

# Fundamental factors of long-term criteria and selection of children at the first stage of multi-year sports training in gymnastics and dance sports

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**Purpose:** to determine objective methods of selection and vocational guidance of children 6–7 years of age for practicing acrobatic rock'n'roll.

**Material & Methods:** studies were conducted on a contingent of children Sports School No. 13 in the amount of 125 people. To write this work, the following research methods were used: pedagogical observation, medical and biological methods of assessing physical development, methods of mathematical statistics.

**Results:** results of the conducted studies and the analysis of many years of experience with the children's contingent engaged in acrobatic rock and roll allowed to generalize the features of the physical development of children and their success in mastering the arsenal of motor actions from the preparatory complex of physical exercises, available for a given age; to systematize the constitutional features of a child's somatotype and a specific group of physical exercises that are more successfully mastered by them; to establish the priority of the motor qualities that are inherent in performing complex coordinated actions of a certain group of physical exercises in acrobatic rock'n'roll; set the compatibility condition for the possibility of complete sets of sports pairs.

**Conclusion:** determining factor for the successful development of a specialized type of motor activity, characteristic of competitive exercises in gymnastic and dance sports, are the phylogenetic features of individual physical development.

**Keywords:** physical development, phylogenetic conditioning, long-term selection criteria.

## Introduction

Sport of high achievements is characterized by specific motor activity. This is the main factor in the natural selection of those who, according to their morphofunctional endowments, meet the requirements of the motor activity of the corresponding sport to the maximum extent. First of all, in this case we are talking about biokinematic features of the constitutional characteristics of the athlete's somatotype. They must correspond to the kinematic characteristics of the motor activity under consideration, to their dynamic efforts and the static stresses of the chosen sport. Accordingly, this kind of specific motor activity must correspond to its energy supply, which closely depends on the specific course of trophic processes [1; 2].

Thus, the long-term selection criteria that are imposed on athletes in accordance with the requirements of the chosen sport should be based on a phylogenetic basis of congenital ancestors. This category of selection criteria is of a special nature and requires in its development for each type of sport activities an independent decision.

Regardless of the specific nature of the direction of competitive motor activity, a common feature for all sports is the reliability of competitive activity, which is determined by the athlete's resistance to extreme and special conditions of its course. Despite the fact that this task concerns the whole variety of sports and professional activity, it has the least degree of its resolution. The main reason for this state of the matter is the lack of the necessary adequate methods for solving it.

**Relationship of research with scientific programs, plans, themes.** The performed work was carried out in accordance with the Consolidated Plan of research works in the field of physical culture and sports for 2011–2015 on theme 2.6 "Theoretical and methodological principles for improving the training process and competitive activities in the structure of long-term training of athletes" (state registration number 0111U001168).

**The purpose of the research:** to determine objective methods of selection and vocational guidance of children 6–7 years of age for practicing acrobatic rock'n'roll.

**Objectives of the study:** 1. Establish general provisions of the determining factors that should ensure the reliability of choosing long-term criteria for children's defense at the first stage of long-term sports training. 2. Identify the characteristics of individual physical development and physical readiness, which affect the variability of the manifestation of predisposition of children to various types of specific motor activity. 3. Identify the characteristic components of competitive motor activity in acrobatic rock'n'roll, defining the ergographic structure of this sport.

## Material and Methods of the research

Research methods: analysis and generalization of scientific and methodological literature generalization of the experience of the coaching contingent's practical work, working with children's groups in acrobatic rock'n'roll, natural pedagogical experiment, methods of mathematical statistics, construction of

special semantic spaces.

### Results of the research and their discussion

The problem of selection and orientation of athletes in the system of long-term training, despite a large number of publications, remains open, as there is no scientifically based methodology. Available literature is a generalization of the empirical observation of the coaching contingent (V. N. Platonov, 2014). The construction of any system of selection is always connected with the necessity of environmental characteristics of knowledge, which should take place the upcoming activities. It is a factor of the individual suitability for staying there. Realizing the sport of high achievements as environmental selection, it is necessary first of all to know what the individual should be prepared for and what inherent predisposition lies in his physical development, which should be the main one in his success in mastering this environment.

A group of gymnastic and dance sports have fairly close ergographic characteristics and in this respect they can to some extent be considered as related types of motor activity. Based on the analysis of the nature of the motor activity performed in acrobatic rock'n'roll, we can speak of the need for high coordination ability in the sequential execution of complex motor actions. In this case, it becomes necessary to assess the accuracy of the binding of the motor actions performed and their available complexity. No less significant quality of the motor activity performed is the rapidity of their course. Despite the high dynamics of motor activity in acrobatic rock'n'roll, a characteristic feature of its performance is the constant presence of static tension, which ensures the preservation of the working posture in the performance of dynamic efforts. It is static efforts that are most tedious and require special attention for the development of endurance quality. Naturally, large amplitude of performed motor activity assumes the presence of adequate mobility in the joints. The magnitude of the manifestation of these motor qualities and, most importantly, their share ratio is the determining factor in the selection and orientation of children for acrobatic rock'n'roll training in the system of long-term training of athletes [5; 6].

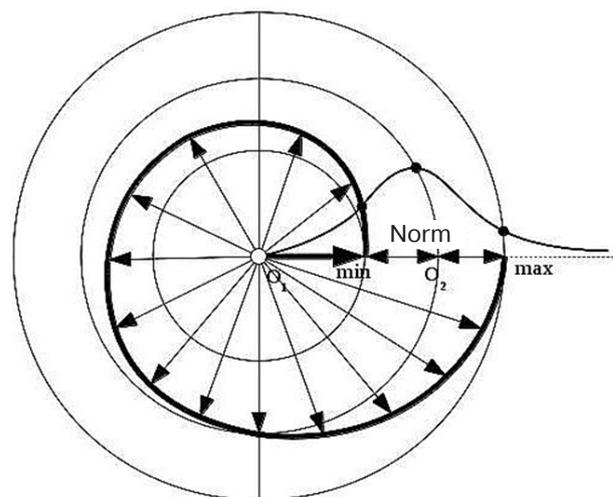
In practice, the evaluation of motor qualities has a fairly well-developed method for their determination, but the absolute units of their measurement do not allow us to evaluate the qualitative relationship of the structure of their interaction in the organization of the specificity of their share ratio in providing specialized motor activity of the group of related sports. The solution of this problem was achieved due to the developed method of compiling various characteristics of the motor activity in the semantic spaces with the uniform measure of these characteristics introduced in them [7].

The main task for their use was the need to obtain the average statistical characteristics of the manifestation of motor qualities in a large contingent of subjects of the same chronological age engaged in gymnastic and dance sports. The necessary material was collected on the basis of the contingent of persons engaged in these sports in the Sports School No. 13. Based on the received material, a standard was defined for each of the motor qualities.

These characteristics were a unit of comparison, with respect to which the individual indicator of each quality was compiled, respectively, with its unit of comparison. If there was a deviation

from the average statistical value, then it was measured in terms of sigma relative to its unit radius vector. Since all the average statistical standards of comparison are taken as a unit, assigning them a specific number can be evenly distributed in a circle with a unit radius. In this case, any deviations from its standard are noted on the corresponding radius vector. The points obtained are connected with each other by line a segment, which gives a certain broken line. The next step in constructing a qualitative analysis of the share of measured characteristics in ensuring the specificity of professional motor activity is that the minimal manifestation of any characteristic and the maximum deviation from its norm of another characteristic are deposited in one direction. Then a logarithmic spiral is traced from the end of the radius vector of the maximum value of the other characteristic. After that, each radius vector of all other characteristics is arranged in such a way that their ends touch the line of the spiral. The resulting sequence of the ranked distribution of radius vectors is a qualitative structure of the share of the controlled characteristics in the construction of the motor activity. This characteristic is phylogenetically conditioned and does not change throughout life. The physical state and age change the magnitude of the manifestation of the trait, but do not affect the qualitative structure of their relationship. The general structure of the construction of the described passport with a long-term selection criterion is shown in Fig. 1.

Such constructions are applicable for comparing the anthropo-



**Fig. 1. Representation of the structure of the characteristics of motor activity in the form of a ranked distribution of controlled indicators in a semantic character space with a single measure of their relations introduced**

metric characteristics of the physique, which reflects the individual specificity of the manifestation of physical development; for the evaluation of physiological parameters, which reflects the specific nature of the course of trophic processes [1].

In addition to physical development, trophic activities that determine the degree of predisposition to stay in a certain formative environment and reflect a specific feature of fitness for the performance of a specific character of motor activity, a special role in achieving high sports results is played by a mental state that acts as a nonspecific component in ensuring a quality such as competitive reliability. The methods for estimating this characteristic are well developed in aviation and space medicine, in engineering psychology and are based on

psychophysical patterns of the behavior of the sensory system and the growth of permissible errors in various states of emotional arousal and emotional unrest [3].

In the theory of sports this question remains insufficiently developed, but using the nature of the obtained dynamics of the error behavior it was established that in the contingent being examined the existing variability of the allowed errors has a systematic shift and an increase in the variability of the error with respect to this displacement. Regarding different sensory systems, the degree of errors allowed to assess their specific coordination activities is different, but the nature of the change in the systematic error and its variation relative to it for all sensory systems of a particular individual remains the same. In various functional states, disturbances in sensory perception involve changes in the evaluation of the strength of the perceived effect, its spatial location, and the time taken to perceive the effect. The numerical characteristics of such changes in sensorics are of an individual nature, which makes it extremely difficult to compare their measurements with different individuals when coordinating the coordination regulations of their joint activities [4; 8].

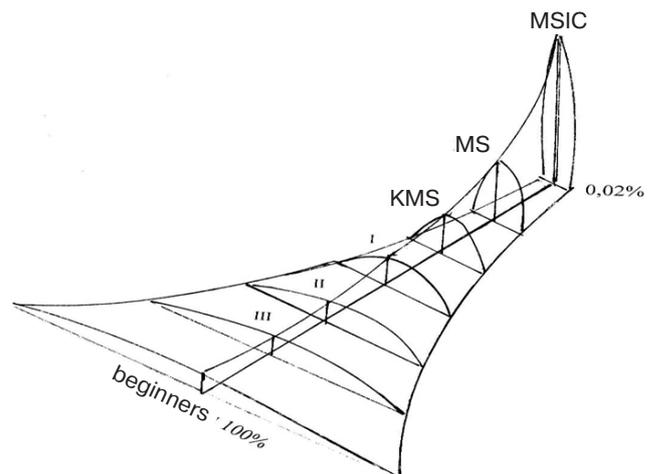
Using the semantic spaces in the analysis of the sensory perception of the environmental changes obtained as a result of the survey of the same contingent, in complete analogy to the above-described process of assessing physical development and physical condition, the average statistical standards of the measured characteristics. It is possible to obtain a ranked series of equity participation activity ratio different sensory systems in providing individual coordination interaction with the environment in which the structure and the partner is included. The very dynamics of changes in sensory perception in the coordination activity of the movement for all types of sporting activity is of a nonspecific nature in ensuring competitive reliability. However, the structure of the significance of the share participation of sensory systems in achieving an equifinal result of the coordination of motor activity in each sport activity has its own specific analysis and is a criterion for a long-term evaluation in the selection system for practicing a specific type of gymnastic or dance sports.

To solve the main task of selecting and predicting the success of any gymnastic or dance sport, it is necessary to have a fairly clear comparison standard for comparing the individual characteristics of the criteria for evaluating the characteristics of physical development, physical condition (trophic health), and sensory activity, reflecting the psychosomatic features of behavior, the totality of which reflects, depending on the measure of the coincidence of the standards, with a comparable individual characteristic, which will indicate the prospects and reliability of the selection at the initial stage of long-term training of the athlete.

Since the specific motor activity of each sport acts as a factor of natural selection, which leaves on the sports arena as its qualification requirements become more complicated only those for whom these exercises are available, the only method of determining the necessary comparison standard is the method of natural experiment introduced into the practice of pedagogical research by A. F. Lazursky.

The essence of this methodology is that the process of adaptation in a more complex environment of residence, screening out those who are incapable of consistency with the level of its

complexity, and leaves individuals who have the same criteria for ensuring the equifinal end result of the structures of the characteristic parameters that ensure its achievement. This effect is achieved by the principle "remove different, allocate a common." Based on this method, a standard was defined for comparing individual fitness data to acrobatic rock'n'roll. From the total number of beginners to engage in the relevant sport as the requirements of the highest level of the qualification scale of sports results become more complicated, it reaches no more than 0,02%. Determination of their passport data in the assessment of physical development, the specificity of the course of trophic processes and psychosomatic features of behavior in special and extreme situations is the desired standard of comparison. The features of the process are shown in Fig. 2.



**Fig. 2. The distribution of the ranked number of athletes of different levels of sports qualification**

The final structure of long-term selection criteria for the success of mastering the complexity of tasks in long-term sports training in gymnastic and dance sports will be achieved by establishing the criteria for the rate of mastery and the level of individual learning.

## Conclusions

1. Determining factors of long-term selection criteria for children are not the first stage of long-term sports training for the successful development of specialized motor activity, characteristic of competitive exercises in gymnastic and dance sports, are phylogenetically conditioned features of individual physical development, physical condition and psychological characteristics of individual behavior.

2. The standard of comparison of fitness for employment in the chosen orientation of sports activity are the criteria of physical development, physical condition and psychosomatics of athletes who have reached the highest level of sports qualification.

**Prospects for further research.** In the conducted studies, such indicators as the learning speed and the available level of learning were not taken into account, which is an important factor in the selection system and needs to be taken into account in the overall research structure of selection problems. This focus represents a purpose for continuing research in this direction.

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