

METHODS OF ENDURANCE DEVELOPMENT FOR SWIMMERS

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Annotation. The article discusses how sports swimming uses exercises from various cyclical sports, sports games, and strength training exercises to develop endurance.

Keywords: swimming, training, cycle, development, physical qualities, endurance, technique, exercises, body, distance, cycle, anaerobe, movement, training.

Аннотация. В статье рассматривается в спортивном плавании для развития выносливости применяются упражнения из различных циклических видов спорта, спортивных игр, упражнений на силовых тренажерах.

Ключевые слова: плавания, тренировка, цикл, развития, физические качества, выносливость, методика, упражнения, организм, дистанция, цикл, анаэроб, движения, тренировка.

In the process of developing endurance, exercises of various types and duration are used. In sports swimming, exercises from various cyclical sports, sports games, strength training exercises, etc. are used to develop endurance. Cyclical exercises aimed at developing overall endurance can last up to 2 or 3 hours. Exercises aimed at developing strength endurance (alactate anaerobic or anaerobic glycolytic) have a duration of 30 seconds to 4-5 minutes. The effectiveness of various exercises largely depends on the methodological conditions of their implementation. Here, components such as the intensity of work, the duration and nature of pauses between exercises, and the total number of repetitions also play a crucial role. For swimmers specializing in long and medium distances, the development of general endurance should be associated with an increase in the body's ability to effectively perform high and moderate intensity work, requiring the utmost mobilization of aerobic abilities. In this case, conditions are provided for the transfer of large amounts of training work, effective recovery after exertion, and the necessary prerequisites are created for the manifestation of a high level of aerobic capacity during special work. For swimmers specializing in sprint distances, the process of developing overall endurance is much more difficult.

Work aimed at increasing aerobic capabilities should be performed only to the extent that it provides certain prerequisites for the effective performance of specific work and the course of recovery processes and, at the same time, does not create obstacles to the subsequent development of speed and strength qualities and the improvement of high-speed technology. The main emphasis in the development of general endurance among swimmers specializing in short distances should be placed on improving performance when performing various types of general



preparatory and auxiliary exercises aimed at fostering speed and strength qualities, flexibility, coordination abilities, and the development of anaerobic capabilities.

When planning work aimed at developing endurance among qualified swimmers, first of all, it is necessary to take into account the dependence of the focus of this work, the composition of its means and methods, and the length of the distance in which the athlete specializes.

This ratio of total endurance sections should be taken into account when planning loads in annual cycle training structures (macro-meso and microstructures). For example:

1) If in a weekly microcycle designed to train 15-year-old sprint swimmers specializing in the 100m distance, the load value will be 5,100 conventional units (points), then 1275 points should be planned for the development of aerobic abilities, 1530 points for the development of anaerobic- glycolytic capabilities, and 1530 points for the development of anaerobic-lactate capabilities. - 1,530 points, and for the development of flexibility and coordination abilities - 765 points.

2) In a macrocycle (large cycle) lasting about 5 months intended for preparation For 14-year-old swimmers specializing in the 400m distance (medley), the total load is 85,000 conventional units (points). In this case, the load value for the development of aerobic capabilities will be 42,500 conventional units, for the development of anaerobic- glycolytic capabilities – 21250, for the development of anaerobic -alactate capabilities – 12750, and for the development of flexibility and coordination, the load value will be 8,500 conventional units (points). To achieve a high level of development of swimmers' special endurance, it is not enough to have a high level of individual properties and abilities that determine it. It is necessary to achieve their complex manifestation in conditions specific to a particular distance. This can be achieved with the widespread use of competitive and special preparatory exercises as close to them as possible, while creating a set of conditions characteristic of the planned competitive activity.

Our observations show that the load of the high-speed sections used to train stayers should not exceed 30-40% of the total volume. The length of the training segments or distances should be selected so that the swimmer is able to maintain a speed close to the planned competitive speed: swimmers preparing to compete at 100 or 200 meter distances should be recommended lengths of 25m, 50m, 75m, 100m and 200m; at 400m 50m, 100m, 200m, 400m; 1500m 50m, 100m, 200m, 400m, 800m. If the length of the segments is significantly lower than the expected competitive distance, then the duration of the rest intervals between them should be short. The next exercise should be performed against the background of fatigue from the previous one. If the pause between exercises is long, then the rest intervals should be filled with low-intensity work and restorative procedures. A significant impact on the development of special endurance is provided by a combination of segments of different lengths during the implementation of a separate lesson program.

At the same time, it is necessary to strictly adhere to the following rules: pauses between segments should be short (the heart rate should not decrease by more than 10-15 beats per minute); each regular segment should be shorter than the previous one or have the same length; the total time of the series should be close to that which is planned to be shown in the competition.



Endurance development is carried out using remote, interval and variable training methods. The distance method is most widely used in sports swimming. Distance swimming promotes the development of all the basic properties of a swimmer's body, ensuring the supply, transport and utilization of oxygen. Distance training, which involves swimming a distance at a heart rate of 140 to 170 beats per minute, is effective in increasing the functionality of the heart, increasing the capacity of the capillary network and increasing the capacity of processes related to oxygen consumption directly in the muscles. When applying the remote method, it is necessary to take into account the following main provisions: the intensity of work should ensure high heart rate and oxygen consumption, as close as possible to the maximum.

These conditions are met by work lasting from 10 to 30-40 minutes. In swimming, these are distances ranging from 800 to 3000 m, swum at a heart rate in the range of 150-175 beats per minute, i.e. in the range at which the maximum stroke volume is recorded. The length of the training distances is determined by the qualifications and fitness of the swimmers, so high-class swimmers with a high level of aerobic performance can occasionally swim longer distances, up to 4000-5000m. Another method of increasing the aerobic performance of swimmers is the variable training method. The essence of the variable method is the alternation of segments passing at relatively high and low speeds in modes that cause maximum activation of the circulatory and respiratory systems.

The methodological conditions characteristic of variable training assume such an organization of work, in which by the end of the "intensive" segment the heart rate increases to 160-170 beats per minute and decreases by the end of the "low-intensity" segment to 140-175 beats per minute. As exercises performed during the swimming of "low-intensity" segments, swimming can be used in the same way that was used during the swimming of the "intensive" segment, and swimming in other ways with one hand or one foot, with a change in the amount of force of rowing movements, stride length, and the like. The interval training method is based on the fact that the stroke volume of the heart reaches its maximum during pauses after relatively strenuous work.

Thus, during pauses, the heart muscle experiences a specific effect that takes place during work. The methodological conditions typical for interval training assume such an organization of work and rest, in which for most of the work, during the entire time of the rest intervals, the heart works at maximum stroke volume. It should be borne in mind that the maximum stroke volume is the main incentive for increasing the size of the cardiac cavities.

When using the interval method, the following rules are usually recommended:

- 1) the duration of individual swimming segments should not exceed 1 minute;
- 2) the duration of rest intervals varies depending on the length of the training segment, usually within 45-90 seconds;
- 3) the intensity of work is characterized by a heart rate of 170-180 beats per minute by the end of the pause.

Despite the fact that each of these methods is effective for increasing aerobic capacity in general, attention should be focused on the need for their integrated use in the training process. Distance training best contributes to the effective development of such an important quality as the ability to maintain high oxygen consumption for a long time. Interval and variable training has a less effective effect on the development of this quality. However, the greatest reduction in



the deployment period of the functional capabilities of the respiratory system occurs under the influence of the interval training method. Unlike the remote training method, the use of alternating and especially interval training contributes to a significant increase in the level of endurance of swimmers for anaerobic work.

This is explained by the fact that during interval swimming, as well as during the passage of the “interval” segment during alternating swimming, work is largely provided by anaerobic energy suppliers accompanied by significant amounts of oxygen debt. The article presents sets of exercises that promote the development of endurance for aerobic work, which are based on the previously described methods.:

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