Development of a methodology to improve the technique of rotations in young figure skaters at the stage of initial specialization

Fedorova Svetlana Vyacheslavovna[1]

[1]Uzbekistan state university of physical education and sport, Chirchik, Uzbekistan

Abstract

Purpose: is the development and implementation of a methodology to improve the rotational technique of young figure skaters in the process of initial specialization, aimed at improving their technical training and stabilizing the performance of rotational elements.

Methods: To solve the set goals and objectives, the following research methods were used: theoretical analysis and generalization of scientific and methodological literature; pedagogical observation, control testing; expert evaluation, pedagogical experiment; mathematical and statistical processing of the results.

Results: The highest difference in percentages was recorded in the indicator "Rotation on the spot", where in the experimental group the increase amounted to 44.4%, while in the control group it amounted to only 12.8%. A significant increase in the data of the test "Balance on one leg with closed eyes" and holding the pose "swallow" (41.5% and 35.8%, respectively), significantly exceed the similar indicators of athletes in the control group (15.4% and 7.6%, respectively).

Conlcusion: The materials of pedagogical observations and the results of timing of training sessions of young figure skaters allowed us to develop a set of exercises aimed at improving the technique of rotations, stabilization of position and control of transitions between different positions in rotation. When forming the complex of exercises, the age peculiarities of female athletes and the specifics of single figure skating were taken into account, which ensured the purposeful development of coordination abilities, improvement of balance and stabilization of movements.

Keywords: rotation technique, initial specialization, coordination, balance, stability, complex elements, training process, sports training, vestibular stability.

Introduction

Figure skating in Uzbekistan has been undergoing a phase of active development in recent years. Taking into account the development of winter sports in the country, the attention to the training of figure skaters at different stages of their sports career is growing. A particularly important stage is the initial specialization, when basic skills are developed, which is the foundation for further achievements of athletes [8].

According to a number of figure skating experts, namely I.V. Absalyamova, A.N. Mishin, V.N. Piseev, A.M. Chaikovskaya, E.N. Tuzova [1,3,5] rotations are dynamic, spectacular and aesthetically attractive elements that are the basis for improving the overall technical complexity of the program and increasing its spectacularity. In figure skating there are basic variants of performance: standing, sitting and libel rotations. These movements can be performed with or without a change of legs. Depending on the skater's grade, the rotation can begin with an entrance through a jump [7].

The quality of rotations directly affects the overall evaluation of the performance, as they are evaluated by judges on such criteria as speed, stability, accuracy and smoothness of execution, as well as the stability of the athlete in holding the correct rotation posture [4].

In this regard, the importance of improving the technique of rotations in the training process becomes especially relevant, because the success of performances in competitions depends on these elements. Improving the technique of rotations in young skaters at the stage of initial specialization requires the development of effective methods.

Research objectives:

1. To study and develop a methodology to improve the technique of rotations aimed at developing stability, coordination and increasing the number of rotations in young figure skaters.

2. To evaluate the effectiveness of the proposed method in the training process and its influence on the improvement of stability of rotations and the general level of technical training of female athletes.

Results and discussion

The study was conducted in three stages on the basis of the School for Winter and Complex Technical Sports in Tashkent. Time - September 2023 to August 2024. At the first stage of the study (September - December 2023), the scientific and methodological material on the issues of young figure skaters' mastering the discharge requirements was analyzed and summarized, as well as the key aspects of the technique of performing rotations and their role in the overall structure of the program were studied.

In addition, at this stage, individual characteristics of each participant of the study were collected, including the level of physical fitness, skating experience, as well as data on previous successes in competitions. These data made it possible to divide the skaters into experimental (10 people - EG) and control groups (10 people - CG), ensuring their equivalence in key indicators.

Also at the first stage of the study primary tests and measurements were conducted to assess the initial level of the skaters' rotational execution technique. The participants underwent a series of tests that included performing different types of spins, assessing their cleanliness, speed and stability on the ice. Five coaches of the republic with different judging qualifications acted as experts. The expert evaluation of rotations was carried out on a 10-point scale of evaluations. Athletes were given three attempts, the best execution of rotations was taken into account.At the second stage of the study (January - May 2022), a training process was organized, including a specialized set of exercises aimed at improving the technique of rotations, stabilization of position, control of transition between different positions in figure skaters of the experimental group. For the control group the training process remained unchanged, i.e. according to the program of the Russian School for Winter and Complex Technical Sports.

The exercises of the complex were selected taking into account the current rules of competition of this sport [2,6], namely the complex included the following exercises (Table 1).

At the third stage of the study (June - August 2022) the results of the conducted research and materials of statistical processing of the results of the pedagogical experiment were summarized and on their basis conclusions and practical recommendations on the methodology of teaching the technique of rotations to young skaters were formed.

Table 1. A set of exercises to improve the technique of rotations

N	Exercise	Description	Number of repetitions	Dosage	Number of approaches
1.	Balance on a balance sheet platform	Standing on a balance platform, holding your balance	10-15 seconds for each leg	Start with 10-15 seconds, gradually increase to 1 minute	3-5 approaches
2.	Exercise with the Rotator trainer	Standing on a rotational trainer, keeping balance while rotating.	15-20 seconds	Increase to 1 minute with the progression of the rotation speed	3-5 approaches
3.	Grouping in place	Execution of rotations with a quick transition to grouping.	3-5 spins	Starting with 2-3 turns and increasing to 5-7 turns	3 approaches
4.	Rotation with grouping acceleration	Performing rotations with a quick transition into a squeeze position to accelerate the rotation.	5-7 turns	Transition to grouping after 2-3 turns	3-4 approaches
5.	Holding the swallow pose	Stand on one leg with back leg extended,	15-20 seconds	Increase to 1 minute	3-4 approaches
6.	The “wiggle” pose exercise.	Rotation with leg extended sideways or forward, keeping a straight leg.	3-5 rotations on one leg.	5-10 seconds on each repetition. 5-6 rotations	3 approaches
7.	Screw pose exercise.	Rotation with bent knees, holding a stable body position.	5-7 turns	The leg and torso should be in correct posture, rotate without losing stability	3 approaches
8.	Transitions between positions (swallow turn)	Smooth transition from one position (e.g., swallow) to another (e.g., wiggle).	3-5 transitions	Change position smoothly and steadily without losing stability	3-4 approaches
9.	Rotations with eyes closed	Performing rotations with eyes closed to practice vestibular stability.	5-7 turns	Increase the speed and time of rotation, focusing only on body sensations	3 approaches
10.	Vestibular tests (after rotation)	Once the rotation is complete, quick transitions into a specific stance or posture.	3-5 tests	You need to regain your balance and immediately perform the given exercise after the rotation	3-4 approaches

Table 2. Results of coordination abilities and vestibular stability of young figure skaters before and at the end of the experiment

Indicators	CG before experement	CG after expere-ment	EG before experement	EG after expere-ment	EG increment	EG increment	t	p
Balance on one leg with eyes closed (c)	5,2±0,8	6,0±0,9	5,3±0,7	7,5±1,0	15,4%	41,5%	3,00	<0,05
Holding the swallow pose	7,9±1,3	8,5±1,2	8,1±1,2	11,0±1,3	7,6%	35,8%	2,92	<0,05
Spinning in place	4,7±0,7	5,3±0,8	4,5±0,6	6,5±0,7	12,8%	44,4%	2,75	<0,05

The results of pedagogical observation of the training process of young figure skaters in the Republic of Uzbekistan showed that their technical preparedness does not meet modern standards [7]. This is due to the insufficient complexity of performed elements, incorrect execution of positions, insufficient number of turns and unstable execution of rotations, which in turn affects the quality of performance of the program combination as a whole. Insufficient number of turns, as well as low stability of rotations and inconsistency with the correct technique of positions indicates the need to improve technical skill through the revision of teaching methods, focused on improving the technique of rotations and the formation of stable motor skills, which, in turn, will improve results at competitions at various levels [8].

In connection with the revealed shortcomings in the technical preparation of young figure skaters, there was a need to further improve the methodology of their training, especially in teaching the technique of rotations and the formation of stable motor skills. In order to evaluate the effectiveness of the proposed methodology, we tested the physical training of figure skaters before and after the experiment (Table 2).

According to the data of expert evaluation, the results of fulfillment of control requirements in young figure skaters of the EG and CG before the beginning of the research had no reliable differences and fluctuated within the baseline (tab. 2). The analysis of the materials of control tests at the end of the experiment showed a reliable increase in the results of all young figure skaters participating in the experiment without exception.

However, the application of the developed complex of exercises for young figure skaters of the experimental group allowed to significantly increase the level of coordination abilities and vestibular stability, to significantly exceed the indicators of the control group (tab. 2).

The increase in vestibular stability and coordination abilities confirms the importance of applying the set of developed exercises.

These results emphasize the importance of working on basic motor skills, such as balance and coordination, which create the basis for further achievements in figure skating, especially in mastering different types of rotations and their various combinations.

The next step in the study is to evaluate the effect of the proposed methodology on the technique of performing rotations, which is a key aspect for improving the level of technical training of young figure skaters. Table 3 presents the results of testing the technique of per-

Table 3. Expert evaluation of the technique of rotation execution in young figure skaters before and after the experiment (points)

Rotations	EG before experement	EG after expere-ment	CG before experement	CG after expere-ment	EG increment (%)	CG increment (%)	t	p
“Screw” with the change	7,2±1,0	8,5±1,1	7,5±1,1	7,8±1,0	18,1	4,0	4,0	<0,05
“Turn” with a shift	6,3±0,7	8,2±0,8	6,4±0,6	7,0±0,7	30,2	9,4	4,20	<0,05
“Libela” with a change	6,0±0,7	8,2±0,8	6,3±0,6	6,9±0,7	36,7	9,5	4,10	<0,05
Combination rotation 2 levels of difficulty	5,4±0,6	8,0±0,7	5,3±0,5	6,1±0,6	48,1	15,1	3,65	<0,05

forming rotations, which demonstrate the changes achieved during the experiment and their influence on the overall assessment of the performance of the program elements.

The analysis of the data of expert evaluation of the technique of performing rotations in young skaters before and after the experiment showed a significant increase in the performance of all skaters without exception. However, despite the significant improvements in the experimental group, the increase in the control group was much smaller.

In particular, the greatest increase was recorded in such tests as “Screw Rotation” and “Combined Rotation of 2 difficulty levels”. For example, in the test “Screw” with the change of legs, the increase amounted to 18.1% in the experimental group, while in the control group - only 4.0%. Similarly, in the test "Combined Rotation 2 level of difficulty" the increase was 48.1% in the experimental group and 15.1% in the control group. This confirms the significant effect of the proposed methodology on the improvement of technical elements requiring high coordination and stability. It is also worth noting that the proposed exercises significantly improved the level of rotation technique, especially in more complex elements, while the control group showed only moderate improvements. This emphasizes the need to introduce new techniques for effective training of young figure skaters.

Conclusion

The analysis of scientific and methodological literature has shown that the successful mastering of technically complex elements of rotation directly depends on a high level of coordination development and the ability to maintain dynamic and static balance. These components are the basis for stable execution of rotations, as they allow skaters to control their movements more effectively, quickly adapt to changes in body position and improve stability in various poses. The development of these skills contributes to the improvement of the quality of execution of rotations, which in turn directly affects the results of competitions.

The significance of the complex of exercises aimed at improving the technique of rotations, position stabilization and control of transitions between positions is confirmed by the results of expert evaluation of young figure skaters' performance of rotations before and after the experiment. Improvements in the evaluation of rotation technique in the experimental group not only confirm the effectiveness of the proposed methodology to achieve better performance of elements on ice, but also indicate that the athletes have become much better at controlling positions in rotation on one leg, performing leg changes, maintaining stable balance, observing the correct alignment of rotation and, most importantly, consistently perform a greater number of turns in the adopted position.

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AUTHOR BIOGRAPHY:



Svetlana Vyacheslavovna FEDOROVA

Employment
Lecture at Uzbekistan state university of physical education and sports

Degree
MD

Research interests
Figure skaters, Physical education and sport, Theory of physical education, Analyzing of sport competitions

E-mail:
svetlanafed18041979@gmail.com