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# AGE FEATURES OF FUNCTIONAL TRAINING FOR SWIMMERS IN MASTERS CATEGORY SWIMMERS SPECIALIZING AT 200 METERS FREE STYLE FOR MEN

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**Annotation.** The article presents an analysis of the generalized sports results shown at the world championships in the Masters category at a distance of 200m freestyle for men. The aim of the study was to substantiate the approach to building a longterm training process among athletes in the Masters category, specializing in the 200m freestyle distance. As a result of the study, the age ranges were identified in which the use of training means aimed at developing and maintaining a high level of efficiency of anaerobic processes of energy supply of the body is relevant. It is recommended to build a long-term training process as follows. Until the age of 50, it is possible to include in the training process exercises aimed at developing and maintaining a high level of efficiency of anaerobic energy supply processes in the body, which will allow showing high results at medium distances. After 50 years, it is proposed to switch to performing at distances that require a lower proportion of the anaerobic component of the body's energy supply, for example, to sprint or stayer distances.

**Keywords:** sports swimming, Masters, training process, anaerobic mechanism of energy supply, optimization, age characteristics.

**Introduction.** Currently, the veteran movement in swimming is gaining more and more popularity. The number of former athletes and just swimming enthusiasts joining the ranks of the veteran movement is steadily growing every year. Athletes taking part in the Masters category competitions expect to achieve high results in their chosen type of program and at the selected distance. To achieve the desired result, as in elite sports, it is necessary to effectively build the training process. There is a lot of research and development related to the construction of the training process for swimmers in the period of initial sports training, sports improvement and sports of the highest achievements. According to the peculiarities of the construction of the training process for athletes participating in veteran swimming, there is a very limited amount of scientific and methodological literature.

Since sport swimming belongs to cyclic sports, special requirements are imposed on the endurance of the athlete. Taking into account the fact that the largest number of athletes of the Masters movement participate in the age categories from 35 to 70 years, the issue of maintaining athletic form in the conditions of the naturally occurring

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maturation and aging processes in the athlete's body, in particular, maintaining his functional capabilities, is acute.

In the process of long-term training of swimmers of the Masters category, the use of a large volume of training loads comparable to the volumes in the elite division is not possible or appropriate. In this regard, the question arises of optimizing the training process, which means finding effective means and methods of training in order to preserve the physical performance of athletes with increasing age. Thus, on the basis of modern data of world-class sports results, it is necessary to identify the features of the energy supply of the body of swimmers of various ages specializing in the 200m freestyle. The obtained data can be supplemented by the already conducted research in the field of knowledge in question in order to form recommendations for the construction of the training process for swimmers participating in the veteran movement.

The purpose of the study. To substantiate the approach to the construction of a multi-year training process for athletes of the “Masters” category, specializing in the 200-meter freestyle distance, depending on age. The results of the study will allow swimmers of the Masters category and their coaches to more effectively approach the construction of the training process depending on the age and physical health of the athlete. The features of the athlete’s functional fitness will also help to approach the choice of the competitive distance more carefully in order to demonstrate the maximum sports result and achieve the highest place in the ranking.To achieve the purpose of the study, the following tasks were set:

1. To summarize the data on the best sports results at the main competitions of the season for Masters swimmers in the period from 2000 to 2019 at a distance of 200m freestyle for men.

2. To identify age-related features of the dynamics of sports results among **Methods.** Masters swimmers at a distance of 200 meters freestyle for men. To solve the tasks, the following research methods were used:

- Analysis of scientific and methodological literature
- Analysis and generalization of competition protocols
- Graphical methods of data processing
- Comparative analysis of the data obtained
- Mathematical and statistical methods of data processing

In order to obtain generalized data in the course of solving the tasks, the protocols of swimming competitions in the Masters category were analyzed. The protocols of the World Championships competitions from 2000 to 2019 were taken for analysis. Sports results obtained at a distance of 200 meters freestyle for men in all age groups were analyzed. In the official classification of ages in the Masters category, the following division is made into groups: group A (25-29 years old), group B (30-34

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years old), group C (35-39 years old), group D (40-44 years old), group E (45-49 years old), group F (50-54 years old), group G (55-59 years old), group H (60-64 years), group I (65-69 years), J (70-74 years), K (75-79 years), L (8084 years), M (85-89 years), N (90-94 years), group O (95 years and older). The source of the competition protocols was the official website of the International Swimming Federation www.fina.org.

**Results.** The data obtained during the analysis were summarized and presented graphically for further comparative analysis of the dynamics of changes in results in all age groups of the Masters category obtained at a distance of 200 meters freestyle for men. The study also compared the results of each of the age groups with a younger age group. It was assumed that at a distance of 200 meters freestyle for men, the results begin to differ significantly in the age range of 50-60 years due to functional changes in the body caused by aging processes.

Table 1 summarizes the data of the best sports results shown at the World Championships in the Masters category in the period 2000-2019 at a distance of 200m freestyle for men.

**Generalized results in the men's 200m freestyle, shown at the World Championships in the Masters category of 200-2019**

| **200m a/c (M)** Age group | Average arithmetic | Relativeresult | σ | V | F | t |
|---|---|---|---|---|---|---|
| | | | | | | |
| 90-94 | 269.45 | 16.28% | 40.786 | 15.14% | 1.34 | 2.21 |
| 85-89 | 231.73 | 22.91% | 35.288 | 15.23% | 4.82 | 3.52 |
| 80-84 | 188.54 | 12.75% | 16.066 | 8.52% | 4.94 | 3.83 |
| 75-79 | 167.22 | 7.28% | 7.230 | 4.32% | 1.25 | 3.31 |
| 70-74 | 155.88 | 6.63% | 8.073 | 5.18% | 7.80 | 3.58 |
| 65-69 | 146.18 | 5.77% | 2.891 | 1.98% | 2.71 | 4.54 |
| 60-64 | 138.20 | 6.17% | 4.755 | 3.44% | 1.05 | 3.83 |
| 55-59 | 130.17 | 3.45% | 4.633 | 3.56% | 2.52 | 2.50 |
| 50-54 | 125.83 | 3.53% | 2.919 | 2.32% | 1.94 | 3.77 |
| 45-49 | 121.54 | 1.43% | 2.098 | 1.73% | 3.52 | 1.22 |
| 40-44 | 119.82 | 1.26% | 3.933 | 3.28% | 1.58 | 0.94 |
| 35-39 | 118.33 | 1.56% | 3.128 | 2.64% | 1.30 | 1.38 |
| 30-34 | 116.51 | -0.45% | 2.743 | 2.35% | 0.58 | 0.37 |
| 25-29 | 117.04 | | 3.593 | 3.07% | | |

The generalized data were processed using statistical and mathematical methods. The arithmetic mean of the performance results, the standard deviation (σ), the coefficient of variation (V), the Fisher Snedekor criterion (F), the Student's t-criterion

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(t) were calculated. The normality of the data distribution was evaluated according to the threesigma rule.

As a result of statistical data processing, it can be assumed that the distribution of the statistical sample is normal, the data are homogeneous and belong to one general population. Figure 1 shows a graph of the dynamics of results in the 200m freestyle for men's Masters swimmers in all age groups shown at the 2000-2019 World Championships.

The graph shows that in the age category of 90-94 years there were no results in 2002, 2015, 2019, due to the non-appearance of athletes at this distance. According to the rest of the results, we can say that there are no noticeable changes in the results from 2000 to 2017. In 2000, the time was shown with 4:52.92 seconds, and in 2017 – 4:42.77 seconds. In the age category of 85-89 years, there is a slight improvement in results. In 2000, a time of 4:04.82 seconds was shown, in 2019 the best time at the World Championships was 3:49.55 seconds.

In the age categories of 80-84 and 75-79 years, sports results also change slightly throughout the observation period. In the 80-84 years category, the best results at the World Championships are within 3:00.00 – 3:15.00 seconds, in the 75-79 years category within 2:48.00 – 3:00.00 seconds. Then over 20 years, the results have grown by 7-8%. In the age group 70-74, there is a noticeable improvement in the result from 2:48.42 to 2:27.26. In the 60-64 year category, there is a slight gradual improvement in results from 2000 to 2019 - from 2:23.84 seconds to 2:17.55 seconds. Swimmers in the 65-69-year-old group do not have a noticeable change in the result. In 2000, a time of 2:25.95 was shown, and in 2019 – 2:25.18 seconds. In the age categories of 40-44, 45-49, 50-54, 55-59 years, there is a gradual improvement in results from 2000 to 2019. In the age category of 55-59 years, there is a significant improvement in results, in 2000 a time of 2:15.00 seconds was shown, in 2019 the best time at the World Championships was 2:07.42 seconds. Representatives of the 50-54 year group have a change in the result from 2:09.10 seconds to 2:03.39 seconds. Athletes aged 45-49 showed the best time in 2000 – 2:01.72 seconds, in 2019 the best time at the World Championships was 2:01.84 seconds, which indicates a lack of progress in sports results. Swimmers in the 40-44 year group have an improvement in the result from 2:01.78 to 1:58.01 seconds. In the age categories of 25-29, 30-34, 35-39 years, there is a very slight change in the results from 2000 to 2019. The smallest changes are observed in representatives of groups 30-34 and 35-39 years old. In group 30-34, the result changed from 1:57.42 seconds to 1:57.43 seconds. Swimmers in the 35-39-year-old group have improved results from 1:59.61 to 1:59.62 seconds. In the youngest age category of 25-29 years, there is an improvement in results from 2:00.88 to 1,57.05. Figure 2 shows a graph of the average results of passing the 200m freestyle distance for men at the 2000-2019 World Championships in the Masters category, depending

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on age. The graph also shows the ratio of the time of passing the distance of the older age group to the time of passing the distance of the younger age group, expressed as a percentage. It can be seen from the graph that the change in the time of passing the distance, depending on the age of the athlete, is exponential. In addition, certain areas can be highlighted on the graph with a more dramatic change in the results.

• The first section – age categories 25-29, 30-34, 35-39, 4044, 45-49 years. In these age groups, the change in results from one group to another does not exceed 2%.

• The second section – age groups 50-54, 55-59 years. In this section, the ratio of the distance passing time increases and is demonstrated at the level of 4%.

• The third section – age groups 60-64, 65-69, 70-74, 75-79 years. In this section, the ratio of the distance passing time increases to the level of 6.5%.

• The fourth section – age groups 80-84, 85-89, 90-94 years. At this site, the biggest change occurs and the ratio of the distance passing time reaches 23%. An interesting fact is the decrease in this indicator in the age group of 90-94 years, which indicates the final reversal of the results at the age of 85-89 years.

**Discussion.** Based on the results of the study, the following conclusion can be drawn. At a distance of 200m freestyle in men, significant differences in results are observed, starting from the age of 50-54 years. A further change in the ratio of the distance passing time to the result of the previous age group to the level of 6% or more occurs already at the age of 60-64 years. Thus, it can be said that at distances requiring high performance of anaerobic mechanisms of energy supply of the body, athletes up to 49 years old can demonstrate high results. At the age of 50-59 years, physiological changes begin to occur in the body, which do not allow maintaining a high athletic result in swimming at a distance of 200m freestyle for men.

In this regard, it is recommended to build a multi-year training process based on this fact. Until the age of 50, it is possible to develop and maintain a high level of efficiency of anaerobic energy supply processes in the body and show high results at medium distances. After the age of 50, it is proposed to switch to performing at distances that require a lower proportion of the anaerobic component of the body's energy supply, for example, sprint or stayer distances.

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