Physiological substantiation of preparation of youth for military and professional activities in extreme conditions of the arctic region

UDC 612.06 (796)

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Received by the editorial office on 03.15.2023

Abstract

Objective of the study was to verify the professional-applied physical fitness and psychophysiological status of student youth for military professional activity in the conditions of the Arctic region.

Methods and structure of the study. A non-invasive method of gas-discharge visualization of induced energy emission processes based on the Kirlian effect was used. The assessment of the level of professional-applied physical fitness and indicators of energy-emission processes of the body of young people during the period of adaptation to military-professional activity in the extreme conditions of the region was made.

Results and conclusions. The success of adaptation to the service of students makes high demands on the professional and applied physical and psychological training of the younger generation in the extreme conditions of the Arctic region. Three levels of adaptation to military service are proposed: basic, optimal and ultimate. The quantitative distribution of levels makes it possible to physiologically substantiate the degree of adaptation of young men to military service in the extreme conditions of the Arctic region.

Keywords: *adaptation, youth, military service, vocational training, extreme conditions of the Arctic region.*

Introduction. Currently, there is an acute problem of preparing young people of conscription age for military service and retraining military personnel in the shortest possible time. The relevance of ensuring the country's national security is increasing and, as a result, expanding cooperation between the commonwealth countries is an objective necessity.

Research on the problem of adaptation of military personnel of the Armed Forces of the Russian Federation has become relevant in recent years in connection with the further development of the process of increasing the complexity of modern military equipment, increasing neuro-psychological and physical stress, and the reduction of the service life of conscript youth, which indicates the specifics of preparing youth for military professional activities in extreme conditions of the Arctic region [5]. Consequently, the process of organizing student service largely requires a reduction in the adaptation period of young people in military groups [1].

Currently, the problem of the influence of human functional states, such as stress, mental tension, fatigue, monotony and others, on human performance remains poorly understood. In addition, the issue of regulation of functional states in the process of military professional activity remains relevant.

Objective of the study was to verify the professional-applied physical fitness and psychophysiological status of student youth for military professional activity in the conditions of the Arctic region.

Methods and structure of the study. The study involved young 2nd-3rd year university students, 58 people aged 18-22 years. Conditions for selecting respondents: permanent residence in the Arctic region, basic health group, readiness for a future military career. The study was carried out during the period of study at the

university and consisted of two stages, including a comprehensive assessment of physical fitness and the level of energy emission processes in the students' bodies.

To solve research problems, motor testing methods were used, including assessment of the development of speed, speed-strength abilities and general endurance. The general control exercise on a single obstacle course, or exercise 32, was made up of exercises of the Military Sports Complex of the Armed Forces of the Russian Federation and was performed in military uniform without weapons. In the process of psychophysiological research, the level of health, the level of activation of psychophysiological processes and indicators of energy emission processes in the students' body were determined. The study used a non-invasive method of gas-discharge visualization of induced energy emission processes, based on the Kirlian effect [3].

Results of the study and discussion. Physical training is one of the main subjects of vocational and applied training, an important and integral part of military training and education of personnel, an integral part and one of the significant areas for increasing the combat capability of the Russian Federation. The process of adaptation to new conditions is associated with significant physical and psychological stress on the functional systems of the body [1, 4].

We assume that systematic training using professionally applied physical training for military personnel helps to optimize the psychophysiological status and accelerate the processes of adaptation of the body of young people to military professional activities.

At the first stage of the study, main testing was carried out. During the year at the university, 2nd-3rd year students were trained in a program of professional-applied physical training. Evaluation of the results allows us to preliminary assess the physical condition of students and consider the impact of a special professionally applied physical training program on the physical fitness of young men (see table).

When assessing the physical fitness of students, it should be noted that at the first stage of the study, the indicators of physical fitness are ambiguous, which indicates the influence of sensitive criteria of physical development. Thus, the assessment of the average test results in the 3000 m run is higher than the average test results than in the 100 m run, which indicates the stability of general endurance indicators in young men during the school year.

Assessing the second stage of physical fitness testing, it can be argued that the results of the respondents' physical and applied fitness have changed towards improvement.

We assume that the program of professional-applied physical training of university students helps to accelerate the processes of adaptation to physical activity during the period of educational activity.

For the purpose of psychophysiological assessment of the adequacy and effectiveness of the applied system of physical training of students, the gas-discharge visualization method was used, which made it possible to quantify the level of psychophysiological activation and health.

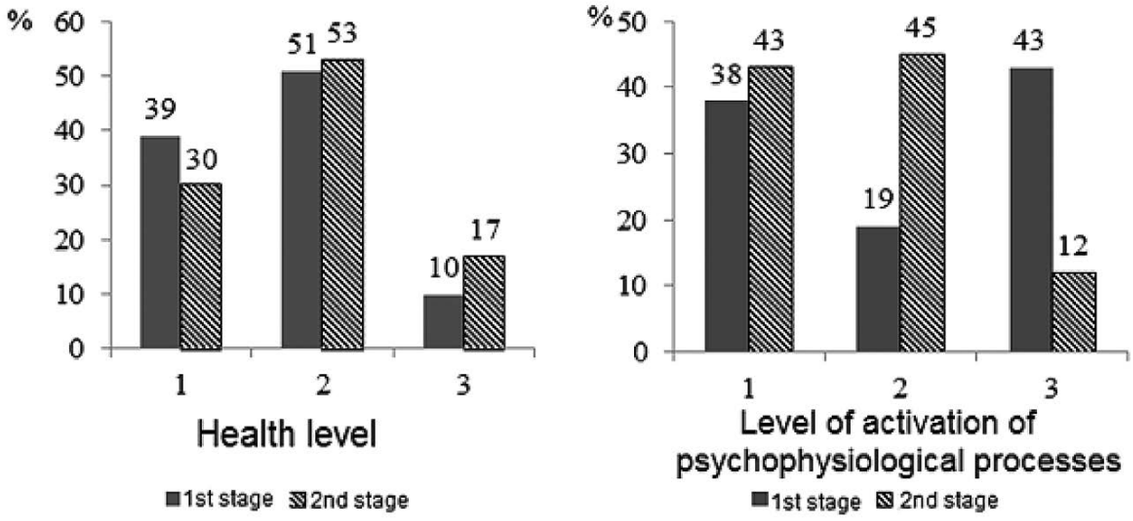
When assessing gas discharge visualization, the Activation Index of psychophysiological processes at the first and second stages differs slightly. The health index is at an optimal level with minimal stress on the body's regulatory functions (see figure).

Assessment of adaptation levels based on the activation index of psychophysiological processes of the body has significant differences. The anxiety index allows you to reflect the psychophysiological status by identifying the caused energy emission processes.

Adaptation levels are an integral indicator of the interaction of all body systems. The health index and the activation index of psychophysiological processes in

Assessment of students' physical fitness (n=58)

Indicators	1st stage	2nd stage	Growth,%
100 m run, s	13,32±0,25	11,72±0,23	12,78
3000 m run, s	807,66±10,96	817,68±11,19	-1,23
Pull-ups from hanging on a high bar, number of times	5,31±0,14	6,19±0,15	15,1
Swimming 100m freestyle, s	99,58±1,17	80,46±0,82	21,24
10m air rifle, 5 shots, number of points	23,49±1,43	29,86±0,87	23,88
Obstacle course (exercise 32), point	66,6 ±1,97	82,64±0,87	21,5



Ranking of students according to health level and degree of activation of psychophysiological processes in the students' body

the students' body contribute to rapid and successful adaptation to military and professional activities.

Solving the problem of adaptation to the extreme conditions of the Arctic region, three levels of adaptation have been identified:

1. The basic level - is one of the mechanisms of socialization, which allows individuals to actively participate in various elements of the social environment through systematic training under the program of professional-applied physical training of university students.

2. Optimal level - is considered as a process of organizing social interaction that contributes to the fullest realization of personal potential and physical development.

3. Limit level - the process of activating the energy supply of the functional systems of the body of students, in which it is possible to move to the optimal level with a minimum level of the activation index of the psychophysiological processes of the body.

Conclusions. Young men with a higher level of physical fitness adapt more quickly to future military and professional activities. The rational use of means and methods of professionally applied physical training of students significantly accelerates the process of social and psychological adaptation of young men.

The psychophysiological state of students is due to the insignificant influence of the health index and the significant influence of the level of energy emission processes of the body.

Three levels of adaptation are defined: basic, optimal and extreme. The proposed quantitative distribution of levels allows us to identify the features of young men's adaptation to military service and make timely adjustments to the vocational training program.

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