

Forming Health Culture of Bachelors of Education by Means of an Academic Course

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ABSTRACT

In Russia the system of spreading health-culture among the young generation, the students, has not been formed yet, which makes the paper topical and up-to-date. The young generation is characterized by a low level of education and professional training efficiency in healthy life-style and health culture. It has caused depreciation of the concepts "health" and "healthy life-style", they have been excluded from the value system of the young. Deplorable health condition of contemporary students was the reason that made the state authorities shift the national policy priorities and improve and upgrade valeological knowledge. Thus the paper aims at showing the ways of spreading health-culture by means of a special academic course. The key research methods are the following: health monitoring of the future Bachelors of Education, analyzing normative documents, getting together and generalizing the facts, making a pedagogical experiment, and forming the informational field for the theoretical grounds of health-culture. The paper presents the results of physical health monitoring of students who are future teachers, it reveals the ways of forming health-culture by means of an academic course. The necessity of improving valeological knowledge of the students and providing the bases for protecting and improving health of the future Bachelors of Education is explained. The research material has a practical value for the headmasters, teachers, and students of higher educational establishments, as well as for the scientists whose research sphere deals with students' health condition and the ways of its protecting and improving.

KEYWORDS

Students' health, health culture, valeological knowledge, health diagnosis, health protection

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Introduction

Topicality of the research. Living in the informational society makes the issue of forming health culture and healthy life-style very topical. TV and Internet offer us loads of information of how to improve our health. You can find lots of different sites giving different, rather controversial answers to the question of how to improve your health. If you are not a specialist in this sphere it would be not easy for you to sort out all those pieces of information. Reducing the number of state-financed medical institutions (from 2010 to 2014 by 13%; Dianov, 2015), as well as reducing the number of free of charge health-care procedures, and other issues of Russian health service have forced the population to neglect their own health, to acquire a “don't care” attitude to it (Shuaybova, 2014). In 2014 in Russia 33.6% population aged 15 and older in need of medical help did not get this help due to their disbelief in the effect of the treatment (21.9%), because of their discontentment with the work of the medical institution (30.2%), because they could not get to the medical institution by themselves without any help (4.9%), and because of other reasons (Dyanov, 2015). Many authors mention a low level of medical knowledge, health culture and health life-style of the population (Bezrukikh, 2012; Verkhorubova and Podlesskaya, 2013; Pazyrkina and Sopko, 2014a; Sopko and Pazyrkina, 2014b, Shuaybova, 2014). Due to the above-mentioned reasons the “healthy” part of the population in Russia, students included, do not consider their health as the main value, health preserving does not make much sense and is not the most important thing to them. Thus, forming health-culture habits of the young generation is being of great importance and prime interest for the contemporary Pedagogic.

Literature Review

Students of higher and high educational establishments make the most numerous part of the youth population. According to Rosstat, in 2014 they accounted for 67% the youth population, and about 15% the able-bodied population; (Laykam, 2015). It is widely known that social and economic prosperity of the country depends on the health state of the young generation who form labour, procreational and cultural potential of the country (Achkasov et al., 2013). Thus preserving and improving health of students is one of the priorities of the state policy.

Youth as a period of ontogenesis is characterized by establishing physiological, psychological and social qualities of a grown-up organism. At this age the potential of an organism is high and one can properly adapt to the environment, still this age group runs a risk of getting health problems. On the one hand, the researchers mention both specific risk factors caused by the learning activity (hard brainwork, discrepancy of one's needs with one's financial resources, constant violation of work-rest schedule, etc.) and the unspecific risk factors (climatic, social, medical, etc.) (Fertikova and Rogachev, 2015; Veselkina and Krylov, 2013; Gorelov and Rumba, 2013; Verkhorubova and Podlesskaya, 2013). On the other hand, one's health state influences all the spheres of one's life activity, including adaptation to studying at the higher educational establishment, one's physical and mental working capacity, social activity, etc. (Veselkina and Krylov, 2013; Mikhailova et al., 2015; Panikhina, 2011). The indices of somatic health of young people, boys and girls, are the indicators of

effectiveness of hygienic measures and the determiners of the future health protecting activities (Akamov and Evdokimov, 2010). Thus there is an urgent necessity in creating a personal database of students' health problems and monitoring physical health of the young which will help in working out regional norms of physical development and for improving health protecting technologies (Petrova, 2012; Fertikova and Rogachev, 2015).

Besides, health protecting and improving require special knowledge, and this knowledge has not been available to all the students at the previous stage of their education. That's why many researchers dealing with healthy life-style factors argue that valeological self-education is an important component of one's healthy life-style (Bezrukikh, 2012; Verkhorubova and Podlesskaya, 2013).

Taking into account the above-mentioned information, the aim of this research consists in monitoring physical health of first-year students of the Vyatka State University of Humanities of the program track 44.03.05 Pedagogic, as well as making theoretical basis for health-culture grounds as a part of the discipline "Developmental Anatomy, Physiology, and Hygiene".

Aim of the Study

Taking into account the above-mentioned information, the aim of this research consists in monitoring physical health of first-year students of the Vyatka State University of Humanities of the program track 44.03.05 Pedagogic, as well as making theoretical basis for health-culture grounds as a part of the discipline "Developmental Anatomy, Physiology, and Hygiene".

Research questions

The overarching research question of this study was as follows:

What are the main methods of students' health culture forming during studying the discipline "Developmental Anatomy, Physiology, and Hygiene"?

Method

Health monitoring was carried out with the use of express-diagnostics of safe health level according to G.L. Apanasenko (2006), it includes physical health indices (body-weight ratio, birth-death ratio, power index), the state of the cardiovascular system at rest and after some graduated exercise (Martinet test), quantitative assessment of energy potential of the cardiovascular system (Robinson index). The indices were calculated taking into account the anthropometric data (height and weight) and physical data (lung capacity, muscle strength of the leading hand, blood pressure, heart rate), which were measured using traditional methods. Circulatory system adaptation was assessed according to adaptation potential calculation with the formula of R.M. Bayevskiy (1989). The results were statistically processed using parametric techniques with finding the arithmetic mean (\bar{x}), arithmetic mean error ($m\bar{x}$), Student's t-test with reliability assessment according to significance test p (difference between the groups of indices were considered reliable at $p < 0.05$).

The following methods were used in the research: practice guidelines analysis, systematization and generalization of the facts, pedagogical experiment.

The research was carried out in the Vyatka State University of Humanities (now – the Vyatka State University, VyatSU).

The research has three stages. At the first, preparatory stage the contemporary state of the issue was analyzed in theory and practice of Pedagogic; the practice guideline was analyzed; the methods were worked out; the place of health culture in the course “Developmental Anatomy, Physiology, and Hygiene” was determined. At the second, main stage express-diagnostics of safe health state and adaptation potential of the students was made, it was done twice, and theoretical grounds for health culture were introduced into the course “Developmental Anatomy, Physiology, and Hygiene”. At the third, final stage the research results were systematized, estimated and generalized, theoretical conclusions were specified, the research results were processed and put on paper.

Data, Analysis, and Results

1. The results of the primary health-state diagnostics.

As a result of express diagnostics of the state of physical health of 129 girl-students (aged 17-18) of the program track 44.03.05 Pedagogic, three groups with different health state were indicated. The first group (1A) consists of students with safe health state, above average – 4.65%. The second group (1B) includes students with the average health state (according to G.L. Apanasenko's classification (2006) – unsafe health state) – 29.46 %. The third group (1C) includes students whose health is below average, which is also unsafe – 65.89%. The results of the primary health-state diagnostics are presented in Table 1.

Table 1. Results of the express-diagnostics of physical health of first-year students

Index	Group 1A(n = 6)	Group 1B (n = 38)	Group 1C(n = 85)	Significance of differences between the groups
Body-weight ratio, g/cm	328.30±5.20	350.68±14.71	341.52±9.6	-
Birth-death ratio, mil/kg	58.70±2.40	50.99±2.21	49.40±1.63	1A and 1B (t=2.363, p<0.05) 1A and 1C (t=3.206, p<0.01)
Power index, %	49.40±3.20	49.09±4.76	43.52±1.66	-
Robinson index, c. u.	70.80±2.80	79.94±5.38	88.02±3.12	1A and 1C (t=4.108, p<0.001)
Martinet test, seconds	47.20±4.40	87.50±6.20	93.27±4.37	1A and 1B (t=5.301, p<0.001) 1A and 1C (t=7.429, p<0.001)
Apanasenko index, u.	15.33±0.29	10.87±0.35	6.50±0.44	1A и 1B (t=9.812, p<0.001) 1A и 1C (t=16.756, p<0.001) 1B и 1C (t=7.773, p<0.001)
Adaptation potential, c. u.	1.98±0.05	1.96±0.13	2.46±0.12	1A и 1C (t=3.692, p<0.001) 1B и 1C (t=2.826, p<0.001)

As for the results, the majority of the students (95.35 %) have unsafe health state. Still their functional indices are within the normal physiological range, with the exception of power index in group 1C (it is below the age norm).

Quantitative assessment of energy potential (Robinson index) revealed good (Groups 1A and 1B) and average (Group 1C) potential of cardiovascular system of the students.

Circulatory system adaptation (adaptation potential) was assessed as satisfactory for all the students.

Thus the students got the necessary knowledge and skills of express-diagnostics of safe health state.

2. Introduction of the theoretic fundamentals of health culture in the course of “Developmental Anatomy, Physiology, and Hygiene”.

The structure of the Federal State Educational Standard of higher education of the program track 44.03.05 Pedagogic (FSES HE, 2016) was changed in the point of students' health protection. In particular, a graduate with the degree of Bachelor of Education must know how to cope with the professional task of providing life safety and preserving health of the pupils in the process of teaching (this duty was not mentioned in the previous Federal State Educational Standard (FSES HPE (higher professional education), 2011)). According to FSES HE common cultural and professional competences of the graduate in health protection were changed (Table 2).

According to the Federal State Educational Standard of higher education some improvements were made in the academic programs and in the curricula. In the VyatSU, according to the curricular for different educational program specializations for Bachelors of Education, the course “Developmental Anatomy, Physiology, and Hygiene” is included into the elective courses of mathematics and natural science circle, it is studied at the first course and is based on the school courses “Biology” (parts “Human Anatomy”, “General Biology”) and “Principles of Personal and Social Safety”. The course “Developmental Anatomy, Physiology, and Hygiene” serves as a ground for the psychological-pedagogical courses (“Developmental Psychology”, “Pedagogic”, etc.) and medical-biological courses (“Basic Medical Training and Healthy Life Style”, “Health and Safety”, etc.), as well as for some particular educational methods.

Within these course students learn Anatomy, Morphology and Physiology of a human organism and its developmental peculiarities, methods of assessing the state of the main human functional systems (nervous, sensory, locomotor, etc.), ways of keeping them healthy and working, hygiene requirements to the teaching process, prevention techniques against the most typical health problems which one could get during the period of education.

As there are few class hours, the main theoretical aspects of structure and functioning of a human organism were studied individually. Still the issues dealing with health preserving and improving were taught at lecture courses and laboratory classes. At the laboratory classes the students were dealing with the following:

- taking the main anthropometric measures and comparing them with the developmental norms;
- assessing the state of the main human functional systems (nervous, sensory, locomotor) and their accordance to the age norms using the available methods;
- assessing the level of physical and psychical health and their accordance to the norms;
- analyzing the timetable and making a timetable in accordance with the hygienic norms;
- using the methods of physical and psychical tiredness for the purpose of performance optimization;
- analysing the daily food ration and changing it in accordance with the theory of sensible nutrition;
- giving first aid to those who has wounded locomotor system, with bleeding, etc.



Table 2. Bachelor of Education competences in health protecting of the pupils

Competences (cipher) according to		Competence-forming stages	Assessment indices	Assessment criteria
FSES HPE	FSES HE			
Readiness to use methods of physical education and self-education for improving the adaptation reserves of the organism and health promotion (CCC (Common Culture Competence) 5)	Readiness to keep the physical conditioning providing the activity (CCC 8)	to know	human neuromuscular system structure and functioning, methods of physical training and health improving, the importance of physical exercise for health improving	can explain the peculiar features (including developmental ones) of anatomy and physiology of human locomotor system, and the meaning of physical training for health improving
		to be able to	correctly estimate the state of the locomotor system, use the methods of physical training for health protecting and improving	recognize the elements of the locomotor system on the natural preparations, on the human model, estimate anthropometric indices
		skills and/or experience (to have the skills of)	the methods of health improving, ways of accident prevention at physical exercises and ways of disease prevention	using the method of health-improving physical training, methods of self-control at doing physical exercises and going in for sports
Readiness to use the methods of protecting in case of emergency, catastrophe, elemental calamity (CCC11)	Ability to give first aid, methods of protecting in case of emergency (CCC9)	to know	the structure and functions of the main systems of the human organism, food hygiene norms, protection of labour, the main protective measures in case of emergency, catastrophe, elemental calamity	the explanation of the peculiar features (including developmental ones) of structure and functions of the main systems of the human organism; teaching hygiene
		to be able to	Form the skills of healthy life-style and safe environmental conditions for education according to hygiene and labour protection requirements; recognize the signs of illness, use group, individual, and other protective means	recognize the indications of health damage of the main systems of the human organism, name their possible reasons, use protection measures, including those against contagious diseases
		skills and/or experience (can do)	give the first aid to the injured, ways of individual and group life and health protection	give the first aid to the injured in the right way, including that after emergency, catastrophe, elemental calamity

Table 2. Continued.

Competences (cipher) according to		Competence-forming stages	Assessment indices	Assessment criteria
FSES HPE	FSES HE			
Readiness to protect life and health of the pupils both in class and during out-of-class activities (PC (Professional Competence) 8)	Readiness to protect life and health of the pupils (CPC (Common Professional Competence) 6)	to know	requirements of hygiene of educational process, dangerous and harmful environmental factors both during the educational process and out-of-class	Hygienic requirements to school work, classrooms, school equipment, teaching aids, pupil's daily routine, clothing and shoes, the reasons of nervous and muscle fatigue, private hygiene rules, hygiene of eyesight, hearing, skin, sleep, elements of healthy life-style
		to be able to	use health protecting technologies in professional activity, taking into account risks and dangers of the social environment and education	Recognize the indices of health problems of the main systems of the human organism and name their possible reasons; demonstrate the methods of muscle tension-relieving
		skills and/or experience (to have the skills of)	ways of protecting life and health of the students and pupils	Using different methods of nervous and muscle tension-relieving

The girls showed a keen interest in the topic “Age Peculiarities of Infants” which is devoted to newborn and infant care, the advantages of breast feeding, supplemental feeding, etc.

For assessing the competences in life and health protection formed by the course special criteria have been worked out. They are presented in Table 2. The midterm assessment has shown good results (students' performance was over 80%) which was the proof of the efficiency of the methods used.

3. The results of the repeat health-state diagnostics.

The repeat diagnostics of the safe health state of the same girl-students (aged 18-19), which was run by the author of this paper at the second year of their studies, has revealed the same three groups with different health state, but in a different proportion. The first group (2A) includes students with the safe health state, above average – 7.75%. The second group (2B) consists of students with the average health state – 49.61 %. The third group (2C) includes students whose health is below average – 42.64%. The results of the repeat health-state diagnostics are presented in Table 3.

**Table 3.** Results of the express-diagnostics of physical health of second-year students

Index	Group 2A(n = 10)	Group 2B(n = 64)	Group 2C(n = 55)	Significance of differences between the groups
Body-weight ratio, g/cm	329.20±6.30	349.05±8.51	354.31±12.7	-
Birth-death ratio, mil/kg	57.50±1.80	54.27±1.71	44.94±2.76	2A and 2C (t=3.812, p<0.001) 2B and 2C (t=2.874, p<0.01)
Power index, %	46.80±4.20	51.39±1.85	41.62±2.23	2B and 2C (t=3.372, p<0.01)
Robinson index, c. u.	69.70±4.20	84.32±3.63	81.44±3.48	2A and 2B (t=2.634, p<0.05) 2A and 2C (t=2.152, p<0.05)
Martinet test, seconds	49.80±5.60	82.38±7.46	92.35±7.20	2A and 2B (t=3.493, p<0.001) 2A and 2C (t=4.665, p<0.001)
Apanasenko index, u.	15.50±0.27	11.31±0.22	6.34±0.50	2A and 2B (t=12.03 p<0.001) 2A and 2C (t=16.12, p<0.001) 2B and 2C (t=9.098, p<0.001)
Adaptation potential, c. u.	1.82±0.12	1.85±0.07	2.03±0.08	1A and 1C (t=3.692 p<0.001) 1B and 1C (t=2.826, p<0.001)

The results suggest that the number of students with unsafe health state got a bit less (92.25% as compared with 95.35% at the first course). Besides there was some significant ($p<0.001$) reduction of the number of students in the group with health level below average (42.64% as compared with 65.89% at the first course) and at the same time some growth of the number of students with the average health level (49.61% as compared with 29.46% at the first course).

The figures of the functional indices were within the physiological norm for their age, with the exception of birth-death ratio and power ratio in the group 2C which were below the age norm.

The functional indices of cardiovascular system of all the students under research were normal, which is shown by the good Robinson indices.

The results of the assessment of cardiovascular system adaptation were satisfactory for all the students. In all the groups one can mention lowering of adaptation potential as compared with the preliminary assessment (in group 2C it is significant ($t=2.982$, $p<0.01$)), which suggests that the organism has enough functional capacity.

On the whole, the repeat diagnostics results demonstrate that the health level of the students increased, which could be explained not only by the fact that they had passed the stage of adaptation to studying at the university, but also by the fact that they had got more knowledge on preserving and improving their health.

Discussion and Conclusion

The dramatic drop in health level of students has been mentioned by many researchers (Verkhorubova, Podlesskaya, 2013; Губа, et al., 2013; Tikhomirov, 2013; Fertikova and Rogachev, 2015). By estimate, about 80–90% young people who enter higher educational establishments have some health issues (Gushchenko, et al., 2011), 40% students graduate from higher educational establishments with debilitated medical condition (Buslovskaya and Ryzhkova,

2010). According to D. A. Tikhomirov (2013), in the first report on young people of Russia in 1993 it was stated that the health state of the young was bad, and since that time the situation has got even worse. Thus the necessity of regular health monitoring and introducing health saving technologies into the curricula is quite evident.

The primary health-state diagnostics of the girl-students of the VyatSU reflects the nationwide tendencies, such as lessening the abilities of the cardiorespiratory system with functional indices remaining within normal limits. The results of the primary health-state diagnostics turned out to be quite unexpected for the students, as many of them were feeling themselves quite well and were able cope with the average requirements of the program at the lessons of Physical Training, were going in for sports (swimming, fitness, etc.). Still their unsafe health state indicated the absence of a whole system of forming, preserving and improving individual health, i. e. lack of health culture.

According to M.L. Zvezdina (2013), the concept “health culture” represents a certain degree of mental and physical health of the students, a system of health valuing, certain systematic knowledge, needs, and skills of health forming, preserving and improving. Health culture is both the aim and the result of Health Pedagogic.

Low level of teachers' education in health preserving is dangerous for their future students/pupils. According to M.M. Bezrukikh (2012), insufficient education of teachers in health preserving and health culture forming is one of risk factors leading to health problems of the pupils. The fact that the teacher knows his/her subject very well does not guarantee that this teacher works in accordance with developmental and individual peculiarities of the pupil. It is noted that the main drawbacks of the federal system of training and retraining Bachelors in Education are the following: minimal and insufficient knowledge in Developmental Physiology and Developmental Psychophysiology which is necessary for organizing health-preserving teaching and learning process.

O.V. Verkhorubova and O.S. Podlesskaya (2013), V.I. Gorbunova (2015), M.V. Pazyrkina and G.I. Sopko (2014a) also mention the problem of ignorance of students, future teachers, in the sphere of preserving and improving health. In order to improve their valeological knowledge the authors suggest to actively introduce new technologies, new forms of organization and new content of the teaching process. For example, in the Bryansk State University the first-formers have a special course “Alternative methods of health improving of the future teacher”, the aim of the course is to introduce the alternative ways of health preserving and improving and to improve the cultural and educational level of the students.

I argue that valeological knowledge can be improved not only by means of medical-biological courses, but also by means of psychological-pedagogical courses. In particular, it could be done by means of such courses as “Developmental Anatomy, Physiology, and Hygiene”, “Health and Safety”, “Basic Medical Training and Healthy Life Style”, “Psychology”, and others. Working out the basic curricula for the above-mentioned courses is supposed to be done by

the higher educational establishments, that's why it is quite possible to increase the number of courses, which could contribute to spreading knowledge on forming, preserving and improving health. This idea is compatible with the idea of G.I. Sopko and M.V. Pazyrkina (2014b), who argue that health culture forming process is grounded on complex knowledge of morphofunctional developmental peculiarities, on the idea of a healthy life-style, on the methods of individual health forming, and on the the ability to use special methods of health improving.

Thus improving teachers training system should aim at improving students' knowledge in forming, preserving, and improving individual health, as well as at making the conditions for preserving and improving health of the future teachers. To develop the second approach, it is offered to prepare regional special-purpose programs on preventing health problems of students. According to T.E. Fertikova and A.A. Rogacheva (2015), such complex programs of students' health improving already work in some higher educational establishments in Russia, for example, in the Moscow State University of Medicine and Dentistry and in the Voronezh State Medical Academy. In order to be able to offer the necessary medical and social help to the students it is recommended to organize local therapy centres. For example, there is such a centre in the VyatSU, which has been functioning for 27 years, it offers health improving therapy to students, teachers, and other university employees, including physiotherapy, healthy diet, etc.

Thus, there are many research papers on the topic, but each paper deals just with some part of the issue. It is not always clear to the students why they should improve their health; they consider themselves too young to be bothered about that. Still the results of the diagnostics of safe health state show importance of health improving, and teaching them some theoretical foundations means giving them the necessary information on the topic.

Conclusion

It was stated that the majority of girl-students of pedagogical specialties of the VyatSU have an average, that is unsafe (according to Apanasenko, 2006) health state, still their functional indices are within the normal physiological range. Quantitative assessment of energy potential of the cardiovascular system (Robinson index) showed good and average reserves of the cardiovascular system of the students under research. Circulatory system adaptation (adaptation potential) assessment (Bayevskiy, 1989) was satisfactory for all the students. During the research the students got the necessary knowledge and skills of express-diagnostics of safe health level.

Literature analysis has shown that the papers on the topic consider just some aspects of the issue, without taking it on the whole. To provide the students with the necessary valeological knowledge it is offered to add extra courses (Verkhorubova, Podlesskaya, 2013), to increase the number of lessons of physical training using health protecting technologies (Gorbunova, 2015; Petrova, 2012), etc.

Including theoretical basis of health culture in medical-biological and psychological-pedagogical courses, for example in the course “Developmental Anatomy, Physiology, and Hygiene” makes it possible to form the main competences of Bachelors of Education in preserving and improving health, to heighten their interest to the course, to explain the importance of preserving and improving one's health. All that leads to putting health at a higher scale in the value hierarchy of each student, as well as to forming health culture.

Implications and Recommendations

The paper has a practical value for the headmasters, teachers, and students of higher educational establishments. It is of interest to scientists dealing with health state of students and looking for the ways of its preserving and improving. Taking into account the results acquired it is possible to state a set of issues and interesting and topical spheres of research, such as grand-scale student health monitoring, working out a complex special-purpose program of young people's health improving, implementation of health-preserving technologies in the curricula, spreading valeological knowledge among the population.

Disclosure statement

No potential conflict of interest was reported by the authors.

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