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REGULARITY OF PHYSIOLOGICAL CHANGES IN THE FUNCTIONAL STATE OF THE BODY OF WORKERS OF A PLANT FOR THE PRODUCTION OF REINFORCED CONCRETE STRUCTURES

Samigova Nargiz
Candidate of Medical Sciences, Associate Professor of the Department of Communal and Occupational Hygiene of the Tashkent Medical Academy. Tashkent, Uzbekistan
E-mail: nargizsam@rambler.ru
https://orcid.org/0000-0003-0123-0599

Abstract. Unfavorable working conditions determine physiological changes in the body of workers at a plant producing reinforced concrete structures, tension in thermoregulatory processes, and the cardiovascular system, which is determined by the influence of harmful production factors on the functional state of the whole organism during the working day.
Key words: occupational hygiene, production of reinforced concrete structures, workers, functional state of the body, physiological indicators, industrial fatigue, preventive measures.

The relevance of the problem. It is known that maintaining professional health is an important function of each country in the course of implementing the main political directions, which contributes to the formation of new opportunities and increasing the rate of economic growth of the state's development [3, 6, 8, 10, 11]. In the republic, at this stage of economic development, the production of building materials is becoming increasingly important, which is primarily due to the expansion of the urban structure, the emergence of new administrative, residential, and industrial facilities, for which the products of the studied facilities are of great importance [1, 4, 7]. This was a prerequisite for targeted research to study the influence of hygienic features of working conditions when performing basic technological operations on the body of workers, and ultimately for the development of scientifically based hygienic recommendations for the prevention of diseases [2, 5, 9].
Purpose of the study. The purpose of the study was to study the state of the functional systems of the body of workers at a plant producing reinforced concrete structures in the dynamics of a work shift, taking into account the severity of the labor process.
Materials and methods. To conduct physiological studies, practically healthy workers from leading professional groups of a plant producing reinforced concrete structures were selected. Each group of subjects consisted of 10 practically healthy individuals, aged from 30 to 40, with 10-15 years of work experience. Observations were carried out over 2 weeks, in the dynamics of the working day (at the beginning of work, before a break and at the end of work), in the warm and cold periods of the year. The study of the functional state of the cardiovascular system included palpation measurement of pulse rate, tonometry with determination of blood pressure and pulse pressure, with calculation of stroke and minute blood volume. The functions

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of thermoregulation processes were assessed by measuring skin temperature with an electric thermometer (TPEM-1) and body temperature with a medical thermometer.

Results and discussion. A study of the state of the functional systems of the body of workers at a plant for the production of reinforced concrete structures in the dynamics of a work shift when working in different periods of the year showed that unfavorable microclimatic conditions of the workplace have the greatest impact on the physiological functions of the body. Moreover, the results of its influence are aggravated by the presence of other harmful production factors. Thus, a study of the thermal state of the body of workers of the studied facility during the warm period of the year revealed that the body temperature before the start of the work shift averaged 36.3±0.07 degrees Celsius, during the working day it increased slightly and at the end of the work shift averaged 36.9±0.01 degrees Celsius. During the cold period of the year, the average body temperature was 36.7 degrees Celsius. The study of the average weighted skin temperature revealed the dynamics of changes on average from 33.6±0.1 degrees Celsius to 35.6 degrees Celsius (during the warm period of the year) and 33.4 degrees Celsius (during the cold period of the year). When determining the average body temperature of workers in the main workshops of the plant for the production of reinforced concrete structures, the following pattern was also revealed: at the beginning of the working day it corresponded to 36.3 ± 0.2 degrees Celsius, and at the end of the working day on average it corresponded to 36.7 ± 0.4 degrees Celsius. It was also found that in the warm period of the year at the beginning of the working day, the difference between the temperature of the skin of the chest and the distal parts of the extremities was equal to 1.6 ± 0.3 degrees Celsius, while with an increase in air temperature at the studied permanent workplaces at the end of the working day, its decrease was observed.

In addition, the influence of the heating microclimate on the state of heat exchange was studied based on quantitative indicators of moisture loss for the entire working day. This figure corresponded to an average of 5280 ml, which confirms the development of thermal stress in the workers' body. When conducting a subjective survey method, it was determined that, according to heat sensations, workers rated their workplaces as "hot" (6 points).

In the dynamics of the working day, changes in the functional state of the cardiovascular system were also identified among workers at a plant producing reinforced concrete structures, which were characterized by increased heart rate, increased pulse pressure and maximum pressure, and a decrease in minimum blood pressure throughout the working day. Thus, the heart rate of workers before work fluctuated within 72±1.5, before the lunch break it increased to 76±1.08, and by the end of work to 88±1.08 beats per minute. The maximum blood pressure among workers during a shift was on average within the range of 114-120 mmHg, the minimum blood pressure was 72-75 mmHg, that is, it generally did not go beyond the limits of physiological fluctuations. Workers at a plant producing reinforced concrete structures showed a tendency toward an increase in maximum and a decrease in minimum blood pressure throughout the working day. As a result of this, pulse pressure increased, which ensured an increase in the systolic volume of the heart and was one of the ways of its adaptation to working conditions. Stroke blood volume and minute blood volume increased after four hours of work, and by the end of the work shift they returned to their original values.

Conclusion.

Unfavorable working conditions determine physiological changes in the body of workers at a plant producing reinforced concrete structures, stress in thermoregulatory

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processes, and the cardiovascular system, which is determined by the influence of harmful production factors on the functional state of the whole organism. All of the above requires the development of preventive measures aimed at preserving the health of workers.

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