Evaluation of the physical performance of long-distance runners

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ABSTRACT

Organization of anti-doping education of students of sports universities assumes the presence of a specialized discipline "Fundamentals anti-doping support". Formation of a number of competencies in students in anti-doping educational areas occurs when mastering both disciplines medical and biological cycle, as well as sports, pedagogical and public disciplines that require or the presence of an erudite teacher with deep and comprehensive knowledge in the field of sports philosophy and psychology, sports law and, simultaneously, in the field of sports biochemistry and sports medicine, or division disciplines on: "Legal basis of anti-doping support" and "Biochemical fundamentals of anti-doping support"

Keywords: High school, anti-doping education, doping, basic professional educational program, students, athletes

Relevance. Modern conditions for the preparation of runners for the average distance requires more and more attention to the reliability of systems organism as a whole in competitive and training conditions of preparation. In this regard, experts pay attention to the study of the problem reliability of the body of athletes in various conditions of training. Analysis of literary sources showed that many experts pay attention to the bioenergetic processes that are the condition the effectiveness of the functional state of athletes [1,2,3,4,5,6].

Yu.S. Vanyushin (2016) notes that an important source of increased physical performance in cyclic sports, especially with resilience is about empowering cardiorespiratory system in the body's oxygen supply athletes [3 p. 26-27]. The author notes that with increasing load power in athletes there are differences in blood circulation. Large indicators of the blood circulation index and the cardiac index show inclusion of adaptive mechanisms for efficient oxygen delivery through the circulatory systems. It is known that the development of endurance is associated with the improvement mechanism of aerobic performance. In the context of increasing requirements for sports training athletes requires the activation of regulatory mechanisms that provide efficiency of the energy supply system.

All of the above requires constant control over the training process, including the

assessment of physical performance. Physiological and bioenergetic mechanisms underlying manifestations of endurance, depend on the direction training loads. It also requires an eye on the means and methods endurance sports training. In this regard, the study and assessment of the level of general physical performance in sports with the manifestation of endurance allows control and adjust aerobic training means, mixed and anaerobic orientation. Conducted comprehensive assessment of the functional state of runners for medium distances G.Z. Khalikov, (2012) proved the effectiveness procedures for determining PWC170 using the Poly-SpectrumSport complex, consisting of an eBike bicycle ergometer with a computerized control panel and software module "Poly-Spectrum-Ergo" (electrocardiograph "Poly-Spectrum-8/EX"). Also, the use of hardware means is also emphasized by other authors [5,6]. N.N. Seliverstova (2014) in her article showed the effectiveness use of the Poly-Spectrum-Sport complex for assessing physical performance [4]. Many authors emphasize the need use of hardware to improve the quality of control sports training in sports [1,2] .

The purpose of the study is to assess the physical performance of runners, specializing in middle-distance running with the use of a complex Poly-Spectrum (in particular, the analysis program "Poly-Spectrum-Ergo", "PolySpectrum-8-EX").

Research methods. The study involved students during the 2012-2013 academic year. The subjects were 2nd year students and specialized in running for average distances. To determine physical performance used the Poly-Spectrum-Sport complex in the laboratory conditions of the university. Athletes were asked to sequentially perform 2 loads of moderate intensity with a cadence of 60-72 rpm, separated by 3-minute rest interval. The results of the ergometry of runners on average distances are automatically entered into the summary protocol of the study. For the convenience of calculating the studied indicators for each athlete to start a data bank with subsequent entering the results into a summary protocol for statistical processing.

The choice of the value of the power of the given loads, providing reliable definition of PWC170, based on sports specialization and athlete's body weight. The load was given to athletes depending on their body weight based on: first load 1 watt per kg of body weight, second load 2 watts per kg of body weight of the subject.

Results of the study and their discussion. The most important factor determining the performance of runners is the maximum oxygen consumption. It is known that aerobic capacity in mainly characterized by indicators of the IPC. Dependence of the IPC on the functional state of the body of athletes has been proven by many authors. In this regard, the assessment of physical performance and aerobic performance and many other indicators is reliable way of establishing the range of the functional state and reserve, adaptive capabilities of the organism of middle-distance runners. Assessment of the physical performance of athletes aimed at identification of the effectiveness of training with the identification of lagging indicators for the subsequent correction of the identified shortcomings, it is necessary to carry out in several stages. Assessment of physical performance of middle-distance runners the level of the master of sports showed that PWC170 was equal to 265 kgm / min, characterizing a high level of preparedness when performing an ECG test with physical activity 87% of the maximum. Assessment of physical performance of middle-distance runners level of candidate master of sports showed that PWC170 was equal to 262 kgm/min and is characterized by a high level of preparedness. At performing an ECG test with physical activity of 77% of the maximum.

Evaluation of the physical performance of middle-distance runners with level of mass discharges showed PWC170 at the level of 232 kgm / min, which characterized as above average; the level of preparedness at performing an ECG test with physical activity of 78% of the maximum. Therefore, physical work is affected by the level qualifications of athletes and the value of indicators of the IPC. Maximum oxygen consumption of middle

distance runners varies in the range from 58.7 to 78.0 ml / (kg * min) and averaged 72.3 ml / (kg * min).

Evaluation of the IPC performance of middle distance runners showed that they also depend on the qualifications of the runners. An important indicator for evaluation is also the number of metabolic units (MET), which characterizes the human metabolism, which makes active work in relation to resting metabolic rate and is the average value of oxygen consumption at rest while sitting.

Mean values of the number of metabolic units (MET) in runners per average distances was 14.6 with an energy expenditure of 17.52 kcal/min (1 MET equals 1.2 kcal/min).

The next indicator submitted for evaluation is maximum endurance index (MIW) used for performance the physical capabilities of runners, taking into account body surface area. The results of MIV in middle-distance runners were recorded in the range from 654 units up to 889 units Chronotropic reserve index (CRI, %), inotropic reserve index (IIR, %) - reflect the change in the chronotropic function of the heart and gives the possibility of assessing the coronary reserve and contractility hearts of middle-distance runners.

The performance of the left ventricle (RLV) gives more in-depth assessment of coronary reserve and contractility of the heart. Indicators, heart rate (HR) and arterial pressure (BP) did not change significantly, the average values were, respectively: heart rate - from 71.5 to 72.2 beats / min.; systolic - from 117.17 to 113 mmHg and diastolic - from 74.67 to 76 mm Hg.

The studied indicator of heart rate is the main indicator,

characterizing the chronotropic response of the body of athletes to physical activity. The difference in heart rate at the end of the first and second loads under the experimental conditions should not exceed 40 beats/min. Heart rate indicators at the first stage of the study after the first load was 119±0.84 beats/min, and after the 2nd load 162±0.6 beats/min, i.e. the difference was 43 beats/min. At the second stage of research, a pronounced chronotropic response of heart rate to the first load is observed - 122 beats / min, at the second - 164 beats / min. There is an adequate response of heart rate to the load.

Conclusion. Thus, the use of the "Poly-SpectrumSport" complex as a means of assessing physical performance allows you to get detailed material that can be diagnosed and analyzed by various levels of specialists, which is so necessary for correcting training process and timely use of rehabilitation measures. According to the testing data, each subject was provided with a load schedule, ergometric indicators with the calculation of the maximum endurance index (MII), an assessment of the recovery period in terms of heart rate and blood pressure, an assessment of physical performance, recommendations on the mode of physical activity, as well as load protocols and schedules of ST segment displacement at rest. , under load and during the recovery period.

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