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PECULIARITIES REACTIONS ORGANISM TAEKWONDOISTS FOR OXYGEN DEFICIT

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Abstract
The dependence of individual body resistance to hypoxic conditions in taekwondo athletes on the integral indicator of blood hemoglobin reserves in gas transport systems has been illuminated.

Keywords: Taekwondo athlete, hypoxide, endurance, blood, hemoglobin, anaerobic capabilities.

Introduction

Study of features of the taekwondo practitioners' body led To conclusion about the importance of anaerobic reserves of their performance, in connection with this, the study of the relationship between the integral indicator of physical performance and more specific indicators of the anaerobic capabilities of the body is of interest.

One of the effective and complex indicators can be considered the level of oxyhemoglobin in the blood of an athlete during hypoxia. The body's resistance to changes associated with a decrease in the oxygen content in the inhaled air can be determined by many reasons, the most important of which are adaptation to oxygen deficiency, sports training, etc. The concept of resistance can be characterized by analogy with the resistance of automatic control systems, which are described in the theory of functional systems, with this In this position, sustainability is considered as the body's ability to function normally, effectively resist various influences and quickly restore the state to its original or close to it To this, without development pathological states. In connections With this Can consider that the complex of reactions of a healthy organism to fluctuations in the content oxygen in the environment, which mainly includes changes in the delivery of oxygen to tissues due to the correction of physiological and biochemical shifts in the delivery and utilization of oxygen, is capable of determine the body's sensitivity to modified oxygen content. In our opinion, compensated, up to a certain period, shifts that occur during oxygen deficiency can reliably determine the body's resistance and its level of physical performance (Kalimov G.A., 1981; Malkin VB, 1996; Kuleshov V.I., 2002; Levshin I.V., 2010). In the study, we used the saturation indicator oxygen in the blood HbO_2, to assess the body's resistance to the occurrence of hypoxia after training physical loads. The assessment was carried out by recording after physical loads with an oxihemograph OxiPen, EnviteC (Germany), the photo sensor was located on the index finger. In our opinion, this indicator is capable of integrally assessing the adaptive reserves of the athletes' body, the reserves of gas transport systems, the efficiency of the vegetative regulation of homeostasis.

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To solve the problem, a study was conducted with the participation of 20 athletes aged 18-22 years, the level of sportsmanship is a candidate for master of sports and 1 category. The dynamic load was a test for the maximum number of kicks in 30 seconds, a 2-minute sparring round. Indirect indicators of performance, their integral assessment and the level of physical fitness were also studied.

Statistically significant differences between heart rate indicators at rest, after PG, after kicks for 30 seconds, after a 2-minute round were 12%, 54%, 57%. Oxyhemoglobin content changed significantly between rest after PG, after blows feet behind 30 seconds, after 2 minute round at 14, 4.5%. No differences were observed between HR and HbO2 after 30-second kicks and after a 2-minute round. 60%. There is a reliable relationship between the indicators of Pc with HbO2 after PG ($r=-0.7$; $p\leq0.05$), Pc with the number of kicks in 30 seconds ($r=0.6$; $p\leq0.05$). Objective indicators of oxygenation include: arterial blood oxygen saturation (SaO_2 , %), tension (pO_2 , kPa) and its content (O_2, ml/l) in the blood, and as an integral indicator – (Q, ml) the amount of oxygen delivered. Under normal conditions, as is known, the total amount of oxygen in the blood mainly depends on the saturation of hemoglobin with oxygen, since its main mass, carried blood, is associated with hemoglobin: where HbO2 is the amount of oxyhemoglobin, Hb is the total amount of hemoglobin in the blood. In the absence of any pathology that causes hemoglobin dysfunction, this oxygenation indicator can be represented by the following formula: Based on the fact that blood oxygenation is primarily in a complex relationship with both the partial pressure of oxygen and the degree of affinity of hemoglobin for oxygen, it is fundamentally important that in a healthy athlete, with normal functioning of the oxygen delivery systems to tissues, this value is able to reliably characterize the level of their oxygen saturation. The range of hemoglobin saturation (normally about 97%) to 93% - ensures sufficient oxygen delivery to tissues. When the level of hemoglobin oxygen saturation decreases below 93%, mechanisms of oxygen delivery compensation to tissues will be activated due to the phenomenon of arterial blood hypoxemia. These patterns were taken into account when analyzing the results of the study (Kreps E.M., 1959; Platonov V.N., 1998; Kolchinskaya A.Z., 2001). Analysis of the obtained data of the Gench test indicator reveals certain patterns of formation of reflex reactions to hypoxic load, increase in heart rate Heart rate was observed at all subjects, This Maybe to be reflex activation of the chronotropic response mechanism to a hypoxemic shift, taking into account the initial heart rate, activation of the hemic reserve, and an increase in the volume of circulating blood, due to a decrease in the $HbO_{2\ level}$ to 85%. Changes caused by dynamic hypoxia are reflected in a reliable difference in the parameters of the $HbO_{2\ content}$ before and after physical exercise. At the same time, in the test load of kicks and a 2-minute sparring round, we observe similar shifts in the $HbO_{2\ content}$ to 95% and a heart rate of 160 beats/min. Such shifts are within the normal range and reflect the effectiveness of the body's regulatory processes in maintaining homeostasis, when anaerobic load mode. The relationship of such a complex indicator, how the content of oxymyoglobin in the blood and the integral indicator of physical performance, allows us to come to the conclusion about the integrity

the proposed methodology, which contains the possibility of an objective assessment of the reserves of the body's gas transport systems and its multifaceted regulatory function. It can also

be noted that the individual resistance of the organism to hypoxic conditions, expressed in the assessment of the content of oxymyoglobin in the blood, can be an integral indicator of the reserves of gas transport systems. There is necessity individualization approaches To similar assessment, since it is clearly not enough to study only the average values of this indicator.

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