



## PHYSICAL PERFORMANCE INDICATORS IN YOUNG SWIMMERS

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### Annotation

An important indicator of the influence of systematic swimming training is the level of general working capacity and special training of young swimmers. This article examines the indicators of adaptation of the swimmers' organism to specific high-intensity loads. Based on the data obtained, the necessary corrections can be made in a timely manner to the training regime and methodology.

**Key words:** physical performance, PWC 170, bicycle ergometer, aerobic performance, moderate power, heart rate, pulmonary ventilation, maximum oxygen consumption.

### Introduction

In the conditions of modern sports, characterized by acute wrestling, the overall performance of an athlete is of great importance. Performance is determined by three main qualities: the body's ability to significantly enhance the main functions (blood circulation, respiration, metabolism, etc.), to maintain a stable level of performance for a long time and resistance to those changes in the internal environment of the body that arise in connection with intense muscular work [1-5]. To assess the level of general performance of swimmers, studies are carried out using nonspecific loads, which make it possible to check how the body adapts to dosed loads of different power. For this purpose, in laboratory conditions, various models of bicycle ergometric loads are usually used [6-11]. When examining high-grade swimmers, a load model is most often used, in which a stop-like increase in work power is carried



out by increasing the number of revolutions with a standard resistance on the pedals. The dosage of loads depends on the technical characteristics of the bicycle ergometer.

## Materials and Methods

Our research was carried out on a bicycle ergometer, with a standard resistance on the pedals (current 3A). After a standard (400 kgm) 10-minute warm-up, the subject is invited to perform sequentially, with an interval of 2 minutes, loads of 500 kgm (52 rpm), 750 kgm (60 rpm), 1000 kg (90 rpm), 1750 kg (105 rpm). Each step is 3 minutes, the last one to failure. To determine the level of functional capabilities of the circulatory and respiratory apparatus, which determine the energy supply of muscular work in relative rest, during work and during the recovery period (within 30-40 minutes. After completion of the entire test), the volume percent of oxygen utilization and carbon dioxide emission (on the gas analyzer), the amount of pulmonary ventilation (on the gas meter) and the heart rate are recorded. Determination of these indicators allows you to calculate a number of important values: respiratory rate, oxygen consumption, oxygen pulse.

An increase in the respiratory coefficient of more than 1.0 indicates the achievement of maximum oxygen consumption: the calculation of the maximum oxygen consumption per 1 kg of body weight makes it possible to compare aerobic performance among athletes of different weights; Determination of the oxygen pulse value, taking into account the oxygen consumption per 1 kg of body weight, gives an idea of the performance of the respiratory system and blood circulation, the degree of efficiency of their function [12-15].

The work performed is evaluated according to its duration and ultimate power. The number of performed loads depends on the patient's tolerance. The indications for the termination of the test are: the subject's refusal to continue working, the inability to maintain the rate of prevalence; significant increase in heart rate; (more than 200 beats per minute) with a pronounced decrease in blood pressure; the appearance of changes in the ECG; decrease in oxygen use, increase in the percentage of carbon dioxide evolution.

In swimming, as in other cyclic sports, an important factor determining performance is the level of development of energy supply processes, in particular, the aerobic performance of the athlete's body. Aerobic performance is characterized by the value of maximum oxygen consumption during strenuous muscular work. As shown by



special studies, physical performance and energy supply are closely related to age. This is clearly seen in tests with cycling ergometric loads of increasing power. We have presented the results of a study of adolescents and young men - 14-15 and 15-16 years old highly qualified swimmers and athletes of low categories, performing loads in two zones of power - maximum and moderate (750 kg/min).

When comparing the indicators of working capacity in each of the two age groups of swimmers, it can be seen that older athletes have a more significant performance - they perform more power work. At the same time, in the zone of moderate power, their work is more economical, as evidenced by a lower value of oxygen consumption (sludge / kg) and a large volume percentage of oxygen use.

## Conclusion

More economical performance of work by 15-16 year old sportswomen in comparison with 13-14 year olds is also confirmed by the higher value of the oxygen pulse. All this, undoubtedly, allows older swimmers to carry out a more significant amount of maximum load. Thus, the studies made it possible to establish that the functional ability of the respiratory and cardiovascular systems improves with the age and advanced training of swimmers, due to which the level of productivity and efficiency of work become higher.

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