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Guidelines for Study of Adaptation Processes after Physical Load in Military Personnel

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ABSTRACT

Have been studied the processes of adaptation in representatives of military forces after physical loads and elaborated methodical recommendations. Experiments have been carried out on students of faculty of military medicine under the normal load conditions. The results of investigation have shown that owing to arterial pressure and pulse rate monitoring it is possible to describe processes of adaptation. On the basis of obtained data, using systolic (T) and diastolic (A) pressures and pulse (P) the diagrams of processes of adaptation were suggested. According to the analysis of received data the three major categories of investigated individuals has been distinguished: 1. Good for farther military activities; 2. The high-risk group; 3. Not good for farther military activities.

KEYWORDS: *military personnel, physical load, adaptation, blood pressure, pulse rate*

To study the processes of adaptation in representatives of military forces after physical loads considering their duty status is of great value. The importance of the mentioned problem is determined by high specificity of their activity. In literature scientific works including analysis of processes of adaptation are presented sufficiently, however they are mainly dedicate to individuals engaged in sport [1,2,3]. In literature, available for population, the data about the same investigations performed in personnel of military forces is absent.

The work was aimed to elaborate the methodological recommendations in cooperation with American colleagues that could allow us to perform investigations with great amount of research objects. It is well known that humans' adaptation processes are in functional dependence with internal and external factors. For instance, internally - arterial pressure (P_i), psychotic type etc., and externally - atmospheric pressure (P_e), ambient temperature (T_e), season rhythm (g_e) etc., the aforesaid relation could be expressed by the following formula:

$$A \sim f(P_i; T_i; g_i; ...)(P_e; T_e; g_e; ...)$$

Naturally, among various parameters we should distinguish such one, which is better expressed and reflected on the process of adaptation after physical load.

If we take into consideration the fact that all military personnel are subjected to preliminary medical examinations, the many of parameters during the examinational process could be accepted as constant, that significantly will reduce the number of investigative parameters.

In the process of complex examination was revealed that controlling arterial pressure and pulse we could discuss the course of processes of adaptation, which is technically available.

Measuring the above-mentioned parameters we could detect approximate picture of course of adaptation.

MATERIALS AND METHODS

Experiments have been carried out on students of faculty of military medicine under the normal load conditions. The arterial pressure and pulse of each student under resting conditions were measured during months on Saturdays. These data were considered as control. The data after load were fixed and obtained immediately on 20 and 40 minutes after load removal. At the same time the ambient temperature was defined as well. The experiments were carried out exactly at 930 AM.

RESULTS AND DISCUSSION

On the basis of results of investigation, according to the systolic (T), diastolic (A) pressures and pulse (P) the following diagrams were received (*Fig. 1,2,3*).

$t_a = f(T_n - T_o)$, where n=1÷4

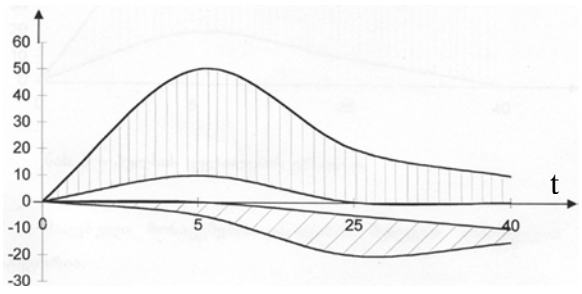

Fig.1 *The changes of systolic pressure.*

$t_1 = f(A_n - A_o)$, n =1÷4

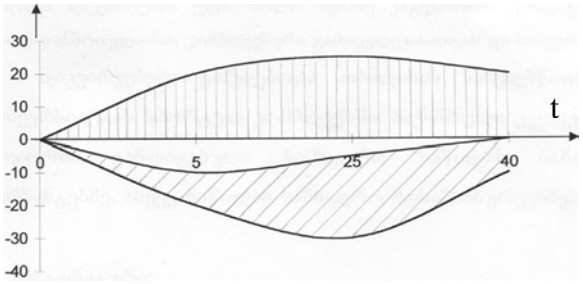

Fig.2 *The changes of diastolic pressure.*

$t_1 = f(P_n - P_o)$, where n =1÷4

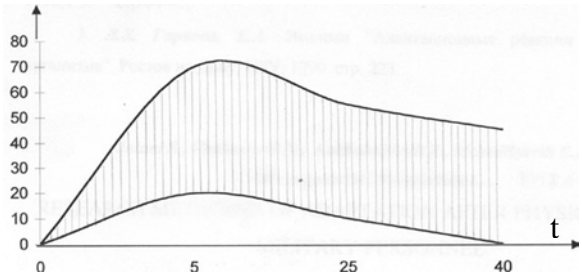

Fig.3 *The changes of pulse rate.*

According to the analysis of received data the three major categories of investigated individuals has been distinguished:

1. Good for farther military activities;
2. The high risk group;
3. Not good for farther military activities;

In an attempt to improve the health state of individuals from the group of high risk, they are subjected to the complex work and simultaneously they are under permanent medical observation. While, individuals of the third category are sent for complex medical examinations and treatment.

The observations were carried out at the sports complex of Tbilisi State Medical University. The mentioned investigations will be carried out on the basis of Kojori military division on both students and military personnel.

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Методические рекомендации для изучения адаптационных процессов у военнослужащих после физических нагрузок

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Р Е З Ю М Е

Цель исследования - изучение адаптационных процессов в организме военнослужащего после тяжелых физических нагрузок и разработка методических рекомендаций. Эксперименты проводились на курсантах факультета военной медицины ТГМУ в виде различных нормированных нагрузок. Во время проведения комплексных обследований установлено, что возможно приблизительное описание адаптационных процессов с помощью контроля артериального давления и пульса. На основе изучения данных эксперимента составлены графики описания динамики адаптационных процессов с использованием таких параметров, как систолическое (Т) и диастолическое (А) давления и пульс (Р). Составлены три пруппа курсантов: годные для военной службы, группа повышенного риска и непригодные для службы в армии.

КЛЮЧЕВЫЕ СЛОВА: *военнослужащий, физические нагрузки, адаптационные процессы, артериальное давление, пульс*