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*PHYSICAL EDUCATION AND SPORT*

# ALGORITHM FOR SAFETY PARAMETERS OF PHYSICAL ACTIVITY UNDER POWER FITNESS

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***Abstract.*** *One of the issues related to adaptation responses during physical activity, long is the determination of the parameters of safe physical activities adequate human capabilities in the directional (specialized) training. Established parameters heart rate variability, the concentration of cortisol, testosterone and LDH in serum can be used as roughly normal levels in comparative assessments of similar functional states in rest and after acute muscle strain. At unexercised young men, change of parameters of a morphofunctional condition of an organism during carrying out researches, were more essential in comparison with similar indicators fixed in group of athletes.*

***Keywords:*** *power fitness, safe power loads parameters, heart rate variability, the concentration of hormones in the blood serum, intensity of loading, power opportunities.*

One of the issues related to adaptation responses during physical activity, long is the determination of the parameters of safe physical activities adequate human capabilities in the directional (specialized) training. This problem arises sooner or later almost before every coach, sports doctor and its solution can save both the health athletes and prevent its deterioration among untrained persons [1, 3, 7, 10]. In practice, the power of fitness and other power sports to search for and identification of the starting and workloads used a number of techniques that, in general, are current in nature [2, 5, 8]. The resulting figures are not real evidence reinforcing their safety, and their use is a risk, especially for untrained troops. This situation is almost impossible to improving the safety of participants in training overload that caused the execution of a series of experimental studies, combined logistics and methodical relationship [4, 5, 10]. As the primary object of research was selected group of trained individuals who over the last three years engaged in power fitness [3, 4, 6, 7]. In this group, 20 were trained boys aged 20-21 years who have a sufficient level of adaptation to power loads applied in terms of the standard mode of training. To assess the autonomic regulation of the cardiovascular system and the state of adaptation mechanisms in conditions of intense muscle activity using methods of analysis of heart rate variability (HRV). To address the objective, the differential impact assessments a certain level of physical activity on the body, muscle tension conditions, using a series of biochemical methods aimed at studying the characteristics of changes in the concentration of the enzyme lactate dehydrogenase, and steroid hormones (cortisol and testosterone) in the blood during syrovottsi long power fitness classes. Mathematical processing of the results of research carried out by the software IBM SPSS Statistics 20 on the use of generally accepted methods of statistical data summaries biological nature. Heart rate variability (HRV) was calculated using Kubios HRV. During the research, the most important point is the initial installation, safe reliable indicators of physical activity, adequate compensatory capacity of the organism which confirmed a set of direct indicators. These indicators are suitable for rough and comparative assessments of young organism at any stage of the training process and his absence. Established parameters heart rate variability, the concentration of cortisol, testosterone and LDH in serum can be used as roughly normal levels in comparative assessments of similar functional states in rest and after acute muscle strain.

Regularities and features of adaptation reactions are object of close attention in the sphere of applied realization of physical capacities of the person in the course of physical activity of various orientations. Nature of change the morphofunctional of indicators of a human body in the general plan is reflection of adaptation potential of an organism on an adequate irritant as which loading serves. The purpose of work there was a research of features of change of parameters of autonomous regulation of a warm rhythm and power opportunities of an organism of unexercised people and athletes, and also their morphometric indicators in the conditions of muscular tension. In the course of researches 40 almost healthy young men at the age of 19-20 years are surveyed. From this contingent two research groups

were created the first group included the trained athletes who are systematically engaged in athleticism throughout three years, and the second consisted of unexercised young men of not having contraindications for occupations with burdening's. As model muscular activity, for 3 months of trainings with frequency of 2 occupations in a week, loading of power character in a mode of high intensity was used at the small volume of work. Autonomous regulation was estimated on indicators of the statistical analysis of variability of a rhythm of heart. For this purpose the Polar RS800CX cardio monitor was used. Parameters of autonomous regulation of a rhythm of heart and results of the spectral analysis of a warm rhythm at unexercised young men of both groups were registered. Morphometric parameters of a condition of an organism were estimated on indicators of structure of a body and its sizes using impedansometry and anthropometry methods. Power opportunities of an organism of representatives of both groups were estimated by means of a method of control testing. Control of all studied indicators was made at the beginning of the program of research and in 3 months of systematic occupations by athleticism. Statistical processing of results of research was carried out with use of a package of the statistical IBM programs * SPSS * Statistics 20. In work results of pilot studies concerning features of change of parameters of autonomous regulation of a warm rhythm and power opportunities of an organism of unexercised people and athletes, and also their morphometric indicators in the conditions of muscular tension are displayed. It is established that use, for 3 months of occupations by athleticism, power loadings of high intensity at the small volume of work, considerably strengthens influence over a low-frequency range of fluctuations of cardio intervals, with simultaneous decrease in activation of a low-frequency and high-frequency range of fluctuations of cardio intervals isn't dependent on level of a fitness of participants of studied groups. The elicited fact reflects process of considerable prevalence of activation of the central contour of regulation of a rhythm of heart, due to activation neurohumoral metabolic factors. It is revealed that despite high level of tolerance of the trained athletes to power loadings, use in the course of occupations by athleticism of non-standard level of intensity and loading volume, promoted rather essential growth of power opportunities and morphometric indicators of structure of a body. At unexercised young men, change of parameters of a morphofunctional condition of an organism during carrying out researches, were more essential in comparison with similar indicators fixed in group of athletes.

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