

PEDAGOGY AND EDUCATION

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INFLUENCE OF PHYSICAL LOADING ON THE FUNCTIONAL STATE OF THE STUDENTS 'ORGANISM

***Abstract.** The article presents a literary review, reveals the positive and negative effects of physical activity on the functional state of the human body. Systematic exercise promotes intensive development of the heart and improves its function. In the myocardium, many morphological rearrangements occur, that is, the synthesis of contractile protein increases, the number of mitochondria increases, and the concentration of myoglobin in the capillary network increases in proportion to the increase in the mass of the heart.*

***Keywords:** physical activity, sports, functional state, students.*

It is well known that physical activity has a direct impact on the functional state of the human body. During exercise, the body needs to adapt to the new condition.

The definition of adaptation to physical activity is that the body not only adapts to the size of heavy lifting, high or slow speed, but also adapts to changes in functions, biochemical processes and the humoral reactions they cause. In addition, the psychological and emotional background of competitive activity changes. A characteristic feature of adaptive functional systems is their flexibility and lability to achieve the same results in different conditions of the external and internal environment. The functions of these systems are performed with the maximum saving of human resources [8]. The relevance of studying the effect of physical activity on the functional state of the human body does not raise doubts, since physical culture and sports are becoming the norm of life and an indispensable attribute of personal success for many citizens of our country

The aim of this work was to study the effect of physical activity on the functional state of a person.

It can be assumed that under the influence of properly organized physical exercises, the plastic process increases, which leads to accelerated formation of bone tissue in the process of human growth. This process is most clearly manifested in childhood. In addition, moderate physical activity lasting 1.5-2.0 hours can cause a 3-fold increase in the level of growth hormone in the blood. And the higher the level of self-tropin, the more intense the growth of a person [10].

Regular exercise can help increase the strength and endurance of the respiratory muscles, increase the size of the lungs and the depth of breathing, and decrease the frequency of breathing, thereby significantly improving air exchange in the airways. In this case, the lungs more fully satisfy the human body's need for oxygen [9].

Physiological changes in the respiratory system are also manifested in the form of an increase in the oxygen utilization rate and an increase in the ability of the respiratory center to maintain arousal at the maximum level for a long time. The oxygen capacity of the blood and the ability of skeletal muscles to use oxygen from the blood increase, thereby creating conditions for lowering pulmonary ventilation, both at rest and during physical exertion [6].

Regular physical exercise increases the number of alveoli by 15-20%, which creates a significant anatomical and functional breathing reserve [4].

Some authors [1, 3] note that physical exercises of a cyclical nature lead to an increase in the volumetric-speed indicators of the respiratory system. So, in the studies of N.G. Varlamova [3] found that people who go in for cross-country skiing have higher airway patency in different parts of it than people who do not go in for sports.

The cardiovascular system plays a leading role in ensuring the adaptation of the body to physical activity, thereby limiting the development of the body's adaptive response [7]. Systematic exercise promotes intensive development of the heart and improves its function. In the myocardium, many morphological rearrangements occur, that is, the synthesis of contractile protein increases, the number of mitochondria increases, and the concentration of myoglobin in the capillary network increases in proportion to the increase in the mass of the heart. All this leads to moderate hypertrophy of the myocardium and an increase in its cavity, therefore cardiac output increases, and the pulse rate decreases. These morphological and functional rearrangements ensure the economy of the heart and adapt the cardiovascular system to various muscular loads [2].

Often, people who exercise regularly have sinus bradycardia at rest, which is characterized by low heart rate values. Most often, a slowdown in the heart rate occurs in people who regularly engage in cyclic exercises to develop endurance. A decrease in the pulse rate in a sportsman is a manifestation of the influence of the vagus nerve on the sinus node and is considered a more efficient and economical circulatory system. This is due to the fact that filling in the ventricles is created during prolonged diastole and the metabolic process of the myocardium after the previous contraction is fully restored. One of the main manifestations as a result of a decrease in heart rate at rest is a decrease in myocardial oxygen demand [2].

At the initial stage of training, the stroke blood volume tends to increase its values, and as sports experience increases, its values stabilize, which contributes to a decrease in the minute blood volume at rest.

In addition to the positive effect on the health of the practitioner, physical activity can have a negative effect on the functional state and cause various diseases and injuries. This occurs as a result of a mismatch between the load performed and

the functional capabilities of the body. Excessive stress can cause inhibition of plastic processes and retardation of the growth and development of the body. Intense physical activity for a long time, especially in combination with unfavorable environmental conditions, can cause and maintain inflammatory changes in the airways [5]. So, I.M. Vuljanko, D. Plavec [11] note that people exercising in an open environment are exposed to cold air, which can increase the risk of respiratory dysfunction.

Regular physical activity promotes the acceleration of plastic processes, contributes to a change in the functional state of the respiratory system in the form of an increase in the strength and endurance of the respiratory muscles, an increase in the vital capacity of the lungs due to an increase in the number of alveoli, an increase in the oxygen utilization rate, and an improvement in airway patency.

The cardiovascular system responds to regular physical activity with a decrease in the heart rate at rest as a result of a decrease in myocardial oxygen demand, which is a sign of a more economical work of the heart. However, physical activity that does not correspond to individual characteristics or takes place in uncomfortable environmental conditions can cause various diseases and injuries.

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