

## **BASICS OF WORK PHYSIOLOGY**

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**Abstract:** to acquaint students with the basic concepts of labor physiology and methods of studying functional changes that occur under the influence of labor activity in the body of workers.

**Key words:** synergistic, households, malnutrition, ecosystem services, triggers growth, physical work.

The current stage of development of the state is characterized by a wide variety of types of labor activity, a significant increase in the share of various types of mental work, computerization of production, and a high level of psycho-emotional stress. At the same time, there are works performed in conditions of incomplete automation, which can cause significant stress on all physiological systems of the human body, primarily the central nervous, cardiovascular systems, musculoskeletal system, visual analyzer, etc.

Currently, in the context of the economic crisis, one of the negative manifestations of which is the reduction in the number of jobs and the redistribution of the volume of work performed to the remaining workers, there are frequent cases of non-compliance with hygienic standards of labor activity, which immediately affects the health of workers. Therefore, the relevance of assessing and regulating elements of the labor process in both public and private enterprises is increasing.

Labor in conditions of semi-automatic production is associated with the performance of simple operations (feeding a part for processing, starting the machine, removing the finished part), accompanied by muscle loads of a mainly local, sometimes regional nature, tension in the visual analyzer in the process of observing machine work, monotony. Meaningless and uninformative work is accompanied by a loss of creativity and leads to a progressive decrease in the activity of various structures of the central nervous system. Examples of such forms of labor include the professions of stampers, grinders, and seamstresses.

The labor associated with automated production comes down to ensuring the smooth operation of production equipment. Some types of such work require frequent and simple intervention in the operation of machines (weaving production), others are characterized by long-term continuous observation followed by diagnosis and elimination of various problems, which requires knowledge of the complex design of equipment, software, and high qualifications (operator). Such control of modern devices occurs with the participation of higher cortical centers for processing complex information to quickly and accurately solve emerging problems. A prolonged state of anticipation and readiness for action – “operative rest” – can lead to paralytic inhibition in the nerve centers.

Group forms of labor (conveyor) involve moving a product (part) during its processing from one worker to another. This requires synchronized work of conveyor participants, who are bound by a certain pace and rhythm of work. Such work can be relatively easy in terms of the physical effort expended (local muscular work), for example, assembling watches and microcircuits. In other conditions, significant muscle loads are observed (regional muscle work) - assembling cars on a conveyor belt. Conveyor workers constantly perform the same simple, monotonous operations; the work is characterized by monotony and is accompanied by tension in various muscle groups and the visual analyzer.

Changes in the blood system

During physical work, significant morphological, physical and chemical changes in the blood occur. Morphological changes consist of an increase in the number of erythrocytes and leukocytes due to release from the depot and increased erythropoiesis (as evidenced by reticulocytosis) and leukopoiesis.

Physical changes in the blood due to work are characterized by an increase in the osmotic resistance of red blood cells or a decrease, which is observed with hard work, acidosis and high air temperature. Osmotic pressure and blood viscosity increase, and the liquid phase of blood decreases.

Chemical changes are changes in the content of glucose, lactic acid, alkaline reserves, and blood gases. An increase in blood glucose occurs at the beginning of work, during emotional stress. A decrease in glucose can occur when performing habitual work in trained individuals; in untrained people, especially when performing heavy and long-term work, a sharp, life-threatening decrease in blood glucose can occur.

The lactic acid content increases depending on the severity of the work performed. In people trained for physical work, less lactic acid is formed, and oxidation occurs faster than the untrained. The level of alkaline reserves in the blood decreases with the accumulation of lactic acid.

During mental work, blood changes are insignificant and inconsistent. There may be a slight decrease in glucose levels, an increase in the content of inorganic phosphorus, cholesterol, creatine, and a decrease in alkaline blood reserves.

Changes in endocrine functions An increase in the intensity of physical work is accompanied by an increase in the concentration of adrenaline, norepinephrine, cortisone, and corticosterone in the blood. With prolonged muscular work, the activity of the sympathoadrenal and pituitary-adrenal systems decreases, the content of glucocorticoids in the blood decreases, which leads to a decrease in the functionality of the myocardium and skeletal muscles. A decrease in insulin levels occurs as a result of a decrease in its secretion and increased breakdown. In such a situation, fat depots are used as an energy source for muscle work.

Fatigue is a functional state accompanied by a feeling of fatigue, decreased performance, caused by intense or prolonged activity, expressed in a deterioration in quantitative and qualitative performance indicators and stopping after work. Fatigue develops not only in working muscles, but primarily in the central nervous system, and is manifested by the development of inhibition, which is limiting in nature, protecting nerve cells from overstrain and death. In its biological essence, fatigue is a normal physiological cortical protective reaction, manifested in mechanisms limiting performance.

The picture of physical and mental fatigue is similar. Mental and physical fatigue affect each other. With severe physical fatigue, mental work is unproductive and vice versa. This is due to the irradiation of inhibition from the most tired centers to neighboring ones. With mental fatigue, functional changes in the central nervous system have been noted, higher nervous activity, analyzers, mental activity. There is a disorder of attention, deterioration of memory and thinking, and the accuracy and coordination of movements is weakened. Fatigue goes away during rest (breaks from work, night rest, weekends, vacation). If rest turns out to be insufficient to fully restore working capacity by the beginning of the next working period, then the resumption of work occurs against the background of fatigue, and overwork develops.

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