Substantiation of methods of selection and orientation of children to practice gymnastics in the long-term preparation system

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Purpose: to determine the most effective methods of selection and orientation of children for gymnastics.

Material & Methods: the study included children 7–8 years of secondary school in Kharkov and Kurdistan in the amount of 112 students. Methods of pedagogical observations, sociological surveys, method of expert evaluations, medical and biological methods of assessing physical development, and methods of mathematical statistics are used.

Results: are based on studies found the most specific criteria for assessing the physical development of children 7–8 years of specific features of the chronological and biological age and criteria for evaluation of their physical readiness. Specific features of the physical development of children 7–8 years old, having characteristic signs of a tendency to exercise in gymnastics are determine.

Conclusions: the peculiarities of individual physical development of children of 7–8 years are established, taking into account the peculiarities of their biological age, it is possible to establish with the highest accuracy the most characteristic features of the somatotype of children, corresponding to the performance of exercises in gymnastics.

Keywords: physical development, biological age, somatotype, gymnastics.

Introduction

Any kind of sport as a specific type of activity acts as a natural selection factor, which leaves the arena only the fittest to the corresponding extreme and special conditions of competitive activity in its respective movement direction. In this representation of gymnastics as a specific type of movement activity it has the features to be met by natural opportunity to engage in this sport. These features are factors of selection and orientation of children for gymnastics in the system of long-term preparation.

Sports selection solves the problem of identifying promising children, from which you can prepare outstanding athletes. The process of selection and orientation is closely related to the structure of the athlete's long-term development. In accordance with this, five stages of selection are highlighted, each of which raises questions: is the subject able to solve by its characteristics those tasks that are at a particular stage of long-term preparation [1].

In accordance with these requirements, basic selection criteria are established at each of its stages. In the first stage of selection play a large role anthropometric and morphological and functional characteristics involved. The accuracy of the chosen fitness criteria determines the permissible selection error and the orientation to the subsequent tasks. At present, the basis for such assessments is the long-term experience of working with the athletes of the trainer, doctor and other specialists, as well as comprehensive surveys, which provides more informed conclusions.

The sports selection conducted at the first stage reveals the makings and abilities in technical and tactical skill, the level of functional readiness, the level of development of movement qualities, mental characteristics, the level of tolerable age-related loads, their adequacy to the individual characteristics of the athlete. The obtained data are the basis for the orientation athletes training at a later stage of long-term improvement.

Sport selection and orientation are not a one-stage event of sports improvement in the continuous process of long-term athlete training. As in any process, its control requires observability of its dynamics and appropriate means of its correction. This requires the certification of individual training in accordance with established criteria for monitoring the measure of the success of its promotion. Such a problem at this stage is completely soluble due to the existing computer hardware and its use in the practice of the organization of the training process. At present, this problem is quite relevant in the construction of a scientifically based system of selection, orientation, management and control in the long-term staged athletes training.

Communication of the research with scientific programs, plans, subjects

The presented researches performed on the topic Consolidated Plan of research work in the field of physical culture and sports in 2011–2015 by theme 2.6 "Theoretical and methodological bases of perfection of training process and competitive activities in the structure of long-term preparation of sportsmen", the state registration number 0111U001168.

The purpose of the research

To determine the most effective methods of selection and orientation of children for gymnastics.

Objectives of the study:

1. To determine the characteristic features of the motor activity of gymnastics as the main components of the professionogram of this sport.

2. To consider the individual features of physical development in accordance with the difference in biological age from its chronological age.

3. Identify the main components of the biomechanics of movement activity in gymnastics and morpho-functional tests of selection of children to engage in gymnastics.

Material and Methods of the research

In the studies involved children 7–8 years of secondary school in Kharkov and Kurdistan in the amount of 112 students. *Methods:* analysis and generalization of scientific and methodical literature, biomedical techniques, pedagogical experiment, static analysis.

Results of the research and their discussion

Implementation of selection and prediction in gymnastics, as in any other sport, is based on the identification of the most important indicators of physical development, physical fitness, physical condition and the nature of the individual's learning. All these characteristics have dynamics of their development in the age group, which must be taken into account in order to meet the optimal conditions for the construction of the training process. Gymnastics classes start with 7–8 years. Existing tests and methods for assessing the prospects for success in gymnastics are based on the average statistical criteria for their construction relative to each chronological age of the contingent.

Considering that it is necessary to monitor and evaluate the physical development of adequate his arsenal available to motor activity, individual biological age and features of its high-quality flow, body structure, the main factors of physical, trophic and mental development should be the need to process large amounts of information and determining the similarity of individuals to achieve the same end result. The task is to determine the shared significance of each of the indicators used to ensure the same final result. Such multicomponent problems have an extremely complex solution, which makes it very difficult to consider them. A second factor that creates a great difficulty in achieving the overall evaluation is the ambiguity of the concepts and definitions of the objects, events and processes. In all cases, the basis of comparison is the final equifinental result, which plays the role of a criterion for the similarity of mutually conditioned relations. In this case, there are two tasks: the establishment of more rigorous definitions of those factors that are the subject of comparison, and a compare of their significance in providing the same equifinal result, which allows us to identify significant signs for the implementation of the selection process and predict the success of certain sports. In this case, this kind is gymnastics.

One of the determining factors for selecting and predicting the success of a particular sport is the concept of physical development of a person. This concept is extremely multilateral. The doctrine of physical development is one of the most early-formed independent areas of physical anthropology. The doctrine of physical development is one of the most early-formed independent areas of physical anthropology. In modern anthropology, physical development is understood as a complex of morphofunctional properties of the organism that determines the reserve of its physical capabilities, the degree of capacity, as well as the process of morpho-functional, and especially somatic indices, that can be controlled to assess their development [2; 3].

The most effective method for accomplishing this task is a modified method of clinical anthropometry by M. Ya. Breitman [4; 5]. Its essence consists in comparing the absolute sizes of fifteen linear biokinematic links of the body, referred to the body length of the subject. This allows us to establish a qualitative structure of the somatotype constitution and make a comparison with the necessary accuracy and the definition of those structures of physique that are observed in athletes achieving the highest development of motor actions in gymnastics. The latter can be the basis for the selection of individuals that are structurally somatotype structures are the most promising to engage in gymnastics.

The concept of "physical development" is closely related to the age of the surveyed individuals. In the practice of the selection we find only the use of chronological age. However, in reality, the true biological age of an individual may differ significantly from the chronological. In this case, the used age estimates of physical development will deviate significantly from the actual relative to a particular individual [6; 7].

In ongoing research used method of estimating the biological age, developed in KhSAPC. This methodology is standardized and includes all the existing private methods for assessing the biological maturity of an individual on the specific indicators of the biological maturity of the system under consideration [8; 9]. Since the selection and prediction of the success of sports gymnastics in the studies used comparative characteristics of the structure of the somatotype, a methodology was used to assess the biological maturity or biological age, built on the basis of clinical anthropometry by M. Ya. Breitman, but using a three-dimensional evaluation of body shaping [10].

Biological age in this modified procedure is determined by the growth of the body weight of an individual relative to its chronological value of the surveyed contingent. In this case, a general indicator of biological development is established, which may seem lagging, normal or advanced. Regarding each specific value of body weight, the variability of its shape was determined with respect to distribution in three directions: height, width and thickness of the body.

After performing this operation, the qualitative structure of the body structure was analyzed using a modified technique M. Ya. Breitman. On the basis of the final analysis, those structural structures of somatotypes those were inherent in individuals who achieved the same high equifinal result in mastering the complexity of motor actions in gymnastics. On the basis of the filled material, a standard of morphofunctional components of the structure of the physique, predisposed to the effective perception and assimilation of the arsenal of exercises of gymnastics for children of 7-8 years of chronological age.

A comparison of the corresponding biological age for the observed contingent of 122 male children of the Kurdistan Republic in Iraq and Ukraine amounted to 7±1,19 years, for 8±1,12 years. The chronological age corresponds to the biological age, when the body weight of the subject completely coincides with the body weight of the population norm. The standards for the evaluation of the physical development of the pupils in terms of growth and weight readings taken from the official publication of the State Institution "Institute for Hygiene and Medical Ecology O. M. Marzeeva National Academy of Medical Sciences of Ukraine" [11].

It should be noted that when selecting the criteria for selection and prediction for the successful development of sports activities, it is not the absolute values of the monitored indicators that should be taken into account but their relative dimensionless quantities that preserve the constancy of the relations and reflect the qualitative structure of the interacting components of the morphofunctional structures of the whole organism. Absolute values have high informativity, which to a greater extent reflects the social conditioning of changes in the environment of the body. In contrast to the chronological age, which has a constant flow rate, the biological age can have different speed, which is associated with the conditions of the educational environment, and demonstrate acceleration and deceleration of the nature of its flow [12].

Structure anthropometric parameters used is shown in table 1.

The most characteristic structure of the somatotype, which determines predisposition to develop the arsenal of movement activity of appropriate complexity in gymnastics at the first stage of selection, is presented in table 2.

According to its requirements, gymnastics as a factor in the educational environment makes certain specific requirements for the correlation of physical qualities in the successful development of movement activity in sports exercises. The most important for this sport are such motor qualities as: movements coordination, joint mobility (flexibility), strength, special endurance. By special endurance in sports gymnastics includes the ability to preserve the work of a given intensity while accompanying a sufficiently strong static tension during the whole time of its performance, which ensures the preservation of the working gymnast posture of the. This side of the

physical preparation of gymnasts is very poorly studied and survey experts in the field gymnastics was not marked by any respondent. In the scientific literature, it is pointed out that the most significant factor in the cost of energy consumption in all forms of movement activity are static stresses related to the preservation of the working posture, ensuring dynamic performance of the respective movement activity [13].

Almost all stages of long-term sports training and especially in the first stage of the particular importance played by control of the current physical condition. The most significant drawback of such control is the evaluation tests based on an average value of its exponent. Moreover, based on such criteria for evaluating the empirical formulas are used, no scientific rationale. A striking example of this phenomenon acts widely used sample Rufie and set on its base Rufie index to assess the level of efficiency of the individual. A similar conclusion is relative to many other tests [14; 15]. In the studies conducted, the level of working capacity and the measure of fatigue were evaluated on the basis of the methods developed in KhSAPC, which allow an individual assessment of the current state, based on taking into account the revealed physiological patterns of the course of these processes [13; 16]. In the structure of these methods, plyometric standard exercises are used in which the rate of quenching of kinetic energy is accurately measured according to the characteristics of the characteristic reflecting the manifestation of the spring function of the biokinematic link at the angle of its movement and the dynamics of the behavior of the mean arterial pressure (MAP). This characteristic is simultaneously recorded on the right and left hand, and is estimated based on the observed asymmetry of her testimony.

Conclusions

Based on the results of the research and achieve the objectives can be formed the following conclusions:

1. Features movement activity in gymnastics that constitute the main components of its professiogram, lies in the fact that the determining cause of fatigue are occurring energy that go into static forces preserving the working position, providing the kinematics of movements of the exercises.

2. Individual features of physical development, which determine the inherent predisposition to gymnastics, are associ-

Table 1
Structure of anthropometric indicators

1.	Upper face		
2.	Bottom face	Head with neck	
3.	Neck		
4.	Acromioclavicular-teat distance		Entire body length of the median-vertical line
5.	Teat -umbilical distance	Torso	
6.	Umbilical-inguinal distance		
7.	Hip		
8.	Shin	Leg	
9.	Foot		
10.	Half acromial distance		
11.	Half span distance	Horizontal distances	
12.	Length of the foot from the heel to the end of the thumb		
13.	Shoulder Length		
14.	Length of forearm	Arm	
15.	Length of the brush		

Table 2

Characteristic somatotype structure, which determines the predisposition to develop the arsenal of movement activity of appropriate complexity in gymnastics at the first stage of selection (% of body length)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8,85	4,21	5,79	6,84	13,66	10	26,14	20,33	4,21	9,5	6,33	14,7	18	14,5	10,5
8,33	3	4,17	8,33	17,66	7	23,5	25,5	5,5	9	7	16	19	14,6	9,2
8	4	5,33	6,22	15,11	5,33	26,66	24	5,2	9,33	7,11	14,5	17	14	9,73

Note. *The first line corresponds to the somatotype structure standard, which represents the average population characteristic of the surveyed contingent. The second and third lines correspond to the category of the surveyed persons who most successfully master the arsenal of gymnastics exercises that are part of the program of the initial stage of long-term training related to the implementation of pre-selection and sports orientation.*

ated with the rate of growth of body weight and its shaping into the corresponding somatotype structure. From the side of morphofunctional indices, this manifests itself in a lower body length relative to its average statistical population index and established deviations in the qualitative structure of the structure of the biokinematic links of the body relative to its length.

3. Gymnastics on the structure of building competitive exercises is characterized by the presence in them of a significant proportion of static electricity spent on the preservation of the working posture of the exercises. This fact determines the test for the selection of persons wishing to engage in gymnastics. The essence of the test is the ability to maintain a static force.

Further research will be aimed at determining the fundamental factors of the psychological reliability of competitive activities, which is especially important in the final stages of long-term training of athletes.

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