

# The effectiveness of using a set of static exercises in the process of training figure skaters specializing in singles and pairs skating at the educational and training stage and the stage of improving sportsmanship

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## Abstract

**Objective of the study** is to develop and experimentally test the effectiveness of using a set of static exercises in order to increase the level of physical fitness of figure skaters at the educational and training stage and the stage of improving sportsmanship in single and pair skating using static exercises.

**Methods and structure of the study.** The pedagogical experiment was carried out from September 2022 to May 2023 on the basis of the State Budgetary Institution «Moscow Academy of Figure Skating» at the Medvedkovo Ice Palace. 44 skaters took part in it. Representatives of single and pair skating, the educational and training stage and the stage of improving the sportsmanship of training. Boys and girls, girls and boys aged 11-13 years old with sports qualifications - I sports category and candidate master of sports.

**Results and conclusions.** As a result of sports and pedagogical testing, an assessment of the initial level of development of physical abilities was carried out according to the norms of the current Federal Standards of 2022 [4]. Using the method of expert assessments, the level of technical preparedness of single and pair skating skaters was determined according to the criteria of the ISU international judging system. The research results made it possible to determine the level of technical preparedness of figure skaters before the start of the experiment, to evaluate the effectiveness of using the developed experimental complex, and also to obtain the final data after the pedagogical experiment.

In the current Olympic cycle 2022-2026, the process of gradually increasing the age limit for admission of athletes to participate in the adult category of competitions of the International Skating Union (ISU) continues based on the decision of the 58th ISU Congress, which is reflected in the latest edition of the Federation Figure Skating Rules Russian figure skating. Changing the age range of athletes in single and pair skating upward, from 17 years in the pre-Olympic season and the 2026 Olympic season. The adopted changes require updating the process of searching and testing the effectiveness of the use of technical, general and special physical training in order to optimize the training system for figure skaters in order to adapt to the new requirements of international regulations [3].

**Keywords:** *figure skating, single skating, pair skating, educational and training stage, static exercises*

**Introduction.** At the present stage, in the process of training figure skaters specializing in single and pair skating, the process of searching and testing the effectiveness and specificity of the use of means of increasing and maintaining the level of technical, general and special physical fitness of figure skaters at the educational and training stage and the stage of improving sportsmanship, taking into account modern requirements of the international rules (ISU) for the admission of participants from 17 years of age in the new Olympic cycle. Currently, in the scientific and methodological literature there is not

enough relevant information about the results of using static exercises as a means of various types of training in the educational and training process of figure skaters, taking into account the specific features of the motor activity of types of figure skating [1, 19 p.].

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**Methods and structure of the study.** The pedagogical experiment was carried out from September 2022 to May 2023 on the basis of the State Budgetary Institution «Moscow Academy of Figure Skating» at the Medvedkovo Ice Palace. 44 skaters took part in it. Representatives of single and pair skating, the educational and training stage and the stage of improving the sportsmanship of training. Boys and girls, girls and boys aged 11-13 years old with sports qualifications - I sports category and candidate master of sports.

**Results of the study and discussion.** As a result of sports and pedagogical testing, an assessment was made of the initial level of development of physical abilities according to the standards of the current Federal Standards of 2022 [4]. Using the method of expert assessments, the level of technical preparedness of single and pair skating skaters was determined according to the criteria of the ISU international judging system. The research results made it possible to determine the level of technical preparedness of figure skaters before the start of the experiment, to evaluate the effectiveness of using the developed experimental complex, and also to obtain the final data after the pedagogical experiment. The effectiveness of the experimental complex was assessed by comparing the results shown by the skaters based on the results of all tests performed. After passing sports-pedagogical testing, which assessed initial indicators, the skaters were divided into:

12 people – control group, representatives of single skating at the educational and training stage and

the stage of improving sportsmanship;

10 people – control group, representatives of pair skating at the educational and training stage and the stage of improving sportsmanship;

12 people - experimental group, representatives of single skating of the educational and training stage and the stage of improving sportsmanship;

10 people - experimental group, representatives of pair skating at the educational and training stage and the stage of improving sportsmanship.

Using the analysis of scientific and methodological literature and pedagogical observations, an experimental set of static exercises was compiled, which was included in the preparation of the experimental group after the initial sports and pedagogical testing - at the general preparatory stage of the preparatory period.

The experimental complex was used in the main part of the special physical training class 3 times a week. This complex contains 10 basic exercises, on which significant emphasis is placed on training sessions, and there are also 7 unloading exercises that are used to relieve tonic and coordination tension, excessive muscle stiffness and confinement, for psychological and emotional stability, as well as switching attention. The complex reflects the number of exercises, approaches, series, rest intervals and the main methodological aspects of the technique for performing them.

As a result, Figure 1 shows a diagram of the average values of the increase in indicators for general physical fitness of representatives of singles and pairs

#### *Fragment of a set of static exercises*

1.	Maintaining the «Attitude» position	3 sets of 15 s	30-40 s	The athletes position when performing the «Attitude» is as follows: arms extended to the sides, back straight, head looking forward, supporting leg straightened at the knee, free leg raised back, knee bent.
2.	Lying back support - lying back support on one leg	5 times on each leg. Reverse plank hold 30 s Holding free leg on weight - 7s	60 s	In this exercise, skaters need to move from one position to another. The first position is lying behind you, legs together, knees straight, do not bend your elbows. Second position: lying back on one leg. The free leg is turned out and raised up (we alternate legs at the coach's signal)
3.	Lying on bent arms	5 times for 10 s	90 s	Starting position: lying position. At the coach's signal, athletes take the position lying on bent elbows: knees are straight, pelvis is twisted, back is straight, elbows are directed to the side, palms are parallel to each other, gaze is directed downward.
Unloading exercises				
1.	Holding the tightening position to the side	5 times for 10 seconds on each leg	10-15 s	At the coach's signal, the athletes take a tightening position to the side - the supporting knee is straightened, the pelvis is twisted, the back is straight, the free arm is extended to the side, the second hand extends the leg to the side, by the heel.
2.	Maintaining position in the Charlotte spiral	5 times for 12 seconds on each leg	30 s	Starting position: main stance. At the coach's signal, athletes assume the Charlotte spiral position—simultaneously lowering the body down toward the supporting leg and raising the free leg up, toes extended, both knees extended, hands clasping the ankle of the supporting leg.

skating of the control group (CG) and experimental group (EG) at the educational and training stage of preparation.

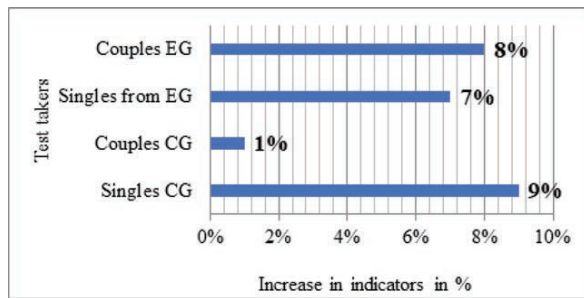


Figure 1. Diagram of average values of the increase in general physical fitness indicators of representatives of single and pair skating from the CG and EG at the educational and training stage and the stage of improving sportsmanship training

The results shown by athletes of both groups during general physical fitness testing, presented in the figure above, indicate that the groups experienced an increase in the scores obtained. Thus, after passing the current and final testing, the difference in results was 10% for the CG in the single skating group and the pair skating group of the educational training stage, and for the EG – 15%.

As a result, Figure 2 shows a diagram of the average values of the increase in indicators for general physical fitness of representatives of singles and pairs skating of the control group (CG) and experimental group (EG) at the stage of improving sportsmanship.

The results shown by athletes of both groups during general physical fitness testing, presented in the figure above, indicate that the groups experienced an increase in the scores obtained. Thus, after passing the current and final testing, the difference in results was 16% for the CG in the single skating group and the

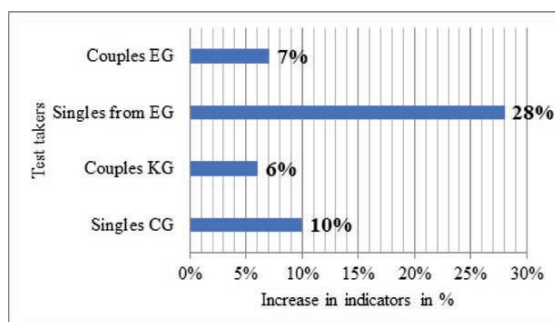


Figure 2. Diagram of average values of the increase in general physical fitness indicators among representatives of single and pair skating from the CG and EG at the educational and training stage and the stage of improving sportsmanship training

pair skating group at the stage of improving sportsmanship, and for the EG – 35%.

Figure 3 shows a diagram of the average values of the increase in indicators for special physical training of representatives of single and pair skating of the control group (CG) and experimental group (EG) at the educational training stage of preparation.

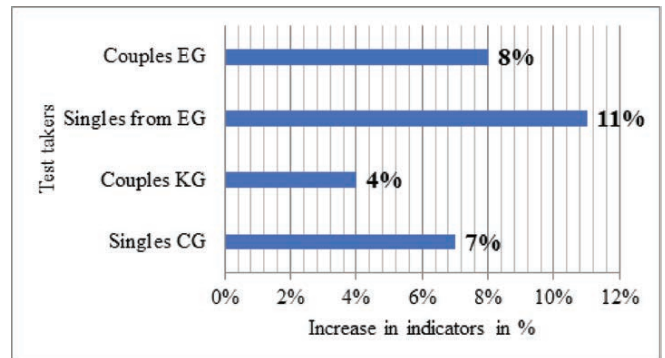


Figure 3. Diagram of the average values of the increase in indicators on TFP among representatives of single and pair skating from the CG and EG at the educational and training stage and the stage of improving sports skills of training

Figure 4 shows a diagram of the average values of the increase in indicators for special physical training of representatives of single and pair skating of the control group (CG) and experimental group (EG) at the stage of improving sports skills of training.

The results shown by athletes of both groups during sports-pedagogical testing on SFP, presented in the figure above, indicate that the groups also experienced an increase in results. So, after passing the current and final testing, the difference in indicators was 13% for the CG in the single and pair skating group of the educational training stage, and 19% for the EG.

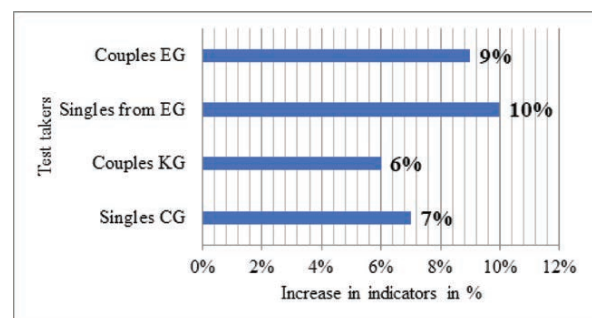


Figure 4. Diagram of the average values of the increase in indicators on TFP among representatives of single and pair skating from the CG and EG at the educational and training stage and the stage of improving sports skills of training



Figure 5 shows a diagram of the average values of indicators for general and special physical training of representatives of single and pair skating of the control group (CG) and experimental group (EG) at the educational and training stage and the stage of improving sports skills of training.

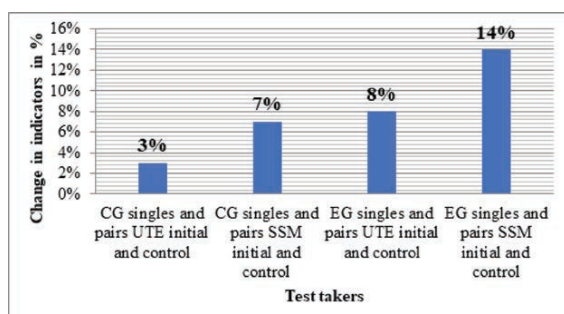


Figure 5. Diagram of the average values of the increase in indicators for general physical fitness and physical fitness among representatives of single and pair skating from the CG and EG at the educational and training stage and the stage of improving sportsmanship training

After the introduction of the developed set of exercises into the educational and training process of the experimental group of the educational and training stage and the stage of improving sportsmanship, the average result for passing tests in general physical training and physical training increased by 22%. In the control group, the situation was somewhat worse: the average score for the general physical training and physical training tests increased by 10%.

To summarize the results of the pedagogical experiment and compare the results shown in the control and experimental groups, an assessment of technical readiness was made.

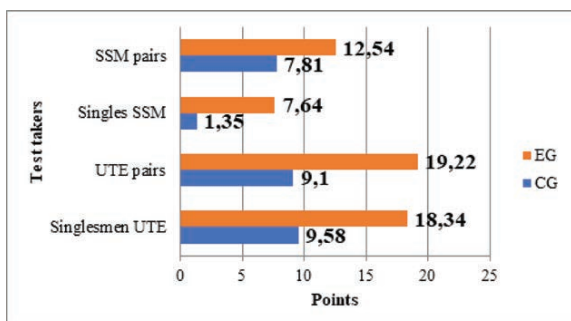


Figure 6. Diagram of changes in free program skating scores in points for representatives of single and pair skating from the CG and EG of the educational and training stage and the stage of improving sportsmanship training

Comparing the results between the two groups in the final testing, we observe that the performance of the program among single skaters of the educational and training stage of the EG improved by 18,34 points, and among the CG – by 9,58 points. The result of pair skating skaters from the EG improved by 19,22 points, and from the CG by 9,1 points. The results of single skaters at the stage of improving sportsmanship in the EG improved by 7,64 points, and in the CG – by 1,35 points. The result of pair skating skaters from the EG improved by 12,54 points, and from the CG by 7,81 points.

**Conclusions.** Thus, the information obtained during the experiment allowed us to conclude that both the control (CG) and experimental (EG) groups were able to increase the level of their performance. However, the increase in the control group was achieved through the use of traditional means of preparation. And the experimental group showed the most active increase in indicators, thanks to the introduction of a developed set of static exercises into educational training sessions. In the process of comparing the final indicators, the effectiveness of using static exercises in the process of training figure skaters, representatives of single skating, at the educational and training stage was proven.

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