

Methodological Principles of Development of Physical Quality of Endurance in Children and Adolescents

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ABSTRACT

This article presents scientific information on the development of physical quality of endurance in children and adolescents. The direct method of measuring endurance in motor activity is based on speed and power abilities, fatigue mechanisms are different, and physical exercises are classified according to their intensity, and the importance of endurance, its types and characteristics are shown in a table based on age.

A temporary decrease in performance, expressed in increased difficulty or inability to continue activities with the same efficiency. Endurance is the ability to resist fatigue in any activity. For the field of physical education, physical fatigue caused by muscle activity is in the first place. A basic measure of endurance is the length of time a person can sustain a given intensity of activity. Durability is measured by direct and indirect methods. A direct way to measure endurance in movement activities depends on speed and strength abilities. Endurance in relation to a specific activity chosen as a subject of specialization is called special. It is often necessary to fight with general fatigue in physical education. Exercise can be performed at different intensities, fatigue mechanisms are different, and exercises are classified according to their intensity.

There are 4 zones of relative strength:

- 1) maximum,
- 2) submaximal,
- 3) large,
- 4) average.

General durability. Functional capabilities of those who require endurance are determined by appropriate motor skills, level of technical skills, as well as aerobic and anaerobic capabilities of the body. Functional capabilities of the body's autonomic systems are high when performing similar types of actions. The lower the work force, the more its result does not depend on the level of perfection of the tool's skills and more on the person's aerobic capacity. General endurance includes long-term work of moderate intensity, including the work of the entire

muscular apparatus, the physiological basis of which is the aerobic capacity of a person.

Methods

Comprehensive development of the functional characteristics of the body that determines its special types, a number of tasks are solved.→

Criteria and components of loads in the development of endurance - Endurance develops during training, when students experience a certain degree of fatigue.

RESULTS AND DISCUSSIONS. Sensitive periods of development of motor qualities of endurance in children and adolescents (according to A. A. Gujalovsky).

Physical characteristics Age periods (years)

Physical qualities	Age periods (years)									
	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
Static endurance	+	+	●●●	+	+	+	+	+	+	+
	+	+	●●	●	+	+	●●●	●●●	+	●●●
Dynamic endurance	+	●	●●●	●	●●●	+	+	+	+	+
	●	●●	+	+	●●●	●	+	+	●	+
General endurance	+	+	+	●	+	+	+	+	+	+
	●●	●●●	+	●●●	+	●●●	+	●●●	+	●●●

Conditional characters:

+ - subcritical and critical periods;

● – stage of low sensitivity;

●● – stage of average sensitivity;

●●● – high sensitivity stage.

When performing cyclic exercises, the load is relatively fully characterized by the following components:

- ✓ absolute intensity of exercise (speed of movement);
- ✓ the duration of the exercise;
- ✓ duration of rest intervals;
- ✓ nature of rest (active or passive).
- ✓ the number of repetitions of the exercise.

Depending on the combination of these components, not only the size of the reactions of the organism, but also the quality characteristics will be different.

1. Absolute intensity. At low travel speeds, work is done under true steady state conditions and is called subcritical. In the zone of subcritical speeds, the demand for oxygen is approximately proportional to the speed of movement. Speeds above critical are called supercritical. Here, the demand for oxygen exceeds the aerobic capacity, and work occurs in conditions of oxygen debt. Due to the low efficiency of energy mechanisms in the zone of supercritical speeds, the demand for oxygen increases faster than the speed of movement. The duration of the exercise is determined by the length of the segments to be overcome and the speed of movement along the distance. →The duration of work →determines the amount of oxygen debt at supercritical speed and the duration of intensive activity of systems at subcritical speed.→
2. The duration of rest intervals plays an important role in determining the magnitude of the

body's impact on the load. In exercises with subcritical and critical speeds and long rest intervals, work is carried out in anaerobic conditions for relative normalization of physiological functions. In subcritical and \approx critical speed \approx interval exercises, the reduction of rest intervals makes the load more aerobic.

3. During work at a speed close to critical, additional low-intensity work, the nature of rest allows you to maintain a high level of respiratory processes.
4. The number of repetitions determines the total value of the impact of the load on the body.

Techniques for increasing aerobic capacity.

In the process of physical education, influencing the aerobic capacity of the body solves the following tasks: 1. increase the maximum level of oxygen consumption;

develop the ability to maintain this level for a long time;

increasing the speed of respiratory processes to maximum values .

Means of increasing respiratory capacity include exercises that achieve maximum values of heart and respiratory capacity and maintain a high level of oxygen consumption. As aerobic capacity increases, \approx repetitive and variable exercise methods are used, with a single method and a variety of options. Single continuous exercises are widely used, especially in the early stages of developing general endurance. The main task to increase the aerobic capacity of repeated and repeated alternating exercises is to choose a combination of work and rest.

Approximately the following \approx characteristics can be indicated:

1. The intensity of the work should be above the critical level \approx , approximately at the level of 75-85% of the maximum and determined by the heart rate, where aerobic power is performed at a low intensity, at a heart rate below 130 beats / min. does not exceed
2. The length of the segments is chosen so that the working time does not exceed \approx about 1-1.5 minutes.
3. The rest interval should be carried out against the background of comfortable changes after the previous work, and the rest interval should not exceed \approx 3-4 minutes.
4. Rest intervals are recommended to be filled with low-intensity work to ease the transition from rest to work and back. \approx The number of repetitions is determined by the participants' ability to maintain a steady state and \approx work in conditions of stabilizing oxygen consumption at a sufficiently high level.

CONCLUSION.

The following tasks are distinguished in the education of endurance:

- 1) increase in anaerobic capacity;

increasing the capabilities of the nerve centers under specific conditions of maximum intensity work .

In the training of special endurance in maximal and high-intensity work, repeated overcoming of segments is widely used.

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