

## EFFECTS OF AVERAGE DOSE OF CAFFEINE ON DURATION OF RESPIRATORY CYCLE AFTER PHYSICAL LOAD

Аль Тавил М., Аль Тавил Р., Кузьмина А., Силантьева Д.И.

*Казанский Федеральный Университет, Казань, Россия*

*disilanteva@kpfu.ru*

**Introduction.** It is known that coffee has stimulating effects on the respiratory system. Caffeine can affect both the central and peripheral chemoreceptors that participate in control of respiratory rate and increase hypoxic ventilatory responses in humans [1]. Due to this effect coffee can influence the duration of respiratory recovery after the physical load.

**Aim of research.** To study the acute effect of coffee intake on parameters of respiratory rhythm before and after physical load.

**Materials and methods.** During the first part of research, the parameters of respiratory rate were measured in rest conditions and 1, 3, 5 min after exercise (20 minutes cycling) using the pneumograph. In the second part, the parameters were recorded 30 min after consuming coffee which contains 200 mg of caffeine in rest conditions and then on 1st, 3rd, 5th minutes after exercise. All participants signed informed consent before performing any activity associated with the experiment.

**Results and discussion:** Analysis of results did not show statistically difference between parameters recorded 30 min after caffeine intake and normal conditions and during the measurements in the first part of experiments. However after combining physical load and coffee intake we observed a significant increase in respiratory rate 1 min after cycling from  $22,5 \pm 3,1 \text{ min}^{-1}$  to  $29,4 \pm 3,7 \text{ min}^{-1}$ , a significant decrease in duration of the whole cycle 1 min and 5 min after cycling to  $2,2 \pm 0,3 \text{ s}$  and  $2,6 \pm 0,3 \text{ s}$  respectively compare with  $3,1 \pm 0,4 \text{ s}$  after coffee intake. Furthermore, the duration of the whole respiratory cycle 1 min after load decreased due to significantly decreasing expiration: from  $1,8 \pm 0,2 \text{ sec}$  to  $1,3 \pm 0,2 \text{ sec}$ .

**Conclusion.** Thus our result showed that coffee intake did not affect the respiratory rhythm in resting conditions, but increased the respiratory rate immediately after average physical load due to decreasing the duration of expiration.

### References.

1. Chapman, R. F., Mickleborough, T. D. The effects of caffeine on ventilation and pulmonary function during exercise: an often-overlooked response // The Physician and sportsmedicine, 2009. - No. 4,- V. 37 - P. 97-103.