

Main components of a long-term prediction structure when selecting and organizing sports activity for children at the initial stage of multi-year athletes' training

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Purpose: *systematize the existing criteria for the long-term diagnosis of the predisposition of children to the successful development of a specific feature of the arsenal of competitive exercises in sports gymnastics diagnosis of children's predisposition to the successful development of a specific feature of the arsenal of competitive exercises in gymnastics.*

Material & Methods: *material for this work was the empirical results obtained in the study, which, when presented in semantic spaces with a single measure introduced in them, give a certain ranked structure of their orderly representation. In this representation of empirical data, there are quite pronounced analytic relationships that allow us to establish general patterns of this ordering of data and to determine on the basis of general regularities individual features that affect the variability of the behavior of general laws. Main method is the statistical processing of empirical data on the basis of which geometric constructions were carried out, which were approximated by analytical expressions and their subsequent analysis.*

Results: *based on the conducted studies and the subsequent analysis of the structure of long-term criteria for the evaluation of the measure of prospects, based on the phylogenetic characteristics of their manifestation, a set of necessary sufficiency of these criteria.*

Conclusion: *in the existing structure of long-term criteria for selecting and orienting children for gymnastics, along with a successful decision to assess the kinematic and dynamic characteristics of motor activity in determining the significance of their share participation in performing competitive exercises remain unaccounted for and lack reliable criteria for assessing motor abilities and motor properties, which significantly reduces the effectiveness of long-term prognosis.*

Keywords: *long-term prognosis, selection, biological age, physical qualities, properties, abilities.*

Introduction

In any kind of professional activity, the problem of selecting and predicting the level of learnability is the determining factor in the formation of human resources. In sports this problem is most systematically presented in the works of V. N. Platonov [1]. However, regardless of the type of professional activity, the person remains at the heart of this problem – an obligatory component that participates in ensuring the effectiveness of obtaining a result in the system “person – object of management – environment”. In all cases, the successful resolution of the issue of human reliability in this system requires an ergographic description of the requirements imposed on the person by the component components of the system – the object of control, the environment. In the overwhelming majority of cases, this kind of information is achieved purely empirically, as a result of prolonged natural selection. There is no general theory for solving this problem [2; 3].

The most characteristic feature in this direction is a comprehensive study of man as an element of the general system “person – object of management – environment” from the standpoint of reliability facts in these systems, which reflects his suitability for the relevant professional activity. Accumulated experience in the research of this area has allowed identifying the main components determining the professional suitability of a person regardless of the nature of professional activity. To such constituent components are the features of

the physical development of the individual; his physical health and current functional condition; mental capabilities that provide the necessary stability of a person to work in special and extreme conditions in the appropriate environment of professional activity. The set of these characteristics reflects the necessary requirements that determine the individual readiness for the appropriate level of complexity of performing professional activities, which must necessarily be supplemented by sufficient conditions for professional training.

In turn, professional preparedness, in addition to the predisposition to its implementation, is determined by the available level of its assimilation and the speed at which it is achieved. In most cases, these components do not have reliable methods of determination, which is the reason for the decrease in the reliability of the long-term prognosis of professional reliability [4].

Relationship of research with scientific programs, plans, themes. The research was carried out in accordance with the summary plan of scientific research works in the field of physical culture and sports for 2011–2015 on the topic 2.6 “Theoretical and methodological basis for improving the training process and competitive activities in the structure of long-term training of athletes,” the state registration number 01110001168.

The purpose of the research: systematize the existing criteria for the long-term diagnosis of the predisposition of

children to the successful development of a specific feature of the arsenal of competitive exercises in sports gymnastics diagnosis of children's predisposition to the successful development of a specific feature of the arsenal of competitive exercises in gymnastics.

Objectives of the study:

1. Identify the main components in the system of long-term forecasting in selecting and targeting the sport of children at the initial stage of long-term training of athletes.
2. To consider the reliability of existing selection criteria and their full presence in the existing system of long-term forecasting in the selection and orientation of children for gymnastics in the system of long-term training of athletes.
3. Identify the main components of long-term selection, which determine the professional suitability of the individual for mastering the specificity of the motor activity of the arsenal of competitive exercises in gymnastics and assess the completeness of the entire system of components used in the reliability of its functioning.

Material and Methods of the research

Signed semantic spaces were used with a single measure of comparison of the parameters being compared; statistical processing of empirical material and its analysis on the basis of the statistical principle of achieving an equifinal final result; geometric representation of the obtained data in semantic feature spaces with the subsequent approximation by their corresponding analytical expressions.

Results of the research and their discussion

The bases for building long-term criteria for predicting the selection of children for gymnastics are phylogenetic abilities that determine individual biological development and characterize its biological age. Validity of the choice of these criteria is determined by the fact that the structure of the somatotype lies at the basis of the kinematic characteristics of the construction of motion.

Distribution of body weight according to biokinematic links, their dimensions, with the corresponding type of body shaping, determines dynamic efforts corresponding to their movement. Since any movement characteristic is possible at a certain static stress, which provides the working posture necessary for the appropriate kind of displacement, the constitution of the body structure is the most indicative for long-term selection to the appropriate specificity of the arsenal of competitive exercises of the sport in question [5].

In the case of an ergographic description of the motor activity of a selected sport, its structure includes characteristics of the motor qualities: dynamic and statistical force, the speed of its development, the duration of the conservation of the intensity of the characteristic motor activity, amplitude of the manifestation of movements of the biokinematic links of the body, the accuracy of the coordination of the elements of motion in the sequence of their execution and the simultaneous implementation of the complicated coordination structure of their construction. If, to achieve a final equifinal result of the motor actions performed, there is a choice of different op-

tions that may be more preferable to achieve the goal, then the ability not only to accurately assess the preference of the necessary choice but also the speed of this choice. In general, the ergogram includes a shared description of the motor qualities necessary to implement a specific form of motor activity in a selected sport. In all cases, to accomplish this task, it is necessary to reflect all six motor qualities that form the corresponding species motor activity of the athlete [6].

Opened in the research features of the manifestation of the motor quality of the force in connection with its division into two constituent components – dynamic force and static stress led to the need for their evaluation and testing of the features of the manifestation of these characteristics. Dynamic force is characterized by the rapidity of its development per unit time, the static stress of its magnitude and its variation by the angle of extension and the possible duration of conservation of this effort. This feature of its manifestation characterizes the presence of statistical stress pulsations during cyclic exercises. The range of this type of pulsation depends on the amplitude of the change in developmental conditions between the operating biokinematic links, which is a characteristic of the preservation of the working posture of the motor action. Consequently, any motor act is characterized by a strict consistency between static stress and dynamic forces for their performance. Energy total expenditure for the motor act performed is distributed in the limit of these components. Greater the value of the static voltage, the less the fraction of the energy potential remains for the dynamic effort. Representation of the interdependence of these characteristics in the performance of specific motor actions specific to a particular sport in all cases has a pulsation of the dynamic force, static voltage pulsation, the average statistical value of the energy cost of the performed motion and the amplitude of the oscillation of these characteristics. Reflection of these data in the semantic character space makes it possible to build the structure of energy supply characteristic for the sport in question, and the reflection of the nature of the manifestation of energy expenditure by a particular individual, when implemented, reflects the measure of its compliance with the chosen sport. If the nature of the energy supply to the motor activity of a selected sport is a factor of environmental selection, then the individual characteristic of this indicator, being conditioned by phylogenetic predispositions of biological development, determines the measure of the conformity of the made choice. When this ratio tends to unity, the long-term value of the forecast made for this indicator is determined [7].

The complete structure of the components of the long-term forecast for all parameters that determine the obtaining of an equifinal final result depending on the accuracy of its required evaluation is represented in the structure of the generalized characteristic space with a single measure in it of the evaluation of the available set of components under consideration. An essential feature of the construction of such a space is the definition of a general criterion for comparing the individual indicator of a particular component with the average statistical value of its manifestation at a specific chronological age of the entire surveyed population, regardless of the chosen type of sports. If there is no such quantity, it can be replaced by a conditional mean, which in the structure of necessary constructions is justified in the theory of mathematical statistics [8].

Thus, it is possible to construct a semantic space for repre-

senting the mutual correspondence of the degree of physical preparedness of the child to the motor activity of the environmental impact of physical exercises.

For any sport, whatever feature of the motor activity it does not have, an initial basic training is required, which is the basic arsenal of the motor activity of general gymnastics and athletic gymnastics. This kind of initial training can be defined as a basic or universal.

Universal training represents an integral indicator of an equally possible, multidirectional motor activity, which gives an effective result. Each of the motor qualities has a range of its manifestation. The range in which all motor qualities have their presence can be characterized as a zone of universality of motor activity. Like any phenomenon, the universal motor activity has a qualitative expression and the strength of its manifestation. For the forecasting of prospects, an important role is played by the qualitative structure of universal preparedness, which includes a certain set and sequence of components characteristic for a given phenomenon and the magnitude of their manifestation. The structure of this qualitative representation is shown in the Figure.

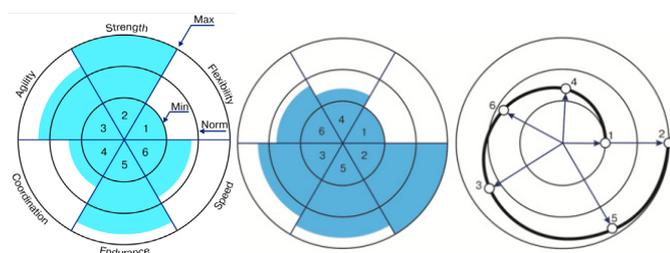


Fig. Sequence of representation of transformation of the petal diagram into a spiral diagram with reflection of the ranked expression of the controlled features that determine the individual qualitative characteristics of the motor activity

An analogous structure of the qualitative representation of the characteristics of the motor activity of an ergographic description of the specifics of a particular sport allows one to justify the child's predisposition to engage in a specific type of sport activity.

Peculiarity of constructing this kind of diagram is its expansion in the number of indicators to be compiled, depending on the necessary completeness of the reflection of the prognostic characteristics and the detailing of the individual and species ergographic representation of sports activities. From the available components of the long-term forecast used in the structure for selecting and targeting children for the selected sport at the initial stage of the multi-year training, the entire aggregate of them can be systematized into three categories:

categories: somatic indicators of physical development; trophic indicators of physical health; mental indicators reflecting the competitive reliability of the individual.

An analysis of the completeness of the necessary criteria for long-term prognosis has made it possible to determine their insufficiency, which sharply reduces the effectiveness of the developed system in the reliability of its long-term prognosis. In the existing system of long-term selection there are no indicators such as the speed of learning and the level of accessible learning. The absence of these evaluation criteria explains the fact that individuals who succeed at the first stages of long-term training of athletes in the vast majority do not become in the future highly qualified athletes. Of the total number of such a result, no more than 5% [1].

Main factor in this case is the individual level of learning, which was found out as a result of using the method of natural pedagogical experiment, developed and introduced into scientific research in pedagogy and psychology by A. F. Lazursky. Revealed regularity of natural environmental selection of the most adequate to the requirements of the increasingly complicated conditions of highly qualified sports activities was shown, that the bulk of those who involved in sports have a limit of accessible learning ability corresponding to the level of the first category and possibly the CMS. It should be noted that the effectiveness of long-term selection is determined not by the sum of the full set of characteristics, but by their product. The reliability index can theoretically be equal to one or 100% only when each criterion is also 100% accurate. In reality, the reliability of the forecast of each of the criteria only tends to unity, and the uncertainty of the indicators of the speed of learning and the level of learning, by virtue of their absence, reduces this forecast to the level of training of the average mass of those who involved in sports, excluding the most gifted individuals.

Conclusions

In the existing structure of long-term criteria for selecting the orientation of children for gymnastics, along with a successful decision to assess the kinematic and dynamic characteristics of motor activity in determining the significance of their equity participation in performing competitive exercises remain unaccounted for and do not have sufficiently reliable criteria for assessing motor abilities and motor properties that determine the speed of training and the level of marginal learning, which significantly reduces the effectiveness of long-term prognosis.

The study of these components and the development of the necessary tests for their numerical determination is a **further task** in the performance of scientific work.

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