The efficiency of developing coordination skills in figure skaters during the initial training phase

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Abstract

Objective of the study was to enhancing the coordination skills of young skaters aged 6-8 years during the initial training phase to enhance their technical proficiency.

Methods and structure of the study. The pedagogical experiment was carried out from June to April of the 2023-2024 educational and training year. The experiment involved figure skaters 6-8 years old with the norm of a young skater and 2-3 youth categories of the State Budgetary Institution of Educational Institution of the Republic of Moldova, Secondary School «Academy of Figure Skating» under the guidance of the Honored Coach of Russia, head coach of the Republic of Mordovia, L.N. Yakovleva. During the year, sets of exercises developed for the experiment for training figure skaters were introduced, and a number of motor and medical-biological tests were carried out to determine the level of development of coordination abilities and the state of the vestibular analyzer.

Results and conclusions. The outcomes of the development of coordination skills in figure skaters during the initial training phase, before and after the experiment described in the article, show a positive trend. There was a substantial enhancement in the development of coordination abilities in figure skaters aged 6-8 years during the initial training phase, which confirms the efficacy of the proposed set of exercises. The research of several authors is examined in the context of the topic, and a set of exercises is practically suggested based on the analysis.

Keywords: *coordination abilities, development of coordination abilities, set of exercises, indicators of development of coordination abilities, initial training stage.*

Introduction. The relevance of the study is due to the modern conditions of development of figure skating, the increasing technical complexity of the skaters' programs, which requires time to master highly coordinated technical elements. The process of teaching complex elements of figure skating, as noted in the Federal Standard1, must be accompanied by a comprehensive physical training. The history of the development of sports emphasizes the importance of creating conditions for the formation of a foundation of various basic movements and physical fitness, taking into account the age characteristics of athletes [5]. However, the rationale for the sports training of figure skaters is poorly presented in scientific and methodological literature, which would take into account the requirements of modern figure skating and the results of assessing the physical fitness of children aged 6-8 years, engaged in the initial training stage.

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Methods and structure of the study. The educational experiment was conducted from June to April

[1] Federalnyy standart sportivnoy podgotovki po vidu sporta «Figurnoye kataniye na konkakh ot 30.11.2022 № 1092. Available at: https://fsrussia.ru/files/docs/fssp_fs_301122.pdf (date of access: 08.09.2024).

of the 2023-2024 training year. The experiment involved skaters aged 6-8 with the standard of a young skater and 2-3 youth categories of the State Budgetary Institution of Additional Education of the Republic of Mordovia, the Sports School «Academy of Figure Skating» under the guidance of the Honored Coach of Russia, Head Coach of the Republic of Mordovia, L.N. Yakovleva. The study was conducted in the control and experimental groups, with 10 skaters in each. As part of the experiment, a developed set of exercises was introduced aimed at effectively developing the coordination abilities of skaters at the initial training stage. The set of exercises is presented in the author's course «Basics of Figure Skating for Young Skaters and Their Parents»1 on the online platform Stepik.

Results of the study and discussion. The development of coordination abilities occupies a central place in the theory of the training process of figure skating. From the point of view of physiology, the concept of «coordination» is presented in the form of coordinated activity of individual organs and systems in a holistic physiological act, namely nervous, muscular and motor coordination [4, 8].

In the cybernetic aspect, according to the laws of information process control, dynamic systems, it is generally accepted that the athlete's body carries out a coordinated action at several levels at once in the process of its motor activity: coordination, correction and control of motor acts [4, 9].

Modern researchers (I.V. Absalyamova, D.D. Baranova, N.V. Mitina [1], I.V. Bogdanov, V.V. Gorshkova, N.A. Rychkova [2], E.E. Gubaeva, N.N. Mugallimova [3], and others) continue to study coordination abilities, since they play a key role in the performance of elements by figure skaters, such as jumps, spins, step sequences and spirals. However, it is difficult to understand the polysemic versatility of the term «coordination».

Thus, in a number of studies, the need for the formation and development of coordination abilities during the athletic development of a figure skater is appropriate. Agreeing with the researchers [4, 6, 9, 10], we will understand coordination abilities as the athlete's ability to coordinate movements, accurately measure and regulate the parameters of movements in space, time and dynamics, maintain the position of his own body and perform motor actions without any unnecessary muscle tension, ensuring stability of posture in static positions and balance during movements. As a result of the analysis of the studied studies (E.E. Gubaeva, N.N. Mugallimova [3], K.S. Dunaev, I.O. Cherepanova, S.A. Yarushin [11] and others), interviews with specialists, personal training experience and involvement в эксперимент, были выявлены показатели сформированности координационных способностей:

1) kinesthetic differentiation – an indicator that was assessed using the «throwing the ball into the hoop» exercise. The criterion the highest number of hits (for example, 20) served as the assessment of this indicator;

2) spatial orientation – an indicator that was measured using the «obstacle course» exercise, which the skaters performed on one leg. The subjects were asked to go through an obstacle course of three cones and three gymnastic sticks lying on the ice. They had to go around the cones by pulling on one leg and then jump over all the sticks also on one leg. This exercise had to be completed in a shorter amount of time;

3) complex reaction – an indicator that was measured by performing a rotation in place with a head tilt back (looking at the ceiling), after which, upon a signal, it was necessary to run forward and catch the ball. The distance in centimeters from the place of rotation to the place of contact with the ball was measured. A decrease in the distance served as an improvement in the result. Three attempts were given for this exercise;

4) dynamic balance – an indicator measured when performing a pistol on a bosu sphere. It was proposed to adopt the Biellmann position after performing a pistol on a sphere. The result was improved by reducing the time;

5) rhythm – an indicator measured during the execution of a jump combination with a change of four positions with two repetitions, from the section of the GDE (general development exercises), aimed at identifying a quick reaction to the execution of a certain rhythm and error-free repetition of this combination in a shorter amount of time.

Thanks to the planned use of exercises at the initial training stage, mainly aimed at developing coordination abilities, it was possible to identify the dynamics of growth in the indicators of coordination abilities of figure skaters aged 6-8 years (see table).

To determine the reliability of differences in the average values of the obtained results, we used the Student's t-test. Reliability (P – probability of error) was

[1] Avtorskiy elektronnyy kurs «Osnovy figurnogo kataniya dlya yunykh figuristov i ikh roditeley». Available at: https://stepik.org/198561 (date of access: 08.09.2024).

Results of testing indicators of coordination abilities at the initial training stage in figure skaters aged 6-8 years (n=10 at p> 0,05)

Indicators of the development of coordination abilities		Kinesthetic differentiation, points	Orientation in space, s	Complex reaction, cm	Dynamic balance, s	Rhythm, s
Before the experiment	CG n=10	3,64	12,67	155,6	16,84	18,64
	EG n=10	3,89	12,82	157,2	16,87	18,54
	T P	0,51>0.05	0,30>0,05	0,71>0,05	0,08>0,05	0,23>0,05
After the experiment	CG n=10	9,9	10,45	132,1	14,47	12,2
	EG n=10	19,58	8,14	105,9	11,09	8,21
	T P	21,84>0.05	5,74>0.05	16,79>0.05	11,67>0.05	11,56>0.05

determined according to the table. If the calculated T is greater than the tabular T for n – the number of subjects, then the differences are reliable – $p < 0,05$; $p < 0,01$ or $p < 0,001$ (D.S. Melnikov, 2018 [7]).

Indicators of the formation of coordination abilities (kinesthetic differentiation, orientation in space, complex reaction, dynamic balance, rhythm) are taken to compare the calculated values and identify the reliability of the results obtained.

The effectiveness of the implementation of the selected set of exercises is confirmed by comparative data on the obtained indicators of the formation of coordination abilities before and after the experiment, verification of reliability using the Student's t-test, where the tabular t is 2,15 at $p > 0,05$ gives reason to assert that the indicators after the experiment are higher than before the experiment.

Conclusions. Thus, during the experiment, the obtained results confirmed the effectiveness of the proposed set of exercises, which is expressed in the positive dynamics of the studied indicators of coordination abilities. The conducted study allows us to determine further prospects and directions of research in the field of formation and development of athletes' coordination abilities at subsequent stages of training in figure skating.

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