Complex of test exercises: the key to success in children's sports

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Abstract

Objective of the study was to create and demonstrate the efficacy of a set of assessment tasks for children, tailored to their developmental stage and aligned with their sensitive developmental period.

Methods and structure of the study. The current phase of advancement in youth sports and the system of training sports reserves is marked by the rapid development of young athletes, with training loads that do not align with age-appropriate periodization, and a high level of expectations, which significantly affects their success and longevity in their careers, as well as the quality of their achievements. To address these issues, the authors suggest a testing approach that focuses on identifying the content and structural elements of children's physical activity, which is represented by a comprehensive set of eleven exercises.

Results and conclusions. Following the evaluation of eight groups of participants, the researchers have determined that in the process of training athletes, the most crucial aspect is the implementation of carefully chosen training methods and the development of training programs that take into account the age-related characteristics, predispositions, and sensitive periods of young athletes.

The effective selection of athletes, as well as the alignment of training programs and sports training systems with the sensitive periods and individual predispositions of young athletes, will contribute to the advancement of the country's sports reserve and the enhancement of the social image of the high-performance sports sector as a whole.

Keywords: *youth sports, testing methods, motor activity, sensitive periods, cognitive abilities, potential.*

Introduction. The development of youth sports and the system of training the sports reserve is of key importance for the future interests and welfare of the nation, social transformations, the development of human potential and the formation of a healthy civil society in general, as well as the achievement of the strategic goals of the state.[1, 2] According to the Ministry of Sports of the Russian Federation, by the end of 2023, the share of citizens systematically engaged in physical education and sports, taking into account citizens who engage in them independently, is 69.3%.[3] However, successes and achievements in the field of sports, to a greater extent, depend on how effective the approaches and methods are used by specialists in training young athletes.

A competent specialist applies a rational system for selecting athletes based on the growth of individual indicators of young athletes, can correctly assess the general condition and promptly notice trends and possible problems of further improvement and development of young athletes, takes into account the patterns of building educational, training and competitive activities, introduces innovative technologies.

Thus, ensuring the rights of children, maintaining

1 Order of the Government of the Russian Federation of December 28, 2021 No. 3894-r on «approval of the Concept for the Development of Children's and Youth Sports in the Russian Federation until 2030 and the action plan for its implementation». [Electronic resource] Available at: http://static.government.ru/media/files/BzNG3VRui0oPR1XemJKbuIZ6U eXTwTD2.pdf (date of access: 24.01.2024).

2 BI-system. Federal State Statistics Service. Available at: https://bi.gks.ru/biportal/contourbi.jsp?allsol=1&solution=Dashboard&project=%2FDashboard%2Fdemography_rosstat (date of access: 28.03.2024).

3 Statistics of physical education and sports in the Russian Federation. Ministry of Sports of the Russian Federation. Available at: https://sportrf.gov.ru/ (date of access: 28.03.2024).

their health and ensuring the necessary level of efficiency of the training process in youth sports largely depends on the degree of compliance with the sensitive period, functional capabilities, age and individual characteristics of each ward, the means and methods of training used by the coach-teacher (trainer).

However, today, youth sports can be characterized by a forced system of training young athletes in order to achieve the highest results. According to Maksimenko I.G. The following problems can be identified: a decrease in the age physiologically acceptable for starting to engage in sports; the lack of methods for training athletes that take into account sensitive periods of training and are based on the principles of athletic longevity; a decrease in the age physiologically acceptable for starting competitive activity; the lack of special methodological training for children's coaches and, as a consequence, the transfer of existing principles of the system of training adult athletes to children's and youth sports; a competition calendar that does not correlate with the sports experience and biological age of young athletes; a high level of overload; injuries; loss of motivation due to early burnout in young athletes; and other pedagogical, logistical, hygienic and medical risk factors [1, p. 57].

Objective of the study was to create and demonstrate the efficacy of a set of assessment tasks for children, tailored to their developmental stage and aligned with their sensitive developmental period.

Methods and structure of the study. In order to eliminate negative factors, it is necessary to organize the process of training young athletes, taking into account, first of all, the characteristics of their health and sensitive periods, without forgetting about other factors. In the system of long-term training of athletes ready to move on to high-performance sports, a special place should be given to the applied approach to periodization and the substantive component of the long-term training process, in which the most important place is occupied by the structure and content of motor activity and sports training of children of different ages, adolescents, athletes in early and late adolescence [1]. However, according to the opinion of experts in the field of development of children's and youth sports, the content of motor activity of preschool children aged 5-6 years should be based on the age-related developmental characteristics of children. According to I.G. Maksimenko, the key aspect of the formation of the nervous system of children is the conduct of training, including elements of various motor activity, the development of many motor skills not associated with a narrow specialization in a certain area of sport. Conducting complex training aimed at systematic development in accordance with age periodization is a positive factor in creating prerequisites for determining the inclinations and abilities of children to play sports, for successful preparation at the initial stage of long-term improvement. And it is difficult to disagree with this [1, 2]. We see that children at the age of 7-8 years, in accordance with the peculiarities of the development of the central nervous system, are already capable of perception and the simplest analysis of movements. Therefore, the educational and training process should be based on complex and simple exercises focused on studying the basics of sports techniques, various outdoor games, including movements in different directions, rotations, jumps, various acrobatic actions, high-speed and strength exercises, the use of objects and equipment of different weights, sizes, etc. A set of educational and training tools that develop various skills and abilities of children is effective for the formation of their kinesthetic and perceptual capabilities, visual and muscle memory, attention, speech. As a result of the simplest load, the child learns to feel, perceive, and also control his movements, coordinate himself in the process of performing the exercise.

Let us agree that children aged 7-8 years at the current level of neurological development, «can during the training process set up an effective interaction of the functioning of the central nervous system, the motor apparatus and the autonomic systems, thereby increasing the level of cognitive development and forming motor experience»1 [1, Art. 242]. Physical exercises affect the work of the circulatory and lymphatic systems, increasing the pulse and providing the brain with more oxygen. Physical activity increases the production of growth hormones, which ensure the creation of new brain cells.

In support of the above and on the basis of the implementation of the federal experimental (innovative) platform «Development of a model for creating a system for selecting talented athletes in new-type organizations in the territory of the Russian Federation», an experiment was conducted that included operational control and ongoing examination of the physical, functional and psychological preparedness of children engaged in sports training at various stages.

The use of a set of test exercises implies monitoring and measurement of physical fitness parameters,

1 Every year 200 thousand athletes give up further sports career. Senate Inform [Electronic resource]. Available at: https://senatinform.ru/news/ kazhdyy_god_200_tysyach_atletov_otkazyvayutsya_ot_dalneyshey_sportivnoy_karery/ date of access: 24.01.2024).

Table 1. Types of exercises for testing children

№	Types of exercises	Clarifications
1	20m Run	From a high start
2	Long Jump	From a standing position
3	Dynamometry	-
4	Lifting the Torso from a Supine Position	With bent legs
5	Forward Bend	From a standing position
6	Falling Ruler	-
7	Shuttle Run 3×10m	Minimum 2 people
8	Running to Numbered Medicine Balls	-
9	Bondarevsky Test	-
10	Walking There and Back	Rack of an inverted gymnastic bench
11	10m Run	With running around 3 uprights

Table 2. Results of the analysis of input and final testing data

Group	Age, years	Number of trainings, pcs.	Exercise number													Group average, %	Average for all groups, %
			1	2	3		4	5	6	7	8	9		10	11		
					P	L						P	L				
1	5-6	8	-1.33	1.49	-	-	54.64	33.3	5.65	13.52	-20.50	-23.87	-31.67	-3.52	0.97	2.61	10.64
2	7-8	5	1.84	0.79	-	-	3.69	14.29	-0.28	1,60	4.15	46.66	161.57	2.83	8.81	22.36	
3	5-6	8	2.48	3.08	2.33	2.72	13.21	10.07	15.29	3.50	9.81	17.62	21.14	5.80	4.85	8.61	
4	7-8	8	5.28	2.31	1.35	4.12	24.05	18.34	0.45	2.07	3.36	1.58	1.22	3.02	3.25	5.96	
5	5-6	8	2.22	2.94	-9.12	-7.02	3.97	31.13	19.00	2.92	5.64	43.03	29.93	9.52	13.09	11.33	
6	7-8	8	5.92	2.45	1.24	-1.52	4.47	9.57	28.05	3.87	4.54	14.47	20.46	4.96	1.55	7.70	
7	7-8	8	0.53	3.92	-	-	1.33	13.51	48.39	-32.20	-8.43	68.11	117.87	-12.94	-0.16	18.18	
8	5-6	8	36.40	1.97	47.06	41.10	-25.96	-62.42	22.22	3.06	17.04	-7.41	-1.66	32.01	5.49	8.38	

such as: strength indicators, endurance, flexibility, speed qualities, coordination of movements. Functional fitness reflects the work of the main systems of the body (digestive, cardiovascular, respiratory, etc.) when performing specific sports loads. Psychological preparedness is assessed by studying the psychological characteristics of athletes, such as motivation, concentration, stress resistance, etc.

Initially, in the groups of 5-6 and 7-8 year olds participating in the experiment, an entrance test was conducted to assess the initial physical and functional preparedness. The testing consisted of 11 exercises (Table 1).

The choice of these exercises is due to the possibility of assessing the physical qualities that should be developed at this age. In addition, during the implementation of the experiment, special training programs were introduced into the educational and training activities of sports groups of children aged 5-6 and 7-8 years. The main goal of the training programs is to improve the quality of physical fitness, maintain health, and develop the physical and psychophysical qualities of children, since the training programs included sets of exercises for the development of physical and psychophysical qualities that are important at this age.

Results of the study and discussion. As a result of the implementation of a set of educational and training programs, final testing was conducted, which assessed changes in the physical, functional, psychological and cognitive preparedness of those involved. During the analysis of the results of the entrance and final testing, data from children who regularly attend training sessions to develop physical qualities (attendance of more than 75% of the training sessions) were taken into account (Table 2).

As a result of the data analysis, the following results were obtained: in the first group of students, the average group result of improvement in test exercise per-

formance indicators was 2,6%, that is, for each of the 11 exercises, the final testing indicators were, on average, 2,6% better than the indicators obtained during the initial testing; in the second group of students, the average group result was 22,36%; in the third group of students – 8,61%; in the fourth group of students – 5,96%; in the fifth group of students – 11,33%; in the sixth group of students – 7,7%; in the seventh group of students – 18,18%; in the eighth group, the average group result of improvement in test exercise performance indicators was 8.38%. The overall average result of improvement in test exercise performance indicators was 10.64%, that is, for each of the 11 exercises, the final testing indicators were, on average, 10,64% better than the indicators obtained as a result of the initial testing. The obtained results of the analysis of the data from the entrance and final tests have a sufficient range of indicators, which proves the different abilities of children.

Conclusions. The use of a set of test exercises based on age periodization and corresponding to the sensitive period of children helps to increase the efficiency of the sports selection system.

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References

1. Maksimenko I.G. Osnovy podgotovki v detsko-yunosheskom sporte. Nastolnaya kniga trenera. Moscow: OOO «Printleto» publ., 2023. pp. 17-68, 241-243, 320-327.

2. Komkova E.I. Kognitivnoye razvitiye rebenka kak usloviye razvitiya yego lichnosti. Vestnik Rossiyskogo universiteta druzhby narodov. Seriya: Psikhologiya i pedagogika. 2010. No. 4. 52 p.