОЧКОВ В ПРЫЖКАХ В ДЛИНУ У РОССИЙСКИХ И ЗАРУБЕЖНЫХ МНОГОБОРЦЕВ

Цыбулевский Никита Сергеевич, аспирант кафедры теории и методики легкой атлетики им. Н.Г. Озолина в Российском университете спорта «ГЦОЛИФК», Москва, Россия, nick.tsyb@mail.ru

Научный руководитель – Сячин Владимир Дмитриевич, профессор, д.п.н., профессор кафедры теории и методики лёгкой атлетики им. Н.Г. Озолина, Федеральное государственное бюджетное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК», Россия, Москва, vdsya@mail.ru

Аннотация. Возрастная динамика спортивных результатов в видах легкоатлетического десятиборья является важным показателем, отражающим стратегию подготовки в многолетнем цикле. Анализ этих показателей позволяет найти причины отставания результатов отечественных многоборцев от результатов ведущих десятиборцев настоящего времени.

Ключевые слова: десятиборье, динамика спортивных результатов, подготовка молодых многоборцев, многолетний цикл подготовки

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UDC 796/799

HISTORICAL FEATURES OF SKELETON DEVELOPMENT: FROM ORIGINS TO THE PRESENT

Tsyganova A.V., Leontyeva N.S.

Abstract. *Skeleton is a winter Olympic extreme sport. The article is devoted to the features and indicators of its development from the moment the sled appeared to the present day.*

Keywords: *skeleton, features, appearance, development*

Introduction. Origins of development This type of physical education and sports activity belongs to the Indians of Canada, who in former times used wooden sleds without runners for high-speed descents from the mountains. Then the name of this projectile appeared - “toboggan”.

Main part. In 1884., in order to popularize the resort, the owner of the hotel near St. Moritz built the first ice track of natural origin - “Cross of Rans”, on which the first toboggan competitions took place, later the Olympic skeleton championships were held here as part of the Winter Games 1928. It is important to note that at the first competitions, the predominant style of overcoming the distance was lying on your back. Later, the method of lying on your stomach became widespread, which was due to the invention of the innovative “flexible” sled “Flexible Runner” (1887.). Subsequently, almost all participants in the competition used this style. Athletes who preferred the method of lying on their stomachs upside down began to conduct races separately from lugers who covered the distance lying on their backs. In 1887. The world's oldest bobsleigh club, Saint Moritz Bobsleigh Club, was founded. Skeleton athletes who usually competed on the Cross Runs track decided to start raising funds to create a new track. The starting point of the new route was in St. Moritz, not far from the Kulm Hotel, and the distance ended in the same place as the Cross-of the Runs route - in the village of Celerina. 1st of January 1904. The track was opened

under the name "St. Moritz-Celerina Bobsleigh Track".

The name "skeleton" appeared in 1892, when a new type of sleigh was invented, made of metal, which was shaped like a skeleton. In 1905. The first skeleton competition took place at the bobsleigh competition (Mürzzuschlag, Austria). In 1906 the first Austrian skeleton championship was held in this place. And in 1908 and 1910 similar championships were held in Zemmering. In 1913, the International Toboggan Association was created. In 1923. At a congress held in Paris, delegates representing lugers from Great Britain, the USA, France, Canada and Switzerland created the International Bobsleigh and Toboggan Federation (FIBT), which for a long time was involved in the development of bobsleigh and luge. In 1968. The first artificial bobsleigh and luge track was built in the city of Königssee (Germany). The emergence of artificial tracks contributed to the development of skeleton, bobsleigh and luge. Thanks to this, the dependence of athletes on natural conditions or the geographical location of natural mountain slopes was leveled, and the opportunity to carry out a continuous training process was ensured. In 1986 the skeleton was taken under the auspices of FIBT. In 2015, FIBT was renamed the International Bobsleigh and Skeleton Federation (IBSF).

The Olympic history of skeleton has not been easy. In 1926 at the Paris Congress, FIBT proposed to the International Olympic Committee to include skeleton and bobsled in the list of Olympic sports. Skeleton competitions took place at the Winter Games held in the 20th century, twice - in 1928 and 1948. Only in 2002, 54 years later, skeleton was again included in the program of the Olympic Winter Games. In the same year, a women's race was included in the Olympic program for the first time. Popularity of skeleton after the Olympic Winter Games 2002. has increased significantly, today not only representatives of countries that have appropriate facilities take part in major international competitions, but athletes from countries that do not or cannot have tracks due to climatic, relief or financial restrictions.

The first Skeleton World Championships were in 1982. Beginning with 1989, World Championships are held annually, with the exception of the year in which the Olympic Winter Games are held. In 2004 bobsleigh and skeleton were combined into one event - competitions take place simultaneously, in the same city, on the same track. At the world championships, starting from 2020, skeletonists compete for 3 sets of awards: men's and women's races; team race (sum of girls' and boys' races)

The Skeleton World Cup is an annual competition that was first organized by the International Bobsleigh and Skeleton Federation in 1986-87, and since 1996-97. This type of competition is also held among women. The Skeleton World Cup is a series of international competitions. The series takes place in different countries and consists of 8 stages. It is important to note that one of the stages of the World Cup is the European Skeleton Championship. All competitions are still held under the auspices of the International Bobsleigh and Skeleton Federation (IBSF). The series begins in November and ends in late January - early February. At each stage, athletes earn a certain number of points. After each stage, the points scored are summed up, thus forming a rating for skeleton athletes - "IBSF ranking". Based on the results of all stages, the winner is determined, who accordingly becomes the owner of the Cup. It is important that this rating is important not only for the career of the athlete himself, but also serves as a selection stage for the Olympic Games, since it determines the

number of Olympic quotas for the country's NOC. From 1 to 6 athletes can be selected to participate in the Olympic Games.

There are 17 bobsleigh and luge tracks in the world for international skeleton competitions, 4 of which are located in the American region (Canada - Calgary, Whistler; USA - Park City, Lake Placid). 10 tracks are located in different cities of Europe (Austria - Innsbruck, Bludenz; Germany - Winterberg, Altenberg, Königssee; Latvia - Sigulda; Norway - Lillehammer; Russia - Sochi; France - La Plagne; Switzerland - St. Moritz) and 3 in cities Asian countries (China - Yanqing; South Korea - Pyeongchang; Japan - Nagano) [3-10, 11-13, 15, 16].

Facilities that are currently inactive include the «Spiral» highway in Nagano (Japan, Asia) – the first track in Asia with artificial ice. An open track with a length of 1360 m, which has a system of canopies on several bends that protect the track from adverse weather conditions, is characterized by a medium-high location above sea level (1028 m), a pronounced difference in heights (113 m), the presence of 15 bends and sections of 100 and 50 m in length. The track was built in 1996 and 2 years later it hosted competitions as part of the 1998 Olympic Winter Games. The total cost of construction of the facility was 10.1 billion yen. In 2007, the Japanese government designated the track the status of a national training center and began paying 100 million yen annually for its maintenance. The Nagano government contributed another 120 million yen. After the completion of the 2018 Olympic Winter Games, the Nagano city government decided to close this bobsleigh and luge facility [].

Conclusions. Thus, as a result of the analysis, the following conclusions can be drawn: the geoFigurey of the location of sports facilities for training and competitive processes in skeleton covers three regions - Asian, American and European, so it is probably advisable to increase the number of such facilities in the Asian region, including, to expand the representation of athletes participating in this type of competitive activity; the oldest track is the track in St. Moritz, the newest facilities are the tracks in Yangqing (Beijing) and Bludenz; the route in Yangqing is also the longest in terms of duration, and in Bludenz the shortest; the height of the tracks above sea level varies from 117 to 2232 m. It is also important to note the most reliable track, which is the Russian facility “Sanki”, which ensures a high degree of safety both during competitions and during training activities.

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Tsyganova Anastasia Vladimirovna, student of the Department of Theory and Methodology of Athletics named after N.G. Ozolin, asiaskasiask9@yandex.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Leontieva Nadezhda Sergeevna, Ph.D., Associate Professor of the Department of ICFSIOO, nadejda_14071977@mail.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

ОРГАНИЗАЦИОННО-СПОРТИВНЫЕ ОСОБЕННОСТИ СКЕЛЕТОНА КАК ФАКТОР РАЗВИТИЯ ЗИМНЕГО ТУРИЗМА

Цыганова Анастасия Владимировна, студентка кафедры Теории и методики легкой атлетики им Н.Г. Озолина, asiaskasiask9@yandex.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Леонтьева Надежда Сергеевна, к.п.н., доцент кафедры ИЦФКСуОО, nadejda_14071977@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. Скелетон – зимний олимпийский экстремальный вид спорта. Статья посвящена особенностям и показателям его развития с момента появления саней и до наших дней.

Ключевые слова: скелетон, особенности, внешний вид, развитие

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UDC 796

THE CONTENT OF THE METHODOLOGY FOR THE FORMATION OF MOTIVATION FOR PHYSICAL ACTIVITY AMONG WOMEN BY MEANS OF MASS COMMUNICATION AND THE RESULTS OF ITS APPLICATION

Turianskaia V.A.

Abstract. *This paper is dedicated to the content of the methodology of motivation women for physical activity by mass communication and to the results of its' application. The process of motivation and training is individualized for each woman, based on motivational preferences, wishes for the format of the provided content, etc., which is designed to effect positively on physical and mental well-being, as well as on the desire to vain regularly in the future*

Keywords: *motivation, physical activity, women, methodology*

Introduction. Based on the results of surveys of women, the lack of physical activity is motivated by various factors: time constraints, lack of interest, etc., still a large number of women mark that an increase in the range of events covered in women's sports and women's physical activity would change their attitude to training for the better. Thus, in reality, the problem lies in the fact that women suffer from a lack of motivation, because they do not have enough information about the field of women's physical activity in general [3, p. 229, 4, p. 40]. So, first thing is to increase the amount of content about women's sports and physical activity. But not only the amount of publications is important, but also the quality and the content itself. Specialists of the sport field need to take into account the request and motivational preferences of the audience. In connection with all the facts we developed the content of the methodology to form the motivation among women for to engage them into physical activity by mass communication.

The results of the study and their analysis. A program of pedagogical content support has been developed on the base of "Zhenskoye Soobscshestvo" group made in Vkontakte social network. During the program daily activity, motivational preferences, interest in content related to women's physical activity, as well as the dynamics of motivation for physical education among participants were monitored. The program is designed for 10 weeks, based on research data that states that the average time to form a habit is 66 days [5, c. 1007]. At the end of each day, the participant sends a report about how many steps did she walk during the day [2, p. 101] to the supervisor, and at the end of the week – a training report. At the beginning of the course, the participants assessed then condition: well-being, motivation and awareness, then 2 times: in the middle of the cycle at week 4 and at week 8, the participants assess their motivation, awareness and general condition using a specially designed questionnaire.

Each subject is assigned an individual supervisor. The course of pedagogical content support is divided into 6 stages:

- The preparatory stage.
- The primary stage.
- The introduction stage.
- The continuation stage. Step 1. Step 2. Step 3.
- The habit formation stage. Step 1, step 2.
- Finishing stage [1, p. 449-450].

63 women, who assessed their physical activity as insufficient, participated in the pedagogical content support program. From them, 29 people believed that such program could not increase then motivation to train more, 18 people from those who were sure in increasing of then* motivation through the content of mass media, as well as 16 people from those who were not sure if the technique would be effective. According to the results of the experiment, by week 8 there was an increase in all three indicators. The dynamics of motivation is shown in figure 1.

The indicator "I feel motivated to include more physical activity in my life" increased for around 38%.

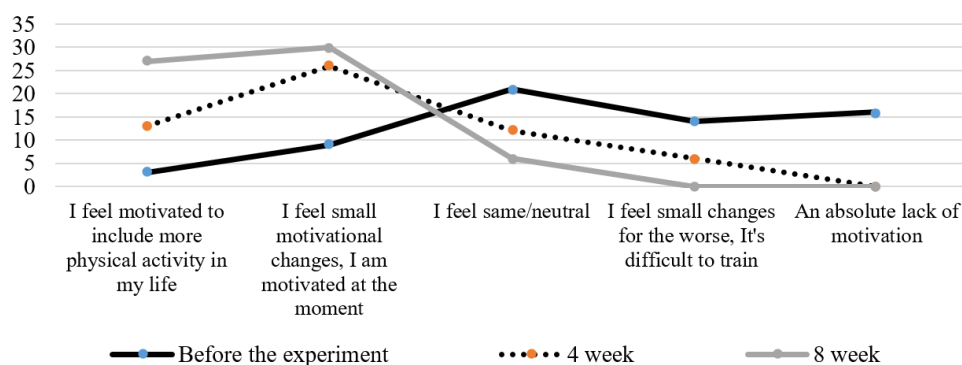


Figure 1. – Dynamics of motivation of the group in week 8

Negative indicators have dropped to zero (ex. an absolute lack of motivation). At the same time, the largest indicator is “motivated at the moment” (30 women out of 63). Thus, for now we can’t say if the methodology can provide long-lasting effects. But as we see it’s quite effective for women who have lack of motivation, nevertheless, it can be assumed that this category of participants requires more time to form a habit and stable motivation.

Indicator “awareness” had extremely positive changes, which are shown in figure 2.

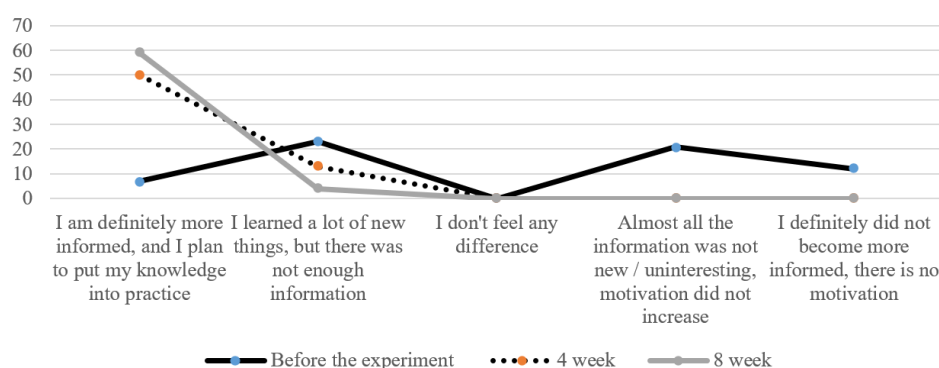


Figure 2. – Dynamics of groups' awareness in week 8

On figure 2 we can see that awareness increased from 7 women who claimed themselves aware enough to 59. Besides they were going to implement them into everyday life.

Positive dynamics also been observed in well-being indicators by the end of week 8, which is shown in figure 3.

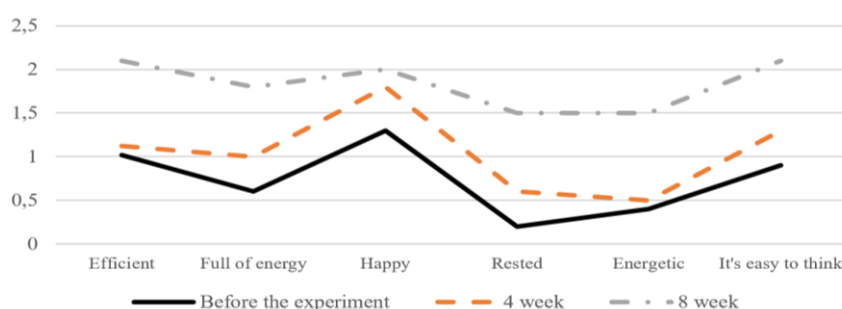


Figure 3. – Dynamics of participants' well-being assessment at week 8

The most successful indicators are "Efficient" and "It's easy to think".

Conclusion. To motivate women to participate in physical activity, an integrated approach should be applied. Not only the availability of necessary physical activity should be covered, but also the conditions and consideration of motivational preferences of each woman, the selection and creation of content on the topic of physical activity based on motivational preferences, in interaction using social networks, reinforcement of recommended physical activity with an extensive array of content on this topic.

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Turianskaia Varvara Aleksandrovna, Senior lecturer of the Department of social technologies and mass communication in sports, e-mail: rainyweather@yahoo.com Russia, St. Petersburg, Federal State Budget Educational Institution of Higher Education "Lesgaft National State University" of Physical Education, Sport and Health, St. Petersburg".

СОДЕРЖАНИЕ МЕТОДИКИ ФОРМИРОВАНИЯ МОТИВАЦИИ ЖЕНЩИН К ФИЗИЧЕСКОЙ АКТИВНОСТИ СРЕДСТВАМИ МАССОВОЙ КОММУНИКАЦИИ, РЕЗУЛЬТАТЫ ЕЕ ПРИМЕНЕНИЯ

Турианская Варвара Александровна, старший преподаватель кафедры технологий и массовых коммуникаций в спорте, e-mail: rainyweather@yahoo.com, ФГБОУ ВО «Национальный государственный Университет физической спорта и здоровья имени П.Ф. Лесгафта, Санкт-Петербург».

Аннотация. В настоящее время необходимость вовлечения большего людей, независимо от их пола, в физическую активность абсолютно очевидна. Данная статья посвящена содержанию методологии мотивации к вовлечению женщин в физическую активность с помощью средств массовой коммуникации. Процесс мотивации и обучения индивидуализируется для каждой женщины, исходя из мотивационных предпочтений, пожеланий к формату предоставляемого контента и т.д., что положительно скажется на физическом и ментальном благополучии, а также желании тренироваться в будущем.

Ключевые слова: мотивация, физическая активность, женщины, методика

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SOCIALISATION OF YOUTH THROUGH PHYSICAL EDUCATION AND SPORT

Turta M.S., s/s Myagkova S.N.

Abstract. *This article analyses the influence of the sphere of physical culture and sport on the socialisation of young people - youth, its influence on interaction in society and the creation of conditions for the development of the necessary skills of communication among young people is viewed. The concept of socialisation and its existence in the sphere of physical culture and sport is considered.*

Keywords: *physical education and sport, socialisation, youth, communication, society, community, socium*

Introduction. Physical education and sport play an important role in the life of any person, especially young people. In this sphere, young people throughout most of

their age have the opportunity to achieve all the necessary results – both in sport or achievement of physical qualities, and beyond it – achievement of certain social statuses, etc. By engaging in physical education and sport, young people can not only maintain a healthy lifestyle, strengthen their health and body condition, maintain a systematic lifestyle closely related to physical activity, but also spend their free time devoted to sport surrounded by similar young people in the same society. Youth is the age of population when a person is able to achieve maximum results in all spheres of his life and activity. It is at the age of youth that a person achieves his/her maximum results in those spheres of activity that are important to him/her and important for his/her personal development. Youth, physical culture and sport are concepts that are inseparable, because it is all impossible without youth in the sphere of physical culture and sport, it is impossible to imagine the existence of a certain society in this sphere, which develops without youth. It is because of this that the socialisation of young people through physical culture and sport is extremely important.

The purpose of the study is to analyze the socialization of youth through the sphere of physical education and sports and the presence of youth within the sphere.

Methods. Analysis of scientific literature, statistical data and indicators.

The main part. The Strategy for Youth Policy in the Russian Federation until 2030 contains data on the proportion of young people in the total population of the Russian Federation. According to data from the Federal State Statistics Service, as of 1 January 2023 there were about 37.9 million people between the ages of 14 and 35 in the Russian Federation (25.9 per cent of the total population of Russia), that is, a quarter of the population of our country is young people [3].

With the right organisation of physical education and sports activities, this sphere of activity can become a serious and effective means of forming social activity and society for people, their healthy lifestyle, namely modern youth. Nowadays, scientists understand socialisation as the process of assimilation of behavioural patterns, social norms and values by an individual, education on this basis of a personality occupying a certain position in a variety of social relations and transforming social reality by means of its active activity.

An extremely important aspect of this issue is the implementation of State programmes providing for the involvement of young people in physical education and sport, which implies the implementation of the appropriate impact on this social group.

The government authorities of the Russian Federation responsible for the organisation and management of physical education and sport have set the task of increasing the number of citizens who lead an active and healthy lifestyle and are systematically engaged in physical education and sport, which is the basis of the Strategy for the Development of Physical Culture and Sport in the Russian Federation for the period up to 2030.

To realise these objectives in the sphere of physical education and sport, a federal project "Sport as a norm of life" has been developed. The goal of the project "Sport as a norm of life" expressed in figures is to increase the number of Russian citizens systematically engaged in physical education and sport to 70% by 2030. The

main goal of the movement is to improve the quality of life of Russians through physical activity and to form a culture of sporting life. The Sport as a Norm of Life project promotes and develops mass sports and creates and improves conditions for physical activity for all Russian citizens. The project includes various master classes, sports and educational training programmes and competitions [2].

Improving the quality of life of our country's citizens through physical activity, the formation of a culture of sporting life among them, the development of mass sports and other tasks allow us to form a healthy society of people united by physical education and sport. Such a society of people united by one task is perfect for one of the most important tasks of physical education and sport - socialisation, and in the topic of this paper socialisation of young people. In such a society the result of socialisation will be successful entry into such a society, correct assimilation of its norms, values and roles.

Sport is an important social institution that fulfils various social needs of the individual, such as health and social well-being, as well as influencing the main spheres of society. Regular physical education and sports form patriotic views in young people, ethical values, and create a correct, healthy way of life for people. Sports, especially Olympic sports, involve a certain socialisation through interaction with a large number of people in a particular sport and the development of a large number of skills needed to build communication with people. The main focus for young people is on character building and sports ethics. Being in such a society allows you to be in a small society with its own set of rules and foundations, which socialises a person in different situations, establishes rules of behaviour and forms models of behaviour and their norms [1].

Conclusion. In the sphere of physical education and sport a person has an opportunity to develop necessary communicative skills and to be adapted to being in the society, to reach certain social statuses. By creating conditions for the socialisation of young people through such an important tool as physical education and sport, it is possible to achieve important goals formed by the state and others, which will allow the development of traditional values and patriotism in the young generation, which are extremely necessary nowadays. Youth, physical education and sport will help the state to create a healthy generation of people who will take care of their health, exercise regularly and be able to exist in society. Being involved in sport involves the interaction of a large number of people with each other, not only in a particular sport, but also in personal communication with each other outside of sporting activities, and the development of skills to build communication with people. Being in a healthy society socialises a person and allows him/her to get used to the rules of behaviour and existing patterns of behaviour and their norms.

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Turta Maxim Sergeevich, 1st year master's student, maaxturta@gmail.com, Russia, Moscow, Federal state budget educational institution of higher education "Russian university of sports «GTSOLIFK».

Scientific supervisor – Myagkova Svetlana Nikolaevna, Russia, Moscow, Federal state budget educational institution of higher education "Russian university of sports «GTSOLIFK».

СОЦИАЛИЗАЦИЯ МОЛОДЕЖИ ЧЕРЕЗ ФИЗИЧЕСКУЮ КУЛЬТУРУ И СПОРТ

Турта Максим Сергеевич, студент I курса магистратуры, maaxturta@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Мягкова Светлана Николаевна, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье анализируется влияние сферы физической культуры и спорта на социализацию молодых людей – молодежи, рассматривается ее влияние на взаимодействие в обществе и создание условий для развития необходимых навыков коммуникации у молодежи. Рассматривается понятие социализации и ее наличие в сфере физической культуры и спорта

Ключевые слова: физическая культура и спорт, социализация, молодежь, коммуникация, общество, сообщество, социум

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PROFESSIONAL ENGLISH TEACHING WITH THE USE OF SPECIALIZED SPORTS VIDEO CONTENT

Udalova M.Yu.

Abstract. *For those learning professional sports terminology, online video streaming services and digital resources provide valuable learning opportunities. By engaging in online training, match analyses, and commentary, students can build up their vocabulary and understanding of specific sports terminology. Channels and websites dedicated to various sports disciplines offer instructional content, match highlights, and in-depth analysis, facilitating comprehensive learning experiences.*

Keywords: *web streaming services, professional terminology, teaching of foreign language*

Introduction Professional sport web streaming services have witnessed a remarkable surge in popularity over the past two decades, driven by advancements in technology and changing consumer preferences. With the widespread availability of high-speed internet and the development of sophisticated streaming platforms, sports leagues and broadcasters have found new avenues to deliver live games and events directly to viewers' devices. [1] This accessibility has revolutionized the way fans consume sports content, offering greater flexibility and convenience compared to traditional television broadcasts [2].

One of the key factors contributing to the popularity of web streaming services is their accessibility and flexibility. Unlike traditional television broadcasts, which are often limited by geographic location and scheduling constraints, streaming services allow fans to watch games and events from anywhere with an internet connection. Moreover, these platforms offer customizable viewing options, enabling users to select specific games, events, or channels to watch, as well as providing on-demand playback for added convenience.

Furthermore, the rise of exclusive content and international reach has further fueled the growth of professional sport web streaming services. Many sports leagues have launched their own streaming platforms or partnered with existing services to offer exclusive content, such as behind-the-scenes footage, documentaries, and archive footage. This exclusive content not only attracts dedicated fans but also helps sports leagues expand their international fan base by reaching viewers in regions where traditional television broadcasts may not be readily available [3]. As technology continues to evolve, professional sport web streaming services are expected to play an increasingly prominent role in how sports content is consumed worldwide.

Objective of the research is to study contemporary online video streaming services and digital resources for providing valuable learning opportunities for professional English teaching.

Discussion and Results. It is becoming widely possible to learn professional sports terminology through online video streaming services and similar digital online resources. [4] Many channels and websites provide tutorials, commentary, and analysis of various sports, including vocabulary specific to each sport.

The enhancement of students' understanding of professional sports terminology might be advanced through the following algorithm.

Search for specific sports: Start by searching for the sport students are interested in, such as basketball, soccer, tennis, etc. There are dedicated channels and playlists for each sport.

Watch tutorials and explanations: Look for videos that explain the rules, techniques, and strategies used in the sport. These videos often include explanations of common terminology.

Listen to commentary and analysis: Watch matches, games, or competitions with commentary. Analysts and commentators often use professional sports terminology extensively, providing context and explanations as they go.

Use subtitles and transcripts: Many online video streaming services offer subtitles or transcripts. These can help students identify and understand specific terms as they are used in context.

Take notes and practice: Make note of any new terminology student encounter and review it regularly. Try using the terms in sentences or discussions to reinforce student's understanding.

Engage with online communities: Participate in online forums, discussion groups, or social media communities focused on the sport students are interested in. Students can ask questions, seek clarification, and practice using professional sports terminology in a supportive environment.

By actively engaging with online resources, student can gradually build student's vocabulary and understanding of professional sports terminology. Keep practicing and exposing student to the language in different contexts to reinforce student's learning.

Here are some examples of how students can learn professional sports terminology through online video streaming services or similar web services for three popular sports: basketball, soccer (football), and tennis.

1. Basketball:

- Search for videos titled "Basketball Basics" or "Introduction to Basketball."
- Look for tutorials on shooting techniques, dribbling skills, and defensive strategies.
- Watch Professional leagues game highlights with commentary to hear terms like "fast break," "pick and roll," "alley-oop," and "three-pointer" being used.
- Explore channels like official pro leagues channels, or individual basketball trainers' channels for instructional content.

2. Soccer (Football):

- Search for videos on "Football Rules Explained" or "Soccer Basics for Beginners."
- Watch match analysis videos where commentators discuss tactics, formations, and player roles.
- Look for tutorials on dribbling, passing, shooting, and goalkeeping techniques.
- Explore channels like pro leagues channels, or individual soccer analysts' channels for in-depth analysis and terminology.

3. Tennis:

- Search for videos titled "Tennis Basics" or "Introduction to Tennis."
- Watch instructional videos on serving techniques, forehand/backhand strokes, and footwork.
- Look for match highlights with commentary to hear terms like "ace," "break point," "drop shot," and "rally" being used.
- Explore channels like ATP Tour, WTA, or individual tennis coaches' channels for tutorials and match analysis.

These are just a few examples, but students can find a wide range of content covering various aspects of each sport on platforms. Remember to actively listen, take notes, and practice using the terminology students learn to reinforce student understanding.

Conclusion. The surge in popularity of professional sport web streaming services over the past two decades has been fueled by technological advancements and changing consumer preferences. With high-speed internet and sophisticated streaming platforms, sports leagues can deliver live games directly to viewers' devices, revolutionizing how fans consume sports content. These services offer accessibility, flexibility, and customizable viewing options, allowing fans to watch games from anywhere with an internet connection and on-demand playback. Their use in the teaching of foreign languages is very promising and effective and opens numerous opportunities for both teacher and the student, which should not be neglected in the advanced learning process.

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Udalova Marina Yurievna, PhD, Associate Professor, udalovamar@rambler.ru, The Russian University of Sport "GTSOLIFK", Moscow, Russia

ПРЕПОДАВАНИЕ ПРОФЕССИОНАЛЬНОГО АНГЛИЙСКОГО ЯЗЫКА С ИСПОЛЬЗОВАНИЕМ СПЕЦИАЛИЗИРОВАННОГО СПОРТИВНОГО ВИДЕОКОНТЕНТА

Удалова Марина Юрьевна, Кандидат педагогических наук, доцент, udalovamar@rambler.ru, Кафедра иностранных языков и лингвистики, Российский университет спорта «ГЦОЛИФК», Москва, Россия

Аннотация. Для тех, кто изучает профессиональную спортивную терминологию, онлайн-сервисы видеостриминга и цифровые ресурсы предоставляют ценные возможности для обучения. Путем изучения учебных пособий, анализа матчей и комментариев студенты могут расширить свой словарный запас и понимание специфической терминологии

различных видов спорта. Веб-стриминговые каналы и веб-сайты, посвященные различным видам спорта, предлагают учебный контент и глубокий анализ, обеспечивая всесторонний образовательный опыт.

Ключевые слова: сервисы веб-стриминга, профессиональная терминология, преподавание иностранного языка

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UDC 796.433.1

ANALYSIS OF RYAN KRAUSER COMPETITIVE ACTIVITY FOR THE OLYMPIC CYCLE

Uskov I.V.

Abstract. The article provides information about the competitive activities of American track and field athlete Ryan Krauser specializing in shot put. To achieve the purpose of the study, an analysis of the sports results of Ryan Krauser, who showed at the World Cup and USA level competitions, was carried out. It is worth noting that the competitions for the study were chosen with the conditions of their holding, that is, held in an open stadium and indoors. The obtained research results became the basis for identifying the best result of American athlete Ryan Krauser in the Olympic cycle.

Keywords: Ryan Krauser, shot put, USA, analysis, competition results, world Championship, USA championship, world record

Introduction. Shot put is an athletics exercise that requires an athlete to make short-term and significant muscular efforts of a speed and strength nature. Based on this, male representatives are most interested in this discipline. Therefore, attention in the study was paid to the strongest athlete in the world and the holder of two world records in the shot put, Ryan Krauser.

The purpose of the study was to analyze the competitive activity of the athlete Ryan Krauser during the current Olympic cycle.

Main part. In order to analyze Ryan Krauser's competitive activities, the final protocols of the World Cup and USA level competitions were studied. Further, the analysis of the obtained data was carried out.

Thanks to the studied materials, it was found that at the moment, the strongest track and field athlete on the world sports arena in the men's shot put is the two-time winner of the Olympic Games in 2016 and 2020, the world champion in 2019 and

2022 – Ryan Krauser.

The world record in this discipline also belongs to him and is 23.56 meters, set at an outdoor stadium in May 2023.

Thanks to the studied final protocols of the World and US championships from 2021 to 2023, information was collected on the competitive activities of American track and field athlete Ryan Krauser, who competed in the current Olympic cycle at these competitions, which in turn were divided according to the conditions of their holding, that is, in an outdoor stadium and indoors.

Table 1. – Dynamics of indoor sports results in the shot put by Ryan Krauser by year

Year	World Championship (sports result, m)	USA Championship (sports result, m)
2021	–	–
2022	22,44	22,51
2023	–	–

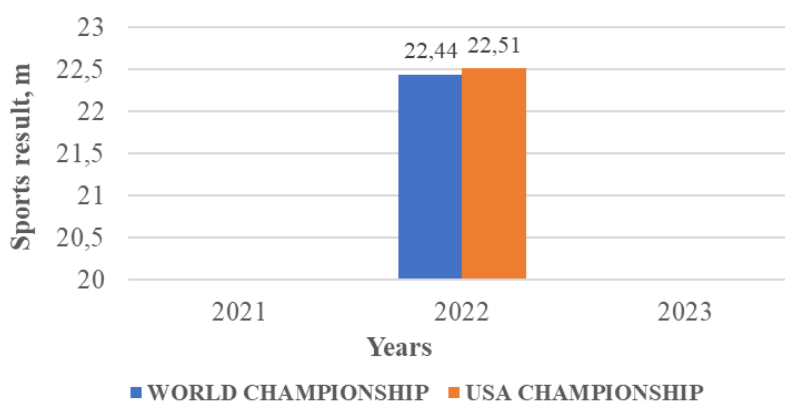


Figure 1. – Dynamics of indoor sports results in the shot put by Ryan Krauser by year

Analyzing the data presented in table 1 and in figure 1, it can be noted that in 2021 and 2023, the athlete did not compete in indoor competitions. Since the US championship was not held in 2021 due to the global situation related to the pandemic, and in 2023 the athlete did not apply for this sports competition. It can be seen that the athlete in 2022, speaking at indoor competitions, shows a high result on the world stage – 22.44 m, and performs at the same level at the US championships – 22.51 m.

Judging by the data presented in table 2, it follows that Ryan Krauser competed for all 3 years from 2021-2023, at competitions held at an outdoor stadium at the level of the World Cup and the United States. It is worth noting that the 2021 World Athletics Championships have been postponed to 2022.

Table 2. – Dynamics of sports results at an outdoor stadium in the shot put by Ryan Krauser by year

Year	World Championship (sports result, m)	USA Championship (sports result, m)
2021	–	23,37
2022	22,94	23,12
2023	23,51	22,86

According to the data presented in figure 2, it is noticeable that the American track and field athlete in 2021 demonstrates a result equal to 23.37 m, thereby setting a world record in the shot put among men at that time. Further, it can be seen that in 2022, speaking at the world Championships and the USA, the athlete shows almost equal results – 22.94 m and 23.12 m, which in turn is less than the level of the world record, which he set in 2021.

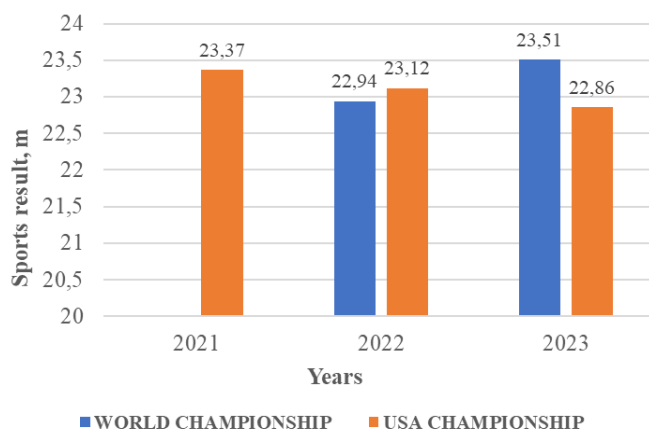


Figure 2. – Dynamics of sports results at an outdoor stadium in the shot put by Ryan Krauser by year

The peak of Ryan Krauser's athletic form came in May 2023, where he shows his career best result of 23.56 m at the USATF Grand Prix in Los Angeles. In July 2023, the result decreases by 0.7 m, while it is worth noting that the athlete quickly returns to the peak of his athletic form and next month in August demonstrates an outstanding result – 23.51 m, which is close to the level of the world record in the shot put among men.

Conclusions. To date, American athlete Ryan Krauser, speaking in May 2023, at the continental tour of the International Association of Athletics Federations in Los Angeles, pushed the core by 23.56 m, thereby setting a new world record in the men's shot put.

The peak of athletic form, based on the best results of the athlete, occurred at different times. In June 2021, Ryan Krauser reached his peak form and pushed a projectile 23.37 m, thereby demonstrating a high result that allowed him to break the previous men's world record set in 1990 and set himself a world record in the shot put. The peak of the American athlete's athletic form fell on May 2023, he participated in the continental tour in Los Angeles, where he showed his best result in his entire career – 23.56 m and thereby set a new world record among men in the shot put, breaking the previous world record – 23.37 m that belonged to him.

Analyzing the data obtained, we can say that Ryan Krauser demonstrated most of his best results at World Cup and USA level competitions, which were held at an outdoor stadium.

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Uskov Ivan Vladimirovich, Lecturer, uskov.iv@gtstolifk.ru, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

АНАЛИЗ СОРЕВНОВАТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ РАЙАНА КРАУЗЕРА ЗА ОЛИМПИЙСКИЙ ЦИКЛ

Усков Иван Владимирович, преподаватель, uskov.iv@gtstolifk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье представлена информация о соревновательной деятельности американского легкоатлета Райана Краузера специализирующего в толкании ядра. Для достижения цели исследования был проведён анализ спортивных результатов Райана Краузера показавшего на соревнованиях уровня чемпионата мира и США. Стоит отметить, что соревнования для исследования выбраны были с условиями их проведения, то есть проведённые на открытом стадионе и в помещении. Полученные результаты исследования стали основой для выявления наилучшего результата американского спортсмена Райана Краузера в олимпийском цикле.

Ключевые слова: Райан Краузер, толкание ядра, США, анализ, результаты соревнований, чемпионат мира, чемпионат США, рекорд мира

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UDC 796

PHYSICAL EDUCATION: CONCEPT, TYPES, SPECIFICS OF PREPARATION OF STUDENTS IN AN EDUCATIONAL INSTITUTION

Usov D.R., s/s Myagkova S.N.

Abstract. *What do we know about physical education? What does this concept include and what significance does it have in modern Russian society? Can physical education lessons combine many techniques and be the basis for developing a healthy lifestyle? In this article we will look at ways to improve physical education in an educational institution.*

Keywords: *physical education, physical culture, sports, self-improvement, methods*

Introduction (Relevance). In the context of modernization of Russian society, one of the key issues of the country is comprehensive care and attention to the safety of life and health, physical formation, training and inclusion of students in educational institutions in maintaining a healthy lifestyle. Physical education is today one of the priority areas for educational institutions to solve this issue [4, p. 5].

Physical education of students studying in secondary educational institutions as

a component part of the education system is formed in any case in the unity of all socio-cultural transformations carried out at the moment. In the course of the reform of the educational sphere nowadays there is some rethinking of the existing educational paradigms, orientation, as well as the organization of physical education in educational institutions. Special attention in the future time should be paid to the growth of efficiency of physical education within educational institutions, to the improvement of achievements, because now the state of health of students is deteriorating all the time, and the level of their physical fitness is significantly reduced. This is something that needs to be addressed. In addition, students now have poor interest in practicing healthy lifestyle. **The aim of our study is** to justify a very important social task within the general education system, which is to reorganize the existing system of physical education in educational institutions.

In the current “Strategy for the development of physical education and sports in the Russian Federation until 2030” (approved on the basis of government decree No. 3081-r dated November 24, 2020) [5] the modernization of physical education in existing educational institutions is named as one of the most important and relevant areas for today, which must be implemented in practice in the very near future.

Physical education is a specific system of activities that are focused on raising a healthy, developed personality through the use of physical education and sports. The formation now in practice of all the necessary conditions that can ensure in practice an increase in the effectiveness of teaching physical education in various educational institutions, the opportunity for students to lead a healthy lifestyle and engage in physical education is the main task at this stage. Its solution is very important today [3, p. 452].

According to the author Zh.K. Kholodov, physical education is a type of education for students of an educational institution, the content of which consists in teaching how to perform various movements, in cultivating various physical qualities, as well as in students’ mastery of special knowledge and in developing students’ need for regular physical education classes [6, p. 95].

Physical education of students includes physical education and development of the necessary physical properties in students. Education of students in this area represents the process of gradual formation of the necessary motor skills, and the transfer of special knowledge in the field of physical education and sports from the teacher to students. At the same time, the education of physical qualities in students is a purposeful implementation of influence on the formation of physical qualities through standardization of various types of functional loads.

The main goal of physical education for students is to ensure, first of all, strengthening their health, developing the necessary motor skills, increasing the body's resistance, improving physical development, and instilling willpower and discipline. At the same time, students will also learn information from the theory and methodology of physical education.

The organization of physical education in an educational institution is understood as a set of techniques and methods used in practice within the framework of the educational process. The goal is to increase the physical fitness indicators of students in an educational institution and strengthen the health of students. In

addition, physical education of students in an educational institution allows them to obtain the necessary theoretical knowledge, as well as the skills and abilities to organize their physical education and sports activities.

The author of the dissertation is S.Yu. Shchetinin “Physical education of students in an integrated educational physical education environment” [7, p. 12] suggests that now improving the effectiveness of physical education for students can be achieved through the formation of an integrated educational physical education environment. This environment must combine the efforts of various state and public organizations, as well as the family in which the student is being raised. The goal is to create all the necessary conditions to ensure in practice the harmonious development of the student’s personality. To achieve this goal, it is now important to begin to use various technologies in practice that make it possible to practically increase the comfort and effectiveness of students’ personal development. In addition, it is important to increase indicators of professionalism and mobility of teachers. Teachers should instill in students of an educational institution a desire to maintain a healthy lifestyle. Today, among the most important principles of combining the educational potential of an educational institution and the municipal environment are adherence to the principle of self-preservation and health care and the humanitarian principle of variability in the external environment.

VC. Balsevich believes that the most important problem of physical education for students of an educational institution today is the regulation of the volume and intensity of the motor component. It is very important to take into account the gender, age of students, their state of health, and social status [2, p. 15].

The main forms of physical education for students in educational institutions are now very diverse. Table 1 shows the main forms of physical education used in practice for students in an educational institution.

According to the author S.V. Alekseev, the organization of physical education and training in an educational institution includes [1, p. 109]:

- formation in students of the various physical education knowledge they need, taking into account their individual characteristics, for subsequent active involvement in physical education and sports;
- conducting classes within the framework of existing educational programs, and additional classes for students of an educational institution in physical education and sports;
- implementation of various physical education activities;
- assistance in holding various sporting events with the participation of students;
- popularization of sports and healthy lifestyle by students;
- analysis of the development and physical training of students;
- control of doctors over the organization of education and physical education of students;
- participation of students in various national sporting events, Universiade in various sports and in various other similar events.

These activities are aimed at organizing physical education and education of students in an educational institution, and the results make it possible to ensure the adaptation of students to the conditions of study in an educational institution, to

implement sanitary and medical measures aimed at ensuring the prevention of infectious diseases; promote healthy lifestyle; carry out the prevention of somatic and mental disorders in students, promote ways to improve the health of students, etc.

Results. It can be concluded that physical education of students in an educational institution is in direct connection with intellectual, moral, moral, and labor education, while being an important link in the education of students as a comprehensively developed personality. Physical education and sports activities influence the moral character of future citizens of the country primarily due to the ability with their help to form collectivism, organization, discipline, etc.

Continuity and continuity in the matter of physical education of students in an educational institution in practice are ensured by: a unified legislative framework that currently exists in the field of physical education, as well as sports and education; a combination of different forms of classes; systematic application in practice of various means of physical education; mandatory requirements for monitoring the dynamics of students' physical training in an educational institution, etc.

Conclusions, physical education in educational institutions is a process of solving certain educational tasks aimed at improving the physical development of students. In the context of modernization of education, the need to preserve and strengthen the health of pupils and students, and the formation of personal physical culture, new approaches to organizing and constructing the process of physical education are required.

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Usov Denis Romanovich, 1st year master's student, den.usov.87@mail.ru, Russia, Moscow, Federal state budget educational institution of higher education "The Russian university of sports «GTSOLIFK».

Scientific supervisor – Myagkova Svetlana Nikolaevna, Professor, Russia, Moscow, The Russian university of sports «GTSOLIFK»

ФИЗИЧЕСКОЕ ВОСПИТАНИЕ: ПОНЯТИЕ, ВИДЫ, СПЕЦИФИКА ПОДГОТОВКИ УЧАЩИХСЯ В УСЛОВИЯХ ОБРАЗОВАТЕЛЬНОГО УЧРЕЖДЕНИЯ

Усов Денис Романович, студент 1 курса магистратуры, den.usov.87@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель - Мягкова Светлана Николаевна, доктор педагогических наук., профессор, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. Что мы знаем о физическом воспитании? Что включает в себя это понятие и какое значение оно имеет в современном российском обществе? Могут ли уроки физической культуры совмещать в себе множество методик и быть основой формирования здорового образа жизни? В данной статье мы рассмотрим способы совершенствования физического воспитания в образовательном учреждении.

Ключевые слова: физическое воспитание, физическая культура, спорт, самосовершенствование, методы

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SELF-DEVELOPMENT AS A TOOL FOR DEVELOPING THE QUALITIES OF AN ENTREPRENEUR IN THE FIELD OF SPORTS AND PHYSICAL EDUCATION

Uzdyaev V.V., s/s Ulitin E.V.

Abstract. *This article examines the economic direction in the field of sports and physical education, namely its development by expanding the market of paid services. Also, the role of self-development in the formation and manifestation of personal qualities of an entrepreneur in the field of sports is revealed.*

Keywords: *entrepreneur, sport, development, self-development, personal qualities*

Relevance. The field of sports and physical education is developing at a high rate, one of the most progressive areas of this field is economic. So, throughout the time, from 2000 to the current 2024, the number of paid physical education services on the market has been gradually increasing. This creates competitive conditions, which, in turn, contributes to the formation of motivation in improving the paid services provided and the emergence of new ones [1].

In this way, the economic direction ensures the development of the field of physical education and sports due to the expansion of the market for paid services. Entrepreneurship in this area is becoming more relevant and profitable.

Throughout time, physical education and sports have been closely linked to the life of society and firmly rooted in people's lives. Thanks to sports, you can maintain excellent physical fitness, and at the same time feel good. Some people go in for sports to relax and improve their mood, finding it an anti-stress activity. For some, sport is a career and a prospect for further development in life. All these aspects explain the relevance of sports, starting from the earliest times [2].

Sport combines the development of physical and cognitive qualities, along with improving intellectual activity. The relevance of the development of entrepreneurial qualities is closely related to the relevance of physical education and sports.

The entrepreneur is at the heart of doing business, it is he who carries out most of the economic operations [3]. Building a successful business model is based on obtaining information, which later leads to the receipt of funds. But the set of personal qualities of an entrepreneur is also important: determination, productivity, perseverance and others. At the same time, self-development is also important, which underlies the emergence and formation of all other personal qualities.

Self-development largely determines a person's success. Through the prism of self-development, a person is inclined to analyze his every action and decision, identify positive aspects and shortcomings, correctly form a development strategy and attract a target audience for his product [4]. For further successful organization of their work in the field of sports, an entrepreneur needs:

1. Have an idea of the work in this field.
2. Have organizational and managerial skills.
3. Allocate time correctly and adequately assess your capabilities.

4. Be able to competently organize the sale and marketing of the product.

5. Analyze the position and relevance of the product for the best option for its development.

In addition to self-development, which affects the formation of a competent entrepreneur, knowledge of psychology plays an important role. With the help of psychoanalysis tools, the development of entrepreneurial activity is faster and easier, as it affects the unconscious part of the human psyche.

Research. To identify the role of self-development in the synthesis and manifestation of entrepreneurial qualities, a study was conducted based on surveys among entrepreneurs in the field of sports and physical culture in the Chelyabinsk region. A total of 200 people took part in the study.

To the question "Do you pay attention and time to self-development?" the majority of respondents in the form of 58% answered positively. Another 29% of the total indicated a lack of time, but at the same time they would like to develop themselves more. The remaining 13% said they were unwilling and lazy about self-development.

Based on this survey, it is clear that most of the respondents attach importance to their own development. They are open to analyzing themselves and their actions, thoughts and decisions. Thus, the goal of achieving success will be completed many times faster.

For a more complete understanding of the attitude of entrepreneurs to self-development, the question was asked: "Do you think that all entrepreneurial qualities can be developed in the process of self-development?". And so, 87% responded positively, while the remaining 13% responded negatively. It is worth noting that the majority of positively responding respondents are girls – 52%.

During the third survey, aspects of the influence of self-development on the formation of entrepreneurial qualities in a person were identified, namely, which qualities develop through self-development. The results are presented in Table 1.

Table 1. – Development of the qualities of an entrepreneur through self-development

Characteristics	% of respondents
Management and work organization skills	43
Leadership qualities	20
Stress resistance	17
Communication skills	10
Development of analytical abilities	10

Most are convinced that self-development primarily affects the development of management and work organization skills. These qualities, first of all, affect the correct allocation of time, team selection and result orientation.

Conclusions. Analyzing the development of the field of physical education and sports, we can say about the progressive development of not only the direction of physical training and sports events, but also about the positive dynamics of changes in relation to the economic direction. According to the results of the study, it was revealed that most entrepreneurs devote time to self-development and attach great importance to this. Indeed, in the course of this, the formation and improvement of

personal qualities of a person takes place.

After analyzing all the answers to the questions, some recommendations were made regarding strengthening the importance of self-development in entrepreneurship.

1. Development of communication and networking to broaden horizons and more easily solve professional tasks.

2. Search for new information, that is, updating your own knowledge by taking courses, trainings, reading books, etc. This will allow us to create more innovative products.

3. Rest in your free time to relax in order to avoid burnout.

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Uzdyaev Vitaly Viktorovich, 2nd year student of the Department of Pedagogy and Socio-economic Disciplines, kfizvugavm@inbox.ru, Troitsk, Russia, Federal State Budgetary Educational Institution of Higher Education "South Ural State Agrarian University"

Scientific supervisor - Ulitin Egor Vyacheslavovich, Candidate of Technical Sciences, Associate Professor of the Department of Pedagogy and Socio-Economic Disciplines, Egorulitin@inbox.ru, Russia, Troitsk, Federal State Budgetary Educational Institution of Higher Education "South Ural State Agrarian University"

САМОРАЗВИТИЕ КАК ИНСТРУМЕНТ РАЗВИТИЯ КАЧЕСТВ ПРЕДПРИНИМАТЕЛЯ В СФЕРЕ СПОРТА И ФИЗИЧЕСКОЙ КУЛЬТУРЫ

Уздяев Виталий Викторович, студент 2 курса кафедры Педагогика и социально-экономических дисциплин, kfizvugavm@inbox.ru, Россия, Троицк, Федеральное государственное бюджетное образовательное учреждение высшего образования «Южно-уральский государственный аграрный университет»

Научный руководитель – Улитин Егор Вячеславович, к.т.н., доцент кафедры Педагогика и социально-экономических дисциплин, Egorulitin@inbox.ru, Россия, Троицк, Федеральное государственное бюджетное образовательное учреждение высшего образования «Южно-уральский государственный аграрный университет».

Аннотация. В данной статье рассматривается экономическое направление в сфере спорта и физической культуры, а именно его развитие за счет расширения рынка платных услуг. Также раскрывается роль саморазвития в формировании и проявлении личностных качеств предпринимателя в сфере спорта.

Ключевые слова: предприниматель, спорт, развитие, саморазвитие, личностные качества

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THE USE OF SOCIAL MEDIA AND YOUTUBE AS ADDITIONAL INNOVATIVE RESOURCES IN TEACHING FOREIGN LANGUAGES

Varichev A.M.

Abstract. *One of the effective ways of learning is the use of social networks, such as VKontakte and Youtube, which can stimulate cognitive interest and increase motivation for learning activities. In these realities, teachers can use social networks and Youtube in the educational process so that students can spend time with greater benefits and also engage in self-education. The article discusses the possibilities of using social media to develop the communicative competence of students.*

Keywords: *social media, teaching foreign languages, innovative methods, foreign language learning*

Introduction. In the modern period of development of education, information and communication technologies should be introduced in educational process in an active and comprehensive way. English learning students are known to be more attracted to websites and apps entertainment-oriented than conventional educational materials, and instead of traditional homework, they would prefer to spend more time on the Internet, namely on social networks.

The aim of the study is to reveal the most effective social media platforms to be used in teaching foreign languages.

Methods of the study. Different literature resources were used to critically analyse the effectiveness and usefulness of social media in teaching foreign languages.

It is known that social networks and instant messengers are especially popular among modern youth. The potential and features of the use of social networks are determined, first of all, by their accessibility and speed of information transfer, and their use for educational purposes makes it possible to extend classes beyond the lesson, which additionally motivates students. Using Social Media provides deeper

mastery of a foreign language, contributes to the formation of foreign language communicative competence with students, orients them towards education information culture, to develop skills for independent acquisition of knowledge.

Interactive exercises help interaction between subjects of the educational process; they are aimed at stimulating and maintaining active speech activity, including students' emotional memory, removing the psychological barrier, which undoubtedly contributes to natural, free use of a foreign language in the process of practical activities.

Effective combination of interactive exercises and modern multimedia technologies can contribute to the development of students' skills in independently finding material for work, be prepared for planning, carry out analysis, draw conclusions, and identify and correct your own mistakes and the mistakes of your classmates.

The Internet is a worldwide repository of information of various contents and topics. Today, Internet resources are the most convenient, and therefore a popular source of information in various areas of life for various groups of people. The virtual environment of the Internet allows you to "go beyond the framework limited by time and space, providing its users with the opportunity for authentic communication with real interlocutors on topics that are relevant to both sides" [9, c. 65]. In order to make the learning process is interesting, you need to use exactly those resources (websites, applications, forums, etc.) that are of interest to modern students. Pedagogical practicability of using global network resources, as well as the intensity of its use is determined by the goals and objectives of a particular lesson in foreign language and require methodological justification for such integration.

In 2019 the international company Deloitte conducted comprehensive research dedicated to the study of media consumption in Russia. The most popular Internet resources among Russians are YouTube (<https://www.youtube.com/>) and VKontakte (<https://vk.com/>). These are used by 86% and 80% of respondents, respectively. Social networks such as Odnoklassniki (57%) (<https://ok.ru/>), Telegram (<https://telegram.org/>) continue to be a widespread platform among Russians (25%).

Turning to the rating of social media in Russia for 2019, formed by research results from Mediascope, the leader of the Russian market media research, it becomes clear that the most popular and promising social the network in Russia is VKontakte (72%) (<https://vk.com/>). In terms of the number of users the leaders are also WhatsApp (61%) (www.whatsapp.com), Odnoklassniki (45%) (<https://ok.ru/>), and Viber (41%) (<https://www.viber.com/ru/>).

Based on the results of the research, we can say that the YouTube platform, as well as social networks VKontakte, Odnoklassniki, and instant messengers Telegram and Viber are advised to be integrated in the process of education.

Social networks are very multifunctional and make it possible to organize such types of work that can serve as an effective means of teaching a foreign language speaking. The table below shows how certain popular social media features that can be used to develop foreign language communicative competence with students.

Table 1. – Functions and opportunities of some popular social media

Social media	Functional features	Opportunities for teaching
Vkontakte	Social network where exists a possibility of communication through private and group chats, placement of text, photo and video posts, short online recordings “stories”, streaming online video broadcasts, creating groups and public pages with your content (private and public).	Create a private class group. Content will be viewed only by group members. The ability to compose dialogues via voice messages. Video broadcasts are available; They allow you to organize work in real time. The teacher can create a text, audio or video post with an assignment on a covered topic.
Vkontakte	There is a function of recording voice messages.	For example: “Get into pairs and write down a video dialogue about plans for the weekend within studying the topic “Let’s Have Fun!” 5–7 phrases from every character.” In the comments to the post. Students can submit completed assignments. Teacher has the opportunity to evaluate the performance of work both online with the group (or in a personal message), and in class during discussion.
Skype	Online audio and video communication software. Both private and group chats are available. Call time is unlimited. A person’s video communication can be carried out unilaterally, when one (or several) conducts a video broadcast, and another (or several) responds in writing in the chat.	Creation of online sessions to develop monologue and dialogic speech skills. You can organize your homework in the form of preparing a monologue on a specific topic. The check can be carried out both in a personal session with a teacher, and in a group online chat, where participants can ask questions and comment on what they hear.
Youtube	Ability to view videos on any page on the Internet. A huge amount of video materials: from full-fledged video lessons created specifically for use in the process of teaching a foreign language, to vlogs created by bloggers who also can be actively included in the educational process. Opportunity to work with authentic texts, listen to the speech of native speakers and even engage in dialogues with them.	Allowing students to create, share and comment on educational videos, YouTube engages students in a creative and collaborative learning environment. Productive and creative nature of learning promotes positive changes in the organization of educational activities. Creates a natural language environment. Allows you to create and develop methodological techniques through constant updating information and its presentation. Videos are a means of giving students a visual idea of the life, traditions, and linguistic realities of the countries whose language is being studied. The teacher has the opportunity to creatively plan training sessions, using it both as a means of increasing motivation for the academic discipline and as a means of developing students’ productive speech.

Example a foreign language group with a very useful feature called “voice message”. The student will be able not only to send his text to the teacher in writing, but also to reproduce it. He can create some kind of monologue, and with the help of voice messages you can hold a discussion between students. If we talk more about this site, then there is the opportunity to write articles on certain topics, in which the teacher can post various tasks and cover grammatical topics.

It is necessary to formulate certain requirements for YouTube material that should be met when selecting video material by the teacher. These criteria include:

- Authenticity of the material – the video must be voiced by a native speaker.
- Compliance of speech with the requirements and norms of the literary language. It is necessary to qualitatively evaluate the content of statements, especially in cases where a teacher decides to use videos created not for educational purposes but, for example, by bloggers.
- A clear and high-quality image, since it is the basis for visual perception of a communication situation.
- The optimal length of the video, since working with audiovisual information for more than three minutes overloads the RAM (random-access memory) of the human brain and thereby disrupts the process of perception. In these cases, it is recommended to divide the material into fragments;
- Correspondence of the material to the speech abilities of students (principle availability).

Working with videos involves three main stages:

1. pre-viewing: motivation of students, preparation for completing tasks, repetition of lexical material;
2. demonstration (while-viewing): ensuring understanding of the content video film, development of the student’s language competence taking into account his real capabilities;
3. post-demonstration (after-viewing): the use of video material for the student’s communicative competence.

Conclusions. A communicative space common to all participants in the educational process makes it possible to collectively evaluate the processes and results of work, monitor the development of each participant and evaluate his contribution to collective creativity. A high level of interaction ensures continuity of the learning process beyond the classroom. Mastering communicative and intercultural competence is possible only in the process of verbal communication, and the use of social media in foreign language education can be a key tool that stimulates independent cognitive activity and makes it possible to combine individual and group forms of work. Thus, YouTube becomes not only a platform for entertainment content, but also provides real opportunities for using resources in the educational process. It is important to pay attention to the special role of the teacher - from selecting content to organizing creative and productive activities of students, which affects not only increasing the efficiency of the learning process, but also has a positive effect on the level of motivation to learn a foreign language.

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Varichev Aleksandr Mikhailovich, Senior Lecturer, happy_trails2008@mail.ru, Dept. of Foreign Languages and Linguistics, Russian University of Sport (GTSOLIFK), Moscow, Russia

ИСПОЛЬЗОВАНИЕ СОЦИАЛЬНЫХ СЕТЕЙ И YOUTUBE КАК ДОПОЛНИТЕЛЬНЫХ ИННОВАЦИОННЫХ РЕСУРСОВ ПРИ ОБУЧЕНИИ ИНОСТРАННОМУ ЯЗЫКУ

*Варичев Александр Михайлович, Старший преподаватель, happy_trails2008@mail.ru
Кафедра иностранных языков и лингвистики, Российский Университет спорта
«ГЦОЛИФК» Сиреневый бульвар, дом 4, г. Москва, Россия*

Аннотация. Одним из эффективных способов обучения является использование социальных сетей, таких как ВКонтакте и Youtube, способных стимулировать познавательный интерес и повысить мотивацию к учебной деятельности. В этих реалиях преподаватели могут использовать социальные сети и Youtube в образовательном процессе, чтобы учащиеся могли проводить время с большей пользой, а также заниматься самообразованием. В статье рассматриваются возможности использования социальных сетей для развития коммуникативной компетентности студентов.

Ключевые слова: социальные сети, обучение иностранным языкам, инновационные методы, изучение иностранного языка

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RELATIONSHIP OF SPECIAL PHYSICAL QUALITIES OF A SAMBO ATHLETE

Varicheva A.V., Tabakov S.E.

Abstract. In this study, a correlation analysis of the readiness indicators of world sambo champions was carried out to determine the relationship of special physical qualities.

Key words: special physical training, sambo, athletes

Introduction. Sambo athletes must have certain physical qualities, such as strength, endurance, flexibility, speed and agility. It is important to increase the level of both general and special physical qualities. According to E.M. Chumakov, special physical training should be understood as professional training, which aims to achieve performance results with minimal expenditure of the body's accumulated reserves [1, 2]. Studying and understanding the relationship between these qualities allows coaches and athletes to develop more effective training programs that will help improve performance in competition. In addition, understanding the relationship between special physical qualities can help prevent injuries and increase the level of safety when practicing sambo.

Purpose of the study: to determine the relationship between the special physical qualities of a sambo athlete.

Research methods: video analysis, methods of mathematical statistics.

The matches of 54 world sambo champions of different years were viewed and analyzed and the parameters of special strength, endurance, speed, agility and flexibility were determined. Next, a correlation analysis of the obtained data was carried out.

Research results and discussion. The Figure shows the relationship between the special physical qualities of a sambo athlete. Low connection is highlighted in red, medium in yellow and high in green.

We can note the following:

- special strength has a high correlation with such qualities as endurance (0.9) and agility (0.7);
- special endurance correlates with strength (0.9) and agility (0.7);
- special speed has an inverse average relationship with special endurance (-0.43);
- special agility is interconnected with strength (0.7) and endurance (0.7).

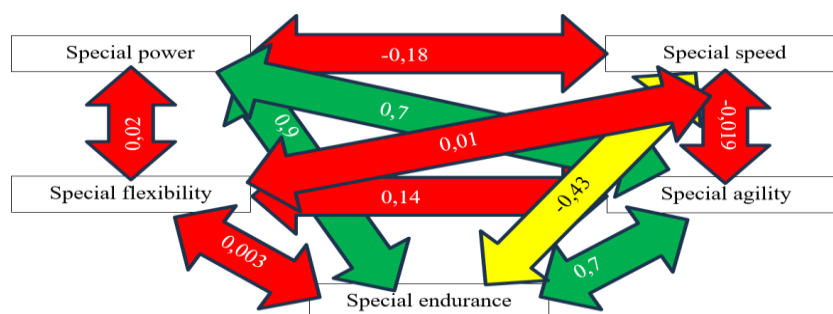


Figure 1. – Relationship between special physical qualities of a sambo athlete

Special flexibility has no relationship with any of the special physical qualities. This is most likely due to the fact that flexibility determines the range of motion in joints and muscles, which allows the athlete to perform various exercises and techniques more effectively. It also helps prevent injury and improves overall mobility of the body.

Thus, we can conclude that strength, endurance and agility have a high correlation with each other because strength and endurance are often interrelated since both strength and endurance are required to perform exercises of high intensity and duration. Dexterity requires good coordination of movements, speed of reaction and general endurance of the body. Performing complex technical elements in various sports (e.g., gymnastics, wrestling, soccer) requires a combination of strength and agility. Strong muscles provide stability and control of movement, and good dexterity allows you to perform technically complex tasks.

Conclusions:

1. Strength, endurance and agility have a high correlation with each other because strength and endurance are often interrelated since both strength and endurance are required to perform exercises of high intensity and duration. Dexterity requires good coordination of movements, speed of reaction and general endurance of the body.
2. Special flexibility has no relationship with any of the special physical qualities.

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Varicheva Anna Viktorovna, post-graduate student of the Russian university of sports "GTSOLIFK", Moscow, Russia, varichanna1998@gmail.com

Tabakov Sergey Evgenievich, Candidate of Pedagogical Sciences, Professor, Russian university of sport (RUS «GTSOLIFK»), Moscow, Russia, samboskif@mail.ru

ВЗАИМОСВЯЗЬ СПЕЦИАЛЬНЫХ ФИЗИЧЕСКИХ КАЧЕСТВ САМБИСТА

Варичева Анна Викторовна, аспирант Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта (ГЦОЛИФК)», Россия, Москва, varichanna1998@gmail.com

Табаков Сергей Евгеньевич, кандидат педагогических наук, профессор, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта (ГЦОЛИФК)», Россия, Москва, samboskif@mail.ru

Аннотация. В данном исследовании был проведен корреляционный анализ показателей подготовленности чемпионов мира по самбо для определения взаимосвязи специальных физических качеств.

Ключевые слова: специальная физическая подготовка, самбо, спортсмены

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UDC 796.88

PSYCHOLOGICAL PREPARATION AND HIGH LEVEL OF STRESS IN WEIGHTLIFTERS BEFORE COMPETITION

Vasilyeva M.A., Trukhacheva L.A., Tishchenko I.A.

Abstract. *The article discusses the methods of sports and psychological preparation of weightlifters for competitions, notes the importance of the psychology of a weightlifter, and the influence of the athlete's stress level on achieving results during a performance.*

Keywords: *weightlifting, athletes, psychological stress, physical stress*

Introduction (Relevance). Weightlifting is a fairly popular sport characterized by lifting a barbell either by clean and jerk or snatch. At the same time, weightlifting is a speed-strength sports discipline. As in many others, it inextricably intertwines two facets of human activity. On the one hand, improving physical qualities, including special ones. On the other hand, improvement of technical skills, creation of such biomechanical conditions of action that will help to best realize the athlete's potential.

Weightlifting in Russia began to develop in 1885, it was then that the first "athletic circle" of Dr. Vladislav Frantsevich Kraevsky was created. This first Russian circle marked the beginning of the development of weightlifting in our country. Now in Russia, much attention is paid to the development of athletics at all levels of education.

The **purpose of our research** is to trace how weightlifting training systems are used in the modern world: Soviet, Bulgarian and Chinese.

Methods. A feature of the Soviet system is the presence of periods and sub-periods, the main one of which is "preparatory", including general and special preparatory stages. During the preparatory period, a multifunctional base was laid, necessary for performing large volumes of tasks, motor skills were improved, key and additional physical qualities of weightlifters were developed, and tactical and psychological preparation was carried out.

At the special preparatory stage, the training became specially targeted with the "development" of the technique of the main movements and the improvement of

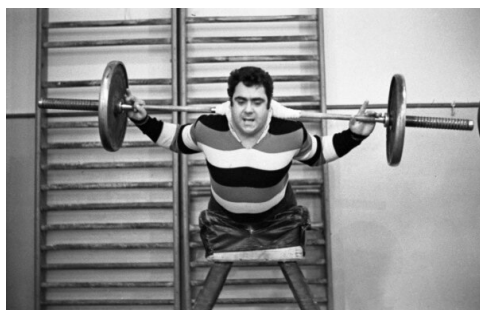
some special preparatory and competitive exercises. Much attention was paid to improving competitive technique and improving sports training with the aim of subsequently forming a professional sports reserve [1 p. 56].

Table 1. – Recommended average volume of load per month for Soviet weightlifters of various qualifications, regardless of the period of preparation for competitions

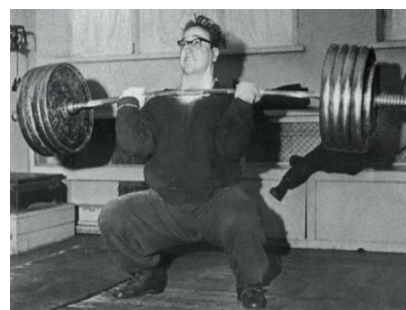
Volume	Athlete qualification									
	3rd category		2nd category		1st category		cms		ms	
	M	m	M	m	M	m	M	m	M	m
Tons	70	30	93	32	109	35	120	30	139	34
Kpsh	986	37	1069	39	1094	38	1169	35	1306	41

The Bulgarian system of training weightlifters was unlike anyone else's and contradicted many approaches that were considered axioms in weightlifting. A distinctive feature of the Bulgarian system from the Soviet one was the lack of detailed calculation of indicators of intensity and volume of loads. The head coach of the national team, Ivan Abadzhiev, counted only the number of repetitions of submaximal and maximum weights.

During the period of intense training, the athletes trained 9 times a week. Before the competition, the load became more selective, lead-up exercises were removed from the program. 2 weeks before the competition, the athletes began to train only once a day. Every week on Friday a “control training” was held, during which “walkthroughs” were performed.



Hyperextension with a barbell through a goat with feet resting on the wall bars



Snatch and push deadlift

Figure 1. – Exercises common in the Soviet training system.

The Chinese system has a large number of differences, which are due to the genetic factor - the difference between the Asian physique and the European one. As a result, experience, developments and, in general, the Chinese system is “tailored” for training middleweights and lightweights. The Asian physique results in a lifting technique that differs from the “European” one. A typical example is the common “Chinese Shwung” in a low squat position, in such a way that the shoulders and arms are pulled back very far. From such a position of “deep squat and strong deviation of the arms back”, it will be very difficult for a European to get up and not drop the weight. The Chinese do this with enviable ease, just like other Asians [2 p.315].

Throughout the entire training process, it is vital to monitor the psychological and physiological state of the athlete caused by training and external factors. If the so-

called external stressors may not be constant, then fatigue from training will persist all the time, so it is necessary to take this into account when drawing up a training plan.

Managing stress before a major competition is very important because all the results an athlete achieves by competition day can be dramatically reduced. Understanding how, when and why to manage fatigue for high-level athletes is critical to performing at their best.

Let's look at an example of training for two athletes and determine what results will be achieved by the athletes on the day of the competition:

Athletes trained for 28 weeks using a block periodization model (i.e., phasic reinforcement) consisting of sequential phases: strength, power, overexertion, and contraction. The pre-competition phase of training began 74 and 76 days (i.e. approximately 11 weeks) after the previous competition for women and men, respectively, which included 6-7 training sessions per week. The training goals for the female and male athletes were 159 kg and 300 kg, respectively. Each athlete used a 4-week training block consisting of 1 week of overexertion and tapering training volume. As a result, after such training, athletes can expect to achieve and maintain maximum readiness 3-4 days before the competition after a 1-week overexertion and a 3-week reduction [3 p. 75].

This technique allows the athlete's body not to overwork and maintain a satisfactory emotional state, which is so important on the day of the competition.

Research design (optional). Sports scientists and coaches must understand that performance results depend not only on the specific task, but also on the totality of psychological and physiological stressors and adaptations that occur throughout the training process. It is important to remember that reducing the load during unloading training is not aimed at achieving further results, but at reducing the accumulated fatigue from previous training blocks. Mastering the principles of balancing training and rest should not be the end goal. Instead, understanding and being aware of how, when and why to apply these principles to achieve peak performance can help you achieve better results.

Conclusions. Thus, the psychological preparation of weightlifters, regulation of stress levels and the psycho-emotional state of athletes are of paramount importance, as is technical and tactical preparation, which works during training, in the pre-competition period, as well as during championships. Analysis of the complex of activities of weightlifting athletes guarantees a high level of competitive struggle and the achievement of productive and targeted results.

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Vasilyeva Margarita Alexandrovna, senior lecturer at the Department of Physical Education, myhomor.86@yandex.ru Lipetsk State Technical University, Lipetsk, Russia

Trukhacheva Lydia Andreevna, senior lecturer at the Department of Physical Education, truhacheva.lida@yandex.ru Lipetsk State Technical University, Lipetsk, Russia

Tishchenko Igor Andreevich, student of gr. EM-22-1, goga.tichshenko.2015@mail.ru, Lipetsk, Russia, Lipetsk State Technical University.

ПСИХОЛОГИЧЕСКАЯ ПОДГОТОВКА И ВЫСОКИЙ УРОВЕНЬ СТРЕССА ТЯЖЕЛОАТЛЕТОВ ПЕРЕД СОРЕВНОВАНИЯМИ

Васильева Маргарита Александровна, старший преподаватель кафедры физвоспитания, myhomor.86@yandex.ru, Россия, г. Липецк, ФГБОУ ВПО Липецкий государственный технический университет;

Трухачева Лидия Андреевна, старший преподаватель кафедры физвоспитания, truhacheva.lida@yandex.ru, Россия, г. Липецк, ФГБОУ ВПО Липецкий государственный технический университет

Тищенко Игорь Андреевич, студент гр. ЭМТ-22-1, goga.tichshenko.2015@mail.ru, Россия, г. Липецк, ФГБОУ ВПО Липецкий государственный технический университет.

Аннотация. В статье рассматриваются методики спортивной и психологической подготовки тяжелоатлетов к соревнованиям, отмечаются фактора важности психологии спортсмена тяжелоатлета, влияние уровня стресса спортсмена на достижение результатов во время выступления.

Ключевые слова: тяжелая атлетика, спортсмены, психологическое напряжение, физическое напряжение

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UDC 338.45

TRAINING AND PREPARATION OF YOUNG SPECIALISTS IN THE FIELD OF «SPORTS MANAGEMENT» IN HIGHER EDUCATIONAL INSTITUTIONS OF MOSCOW

Vlaskina V.V., Litvinov S.V., Myagkova S.N.

Abstract. *This article presents an analytical, statistical, and theoretical review of the activities of sports managers in the Russian Federation, identifies the main areas of work and*

functions performed, as well as professional and educational standards, based on which the training of these young specialists is carried out in leading universities in Moscow. The importance of the activities of sports managers in the field of physical culture and sports is emphasized.

Keywords: competition, personnel, management, sports, training, standards, youth, statistics, potential

Introduction. Physical culture and sports are a vital sphere of the national economy, whose activities are aimed at meeting the vital needs of the population in motor activity, good health, maintaining and increasing efficiency, physical, mental, and social health [3].

The development of physical culture and sports in the Russian Federation is carried out in accordance with the Strategy for the Development of Physical Culture and Sports for the period up to 2030, approved by the Resolution of the Government of the Russian Federation № 3081-p of November 24, 2020, and the Federal project «Sport - a norm of life», which is part of the national project «DemoFigurey», which began its implementation on January 1, 2019. The main task of the project, expressed in figures, is to increase the number of people regularly engaged in physical culture and sports in Russia to 70% by 2030 [1].

In the field of physical culture and sports, there are many areas of activity, each of which has its own features and requires specialized knowledge and skills, but ultimately aimed at achieving common state-set goals: sports pedagogy, physical education, rehabilitation, sports medicine, sports psychology, journalism, sports physiology, sports management, etc.

The main part. Sports management is an independent type of professional activity aimed at achieving goals and implementing tasks within the framework of the activities of a sports organization. A sports manager can work in all subjects of the sports industry: sports federations (national, regional or local levels), sports clubs, sports infrastructure facilities (stadiums, sports complexes, ski resorts, car racing tracks), fitness clubs, esports organizations, sports media, betting companies, and so on [5].

This can also be work in companies that produce sports equipment, inventory, and equipment in the Russian Federation within the framework of the development of import substitution. Currently, there are about 800 companies developing in the Russian Federation, most of which are located in Moscow and St. Petersburg.

Training in sports management is carried out in higher educational institutions based on the Federal State Educational Standard of Higher Education in the field of training 38.03.02 «Management», approved by the Order of the Ministry of Science and Higher Education of Russia dated August 12, 2020 № 970, as well as taking into account professional standards presented in Figure 1 [2].

During the training, students study the basics of sports management and gain practical experience in this field by undergoing an internship at the bases of sports organizations. Training in sports management can be available at various levels of education, including bachelor's, master's, and doctoral programs. In addition, many educational institutions offer specialized programs and courses in the field of sports management.

In Moscow, leading universities of the Russian Federation provide training and preparation in the field of «Sports Management»: Russian university of sports

«GCOLIFK», Lomonosov Moscow State University, Russian Academy of National Economy and Public Administration under the President of the Russian Federation, Financial University under the Government of the Russian Federation, Moscow State Institute of International Relations of the Russian Federation, National Research University «Higher School of Economics», as well as Moscow State Academy of Physical Culture and Sports and others.

№ п/п	Код профессионального стандарта	Наименование профессионального стандарта
05 Физическая культура и спорт		
1	05.008	Профессиональный стандарт «Руководитель организации (подразделения организации), осуществляющей деятельность в области физической культуры и спорта», утвержденный приказом Министерства труда и социальной защиты Российской Федерации от 29 октября 2015 г. N 798н (зарегистрирован Министерством юстиции Российской Федерации 12 ноября 2015г., регистрационный N 39694)
08 Финансы и экономика		
2	08.008	Профессиональный стандарт «Специалист по финансовому консультированию», утвержденный приказом Министерства труда и социальной защиты Российской Федерации от 19 марта 2015 г. N 167н (зарегистрирован Министерством юстиции Российской Федерации 9 апреля 2015 г., регистрационный N 36805)
3	08.018	Профессиональный стандарт «Специалист по управлению рисками», утвержденный приказом Министерства труда и социальной защиты Российской Федерации от 30 августа 2018 г. N 564н (зарегистрирован Министерством юстиции Российской Федерации 17 сентября 2018 г., регистрационный N 52177)

Figure 1. – List of professional standards [2]

According to the data of the Russian internet recruitment company HeadHunter, as of 2023, the number of vacancies for the position of «Sports Manager» is 10,645, and the number of job seekers actively looking for work in this field is 27,882 people. By simply comparing, it turns out that there are 2-3 people competing for one vacancy, which indicates the presence of strong competition in the market in this direction [4].

Conclusion. The success of an athlete and an organization depends on the work of a sports manager, so good specialists are highly sought after in the market and there is strong competition. Managers are needed to free coaches from ancillary, accompanying training work - finding money for participation in competitions, for food, for providing sports equipment, building long-term relationships with sponsors, developing the brands of sports organizations, concluding mutually beneficial contracts, so the work of managers is very important in the field of physical culture and sports at the moment, and for this, highly qualified employees are needed, whose training can be carried out in the ranks of leading universities in our country.

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Vlaskina Victoria Viktorovna, 1st year Master's student in the Department of Public Administration and Youth Policy, viktoriavlaskina14@gmail.com, Russia, Moscow, The Russian university of sports «GTSOLIFK».

Litvinov Sergey Vladimirovich, professor of the Department of Foreign Languages and Linguistics, litvinov.sv@gtsolifk.ru, Russia, Moscow, The Russian university of sports «GTSOLIFK».

Myagkova Svetlana Nikolaevna, Head of the Department of State Administration and Youth Policy, Doctor of Pedagogical Sciences, Professor, chair.gump@gtsolifk.ru, Russia, Moscow, The Russian university of sports «GTSOLIFK».

ОБУЧЕНИЕ И ПОДГОТОВКА МОЛОДЫХ СПЕЦИАЛИСТОВ ПО НАПРАВЛЕНИЮ «СПОРТИВНЫЙ МЕНЕДЖМЕНТ» В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ ГОРОДА МОСКВЫ

Власкина Виктория Викторовна, магистр 1 года обучения кафедры государственного управления и молодежной политики, viktoriavlaskina14@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский государственный университет спорта «ГЦОЛИФК».

Литвинов Сергей Владимирович, доктор исторических наук, профессор кафедры иностранных языков и лингвистики, litvinov.sv@gtsolifk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский государственный университет спорта «ГЦОЛИФК».

Мягкова Светлана Николаевна, заведующий кафедрой государственного управления и молодежной политики, доктор педагогических наук, профессор, chair.gump@gtsolifk.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский государственный университет спорта «ГЦОЛИФК».

Аннотация. В данной статье представлен аналитический, статистический и теоретический обзор деятельности спортивных менеджеров в Российской Федерации, определены основные направления работы и выполняемые функции, а также профессиональные и образовательные стандарты, на основе которых осуществляется подготовка данных молодых специалистов в ведущих Вузах города Москвы, подчеркнута важность деятельности спортивных менеджеров в сфере физической культуры и спорта.

Ключевые слова: конкуренция, кадры, менеджмент, спорт, обучение, стандарты, молодежь, статистика, потенциал

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UDC 796

BIOMECHANICAL PARAMETERS OF WEIGHTLIFTER'S ELEMENT «JERK» IN CATEGORY OF 73 KILOGRAM

Vorobyov V.S.

Abstract. This article describes a biomechanical study of the barbell chest lift in elite lifters in 73 kilograms weight class. The video data was collected in the European Championship 2020.

A unique APK "GTSOLIFK-2012" was used in the study, which allows to track all the main dynamic and kinematic parameters of the barbell movement.

Keywords: barbell lift from the chest, clean and jerk, biomechanical parameters, weightlifting

Introduction. Competitions in weightlifting consist of two competitive events as the barbell snatch and the classic clean and jerk. One of the most difficult elements

in competition is mainly the second part of the classic clean and jerk - the barbell lift from the chest. This trend has been observed for a great number of years and has not ceased to be relevant [3].

Most often experts in the theory and practice of weightlifting sports connect it with the irrational building of the training process, and they also note that the small bearing area of the athlete and the uncomfortable location of the center of gravity are the confounding factors [1]. All these factors are negatively affected by the lack of optimal biomechanical criteria of technical training and a coaching staff does not have clear guidelines [2]. This raises the relevance of our research topic.

Our scientific interest is connected with the fact that the study of elite athletes will allow us to obtain new biomechanical data for the weight category of 73 kilograms, as well as to show significant trends of technical skill in lifting a bar from the chest.

Purpose. Investigation of the biomechanical parameters of such technical element as lifting a barbell from the chest in weight category of 73 kilograms.

Methods. In our work, we have applied the following methods:

1. Literature survey;
2. Methodology of biomechanical control – APK "GTSOLIFK-2012";
3. Methods of mathematical statistics

Experiment design. Experimental data were obtained during competitive activity in the European Championship (April 2021).

The study involved 9 athletes, weight category of 73 kilograms, included in group A.

To obtain biomechanical parameters, the hardware-software complex "GTSOLIFK 2012", of domestic development, was used.

All competitive attempts of the athletes in the clean and jerk were filmed, then only successful attempts were selected, and the best out of all attempts for each athlete was analysed.

The following parameters were taken for analysis: maximum vertical force at the end of the half squat phase, its absolute and relative values, maximum vertical force generated during push out, its absolute and relative values, and bar height at the end of the half squat phase and maximum bar height during push out, absolute and relative values.

Results and discussion. The coefficient of variation shows the homogeneity of these parameters, it ranged from 7.2% to 17.9% as shown in table 1.

Having analyzed the obtained parameters, we have revealed the following similar trends in biomechanical parameters in the performance of lifting a barbell from the chest with maximum weight, for athletes of weight category 73 kilograms, indicated in table 1: the maximum vertical force at the end of the half squat phase, in absolute values – 3209,8 N. and relative – 180,9%, maximum vertical force generated during push out, in absolute values – 3551,7 N. and relative – 200,3%.

And the bar height at the end of the half squat phase, in absolute values – 0,25 m. and relative – 14,76%, maximum bar height during push out, in absolute values – 0,26 m. and relative – 15,39%.

Table 1. – Average values of biomechanical indices in the group of subjects when performing the barbell push from the chest

N.	%	N.	%	m.	%	m.	%
Maximum vertical force at the end of the half squat phase		Maximum vertical force generated during push out		Depth in half squat phase		Maximum bar height reach during the push phase	
3209,8	180,9	3551,7	200,3	0,25	14,76	0,26	15,39

They can be considered as benchmarks to which one should strive when performing a barbell lift from the chest.

Conclusions:

1. In this work, biomechanical parameters of such technical element as barbell lifting from the chest in the weight category of 73 kilograms were investigated.

2. Based on the results of this study, we suggest that the identified values should be followed when performing lifting a barbell from the chest for athletes in the 73 kg category.

3. In addition, it is worth noting that the force in the half squat phase is less (3209.8 N) than in the push out phase (3551.7 N), therefore, when practising the technical skill of lifting a barbell from the chest, serious attention should be paid to the optimal distribution of effort in the execution of the movement, that is, to seek to save effort in the half squat.

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Vorobyov Viktor, 1st year PhD student of the Russian university of sports "GTSOLIFK", e-mail: vorobevviktor271@gmail.com, Russia, Moscow, Lilac Boulevard, 4

БИОМЕХАНИЧЕСКИЕ ПАРАМЕТРЫ В ТОЛЧКЕ ОТ ГРУДИ У АТЛЕТОВ ВЕСОВОЙ КАТЕГОРИИ 73 КГ (ГРУППА А)

Воробьев Виктор Сергеевич, студент 1 курса аспирантуры, Российский Университет Спорта «ГЦОЛИФК», e-mail: vorobevviktor271@gmail.com, Россия, Москва

Аннотация. В статье описано биомеханическое исследование подъёма штанги от груди у атлетов экстра-класса в весовой категории 73 килограмма. Сбор материалов проходил на Чемпионате Европы 2020.

В исследовании применён уникальный АПК «ГЦОЛИФК-2012», который позволяет отслеживать все основные динамические и кинематические параметры перемещения

штанги в пространстве.

Ключевые слова: подъём штанги от груди, толчок штанги, биомеханические параметры, тяжёлая атлетика

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UDC 796

APPLICATION OF VIRTUAL SPORT TECHNOLOGIES IN WUSHU SANSYOU (SANDA) TEACHING AND TRAINING ON THE EXAMPLE OF VIRTUAL, AUGMENTED AND MIXED REALITIES

Wang Zhen

Abstract. *The article studies the role of virtual technologies in teaching Wushu Sanshou (Sanda). The author offers new ideas and methods of training Wushu Sanshou, which could contribute to the modernization and improvement of this sport teaching. It is concluded that virtual sports technologies, including virtual reality (VR), augmented reality (AR) and mixed reality (MR), play an irreplaceable role not only in teaching Wushu Sanshou, but also in sports industry development and Chinese martial arts popularization.*

Keywords: *Wushu Sanshou (Sanda), virtual sports technologies, VR (virtual reality), AR (augmented reality), MR (mixed reality)*

Introduction. Nowadays, with the continuous development of science and technology, virtual sports technologies as an innovative teaching tool have gradually attracted wushu instructors' attention. A lot of problems arise in Wushu Sanda teaching, and it is relevant to analyze how to improve instruction of this sport, enhance students' technical level and stimulate their interest in training.

Virtual sports technologies, including virtual reality (VR), augmented reality (AR) and mixed reality (MR), provide new approaches to Wushu Sanda training. In particular, VR allows athletes to get a completely virtual image of a fight, like in a game. AR involves overlaying a real image on a virtual one, for example, virtual M. Tyson, an American martial arts master, can be shown in a real ring. MR is the demonstration of a real image superimposed on a virtual image, which involves the ability to interact with the virtual image. For example, it is possible to give a fighter in the ring a set of combinations so that in the virtual world his heart rate decreases.

Currently, a lot of countries around the world are using virtual sports

technologies in teaching wushu. With the help of these technologies, students can immerse in real Wushu Sanshou combat scenarios, watch videos of international masters' competitions and conduct technical simulations and real-time training. Compared to traditional training methods, virtual sports technologies are more interactive, which promotes greater students engagement. However, although virtual sports technologies have achieved some results in different wushu styles, its application in Wushu Sanda teaching is still not very widespread. Issues such as effective combining virtual sports technologies with Wushu Sanda peculiarities to develop a training programme that meets the real needs of students, as well as the extent to which virtual sports technology can enhance students' competitive performance need to be deeply studied and researched.

In this regard, the **purpose** of our study is to analyse the application of virtual sports technologies in teaching Wushu Sanshou and their impact on the quality of training.

The study used such **methods** as literature analysis on the research problem, logical analysis and expert interviews analysis.

Results. The role of virtual technologies in teaching and learning Wushu Sanda can be categorised into the following points.

1. Promotion of training forms diversity. Virtual technologies allow to diversify traditional training environment, as well as to change the role of an instructor in training: from a dominant leader the instructor turns into a “guide”, and his/her personal explanation of the subject becomes a joyful tutorial, which strengthens students' independent initiative in the learning process [1]. Virtual sports technologies make it easier to explain complex elements of Wushu Sanshou to students, and the use of three-dimensional space makes Wushu Sanshou movements more detailed and instinctive [2]. While using virtual sports technologies, students or athletes can still wear helmets and equipment used to capture the opponent's body and have a chance to practice Sanda even at home. Through video recordings of competitions, students can analyze the frequency of international masters' fighting techniques use and get a simulation of an opponent for a fight.

2. Sports injuries reduction. Since Wushu Sanshou is a competitive sport, both athletes need to use strikes to score more points and win the fight. Therefore, in a virtual sports system, students and instructors can reproduce all punches, kicks, wrestling and other technical movements, which allows them to avoid injuries during real fights.

3. Improving psychological qualities of athletes during fights and overcoming panic. Knowing that the opponent is a virtual image, students and instructors can eliminate the psychological burden of hitting and kicking the opponent and improve the body's subconscious instinctive response.

4. Easy explanation of Wushu Sanda technical structure. The technical structure of Wushu Sanshou is relatively complex, and with the use of virtual

technology it can be divided into levels and modules for teaching and training. These levels mainly include a basic training complex (basic rules, culture and spirit of Wushu Sanshou, fighting styles, tempos, hitting targets and air strikes practice), an advanced training complex (combinations of strikes, dodging and defensive counterattacks) and a combat training complex (competitions between athletes can be held in real time via the Internet).

5. Simultaneous use of real and virtual rings. A wide range of technologies can be used by students to practice grappling, striking, wrestling and other movements of Wushu Sanshou in a virtual ring for subsequent use in real competitions. The use of Microsoft Holoportation [3] [4] and other similar technologies can effectively combine the real and virtual rings, so that athletes are immersed in some semblance of a real fight.

6. Athletes' imagination stimulation. Virtual reality technologies based on human-computer interaction allow students to compare Wushu Sanshou with martial arts from other countries, such as Brazilian judo, Russian wrestling, Korean taekwondo, etc.

Unfortunately, virtual sports technologies in Wushu Sanshou are currently underdeveloped. The most acute problem is the research and development of hardware and software equipment for teaching Wushu Sanda, as well as finding investment for these purposes. In addition, it seems difficult to create a virtual world in which AR/MR/VR will be perfectly intertwined, which would allow achieving the most effective interaction between the virtual and real worlds.

Conclusions:

1. With the rapid development of virtual sports technologies, Wushu Sanda teaching is getting more and more unprecedented opportunities, such as new teaching and training models and athletes' overall technical level improvement.

2. At the same time, virtual sports technologies promote the spread and popularization of this sport and make modern Chinese martial arts more intelligible for people.

3. In the future, virtual, augmented and mixed reality technologies will be more widely used in sports, including Wushu Sanda. Virtual technologies will "break" the spatial limitations of wushu and open up new opportunities for sports industry development.

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Wang Zhen, postgraduate student of the direction "Pedagogics", "Theory and Methodology of Sport" profile, 984716006@qq.com, Russia, Moscow, Federal State Budget Educational Institution of Higher Education "The Russian University of Sport "GTSOLIFK".

**ПРИМЕНЕНИЕ ТЕХНОЛОГИЙ ВИРТУАЛЬНОГО СПОРТА В ПРОЦЕССЕ
ПРЕПОДАВАНИЯ И ТРЕНИРОВОК УШУ САНЬШОУ (САНЬДА) НА ПРИМЕРЕ
ВИРТУАЛЬНОЙ, ДОПОЛНЕННОЙ И СМЕШАННОЙ РЕАЛЬНОСТЕЙ**

Ван Чжэнь, аспирант направления «Педагогика», профиль «Теория и методика спорта», 984716006@qq.com, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье исследуется роль виртуальных технологий в обучении Ушу Саньшоу (Саньда). Автор предлагает новые идеи и методы обучения Ушу Саньшоу, которые могут способствовать модернизации и совершенствованию преподавания этого вида спорта. Делается вывод о том, что технологии виртуального спорта, включая виртуальную реальность (VR), дополненную реальность (AR) и смешанную реальность (MR), играют незаменимую роль не только в обучении Ушу Саньшоу, но и в развитии спортивной индустрии и популяризации китайских боевых искусств.

Ключевые слова: ушу Саньшоу (Саньда), технологии виртуального спорта, виртуальная реальность (VR), дополненная реальность (AR), смешанная реальность (MR)

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UDC 796

**THE DEVELOPMENT STATUS OF EXERCISE THERAPY FOR
NONSPECIFIC LOW BACK PAIN**

Xie Fei, s/s Tkachenko S.A.

Abstract. *This study aims to explore the role and significance of exercise therapy in the treatment of nonspecific low back pain through an investigation of the current development status of nonspecific low back pain. The research results show that through appropriate and scientifically guided exercise therapy, patients can effectively alleviate low back pain symptoms and improve*

their quality of life. Therefore, the results of this study are of important reference significance for further promoting the treatment methods of nonspecific low back pain.

Keywords: exercise therapy, nonspecific low back pain, treatment, pain level, quality of life

Introduction (Relevance). According to the results of the author's previous study, the effect of physical rehabilitation on the treatment of nonspecific low back pain was studied. Existing research results have proven that the pain level of patients with nonspecific low back pain can be controlled through sports rehabilitation. Therefore, based on this, we will discuss whether Modern methods of physiotherapy can cure nonspecific lower back pain.

The **purpose /aim/objective/goal** of our study is a brief outline method of care and rehabilitation for nonspecific low back pain and provide links to subsequent studies.

Methods. Descriptive research method, literature research method.

Research design (optional). Based on existing literature, analyze the impact of physical rehabilitation techniques used in the literature on patients to determine whether sports rehabilitation can treat nonspecific low back pain.

Results (discussion). Based on the analysis of existing literature, it is concluded that physical rehabilitation methods have a significant effect on reducing pain levels in patients with nonspecific low back pain. However, existing research and rehabilitation methods cannot cure nonspecific low back pain, and most scientists still need to continue their research and discussions.

Conclusions:

1. According to current research results, physical rehabilitation is not an effective remedy for the complete cure of nonspecific lower back pain.
2. Physical rehabilitation has a significant effect on pain control in non-specific lower back pain.

Nonspecific low back pain is a prevalent condition that significantly impacts an individual's health and quality of life. Despite the availability of various treatment options, there remain challenges and uncertainties in managing this type of back pain. Physical therapy has emerged as a non-pharmacological intervention that has shown promise in addressing nonspecific low back pain. Physical rehabilitation is widely acknowledged as a crucial approach for managing lower back pain globally. This article examines the active physical rehabilitation of patients with CNSLBP and provides recommendations and a basis for medical personnel to conduct active physical rehabilitation of patients with CNSLBP [3].

Nonspecific low back pain is a common condition characterized by discomfort in the lumbar spine that lasts for more than 12 weeks without a clear cause. It typically lacks obvious structural changes or nerve root compression symptoms. This type of back pain may result from a combination of local inflammatory factors due to damage to muscles, bones, and the nervous system, as well as external viral influences and psychosocial factors in the individual. However, due to the lack of specific etiological data, the exact mechanism of nonspecific low back pain is not yet clear [4]. The clinical manifestations of nonspecific lower back pain are diverse, including lower back pain, stiffness, muscle tension and limited activity. These

symptoms can negatively affect the patient's quality of life and ability to work.

The primary aim of physical therapy for back pain is to facilitate the repair of injured tissues and address structural issues in the spine. The mechanism of its action mainly includes several aspects: 1. Improve the regulatory ability of the central nervous system; 2. Improve the metabolic abilities of the body and cardiopulmonary function; 3. Maintain and restore the shape and function of motor organs. Contribute to the formation and development of an appropriate compensatory mechanism in patients. Physical therapy can help increase the content of enkephalin, thereby increasing the pain threshold; at the same time, it accelerates metabolism and increases the supply of nutrients to the intervertebral discs and articular cartilage. Therefore, physical therapy is considered one of the important methods of treating nonspecific lower back pain [5].

Nonspecific low back pain is a prevalent global health issue that significantly impacts the quality of life and productivity of individuals. As such, effective pain management is crucial for addressing non-specific lower back pain. Recent advancements in both domestic and international settings have led to notable progress in the development of methods for managing pain associated with non-specific lower back pain.

Basic resistance training, also known as exercise control training, is the primary exercise method for improving the symptoms of CNSLBP. The main stability training is the activation and strengthening of stable trunk muscles in the process of low-level isometric contraction and gradual participation in functional tasks, while improving the ability to coordinate and control, thereby increasing the stability of the spine and alleviating the symptoms of lower back pain. It has been found that basic stability training can more significantly reduce the degree of pain in patients with CNSLBP, improve lumbar spine function and improve the ability to control the main muscle group than conventional rehabilitation treatment. Aerobic exercise is a form of physical exercise with a relatively low intensity (from 60% to 90% of the maximum heart rate). They have been proven to have physiological, psychological, and joint effects on patients with chronic diseases (such as arthritis, osteoarthritis and fibromyalgia). Aerobic exercise in combination with other types of therapy has a significant improving effect on symptoms in patients with CKD. Aerobic exercises have a significant effect on the reduction and prevention of nonspecific lower back pain.

As researchers delved deeper into non-specific studies, they identified additional physical therapy approaches. Letafatkar used tools to conduct motor-sensory training for patients with CNSLBP. After the intervention, the patient's proprioceptive system, ability to control movements in the lumbar spine, and quality of life were significantly improved, and the intensity of pain also decreased significantly. A study conducted by Cao Tingting and others compared the therapeutic effects of exercises for muscle groups working under the influence of gravity and traditional exercises for lower back rehabilitation in patients with CNSLBP within a hierarchical model of diagnosis and treatment, and found that exercises for muscle groups working under the influence of gravity improve the quality of the life of patients, the condition of the lumbar and spinal extensor muscles, strength, pain and dysfunction were significantly higher than when performing traditional exercises for lumbar rehabilitation.

Physical therapy plays a crucial role in treating non-specific lower back pain by effectively reducing symptoms, enhancing lumbar function, and helping prevent future episodes. However, it should be noted that physical therapy is not suitable for all patients with nonspecific lower back pain, and it must be evaluated and selected according to individual circumstances. Through a systematic review and analysis of the relevant literature, this article concludes that physical therapy plays an important role in the development of nonspecific low back pain, which can improve the psychological state of patients, increase their ability to cope with pain, control the degree of pain, and then improve the quality of life of patients.

Although, based on current research results, we have a preliminary understanding of the active role of physical therapy in the treatment of nonspecific lower back pain, there are still some drawbacks in this study: first, this study is mainly based on a review and analysis of the literature, and there are no randomized controlled trials in the field to verify the effect of physical therapy; secondly, the specific mechanism of physical therapy is not yet clear, and further experimental studies are needed to study it. Therefore, we assume that in subsequent studies, a more rigorous research design and a larger sample size can be used to test the effectiveness of physical therapy for nonspecific lower back pain and further study the mechanism of its action. At the same time, the results of this study are of great reference value for further advancing the treatment of nonspecific lower back pain. It is hoped that future research will further improve the model of physical therapy, reveal the mechanism of its action, and offer the best solution for the treatment of nonspecific lower back pain.

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Xie Fei, student, xiefei990@gmail.com, Russia, Moscow, The Russian university of sports "GTSOLIFK"

Scientific supervisor – Tkachenko Svetlana Anatolyevna, The Russian university of sports "GTSOLIFK", Russia, Moscow

СОВРЕМЕННАЯ СИТУАЦИЯ РАЗВИТИЯ ЛФК ПРИ НЕСПЕЦИФИЧЕСКОЙ БОЛИ В НИЖНЕЙ ЧАСТИ СПИНЫ

Се Фэй, студент, e-mail: xiefei990@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Российский университет спорта "ГЦОЛИФК".

Научный руководитель – Ткаченко Светлана Анатольевна, Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Российский университет спорта "ГЦОЛИФК".

Аннотация. Целью данной статьи является изучение роли и значения ЛФК в лечении болей в пояснице путем изучения статуса развития неспецифической боли в пояснице. Результаты исследований показывают, что с помощью правильно подобранной и научно обоснованной лечебной физкультуры пациенты могут эффективно уменьшить симптомы боли в пояснице и улучшить качество своей жизни. Таким образом, результаты этого исследования имеют важное справочное значение для дальнейшего совершенствования лечения неспецифической боли в пояснице.

Ключевые слова: ЛФК; неспецифическая боль в нижней части спины; лечение; уровень боли; качество жизни

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UDC 796

GENDER DIFFERENCES IN THE EFFECT OF ACUTE NORMOBARIC HYPOXIA ON HEART RATE AND PERIPHERAL OXYGEN SATURATION IN BASKETBALL PLAYERS

Yakovleva L.S., s/s Tambovceva R.V.

Abstract. It has been analyzed some data of testing female and male athletes during normobaric hypoxia such as heart rate, and arterial oxygen saturation. Method of testing included breathing hypoxia gases mixture during rest or doing cognitive tasks. Examined gender's difference heart rate and arterial oxygen saturation in athletes. As a result of the study, there were no significant differences found in the response of the oxygen transportation system to hypoxic

conditions in male and female. Additionally, there was no correlation between heart rate and oxygen saturation during normobaric hypoxia exposure.

Keywords: Normobaric hypoxia, basketball players, heart rate, oxygen saturation, athletes

Introduction. Hypoxic training is a popular method of physical performance increasing in athletes. But hypoxic exposure is less studied so we need to study the effect of hypoxia for safe and efficient sport practice.

A systematic literature review showed different effect of acute hypoxia in some research. Some authors note similar levels of desaturation in male and female, while others indicate a more noticeable decrease in peripheral oxygen saturation in female. This also applies to the reaction of the cardiovascular system to a decrease in oxygen levels. Authors note higher sympathetic responses in male than in female, which can be explained by the higher aerobic capacity of men compared to women and the parameters of pulmonary ventilation.

At the same time using hypoxia training in team sport isn't studied enough especially in female and even existing data is not unified. It is necessary to monitor the response of the oxygen transportation system in female and male to hypoxia under conditions of rest and increased mental stress.

The **goal** of our study is examining the acute effect of different doses of normobaric hypoxia on heart rate and oxygen saturation in basketball players by comparing potential gender differences.

Methods. Acute normobaric hypoxia testing, pulse oximetry, math statistics

Research design. Participants (5 females, 5 male) students-athletes attended the laboratory 3 times once a week during three weeks. Each visit they breathed hypoxia gases mixture (10% O₂) in rest or during performing different tasks for attention and thinking. The duration of hypoxia measurement is 30 minutes. During doing tasks had fixed heart rate and peripheral oxygen saturation.

Results. As a result of the study, there are no significant differences ($p > 0,05$) in the indicators (heart rate and oxygen saturation) both male and female in all tests. Tasks performed in conditions of hypoxia did not significantly effect the oxygen transport system of the subjects. The Wilcoxon test for related samples was used to test the statistical hypotheses.

When analyzing the data using the Mann-Whitney nonparametric test, there were also no significant differences between male and female in the response of the oxygen transport system during each of the three tests ($p > 0,05$). Therefore, between male and female absent differences in their reaction to hypoxia during performing tests.

In the related samples, which included both male and female participants ($n=10$), we found differences in the way the oxygen transportation system responded when performing different types of tasks.

Significant differences in the oxygen transport system response were found between breathing hypoxia gases mixture in the rest and "thinking" test in a related sample of both gender. Oxygen saturation was significantly higher during the "thinking" test compared to the "rest" ($p < 0,05$). The heart rate was significantly higher in the "thinking" and "sensorimotor" ($p < 0,05$) tests compared to the "rest". During hypoxic exposure, the body maintains homeostasis by activating urgent

adaptation mechanisms. We suggest that this results may be due to a decrease in the sympathetic activity of the subjects during a state of absolute rest. Performing additional tasks under conditions of hypoxia helps to maintain a certain level of activity in the physiological systems that are responsible for maintaining homeostasis.

Standart deviation for saturation was also significantly lower in the tests for "thinking" and "sensorimotor", compared to the «rest» ($p < 0,05$). Apparently, this may be due to the fact that during intellectual stress, the body prevents a decrease in blood oxygen levels by activating an adaptive response to hypoxia.

The minimum oxygen saturation values were significantly lower in the rest ($p < 0,05$) compared to «thinking». The minimum values of heart rate were significantly lower during "rest" and "sensorimotor" ($p < 0,05$) testing compared to "thinking". We expect it can be explained by the lack of stimulus effects during rest which have a sympathetic impact on the oxygen transportation system.

The correlation between oxygen saturation and heart rate as measured by pulse oximetry was weak, with a negative correlation being more common than a positive one (figure 1).

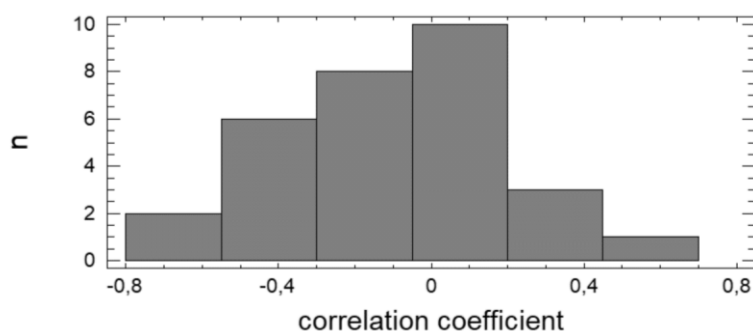


Figure 1. – Histogram for correlation coefficient

Correlation coefficients were calculated based on 30 measurements of heart rate and oxygen saturation. The Figure shows a predominance of a negative and weak correlation ($n=16$), which suggests that there is likely no correlation between heart rate and oxygen saturation in both male and female.

Conclusions:

1. No significant differences in the response of the oxygen transport system to hypoxia between the gender were found;
2. Correlational relationships can be characterized as multidirectional and weak. We assume that this is due to individual responses and resistance to normobaric hypoxia.

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Yakovleva Liliya Sergeevna, lileknn29@gmail.com, Russia, Moscow, Federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK".

Scientific supervisor – Tambovceva Ritta Viktorovna, Russia, Moscow, Federal state budgetary educational institution of higher education "Russian university of sports "GTSOLIFK".

ГЕНДЕРНЫЕ РАЗЛИЧИЯ ВО ВЛИЯНИИ ОСТРОЙ НОРМОБАРИЧЕСКОЙ ГИПОКСИИ НА ЧАСТОТУ СЕРДЕЧНЫХ СОКРАЩЕНИЙ И НАСЫЩЕНИЕ ПЕРИФЕРИЧЕСКОЙ КРОВИ КИСЛОРОДОМ У БАСКЕТБОЛИСТОВ

Яковлева Лилия Сергеевна, lileknn29@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Тамбовцева Ритта Викторовна, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье представлен сравнительный анализ показателей кислород-транспортной системы юношей и девушек, занимающихся баскетболом (n=10). Во время воздействия нормобарической гипоксии (10% O₂) в состоянии покоя и при решении других вариантов задач фиксировались частота сердечных сокращений и насыщение гемоглобина артериальной крови кислородом. В результате не обнаружено достоверных различий между несвязанными выборками ($p>0,05$), но выявлены различия в физиологической реакции на гипоксическое воздействие общей выборке ($p<0,05$). Также обнаружена слабая корреляционная связь между значениями частоты сердечных сокращений и степени насыщения гемоглобина артериальной крови кислородом во время нормобарической гипоксии.

Ключевые слова: нормобарическая гипоксия, баскетболисты, периферическая кислородная сатурация, частота сердечных сокращений, спортсмены.

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UDC 615.825

PHYSICAL REHABILITATION IN ISCHAEMIC STROKE IN THE EARLY RECOVERY PERIOD

Yuditskaya A.A., s/s Zakharyeva N.N.

Abstract. *The article deals with the programme of physical rehabilitation of patients after ischemic stroke in the early recovery period based on the application of therapeutic gymnastics and*

mechanotherapy with the inclusion of various methods. The main exercises and the data obtained in the course of the study are presented.

Keywords: *physical rehabilitation, ischaemic stroke, therapeutic gymnastics, mechanotherapy*

Introduction. Stroke takes the second leading cause of death worldwide, and the incidence of cerebrovascular disease is expected to increase significantly in the future [4].

This disease appears more often after the age of 55, its risk increases significantly and doubles every next ten years. According to the World Federation of Neurological Societies, about 15 million strokes are registered annually in the world, in Russia is about 500 thousand cases of stroke per year [1].

Stroke is the leading cause of disability in the Russian population: among survivors, 60-80% of patients become disabled, 31% need assistance, 20% cannot move independently, and only 8% are able to return to their previous domestic activity [2].

There is a decrease in patients' social functioning in ischaemic stroke, so physical rehabilitation should be applied for their recovery. Lack of timely rehabilitation treatment leads to irreversible anatomical and functional changes in the patient's body [3].

Purpose of work: to increase the effectiveness of using means and forms of physical rehabilitation in ischaemic stroke in the early recovery period.

Methods. The practical study was conducted in the Federal Centre for Brain and Neurotechnology of FMBA of Russia, Moscow. It involved 15 people from 45 to 70 years old who had suffered from an ischaemic stroke.

The following research methods were used: literature analysis, pedagogical experiment, Trunk Control Test, Fugl-Meyer Assessment (FMA) (upper limb), Action Research Arm Test (ARAT), Standing Balance test, Berg balance scale, Hauser Ambulation index, mathematical statistics method.

The physical rehabilitation programme was designed for a 15-day inpatient course. It included three periods: introductory (5 days), main (5 days) and final (5 days).

General objectives of physical rehabilitation (PR): prevention of intensive care syndrome effects, prevention of pathological muscle tone in the right limbs, improvement of tolerance to physical load/extension of the motor regime, increase of muscle strength and power endurance in the right limbs, improvement of postural stability in standing position, improvement of statodynamic balance in standing and walking.

In the sparing period, general exercises for small and medium muscle groups of the upper and lower limbs, starting from the proximal joints (in initial positions (i.p.) - lying down, lying on the side, sitting with support under the back) were used in therapeutic gymnastics. Special exercises: applied according to the method "Balance 1 stage", PNF (short scapula diagonal). The complex also includes passive-active stimulation of the vestibular apparatus (oculomotor gymnastics).

Therapeutic gymnastics is carried out for 30 minutes, daily.

Also, during the above period, sessions on a Motomed Letto2 cycling exercise machine were conducted (15 minutes daily).

Gentle training period. Therapeutic gymnastics classes were held daily for 30 minutes. New exercises were performed from lying, lying on the side, sitting. Special exercises: PNF (short diagonal shoulder, pelvis); according to the method "Balance 2

stage"; stimulation of innate motor reflex reactions and holistic motor acts (reflex movements to maintain a stable position in response to unexpected (provocative) pushes forward/back and to the sides); new movement trajectories in oculomotor gymnastics were added.

Mechanotherapy on a THERA-Vital cycling exercise bike, 15 minutes daily.

Training period. Therapeutic gymnastics exercises were carried out daily for 30 minutes.

Special exercises: PNF to form a correct walking stereotype; exercises with two or more tasks (standing and walking); exercises to improve balance in sitting and standing; "Balance 3 step".

The THERA-Vital exercise bike continued, 15 minutes daily.

Results. The results of the Trunk Control Test are presented in table 1.

Table 1. – Results of the Trunk Control Test

Indicator	Result				Variance		Wilcoxon t-test calculation. (tcr.=30)	p
	before FR		after FR					
	X average	±σ	X average	±σ	In abs. units	%		
Trunk Control Test (points)	85	39	98,2	26	13,2	15,5	12	≤0,05

Trunk Control Test scores increased by 13.2 (15.5%), indicating that almost all patients learnt to keep their balance in a sitting position (30 sec).

Upper limb function was also assessed using the Fugl-Meyer Assessment (table 3) and ARAT test (table 4).

Table 2. – Results of the Fugl-Meyer Assessment (upper limb) assessment

Indicator	Result				Variance		Wilcoxon t-test calculation. (tcr.=30)	p
	Before FR		After FR					
	X average	±σ	X average	±σ	In abs. units	%		
Fugl-Meyer Assessment (scores)	109,7	34	121,7	61	12	11	13	≤0,05

The results of the Fugl-Meyer scale test showed an average improvement of 12 points (11%), indicating an improvement in motor and sensory function of the hand.

Table 3. – Results of the Arm Motor Assessment Test (ARAT)

Indicator	Result				Variance		Wilcoxon t-test calculation. (tcr.=30)	p
	Before FR		After FR					
	X average	±σ	X average	±σ	In abs. units	%		
ARAT test (scores)	47,7	23	51,7	24	4	8,4	16,5	<0,05

There was a positive trend in the motor function of the hand according to the

ARAT test. The indicators increased by 4 points (8.4% of the initial one).

The results of the standing stability test are presented in table 4.

Table 4. – Standing Balance test results

Indicator	Result				Variance		Wilcoxon t-test calculation. (tcr.=30)	p
	Before FR		After FR					
	X average	± σ	X average	± σ	In abs. units	%		
Standing Balance test (scores)	1,3	3	2,6	2	0,7	53,8	1	≤0,05

Initially, not all patients were confident in standing with their legs apart; after rehabilitation, the average test result was 2.6 (53.8%), which shows that some patients were able to stand for up to 30 seconds with their legs together, while others were able to stand with their legs apart for more than 30 seconds.

The subjects' balance was examined using the Berg balance scale (table 5).

Table 5. – Results of the Berg Balance Scale score

Indicator	Result				Variance		Wilcoxon t-test calculation. (tcr.=30)	p
	Before FR		After FR					
	X average	±σ	X average	±σ	In abs. units	%		
Berg Balance Scale (points)	15	17	27,6	22	7	46,6	4,4	≤0,05

The results of this test showed an improvement of 7 points (46.6%), indicating an improvement in the patients' balance.

The patient's locomotor function was assessed using the Hauser walking index (table 6).

Table 6. – Results of Hauser's walking index assessment

Indicator	Result				Variance		Mann-Whitney U-criterion (tcr.=72)	p
	Before FR		After FR					
	X average	±σ	X average	±σ	In abs. units	%		
Hauser Ambulation index (points)	8,2	3	4,2	3	4	48,8	1	≤0,05

Before the rehabilitation measures, all patients moved with the help of a wheelchair, the average score of this index was 8.2. After treatment, the Hauser Ambulation index score improved by 4 points (48.8%), patients started walking with an additional means of support (bilateral or unilateral).

Conclusions:

1. The programme of physical rehabilitation in ischaemic stroke in the early recovery period consisting of introductory (5 days), main (5 days) and final (5 days)

periods was developed.

2. The results of the pedagogical experiment showed the effectiveness of our physical rehabilitation programme.

After the course of physical rehabilitation, the patients showed a significant improvement in all the studied indicators ($p \leq 0.05$):

- the results of the Trunk Control Test increased on average by 13.2 points (15.5%);
- the results of the Fugl-Meyer Assessment (upper limb) improved by 12 points (11%);
- an improvement of 4 points (8.4%) in the Action Research Arm Test (ARAT);
- an improvement of 0.7 points (53.8%) in the standing Balance test;
- an improvement of 7 points (46.6%) in the Berg Balance Scale score;
- the Hauser Ambulation Index score showed an improvement of 4 points (48.8%).

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Yuditskaya Anna Aleksandrovna, student of the 4-nd year. Department of physical rehabilitation, massage and health culture named after I.M. Sarkizov-Serazini, chbphm@gmail.com; Russia, Moscow, Russian University of Sport "GTSOLIFK".

Scientific supervisor – Zakharyeva Natalya Nikolayevna; Doctor of medical sciences, Professor, Department of Physiology; Russia, Moscow; FGBOU VO RUS "GTSOLIFK".

ФИЗИЧЕСКАЯ РЕАБИЛИТАЦИЯ ПРИ ИШЕМИЧЕСКОМ ИНСУЛЬТЕ В РАННЕМ ВОССТАНОВИТЕЛЬНОМ ПЕРИОДЕ

Юдицкая Анна Александровна; студентка 4 курса бакалавриата, кафедры ФР, МиОФК И.М. Саркизова-Серазини, chbphm@gmail.com; Россия, Москва; РУС «ГЦОЛИФК».

Научный руководитель – Захарьева Наталья Николаевна; д.м.н., профессор кафедры физиологии; Россия, Москва; РУС «ГЦОЛИФК».

Аннотация. В статье рассматривается программа физической реабилитации пациентов после ишемического инсульта в раннем восстановительном периоде, основанная на применении занятий лечебной гимнастикой и механотерапии с включением различных

методов. Представляются основные упражнения и полученные данные в ходе исследования.

Ключевые слова: физическая реабилитация, ишемический инсульт, занятия лечебной гимнастикой, механотерапия

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TRAINING OF NON-PROFESSIONAL ADULT ATHLETES (ON THE EXAMPLE OF DIVING)

Yurasova A.D.

Abstract. *This article explores the unique nature of injuries experienced by non-professional, or amateur, athletes, using diving as an example. A survey of coaches and these athletes was conducted to determine the specific types of injuries that both trained and untrained athletes encounter. The survey incorporated a classification of injuries from a scientific source that is typically used for professional athletes. The author then expanded this list based on the expert opinions of professional coaches. The survey revealed that the most common injuries include shoulder joint injuries, foot injuries, ligament sprains, and soft tissue hematomas. Notably, over 60% of the respondents had sought consultation with a traumatologist. The article primarily focuses on less trained amateurs and the increasing number of athletes who need clearance for participation in lessons and sports competitions organized by amateur leagues.*

Keywords: *non-professional sport, amateur athletes, injuries of non-professional athletes, coaches' recommendations, diving*

Introduction. The Russian Federation's State Duma has passed a draft law focusing on amateur, mass, and corporate sports. This legislation paves the way for a broad spectrum of opportunities to engage Russian citizens in sports activities. The deputies are of the opinion that the enactment of this bill will foster the growth of mass sports [1].

The significance of this study is heightened due to the amendments introduced by the State Duma of the Russian Federation to the Federal Law "On Physical Culture and Sports in the Russian Federation", particularly with respect to mass, amateur, and corporate sports.

Our study aims to evaluate the potential for both serious and minor injuries among non-professional athletes. To comprehend the specific nature of injuries among amateur athletes, we will examine common injuries in the sport of Masters diving.

The World Health Organization recommends a weekly exercise load of 150 minutes (or 2.5 hours) for maintaining health. A typical training session for amateur diving athletes lasts about 2 hours, which often ends up being their only session for the week. For this study, we:

Reviewed the following documents: Federal Law No. 684-FZ of 25 December 2023 “On Amendments to the Federal Law ‘On Physical Culture and Sports in the Russian Federation’” and Article 1 of the Federal Law “On Amendments to the Federal Law ‘On Physical Culture and Sports in the Russian Federation’ and Certain Legislative Acts of the Russian Federation”. We also looked at the Draft Order of the Ministry of Labour and Social Protection of the Russian Federation “On Approval of the Professional Standard ‘Doctor of Sports Medicine’” (prepared by the Ministry of Labour of Russia on 26.07.2023), and the website of the Moscow Scientific and Practical Centre for Medical Rehabilitation.

Analysed popular scientific literature on the specifics of occupational injuries of athletes engaged in diving.

Conducted a survey of amateur “Masters” category divers and their coaches about the most common injuries and methods of their treatment and minimisation. The survey allowed us to compare the nature of injuries between amateur and professional athletes [4].

General. The “Masters” movement is currently gaining traction, attracting individuals of all ages who dream of experiencing the thrill of diving. At amateur competitions, an ambulance is always on standby to provide immediate assistance to athletes. However, the likelihood of injuries during competitions is significantly lower than during training sessions.

This discussion focuses on injuries incurred during training, specifically in the sport of diving. Non-professional athletes often lack the muscle conditioning required for certain sports. Therefore, coaches must allocate time for not only training but also quality warm-ups, general physical preparation, and technique instruction [3].

At the onset of a dive, an athlete may hesitate or fear the jump, leading to the execution of an incomplete element, which is a common cause of sports injuries. During the initial stages of diving training, proper water entry is crucial. Hence, beginners are taught special exercises, known as dips, to ensure correct water entry. Many amateur divers have backgrounds in other sports, including gymnastics, acrobatics, and wrestling.

Divers consistently incorporate gymnastic and acrobatic exercises into their training. Consequently, one of the causes of injuries is the execution of acrobatic tasks on trampolines, tracks, and “dry” springboards.

E.A. Raspopova’s article [4] discusses injuries among professional athletes, which helps us understand the main issues that amateurs may face. Based on her article, we can identify injuries such as hand bone injuries, shoulder joint pain, dislocations and subluxations of the shoulder joint, joint contusions, tears of the supraspinatus muscle and biceps, foot injuries, ligament sprains (foot, groin, etc.), foot bone fractures, pelvic bone injuries, back pain, and wrist joint pain.

We conducted a survey among amateur athletes and their coaches about injuries in amateur sports. The survey revealed that the most common injuries among

amateurs are shoulder joint injuries, foot injuries, ligament sprains, and soft tissue hematomas. Over 60% of respondents had consulted a traumatologist. Other injuries, such as ruptured eardrums, sprained iliopsoas muscles, synovitis, knee injuries, and head contusions, were also reported.

A survey among amateur sports coaches revealed that foot injuries, sprains, and soft tissue hematomas are the most common injuries among amateurs. Coaches were asked to provide recommendations on how to prevent and minimize injuries. They emphasized the importance of sufficient warm-up time, an individualized approach to task selection based on different levels of physical and technical fitness, conducting “pumping”, observing safety measures, and ensuring that athletes are physically and mentally prepared before attempting a new jump.

Conclusion. In conclusion, it is crucial in amateur sports to comprehend the perspectives of both the athlete and the coach. A significant amount of time should be dedicated to educational activities and the training of various muscle groups. This understanding and focus on comprehensive training can lead to a safer and more effective sporting environment, ultimately enhancing the overall experience for amateur athletes. It also underscores the importance of preventive measures and proper training techniques in reducing the risk of injuries. Therefore, the role of coaches extends beyond just training; they are instrumental in ensuring the safety and well-being of the athletes, which is paramount in the world of sports.

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Yurasova Anna Dmitrievna, yurasova_a_d@student.sechenov.ru, Sechenov University, Russia, Moscow

ТРЕНИРОВКИ НЕПРОФЕССИОНАЛЬНЫХ СПОРТСМЕНОВ (НА ПРИМЕРЕ ПРЫЖКОВ В ВОДУ)

Юрасова Анна Дмитриевна, yurasova_a_d@student.sechenov.ru, Сеченовский университет, Россия, Москва

Аннотация. В статье рассматривается специфика травм, полученных непрофессиональными спортсменами (любителями) на примере прыжков в воду. На основе опроса тренеров и непрофессиональных спортсменов определяется специфика травм подготовленных и неподготовленных спортсменов. При проведении опроса была взята классификация травм профессиональных спортсменов из научного источника. Автором предложенный список был расширен на основе экспертного мнения профессиональных тренеров. В результате проведенного опроса было выявлено, что наиболее распространёнными травмами являются травмы плечевого сустава, травмы стопы, растяжение связок и гематомы мягких тканей. При этом более 60% опрошенных приходилось обращаться к травматологу. Акцент работы смещен в сторону менее подготовленных любителей и росту количества спортсменов, которым требуется допуски до занятий и спортивных соревнований, организуемых любительскими лигами.

Ключевые слова: непрофессиональный спорт, спортсмены-любители, травмы непрофессиональных спортсменов, рекомендации тренеров, прыжки в воду

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UDC 796.01/005.32

GENDER ASPECTS IN THE FIELD OF PHYSICAL CULTURE AND SPORTS MANAGEMENT

Yurchenkova V.V., s/s Barienikova E.E.

Abstract. This article examines the problems of gender stereotypes faced by the female managers in the state service in the field of physical education and sports. On the basis of the conducted empirical research, the main stereotypes, affecting the assessment of the female managers' work in the field of physical education and sports, are presented.

Key words: gender-based gap, gender stereotypes, female manager, State Service in the field of physical education and sports

Relevance. In modern society, gender studies have gained considerable popularity in scientific communities. One of the key aspects of this research is the analysis of gender stereotypes. Gender stereotypes are generally accepted ideas about how the different genders in society should behave and what responsibilities they

should take on. These stereotypes affect our attitudes and feelings by setting certain boundaries and limits to how we see ourselves and how we see others. Deeply rooted in culture and tradition, stereotypes can lead to imbalances and inequalities in the attitudes, opportunities and rights of men and women in society [4].

This question is particularly relevant in light of the results of the Global Gender Gap Index, which ranks countries according to gender equality. Each year, the World Economic Forum develops and publishes the Global Gender Gap Index, which analyses four key indicators: economic participation and opportunity, education, life and health, and political empowerment. According to the data for 2021, Russia ranked 81st out of 153 countries in the world, but by the end of 2023, Russia's position had deteriorated significantly, falling behind the 100 mark in gender equality. [5] This is largely due to the under-representation of women in the country's political sphere, which leads to a misallocation of human resources. When political bodies do not reflect the true diversity of society and do not represent the interests of all population groups, there is a likelihood of unbalanced decisions that do not take into account women's needs and views [2].

One of the areas in which gender inequalities have always existed is physical education and sports. Women have long experienced injustice and discrimination in this sector. For example, in 2021, the BBC, the UK's largest television and radio broadcaster, conducted a study aimed at reducing the gender pay gap in the sports industry. Experts compared the position of men and women in 56 sports around the world. Of the 35 sports where prize money is awarded, 25 have equal pay for men and women, 10 have differential pay and 14 have no prize money at all. The results show that in most sports at the time, women and men received roughly equal prize money for their performances. However, from that year to the present, there is still a significant gap in prize money in popular sports such as football and basketball [3].

The objective of our study was to investigate the extent to which gender stereotypes influence the assessment of women's professionalism in the state service in the field of sport.

Methods. To investigate the issue of gender inequality in the field of physical education and sports, we developed a questionnaire and conducted an empirical study involving personnel, coaches and athletes of the Moscow Handball Academy, a state budget educational institution. In the course of the survey, we have managed to collect information from one hundred respondents. An equal number of respondents by gender was specially selected for more representative, in our opinion, results. On the basis of the data obtained, the analysis was carried out, which allowed us to formulate a number of theses about the women managers' work assessment in the field of physical education and sports.

Respondents were given a statement that they needed to continue: «The manager should have characteristics like...» and specify at least 5 options from the proposed ones (fig. 1). According to the results, the respondents, most often, included responsibility in their choice 16%, leadership skills 15%, and communication skills 14%.

In response to the question, "Who would you prefer to have as your manager in the field of physical education and sports?", 45% of the respondents answered that they are ready to work both under the authority of a man and under the authority of a woman.

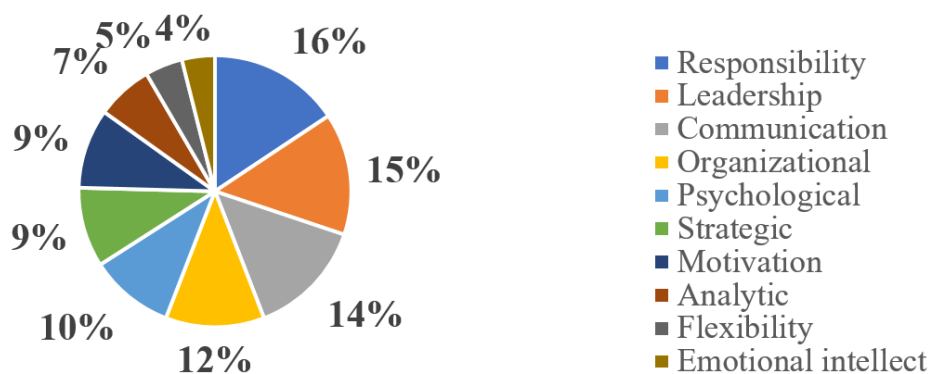


Figure 1. – Response chart «The manager should have characteristics like...»

We suggested that respondents rank the skills and attitudes from the same list that, in their opinion, a male manager should have. The results were as follows: 15% of the respondents highlighted leadership skills, 14% highlighted organizational skills, and 12% mentioned communication skills and responsibility (fig. 2).

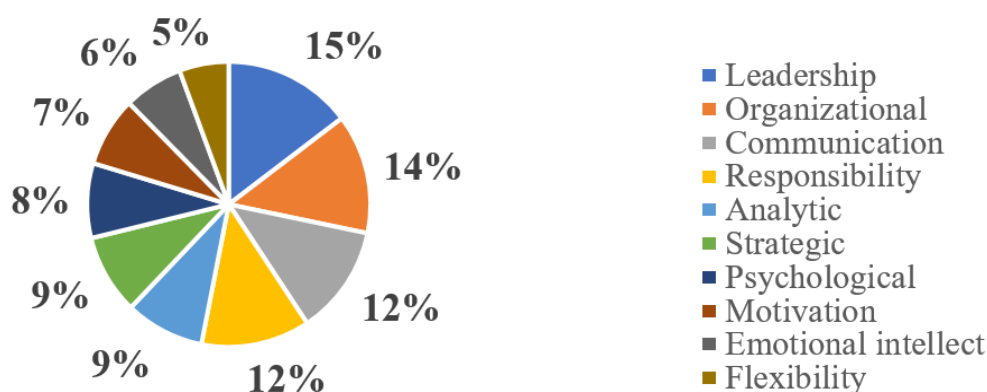


Figure 2. – Response chart «Male manager should have characteristics like...?»

A similar question was asked of female managers, and the distribution of responses was slightly different. Equally, 12% of respondents highlighted communication, leadership skills and responsibility, while 11% highlighted psychological abilities and organizational skills (fig. 3).

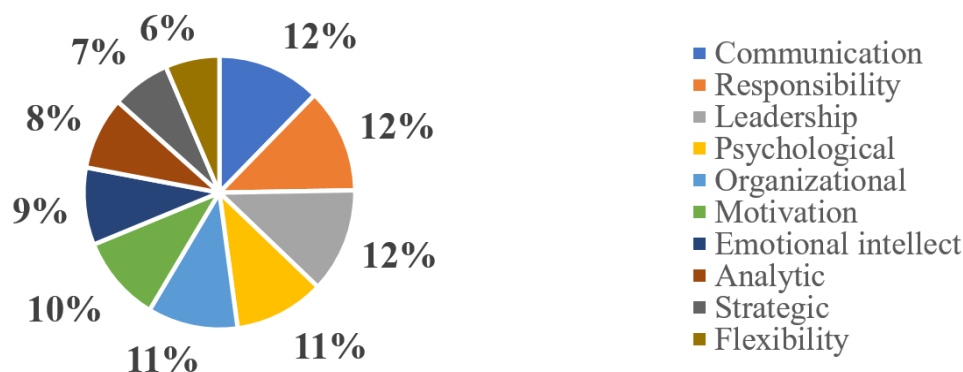


Figure 3. – Response chart «Female manager should have characteristics like...?»

Respondents identified some benefits of female managers: attention to details 20%, quality approach to work 16%, and developed communication skills and increased responsibility 15% each (fig. 4).

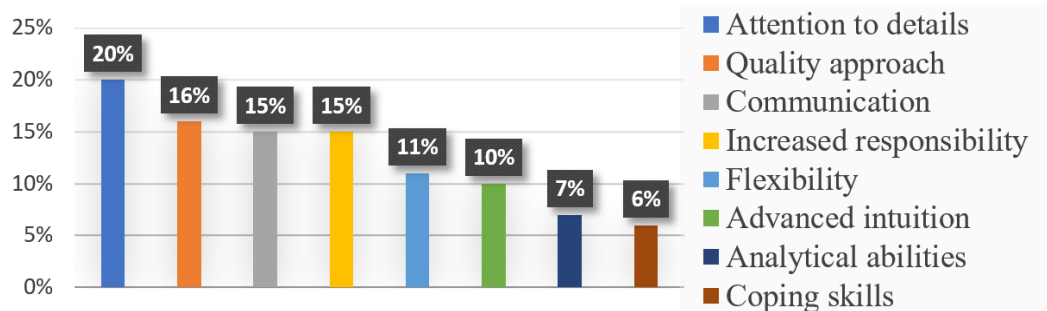


Figure 4. – In your opinion, what is the most significant advantage of a female manager in the field of physical culture and sports?

In response to the question "Does the gender of the manager influence the decision-making ability?" the respondents said that it did not matter to them.

However, they were then asked to identify the qualities that hinder a female manager's ability to work. The answer options that scored the highest showed that 22% highlighted excessive emotionality, 14% each had a personal attitude to colleagues, as well as inefficient conflict management, and 13% highlighted a lack of confidence in decision-making. The latter contradicts the answer to the previous question and indirectly proves the existence of a stereotype in this category (fig. 5).

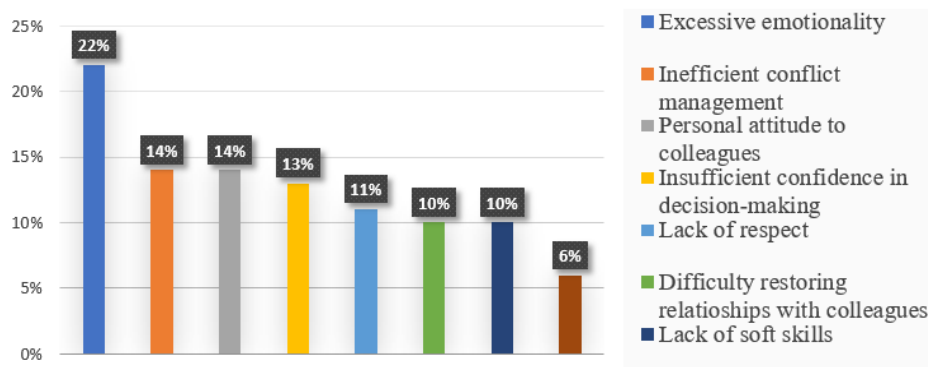


Figure 5. – What features hinder female manager to succeed in the field of physical culture and sports?

It was found that 40% of respondents felt that female managers were under more pressure and had higher expectations than the male ones in the field of physical education and sports.

We also identified important factors that influence mistrust of a female manager. They relate to the fact that 40% of people are afraid of being misunderstood, a further 35% are confronted with prejudices and stereotypes about female managers, and a third 20% prefer a male manager altogether.

Next, in an open-ended question, we asked respondents to name female leaders they knew. The most popular answers: Catherine II, Margaret Thatcher, Valentina

Matvienko, Angela Merkel, Elvira Nabiullina.

Results. Formulating the conclusions of the survey, we see that, on the one hand, for the majority of respondents it does not matter whom they work under, however, on the other hand, they mainly prefer a man as a manager. There was no gender difference in the question about the manager, with respondents highlighting responsibility and leadership skills as the most important qualities any leader should have. However, when the question was asked specifically about men or women in leadership status, we saw different perceptions of respondents towards the set of characteristics of managers of different genders. As a result, the main skills of male managers are leadership and organizational skills, and the third place is shared by responsibility and communicative skills, while female managers also have leadership, communicative and responsibility skills in the first place, and psychological and organizational skills in the second place. It should be noted that there is still a lack of trust in female managers, the main shortcomings are considered to be excessive emotionality, inability to solve conflict situations and subjective attitude to colleagues.

Conclusions. Gender stereotypes in the field of physical education and sports still limit women's professional opportunities and affect their working environment. Despite the fact that Russian legislation guarantees equality between men and women and prohibits discrimination on the basis of gender, however, it does not provide for positive measures aimed at improving the status of women (such as quotas for women's representation in political parties, preference for female candidates in recruitment in case of under-representation, etc.). Addressing the problem requires joint efforts on the part of sports organizations and society.

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Yurchenkova Viktoria, student of the Department of Public Administration and Youth Policy yurchenkova2122@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK".

Scientific supervisor – Barienikova Ekaterina Evgenievna, Senior Lecturer of the Department of Public Administration and Youth Policy, barikkat@mail.ru, Russia, Moscow, Russian university of sports "GTSOLIFK".

ГЕНДЕРНЫЕ АСПЕКТЫ В УПРАВЛЕНИИ В СФЕРЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА

Юрченкова Виктория Вадимовна, студентка кафедры государственного управления и молодёжной политики, yurchenkova2122@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Научный руководитель – Бариевникова Екатерина Евгеньевна, старший преподаватель кафедры государственного управления и молодёжной политики, barikkat@mail.ru, Россия, Москва, Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье рассматриваются проблемы гендерных стереотипов, с которыми сталкиваются женщины, занимающие должности руководителей на государственной службе в области физической культуры и спорта. На основе проведенного эмпирического исследования представлены основные стереотипы, по которым оценивают работу женщин-руководителей в сфере физической культуры и спорта.

Ключевые слова: гендерный разрыв, гендерные стереотипы, женщина-руководитель, государственная служба в сфере физической культуры и спорта

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PSYCHOLOGICAL MODEL OF RELIABILITY OF HIGH SPORTS QUALIFICATION MOUNTAINEERS

Zarembo-Ratsevich R.A., Komova E.V.

Abstract. *The article discusses a psychological model of the reliability of mountaineers of extreme specializations of high sports qualifications, developed on the analysis of the requirements for the activity of an athlete-mountaineer.*

Key words: *psychological model, psychological reliability*

Introduction. Mountaineering is a sport in which an athlete overcomes various natural and artificial obstacles (for example, mountains, rivers) to climb the peaks of mountainous terrain in various weather conditions (rain, snow, ice, wind, etc.). The competitive actions of athletes are aimed at achieving goals such as climbing higher peaks than their opponents, overcoming a route of higher technical complexity, nature and length. Mountaineering is an extreme sport (associated with danger to human life or with extreme or near extreme stress on the mental and functional capabilities of the body). In this regard, more than half of the climbers (60%) have an increased tendency to take risks [1].

Taking into account the above-mentioned features of sports activity, psychological reliability is a particularly important and determining component of maintaining high sportsmanship in mountaineering athletes.

Rodionov A.V. [2] understood the mental reliability of an athlete as the probability of his stable maintaining a high level of effective mental activity and a positive mental state in extreme situations of training and competition during the planned training cycle.

Anokhin P.K. separated the concepts of “reliability” and “stability”. He emphasized that if the system itself has changed, but the result has not changed (not worsened), then this is reliability. Stability (A.K. Astafiev, V.G. Pushkin, etc.) is defined as the ability of a system to restore its original state after any failure. By ensuring the constancy of a given quality, stability does not allow the system to transform into a new quality during quantitative changes [3].

A similar definition is given by O.A. Sirotin: reliability is “a complex integrative personality quality, characterized by such a combination of emotional, volitional, moral and intellectual components of mental activity that contributes to a person’s successful solution of complex and responsible tasks in a tense emotional environment, without significant negative influence of the latter on a person’s well-being and future performance” [4].

Factors that determine the psychological reliability of athletes activities are traditionally divided into 2 groups of factors: external and internal.

Objective. Identify the components of the psychological model and ways to test them.

Methods. The study used the method of theoretical analysis.

Results discussion. Emotional self-control, teamwork and decision-making in

critical situations are key competencies for climbers. These skills directly affect the safety and success of climbs. Based on the personality model according to E. Hollender, the components of the model of psychological reliability of climbers include:

1. Internal factors: psychological readiness for climbing, level of motivation.
2. External factors: the ability to control one's emotions and behavior in extreme conditions, the ability to work in a team, the ability to make decisions in difficult situations [5].

Table 1. – Methods for testing components of the model of psychological reliability of mountaineers

Internal factors		
Component	Methodology (Test)	Explanation
Ready to climb	State-Trait Anxiety Inventory (STAI)	Assessment of the level of anxiety at the moment (reactive anxiety as a state) and personal anxiety (as a stable characteristic of a person)
Motivation level	Mehrabian Achieving Tendency Scale (MATS)	Identification of two stable personal motives: the desire for success and the avoidance of failure. The study allows us to determine which of these traits predominates in the person being tested.
External factors		
Component	Methodology (Test)	Explanation
Control of emotions and behavior	Questionnaire of psychological resistance to stress by E. V. Raspopin (OPUS)	Allows you to identify the general level of stress resistance and determine the stressors to which a person is more or less susceptible.
Teamwork	Belbin Team Role Self - Perception Questionnaire Inventory (BTRSPI)	Allows you to determine 8 team roles and their levels of expression in the subject.
Ability to make decisions in difficult situations	Melbourne Decision Making Questionnaire (MDMQ)	Determination of an individual approach to decision making under conditions of uncertainty and strategies for coping with stress.

Conclusions. The use of the proposed methods will allow for accurate diagnosis and assessment of the psychological reliability of mountaineering athletes, which will help improve the safety and efficiency of their activities in extreme conditions.

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Zaremba-Ratsevich Rem Andreevich, 1st year Ph.D. student, rem.zaremba@gmail.com, Department of Psychology, Philosophy and Sociology, The Russian University of Sport (GTSOLIFK), Moscow, Russia.

Komova Elena Viktorovna, PhD, FL Department Head, komova.ev@gtsolifk.ru, The Russian University of Sport (GTSOLIFK), Moscow, Russia.

ПСИХОЛОГИЧЕСКАЯ МОДЕЛЬ НАДЕЖНОСТИ АЛЬПИНИСТОВ ВЫСОКОЙ СПОРТИВНОЙ КВАЛИФИКАЦИИ

Зарембо-Рацевич Рем Андреевич, аспирант 1 курса, rem.zaremba@gmail.com, кафедра психологии, философии и социологии, Российский университет спорта «ГЦОЛИФК», Москва, Россия.

Комова Елена Викторовна, к.п.н, доцент, заведующая кафедрой иностранных языков и лингвистики, komova.ev@gtsolifk.ru, Российский университет спорта «ГЦОЛИФК», Москва, Россия.

Аннотация. В статье рассматривается психологическая модель надежности альпинистов экстремальных специализаций высокой спортивной квалификации, разработанная на основе анализа требований к деятельности спортсмена-альпиниста.

Ключевые слова: психологическая модель, психологическая надежность

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UDC 376.2

INDIVIDUALIZATION OF EQUIPMENT FOR YOUNG ICE SLEDGE HOCKEY PLAYERS WITH CEREBRAL PALSY: PROBLEM ANALYSIS

Zenkov V.M., Rubtsova N.O.

Abstract. *This article presents an analysis of survey data from ice sledge hockey coaches. The aim of the survey was to determine coaches' awareness regarding the problem of selecting specialized equipment and its individual modification for young athletes with cerebral palsy (CP) engaged in ice sledge hockey.*

Keywords: *ice sledge hockey, specialized equipment, individual modifications, cerebral palsy*

Introduction. In recent decades, there has been an increasing interest among individuals with disabilities in adaptive physical education and various forms of adaptive sports. However, specialists face several challenges in attracting such individuals to systematic training, including a lack of scientific and methodological support, as well as insufficient equipment and inventory. Adolescents with cerebral palsy (CP) have motor limitations that require special methodological approaches to develop sports skills in game sports and use specialized equipment. For example, sleds and sticks have been specially designed for ice sledge hockey. However, ensuring accessibility and meeting all the needs of individuals with CP, especially children and adolescents, with this equipment is not always guaranteed.

In this regard, individual selection and customization of equipment, taking into account existing limitations and accompanying conditions, become key aspects in working with athletes with CP, especially among young athletes.

We hypothesized that individual modifications of equipment would contribute to improving the quality of the training process and preserving the rehabilitation potential, yet this remains a poorly researched topic. Further study and standardization of individual modifications will also have a positive impact on the training process and the speed of motor skill acquisition among young athletes with CP engaged in ice sledge hockey.

The aim of the research is to confirm our hypothesis regarding the feasibility and necessity of standardizing types of individual equipment modifications for young athletes with CP engaged in ice sledge hockey.

Research methods include pedagogical observation, pedagogical experiment, questionnaire surveys, and methods of mathematical statistics.

Over a period of 4 months, we conducted pedagogical observation and participated in the training process of young athletes with various musculoskeletal disorders. We noted that the majority of participants had individual modifications of specialized equipment, but after discussions with engineers and coaching staff, we concluded that this issue is practically neglected, and the system of individual modifications is not standardized.

An 18-question survey was compiled, and 18 ice sledge hockey coaches participated in the survey.

Analysis and Interpretation of Research Results. The majority of respondents, specifically 66.7%, have over 3 years of coaching experience in ice sledge hockey. From this, we can conclude the reliability of the data obtained during the survey, based on the expertise of the respondents in this field.

Questions regarding the demoFigureics with which coaches most frequently work were decided to be grouped together.

According to the survey data, it was found that respondents most frequently work with the age group of 7-12 years old, and the most common diagnosis encountered in coaching practice is various forms of cerebral palsy (CP). The percentage of these data was 32.6% and 48%, respectively.

When asked if selecting specialized equipment in ice sledge hockey is a

problem, 61.1% of surveyed coaches agreed with this fact. However, it is worth noting that 11.1% of respondents stated that they had not considered this issue.

Questions regarding the frequency of encountered individual modifications in coaching practice were also decided to be grouped together.

Regarding individual modifications of equipment, 94.4% of respondents are familiar with this concept, 55.6% often encountered individual modifications, 38.9% encountered them rarely, and only 5.6% never encountered individual modifications in their coaching practice. It is also noteworthy that the most frequent age groups in which individual modifications were encountered are 7-12 years old and 13-17 years old, both groups accounting for 34.4%.

Question group #3 reflected coaches' opinions on the appropriateness and impact of individual modifications on the training process.

Given the specifics of CP, a complex disorder affecting the musculoskeletal system, including muscle tone disturbances, balance and coordination impairments, and insufficient development of chain-setting extensor reflexes, these factors need to be considered when organizing the training process. These factors limit the use of specialized equipment in its basic configuration. However, when customizing equipment to the specific features of different forms of CP, the acquisition and use of specialized equipment are facilitated, thereby accelerating the acquisition of motor skills and positively impacting the training process.

The data obtained from question group #3 confirm our hypothesis about the appropriateness and positive impact of individual modifications on the quality of the training process.

The vast majority of respondents stated that individual modifications of specialized equipment are appropriate (94.4%). However, it should be noted that the remaining percentage of respondents stated that they had not considered this issue.

Regarding the impact of individual modifications on the training process and the speed of motor skill acquisition, all respondents unanimously agreed that the impact would be positive, thereby confirming our hypothesis.

We also identified, according to coaches' opinions, which diagnostic groups have a greater need for individual modifications of equipment. Coaches ranked various forms of CP as the highest priority (66.7%), but the most demanding in terms of modifications are young athletes with CP and Spina Bifida. Mixed types of diagnoses followed (33.3%). According to ice sledge hockey coaches, athletes with intellectual disabilities do not require individual modifications of equipment.

Regarding recommendations, 94.4% of coaches stated that they provide recommendations to parents regarding individual modifications of specialized equipment for their children.

When asked about the presence of an adaptive physical education specialist in teams, slightly over half of the coaches responded that such a specialist is present in the club (55.6%). Regarding the presence of an engineer specializing in equipment modifications in clubs, 61.1% confirmed the presence of such a specialist in the club.

Conclusions. In conclusion, our hypothesis about the appropriateness of individual modifications of equipment and its positive impact on the training process was partially confirmed during the survey of ice sledge hockey coaches. It can also be

said that coaches' interest in this survey indicates the relevance of the problem of standardizing types of equipment modifications and their individualization, if necessary. However, the understanding of the respondents regarding the implementation of this issue still remains insufficient, as the issue of individualizing sports equipment in youth teams is practically neglected.

Efforts to recommend and implement individual modifications should be coordinated with the training process. It is also necessary to establish cooperation between coaching staff and specialists in adaptive physical education and engineers in this direction. This will contribute to the standardization and structuring of individual modifications of specialized equipment.

Standardization of modifications will facilitate the work of ice sledge hockey coaches, specialists in adaptive physical education, and engineers. Recommendations to parents of athletes will become more accurate, and the implementation of recommendations will become easier and more accessible.

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Zenkov Viktor Maksimovich, PhD student, znkvktr@gmail.com, Russia, Moscow, Federal State Budgetary Educational Institution of Higher Education "Russian university of sports "GTSOLIFK"

Rubtsova Natalia Olegovna, PhD, Professor, Head of the Department of Theory and Methodology of Adaptive Physical Culture, Nataly.rubtzova@gmail.com, Federal State budgetary educational institution of higher Education "Russian university of sports "GTSOLIFK".

ПРОБЛЕМА ИНДИВИДУАЛИЗАЦИИ ИНВЕНТАРЯ ДЛЯ ЮНЫХ СПОРТСМЕНОВ С ДЦП ЗАНИМАЮЩИХСЯ ХОККЕЕМ-СЛЕДЖ

Зенков Виктор Максимович, аспирант, znkvktr@gmail.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК»;

Рубцова Наталья Олеговна, к.п.н., профессор, заведующая кафедрой теории и методики адаптивной физической культуры, Nataly.rubtzova@gmail.com, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В данной статье представлен анализ данных опроса тренеров по хоккею-следж. Целью опроса являлось выяснение осведомленности тренеров относительно проблемы подбора специального инвентаря и его индивидуальной модификации для юных

спортсменов с ДЦП, занимающихся хоккеем-следж.

Ключевые слова: хоккей-следж, специальный инвентарь, индивидуальные модификации, детский церебральный паралич

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UDC 796

THE DEVELOPMENT OF VOLUNTARY ATTENTION IN CHESS PLAYERS AGED 9-10 YEARS WITH THE USE OF A COMPLEX OF PSYHOTECHNICAL EXERCISES

Zharikov A.A., s/s Moskvina N.V.

Abstract. *The article presents a study devoted to the development of a set of psychotechnical exercises for the purposeful development of voluntary attention in chess players aged 9-10 years. We have refined the exercises presented in the methodological manuals for the development of attention, and also developed an exercise that allows you to develop arbitrary attention for better integration into the training process and compliance with the specifics of the sport. The practical significance of the conducted research lies in the fact that the introduction of a set of exercises into the training process as the initial part of a training session has a positive effect, consisting in improving stability and attention span. The scientific novelty of the study consists in the fact that for the first time a set of exercises has been proposed that ensures the purposeful development of arbitrary attention in children 9-10 years old, taking into account age-related physiological characteristics and including exercises adapted to foster arbitrary attention in chess players.*

Keywords: *arbitrary attention, chess, a set of exercises*

Introduction. The focus of attention in chess has a pronounced arbitrary character. Each move is aimed at certain goals, and the chess player actively manages his attention, making efforts to concentrate as much as possible and successfully implement strategic plans.

The most important age stage in the organization of voluntary attention is primary school age. By the age of 9-10, the mechanisms of arbitrary regulation are being improved; activation processes become more manageable, determining the improvement of performance indicators.

In primary school age, mechanisms of voluntary attention develop in connection with progressive maturation. By the end of the preschool period, children begin to plan actions and manage attention in accordance with adult instructions, but

this is still unstable: interesting activities can easily distract them from their tasks. [1]

According to the results of A.N. Leontiev, elements of arbitrary attention are also found in preschool age, but it really becomes arbitrary only after the child has mastered the techniques of its organization and ordering. And this happens only at school age, and 11-12-year-old students already reach a high stage of development of voluntary attention. Therefore, in the history of attention development, preschool age differs sharply from the entire subsequent period of a child's life. [2]

The arbitrary attention formed during primary school age, which creates the possibility of a selective activating effect in space and time on certain areas of the cerebral cortex, ensures the effectiveness of solving various tasks. Primary school age can be considered as a sensitive period of formation of arbitrary attention. [1]

Thus, it can be concluded that at the age of 9-10 years it will be advisable to organize a training effect on arbitrary attention. Being one of the most important properties of the psyche that affect the performance of an athlete in a chess game, attention requires purposeful development in the training process.

The **purpose** of the study is to develop a set of exercises aimed at the development of voluntary attention and to test its effectiveness in a pedagogical experiment.

All of the above, as well as the lack of funds for the purposeful development of attention among chess players aged 9-10 years, determines the relevance of this study.

Methods and organization of research. To implement the pedagogical research, we formed 2 groups – experimental (EG) and control (CG), 10 boys and girls 9-10 years old, engaged in the chess section, each. The duration of systematic lessons in the chess section for children was at least 1.5 years, but not more than 2 years by the time the experiment began.

In both groups, chess classes were held 2 times a week for 120 minutes each, the structure and content of the classes were identical (they corresponded to the calendar plan of the study groups approved at the sports school). An experimental set of exercises for the development of voluntary attention in children 9-10 years old engaged in the chess section was used once a week as the initial part of a training session lasting 40 minutes.

At the beginning of the experiment, all children passed a control test, which included a proof-reading test, the Bourdon test, adapted for children. As a result of the fact that the lesson was conducted with a group of children, it was decided to limit the time to 30 seconds and record the result by the number of characters in the viewed part of the proof sheet – indicator "A" for the execution time – 30 seconds.

Next, a formative pedagogical experiment was conducted for 10 weeks: in the experimental group, once a week, as the initial part of the lesson, children performed a set of exercises developed by us to develop arbitrary attention in children 9-10 years old engaged in the chess section, in the control group, traditional means of preparation were used – playing chess and solving chess positions.

The results of the study and their discussion. Chess, as an intellectual sport, has a number of features that place high demands on the mental qualities of an athlete in competitive and training activities. The qualitative level of development of voluntary attention directly affects the training process, which most often includes lectures, position solving, party analysis, and competitive activities. Depending on

the discipline of the sport of chess, the time allotted for a game varies from 3 minutes to 7 hours, and throughout the entire time of the game, the chess player keeps the focus on the game.

For the purposeful development of voluntary attention in chess players aged 9-10 years, we have developed a set of exercises presented in table 1.

Table 1. – Exercises for the development of voluntary attention in chess players aged 9-10 years

The name of the exercise	The orientation of the exercise
"Tell me what color is"	Attention stability
"Find the word"	Attention stability
"What is missing?"	Attention stability, attention volume
"Fly"	Attention stability, attention volume
"Find the figure"	Attention stability

"Tell me what color it is." Before starting the exercise, the subjects are given stimulus material – figure 1. The task is to name the color that the word is highlighted with, the subjects name the color in turn. The duration of the exercise is 10 minutes.



Figure 1. – Exercise "Tell me what color"

"Find the word." Before starting the exercise, the subjects are given stimulus material – figure 2. The task is to cross out all pairs of letters, and from those that remain to make up a word. The duration of the exercise is 10 minutes.

Задание: вычеркнуть все повторяющиеся буквы (пары - а:а и т. д.) и из оставшихся букв составить слово

ч	а	г	б	ж	к	в
ж	к	х	е	ф	у	х
б	р	л	д	ь	м	с
т	п	ф	ц	ы	щ	э
з	ш	ю	ь	и	ю	з
а	ы	о	ш	э	ё	д
щ	в	ъ	л	ъ	г	я
у	ц	с	ё	р	н	т

Впиши получившееся слово сюда ↓

Figure 2. – The "Find the Word" exercise

"What's missing." The exercise has 3 difficulty levels. Level 1 – subjects are shown two Figures with an interval of 3-5 seconds, the first shows 5 objects, the second shows the same objects, but in a different sequence and without one object – Figure 3. The task is to determine which object is missing in the second Figure. Level 2 is the same as level 1, but chess pieces are depicted instead of objects (fig. 4). Level 3 – the subjects are shown two Figures with an interval of 5-8 seconds, the first one shows a chess position, the second one shows the same position, but without one piece (fig. 5). The task is to find the missing figure. The duration of the exercise is 10 minutes.

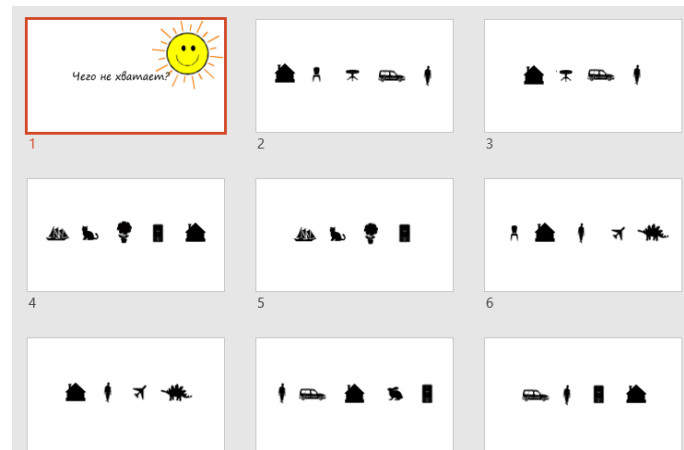


Figure 3. – Exercise "What is missing" 1 level of difficulty

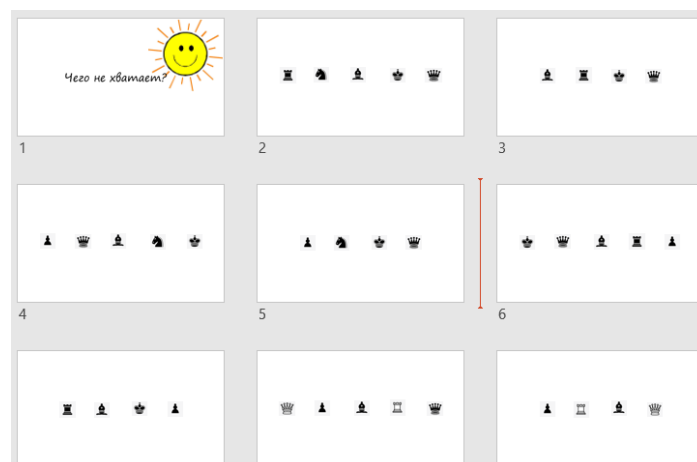


Figure 4. – Exercise "What is missing" 2 level of difficulty

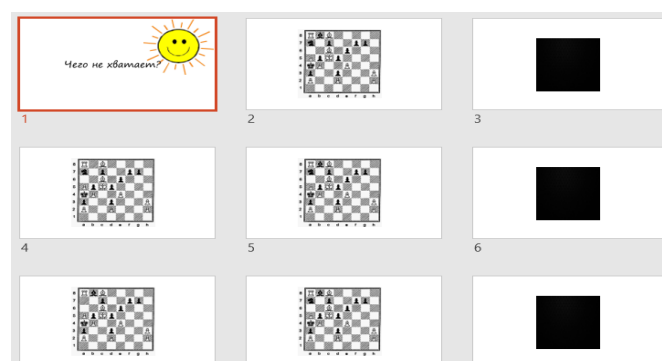


Figure 5. – Exercise "What is missing" 3 level of difficulty

"The fly." The exercise has 3 difficulty levels. The subjects are shown a nine-cell 3x3 playing field with a fly in the central cell (fig. 6). Level 1 – the subjects need to close their eyes and imagine a 3x3 field with a fly in the central cell. The task is to control the commands ("up", "down", "left", "right") to move the fly around the playing field, preventing it from flying beyond its limits. Level 2 is the same as in level 1, but the initial location of the fly on the field and the final one are set. The task is to guide the fly with commands ("up", "down", "left", "right") from the initial location to the final one. Level 3 is the same in level 2, but after moving the fly to the final location, it must be returned to the initial location along the same route. The duration of the exercise is 10 minutes. [3]

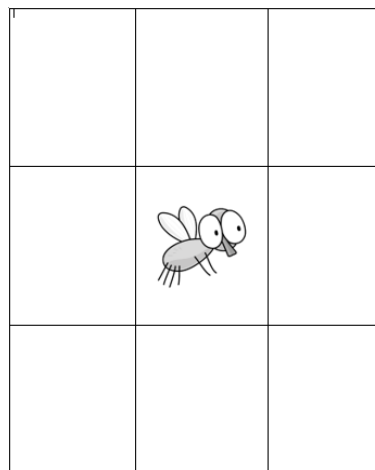


Figure 6. – The Fly exercise

"Find the figure." The exercise has 2 difficulty levels. Before starting the exercise, the subjects are given a stimulus material – a 10x20 field, in the cells of which chess pieces are depicted. Difficulty level 1 – the task is to find and cross out a certain figure (for example, a white king or a black elephant). Difficulty level 2 – find and cross out 2 specific pieces (for example, a white king and a black elephant). The duration of the exercise is 10 minutes.

The training sessions were conducted in accordance with the plan given in table 2.

Table 2. – Lesson plan for the development of voluntary attention in chess players aged 9-10 years

Training session No.	The content of the training session
1-3	Exercise "Tell me what color" Exercise "Find the word" Exercise "What is missing?" 1 difficulty level Exercise "Fly" 1 level of difficulty
4-6	Exercise "Find the word" Exercise "What is missing?" difficulty level 2 Exercise "Fly" 2 difficulty level Exercise "Find a figure" 1 difficulty level
7-10	Exercise "Find the word" Exercise "What is missing?" 3 difficulty level Exercise "Fly" 3 difficulty level Exercise "Find a figure" 2 difficulty level

In order to evaluate the effectiveness of the proposed experimental set of exercises for chess players aged 9-10 years, a parallel formative experiment was conducted. The effectiveness of the complex was determined based on the revealed significant differences between the indicators of the control and experimental groups at the end of the experiment. During the initial examination, there were no significant differences between the groups according to the studied indicator of voluntary attention (table 3, 4).

Table 3. – Results of the primary examination of chess players aged 9-10 years

Indicator	EG before the experiment	CG before the experiment	The reliability of differences according to the Mann-Whitney criterion
Proof-reading test - the Bourdon test	Amid = 16,5	Amid = 16,3	$U_{cr}(0.05) < U_{emp}$ $U_{cr}(0.01) < U_{emp}$, therefore, differences in sample levels can be considered insignificant.

Table 4. – Results of repeated examination of chess players aged 9-10 years

Indicator	EG after the experiment	CG after the experiment	The reliability of differences according to the Mann-Whitney criterion
Proof-reading test – the Bourdon test	Amid = 29,9	Amid = 20,6	$U_{cr}(0.05) = U_{emp}$ $U_{cr}(0.01) < U_{emp}$, Therefore, the differences in sample levels can be considered significant.

Conclusions. The analysis of the initial test results of chess players aged 9-10 years, as well as taking into account the importance of arbitrary attention to the training and competitive activities of chess players, necessitated the development of a set of exercises for the development of arbitrary attention, which was introduced into the training activities of chess players. The conducted research has shown that the use of the presented experimental set of exercises in the training process of chess players for 10 weeks contributes to the development of arbitrary attention.

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Zharikov Artemiy Aleksandrovich, undergraduate student of the chair of pedagogy, a.zharikovsportpsy@gmail.com, Russia, Moscow, The Russian University of Sport «GTSOLIFK».

Scientific supervisor – Moskvina Nina Victorovna, Russia, Moscow, The Russian University of Sport «GTSOLIFK».

РАЗВИТИЕ ПРОИЗВОЛЬНОГО ВНИМАНИЯ У ШАХМАТИСТОВ 9-10 ЛЕТ С ПОМОЩЬЮ КОМПЛЕКСА ПСИХОТЕХНИЧЕСКИХ УПРАЖНЕНИЙ

Жариков Артемий Александрович, магистрант кафедры педагогики,
a.zharikovsportpsy@gmail.com, Россия, Москва, Российский Университет Спорта «ГЦОЛИФК»
Научный руководитель – Москвина Нина Викторовна, Россия, Москва, Российский
Университет Спорта «ГЦОЛИФК»

Аннотация. В статье представлено исследование, посвященное разработке комплекса психотехнических упражнений для целенаправленного развития произвольного внимания у шахматистов в возрасте 9-10 лет. Нами были доработаны упражнения, представленные в методических пособиях по развитию внимания, а также разработано упражнение, позволяющее развивать произвольное внимание для лучшей интеграции в тренировочный процесс и соответствия специфике вида спорта. Практическая значимость проведенного исследования состоит в том, что от внедрения комплекса упражнений в тренировочный процесс в качестве начальной части тренировочного занятия получен положительный эффект, заключающийся в улучшении устойчивости и объема внимания. Научная новизна исследования состоит в том, что впервые предложен комплекс упражнений, обеспечивающий целенаправленное развитие произвольного внимания у детей 9-10 лет, учитывающий возрастные физиологические особенности и включающий в себя упражнения, адаптированные для воспитания произвольного внимания у шахматистов.

Ключевые слова: произвольное внимание, шахматы, комплекс упражнений

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THE FORMATION AND DEVELOPMENT HISTORY OF TAIJIQUAN HEALTH PRACTICES

Zhu Zehuan, Baranov V.A.

Abstract. The article discusses the evolution of the health practices of taijiquan in modern Chinese society. Taijiquan, which originally emerged as a form of martial art, has undergone changes in its content, direction of influence on the individual, organization, and teaching methods. Historical analysis made it possible to single out its social functions and establish a connection between this type of martial arts and health-improving practices that have a significant impact on the harmonious development of the individual.

Keywords: taijiquan, social phenomenon, culture, harmony, mass character, individual, society

Introduction. Taijiquan has its own history based on rich cultural traditions, and its popularity among people all over the world is ensured from various

perspectives: social and philosophical factors that shape the way of life; sports factors that promote physical development and improvement; military factors that ensure readiness for combat tasks; aesthetics and health, anticipating the joy of life, the beauty of existence and the energy of inspiration.

The health practice of taijiquan is based primarily on a philosophical approach rooted in the classical Chinese tradition, combining the harmony of existence, the unity of the universe and nature with the human body, the development of the individual, the choice of one's life path, and the orientation of individual's growth in the rapidly developing Chinese society.

In this direction, taijiquan, considered as a kind of martial art and health practice, appears to be quite interesting and effective.

The purpose of the study is to analyse the formation and development of Taijiquan health practices and their impact on the individual and society as a whole.

It is not possible to ascertain the exact dates of the origins of Taijiquan, therefore this article will focus on the historical aspects that took a seat in modern Chinese society and had a substantial impact on the content and teaching methods of taijiquan as a method of health practice.

Methods. The analysis of literature sources enabled some important aspects of the content and direction of Taijiquan development to be highlighted. Around the end of the 1940s, this kind of physical activity was included in the plan of the National Sports Committee as a system of gymnastic exercises, and the first demonstration performances and sports competitions were held. After the Reform and Opening-up in China, Taijiquan has been fully developed and restored to its original content. Generally, it is categorized into Fighting Technique taijiquan, Gymnastic Taijiquan and Pushing Hands Taijiquan. This has given rise to many schools which observe the tradition and incorporate certain innovations, such as the traditional schools of Chen, Yang, Wu, Wu and Sun.

The active promotion of Taijiquan has ensured its rapid growth in popularity and contributed to its international development. In December 2020, the 15th Ordinary Session of the UNESCO Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage included Taijiquan in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity [2].

Results discussion. To date, there is no consensus in scholarly circles on the origin of Taijiquan. However, many researchers adhere to the following grounds.

Firstly, Taijiquan was created by the semi-legendary Chinese Taoist Zhang Sanfeng, which existed according to rather contradictory data during the period of the Song, Yuan or Ming dynasties.

Secondly, the founder of Taijiquan was Cheng Lingxi, allegedly a resident of the Liang dynasty (502-557) in the Shexian county, Anhui province. He not only practiced Taijiquan himself, but also trained local self-defense units, which he commanded [1].

Thirdly, Taijiquan was created by Chen Wangting in Wen County, Henan province in the late Ming and early Qing Dynasty. Today, most Taijiquan practitioners are of this opinion. Chen Wangting was a martial arts pioneer who studied the Taoist *Scripture of the Yellow Court* and created Taijiquan based on the

Quan Jing of Qi Jiguang. The sources of Taijiquan are the following three aspects.

On the basis of the findings presented, the researchers concluded that Taijiquan originated from: 1) fighting techniques that existed during the Ming Dynasty; 2) the combination of the ancient art of health care and breathing and exhalation methods; and 3) the application of the doctrine of Yin and Yang meridians in traditional Chinese medical theory.

The subsequent formation of the content of Taijiquan has enabled the following constituent elements to be differentiated: movement technique; physical form; psychosomatic characteristics (calmness of mind, relaxation, softness of movement and body).

Conclusions. Thus, in the course of its evolution, Taijiquan health practices have provided an enormous social and cultural potential that is being realized in contemporary Chinese society. The main directions for the realization of this potential are manifested through its social functions, among which the most prominent are:

- the function of cultural ideology: both internal and external cultivation can nurture a person's spiritual outlook and play a role in shaping a stable and mature personality;
- the function of harmonization of the individual and society: harmony with the self, harmony with society, harmony with nature and harmony with people;
- the function of developing interpersonal and inter-team collaborations;
- the function of socialization of the individual;
- the function of social control and maintenance of social order in society;
- the function of forming a certain subculture of society, expressed in the ability to pay attention, above all, to oneself, not to be prejudiced, as well as to nurture the following personal qualities: endurance, self-control, peace of mind, elimination of negative emotions.

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Zhu Zehuan, PhD student of the Department of Psychology, Philosophy and Sociology, e-mail: 994384604@qq.com, Moscow, Russia, The Russian University of Sport "GTSOLIFK".

Baranov Viktor Alekseevich - Doctor of Philosophy, Associate Professor, Professor of the Department of Psychology, Philosophy and Sociology, e-mail: v.bar57@mail.ru, Moscow, Russia, The Russian University of Sport "GTSOLIFK".

ИСТОРИЯ СТАНОВЛЕНИЯ И РАЗВИТИЯ ОЗДОРОВИТЕЛЬНЫХ ПРАКТИК ТАЙЦЗИЦИЮНЬ

Чжу Цзэхуань – аспирант кафедры психологии, философии и социологии, e-mail: 994384604@qq.com, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Баранов Виктор Алексеевич – доктор философских наук, доцент, профессор кафедры психологии, философии и социологии, e-mail: v.bar57@mail.ru, Россия, Москва, Федеральное государственное бюджетное образовательное учреждение высшего образования «Российский университет спорта «ГЦОЛИФК».

Аннотация. В статье рассматривается эволюция оздоровительных практик тайцзицюань в современном китайском обществе. Первоначально возникший как вид боевого искусства тайцзицюань претерпевал изменения по своему содержанию, направленности воздействия на индивида, организации и методикам обучения. Исторический анализ позволил выделить его социальные функции и установить связь этого вида боевого единоборства с оздоровительными практиками, оказывающими существенное влияние на гармоничное развитие личности.

Ключевые слова: тайцзицюань, социальное явление, культура, гармония, массовость, индивид, общество

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DETERMINATION OF APPROPRIATE AGE FOR SPORTS SELECTION FOR PLAYING POSITIONS IN VOLLEYBALL

Zornić S., Vovk S.I.

Abstract. *Modern volleyball is characterized by a high level of specialization of playing positions. Despite the fact that there is practical experience in constructing training process in volleyball and theoretical research is being carried out, at present the problem of determining the playing positions in volleyball has not been sufficiently developed, in particular, it is not clear at what age it is advisable to determine the playing position of young volleyball player. The aim of the study was to increase the individual effectiveness of volleyball players by reliable determination of their playing position at the right age.*

Keywords: *volleyball, playing positions, sports selection, sports specialization*

Introduction. The complex nature of competitive gaming activity in volleyball creates constantly changing conditions, forces one to evaluate the situation and choose actions. To achieve a high level of performance, players are required not only to improve technical and tactical skills, but also to demonstrate high levels of motor skills and psychological characteristics (U. Kunstlinger, H.G. Ludwig, J. Stegemann 1987). Long-term athlete development (LTAD) is a planned, structured and progressive model for managing a sports career through the harmonious development of a young athlete. The main drawback in working with young athletes so far is the early specialization of playing positions, which does not allow development of a

broad base of abilities, necessary for achieving success in the later period of career. This structured, long-term pathway allows talented young athletes to achieve success at the highest level. LTAD assumes an integrated approach to the development of an athlete's career, taking into account motor, morphological, cognitive, psychosocial and many other characteristics of growth and development. The reason for the existence of a numerous problems in working with young players is associated with the untimeliness of studying some systems of tactical play. Namely, it was observed that the training program of a significant number of volleyball coaches does not describe methodicality and the necessary patience in working with young players. There is a lack of content and attention paid to technical and physical preparation and maturity to continue learning through training and competitions. (Balyi et al., 2013).

In sports game (volleyball, basketball, hockey, handball, etc.), the final result depends on winning in each individual moment of the game, it depends on the accuracy of decision-making and its implementation. Implementation accuracy or hit accuracy is a criterion by which, under other conditions (physical, mental, psychophysiological state and development), it is possible to predict in advance the classification of an athlete into a specific type of activity. For selecting for educational training groups, a complex of medical, pedagogical, psychological, and expert assessments is used, including pedagogical observation and other tests. Indicators of gaming activity have a certain predictive power at later stages of sports training. The gaming efficiency of volleyball players at this stage should not be given much importance. The reference models of the gaming functions of athletes, are performance of outstanding volleyball players and the milestone models of young volleyball players of different ages serve as a guide (M. S. Bril, Yu. N. Kleshchev, 1988).

Objective. To determine the appropriate age for sports selection for playing positions in volleyball.

Methods. Analysis of scientific and methodological literature; questioning (survey research methods); methods of mathematical statistics (MS Excel).

Research design. Based on survey research methods conducted as part of our work, we received answers (results) to the main questions that interested us:

- At what age is it advisable to start playing volleyball?
- At what age should selection be made for playing positions in volleyball?
- Is it possible to conduct selections later for certain playing positions in volleyball? If so, when and which playing positions for?

20 specialists and coaches from Serbia took part in the survey. Among them were professors from the Department of Theory and Methodology of Volleyball of Faculty of Sport and Physical Education of the University of Belgrade, and volleyball coaches with a minimum of 7 years of work experience.

Discussion. Volleyball is known as a sport that requires a high level of technical preparedness and tactical intelligence in dealing with various situations and challenges in the game. The learning path, which should lead to the achievement of high results, is filled with programed planning activities, establishing a system in organizing training and competitions, timely identification and development of talented athletes throughout a number of stages of sports selection.

Achieving high performance in volleyball requires a lot of time and high-

quality planning for the development of each of the players. Previous researches have found that early specialization in a sport has a number of side effects, such as increased risk of injuries, overtraining syndrome, and withdrawal from the sport. In addition, daily training loads can lead to loss of motivation and lack of concentration in young athletes. Early specialization can have a negative impact on the athlete and lead to problems in sports development due to the acceleration of the training process, premature development without taking into account age and level of preparedness (Balyi et al., 2013).

On the question: „At what age is it advisable to start playing volleyball?“, the most of specialists and volleyball coaches (81,25%) agree that the age of 8 to 9 years old is the most suitable for starting to play volleyball, which corresponds with the information that we could find in the previous researches and in the Federal Standard for Sports Training.

Table 1. – Age for enrollment in volleyball training and selection for playing positions

Sports selection	Age	Playing position
Selection for initial training	8-9	
First selection by playing positions	13-14	Setter, Hitter
Second selection by playing positions	15-16	Libero, Opposite, Outside Hitter

The study showed that the appropriate age for selection for playing positions is 13-16 years old, which, in general, corresponds to the stage of sports specialization. By opinion of experts (81.25%) at the age of 13-14 years old, as a rule, two playing positions are distinguished – Hitter and Setter, and by the age of 15-16 a more detailed gradation of volleyball players by playing positions is carried out (table 1).

Experts (62.50%) also agree that the selection of certain playing positions can be carried out later. All experts agree that the playing position libero can be determined later; 81.25% of experts believe that playing positions Middle Blocker and Opposite also can be determined later; 62.5% of experts think that for the Outside Hitter and 50% for the Setter (table 1).

Conclusion. In order for young volleyball players to be able to respond to demands for a high level of technical and tactical preparedness, and be able to deal with various situations and challenges of volleyball game and achieve a high result in their professional career, it is necessary that the learning path be filled with planned activities, timely identification and development of talented athletes throughout a number of stages of sports selection. Without taking into account age and level of preparedness, sports specialization and selection by playing positions can have a negative impact on the athlete and lead to many problems in sports development. Based on the opinion of the majority of experts, sports specialization should be timely, namely, between the ages of 13-16 years. At the age of 13-14, two positions are distinguished, Setter and Hitter. At the age of 15-16 a more detailed gradation of volleyball players by playing positions is carried out.

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Zornich Sasha – postgraduate student of the Department of Theoretical and Methodological Foundations of Physical Culture and Sports, of the Russian University of Sport «GTSOLIFK», Moscow, Russia, sasa.zornic@gmail.com

Vovk Sergey Ivanovich, Doctor of Pedagogical Sciences; Assistant professor, head of the Department of Theoretical and Methodological Foundations of Physical Culture and Sports, of the Russian University of Sport «GTSOLIFK», Moscow, Russia, vovk2007@mail.ru

ОПРЕДЕЛЕНИЕ СООТВЕТСТВУЮЩЕГО ВОЗРАСТА ДЛЯ СПОРТИВНОГО ОТБОРА ПО ИГРОВЫМ АМПЛУА В ВОЛЕЙБОЛЕ

Зорнич Саша – аспирант кафедры Теоретико-методических основ физической культуры и спорта, Российский Университет Спорта «ГЦОЛИФК», Москва, Россия, sasa.zornic@hmail.com.

Вовк Сергей Иванович – Доктор педагогических наук, доцент, заведующий кафедры Теоретико-методических основ физической культуры и спорта, Российский университет спорта «ГЦОЛИФК», Москва, Россия, vovk2007@mail.ru.

Аннотация. Современный волейбол отличается высокой степенью специализации игроков. Несмотря на то, что существует практическая деятельность в построении подготовки в волейболе и проводятся теоретические изыскания, в настоящее время проблема определения игрового амплуа в волейболе в достаточной степени не разработана, в частности не ясно в каком возрасте целесообразно прогнозировать амплуа волейболиста. Цель работы была – повышение индивидуальной эффективности игровой деятельности волейболистов путем объективизации прогнозирования их игрового амплуа.

Ключевые слова: волейбол, игровые амплуа, спортивный отбор, спортивная специализация

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