ANTHROPOMETRIC AND INDIVIDUAL CHARACTERISTICS OF YOUNG ATHLETES ENGAGED IN SWIMMING

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Аннотация: В данной статье рассматриваются вопросы ориентации юных спортсменов на занятия плаванием и проблемы спортивного отбора на основе антропометрических показателей и мирового опыта. Анализируется влияние особенностей телосложения, роста, длины конечностей, пропорций тела, соотношения мышечной и жировой ткани на спортивные результаты в плавании. Особое внимание уделяется раннему выявлению перспективных спортсменов, функциональной подготовленности, уровню биологического созревания и психологическим характеристикам детей и подростков.

В статье представлен анализ систем спортивного отбора в ведущих странах мира, таких как США, Австралия, Россия и Япония, а также рассмотрены возможности применения их опыта в национальной системе подготовки спортсменов. Результаты исследования подчеркивают необходимость научно обоснованного подхода к отбору и ориентации юных пловцов с целью формирования спортивного резерва и достижения высоких спортивных результатов.

Ключевые слова: плавание, юные спортсмены, спортивный отбор, антропометрия, мировой опыт.

Abstract: This article examines the process of orienting young athletes toward swimming and the existing problems of athlete selection based on anthropometric indicators and international experience. The study analyzes the impact of body structure, height, limb length, body proportions, and the ratio of muscle and fat tissue on performance in swimming. Special attention is given to early talent identification, functional preparedness, biological maturity, and psychological characteristics of young athletes.

The paper also reviews athlete selection systems used in leading swimming nations such as the USA, Australia, Russia, and Japan, highlighting their scientific approaches and effectiveness. The research results emphasize the importance of implementing a scientifically based selection system to develop a strong sports reserve and achieve high competitive performance. The findings are practically valuable for swimming coaches, sports specialists, and professionals in the field of physical education.

Keywords: swimming, young athletes, sports selection, anthropometry, international experience.

At present, improving the system of physical education and sports, promoting a healthy lifestyle among the younger generation, and identifying talented athletes have become issues of particular importance. The experience of countries with well-developed sports systems shows that achieving high performance is associated with a long-term and carefully planned training process, the initial stage of which begins with the correct selection of a sport discipline.

From this perspective, directing children and adolescents toward sports activities that correspond to their individual abilities is considered one of the most important tasks of modern sports pedagogy.

Swimming is one of the sports that comprehensively develops the functional capacities of the human body, playing a significant role not only in physical conditioning but also in the

formation of volitional qualities and movement coordination. However, achieving high effectiveness in this sport is directly related to the athlete's anatomical structure, body proportions, and functional potential. Practical experience shows that insufficient attention to these factors during the selection process leads to reduced training effectiveness and prevents the full realization of an athlete's potential.

In sports selection, anthropometric analysis occupies a leading position. Balanced physical development, the length of limb segments, optimal body mass, and the ratio of muscle and fat tissue have a significant impact on movement speed in the aquatic environment and the accuracy of technical actions. Especially during periods of growth and physical development, the dynamic changes of these indicators require in-depth analysis and an individualized approach from coaches.

At the same time, in developed countries, the selection of young athletes is based not only on morphological characteristics but also on functional fitness levels, biological maturation, psychological stability, and motor abilities, which are assessed in a comprehensive manner. Studying scientifically grounded selection models applied in international practice and adapting them to national sports systems increases the potential for training competitive athletes in swimming.

This study is aimed at identifying problems arising in the orientation of young athletes toward swimming, analyzing the importance of anthropometric criteria, and developing effective selection mechanisms based on advanced international experience. The research findings are of significant scientific and practical value for specialists working in this field.

Scientific and Pedagogical Foundations of Orienting Young Athletes toward Swimming

The process of orienting young people toward swimming requires a thorough analysis of children's individual characteristics, physical potential, and psychological readiness. From this standpoint, pedagogical approaches are divided into two main stages: initial selection and monitoring of individual development. During the initial selection, a child's ability to adapt to water, breathing coordination, and capacity to maintain balance in the aquatic environment are considered key criteria.

In addition, motor coordination and volitional stability at a young age are important factors, as they determine an athlete's endurance and the accuracy of technical movements during long-term training. Pedagogical theories indicate that motivational and psychological readiness are also essential in swimming orientation: the child should be willing to engage in sports and feel confident and comfortable in the water.

International experience (for example, in schools in Australia and the United States) shows that youth orientation systems are often implemented in an interactive and gradual manner. Children are initially selected based on their level of "water competency" and subsequently directed toward technical and functional training. This approach not only ensures safe behavior in the aquatic environment but also creates opportunities for systematic athletic development.

Problems in the Selection of Swimmers

The selection process is one of the most complex issues in orienting young athletes toward swimming. Practice shows that selection is often based solely on external physical indicators such as height, body weight, and limb length. However, this approach is insufficient to fully assess an athlete's future potential.

One of the key problems is the discrepancy between biological and chronological age. For example, among 12-year-old children, one may already be biologically mature, while another is still in an active growth phase. Although early-maturing children may have an initial advantage, in long-term development, late-maturing athletes with high potential often achieve superior results. Therefore, determining biological age, monitoring growth rates, and developing individualized training programs are essential components of the selection process.

Moreover, psychological stability must be taken into account during selection. Swimming requires endurance, concentration, and resistance to stress. In selecting young athletes, their ability to perform tasks underwater, level of concentration, and readiness for competition should be assessed.

The Importance of Anthropometric Indicators in Swimming

Anthropometry is a scientific basis for predicting success and selecting athletes in swimming. Research indicates that:

- **Body height and limb length:** Longer arms and legs increase propulsion force in water and expand the range of motion. Therefore, height is considered a key factor influencing speed and efficiency in swimming.
- **Body mass and muscle-to-fat ratio:** Optimal body mass reduces water resistance, while muscle mass increases propulsion. Excess fat tissue, on the other hand, hinders movement in water.
- **Chest volume and respiratory capacity:** These enhance endurance in swimming and help maintain rhythm and cover longer distances more efficiently.

For instance, in sports schools in Japan and Russia, these indicators are systematically measured during the selection of young swimmers. The results are entered into databases, and each athlete's growth and development rate is continuously monitored. This approach helps identify future high performance potential and maximize athletes' development.

Swimming Selection in International Practice

In developed countries, selection systems are built on scientific research and statistical monitoring.

- **United States and Australia:** Continuous monitoring systems are used when working with young athletes. Each athlete's technical, functional, and psychological indicators are tracked through annual testing. Based on these data, coaches develop individualized programs and identify athletes' strengths and weaknesses.
- **Russia:** The selection process considers anthropometric and functional tests as well as biological maturation levels, allowing for the prediction of future athletic success.
- **Japan:** In sports schools, psychological stability, concentration ability, and stress resistance are key selection criteria. Coaches also observe freedom of movement and motor skills in the aquatic environment.

International experience demonstrates that the selection process should be multidimensional, integrating external physical indicators, functional preparedness, biological maturation, and psychological characteristics.

The issues of orienting and selecting young athletes for swimming are regarded as one of the most pressing problems in modern sports pedagogy and sports theory. Research results indicate that successful athletic performance depends not only on systematic training but also on scientifically grounded, long-term selection that accounts for athletes' individual physical, morphological, functional, and psychological characteristics.

In swimming, anthropometric indicators—including height, body mass, limb length, muscle-to-fat ratio, and chest volume—are among the main factors determining the effectiveness of technical movements and endurance. At the same time, biological maturation, psychological stability, and motivation play an important role in the selection process.

International experience shows that developed countries organize selection systems on a scientific basis. They evaluate young athletes through long-term monitoring, develop individualized training programs, and predict not only current performance but also future success. Adapting this approach to national systems can enhance the creation of a high-quality sports reserve, achieve superior results in swimming, and develop competitive athletes.

As a result, if the process of orienting and selecting young athletes for swimming is carried out using a scientifically grounded, systematic, and individualized approach, it will not only contribute to the development of the national sports system but also ensure future sporting

achievements. At the same time, this process promotes overall physical development in children, forms safe movement skills in the aquatic environment, and encourages a healthy lifestyle.

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