

# **The Use of Micro cycle With Complexes of General Developmental and Special Jumping Exercises in The Development of Speed-Power Abilities Within 15-17-Year Girls-Skaters**

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## **ABSTRACT**

The article presents a study of the training process for girls aged 15-17 years in speed skating to develop speed-strength abilities. The aim of the work was to experimentally justify the development of speed-power abilities within 15-17-year girls-skaters as a result of the use of microcycle with complexes of general-developing and special jumping exercises. The experiment involved 24 girls aged 15-17 years, which were divided into two groups (experimental and control). For the experiment we selected two equivalent groups by age, fitness and level of development of the studied qualities. For a systematic assessment of the speed-strength readiness of 15-17-year girls we carried out control and pedagogical tests were at the beginning and in the end of the experiment. They made it possible to identify the level of indicators of speed-strength readiness, trace the dynamics and determine the shift over the experimental period. In groups we retained the number of hours provided by Specialized Children and Youth Sports School of the Olympic Reserve of skating. Basically, the training was aimed at further improvement of power qualities, increase of explosive power and speed-strength endurance. The experimental group trained on a jumping microcycle. In this group we focus on whether the case load increase with general developmental and special character jumping exercises, as well as the selection of the load phase and rest, which provide a favorable training effect. We have proposed two sets of jumping exercises. Complexes of jumping exercises were designed in such a way that there is no one-direction training sessions prolonged overlap. We included not less than 3 jumping character training lessons in the microcycle. During the experiment we proved that the development of speed-power qualities of 15-17-year girls-skaters through the use of jumping microcycle had more intensive effect on increasing the level of speed-strength training in conjunction with the development of motor abilities.

**Keywords:** training, speed skating, girls, speed-strength abilities, microcycle, jumping exercises, athletes, special exercises

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## **INTRODUCTION**

The young athletes sports training issues have attracted sports specialists attention for many years [2, 3, 4, 6].

In recent years, the growth of results in speed skating has been due to a significant increase in the volume of special load. According to experts, the course for the further increase in training volumes is not promising. In this regard, the search for new training tools, rational forms of its organization, effective methods of monitoring the progress of the training process is acquiring more and more importance. Considerable reserves lie in the development of strength qualities. Conducting highly effective strength training at various stages of the annual cycle largely determines the stable success in competitive activity [1,5]. In this regard, much attention is paid to the development of these qualities in the educational process.

The purpose of our research was to experimentally substantiate the tools of developing speed-power abilities within 15-17-yearold girls-speed skaters as a result of using the developed microcycle.

## **Organization of the research**

During our research, we used the following research methods:

1. Analysis of scientific and methodological literature.
2. Testing.
3. Pedagogical experiment.
4. Methods of mathematical statistics.

Research of natural conditions on the basis of speed skating sports school for speed skating from April to September.

The experiment involved 24 girls aged 15-17 years, who were divided into two groups (experimental and control). For the experiment, two equal groups were selected in terms of age, fitness and studied qualities development level.

The distribution into groups was based on the wishes of each participant in the experiment. For a systematic assessment of the speed-strength readiness of girls aged 15-17, control-pedagogical tests were periodically conducted at the beginning and end of the experiment. They made it possible to reveal the level of indicators of speed-strength readiness, to trace the dynamics and determine the shift over the experimental period.

In the groups, we saved the number of hours provided for sport school speed skating program for training groups.

Basically, the training was aimed at further improving strength qualities, increasing explosive strength and speed-strength endurance.

The experimental group trained on a jumping microcycle. In this group, we focused on increasing the load with the help of jumping exercises of a general developmental and special nature, as well as the selection of the phases of load and rest, which provide a favorable training effect. We suggested two sets of jumping exercises.

Jumping exercises complexes are designed in such way that there is no prolonged overlapping of unidirectional training sessions. The microcycle includes at least 3 jumping character training sessions.

Complex 1. General developmental jumping exercises

1. Bouncy hopping on toes.
2. Jumping with legs spread to the sides and return to SP – legs together.
3. Jumping up from a half-squat position.
4. Jumping upward pulling hips to the chest.
5. Jumping in different directions (forward, backward, sideways).
6. Jumping up on one leg.
7. Jumping exercise "kazachok".
8. Jumping up from foot to foot over the gymnastic bench.
9. Jumping on the gymnastic bench on each leg.
10. Jumping forward in a half-squat.
11. Jumping on 2 legs forward over barriers.
12. Standing long jumps (triple, fivefold, tenfold).
13. Multiple hops.
14. Jumping up-forward on one leg.
15. Jumping type "frog".
16. Depth jumping.

Complex 2. Special jumping exercises

1. Jumping up on one leg in skater "seat" position.
2. Jumping upwards - to the side - forward alternately on the right and left legs in skater "seat" position.
3. Jumping imitation of running in a straight line on skates, pushing off exactly to the side.
4. Jumping imitation of skating in a straight line with forward movement to the side.
5. Jumping imitation of skating on the turn.

Experimental group microcycle

1st day:

1st workout: Jumping exercises of a general developmental nature (complex 1) with maximum intensity and duration of 10-15 seconds. The number of episodes is from 3 to 5.

2nd training session: Cycling 60 km.

2nd day:

1st workout: Jumping exercises of a special nature (complex 2) for 2 minutes. For a training session, perform from 6 to 10 series with a heart rate of 160-170 beats/min.

2nd workout: Special orientation training - imitation on the board for 3 minutes 5 repetitions.

3rd day:

1st workout: Roller Skating

2nd workout: Cycling 60 km.

4th day:

Day of leisure sports.

5th day:

1st training: Training according to the regime of the 1st day using jumping exercises of a general developmental and special nature (complexes 1 and 2)

2nd workout: Pace running. Running at a heart rate of 160-170 beats/min. – 2 minutes + bend walking - 1 minute + jumping imitation - 30 sec. The number of repetitions is from 6 to 10.

6th day:

1st workout: Circular workout, consisting of special exercises, lasting from 30 seconds up to 5 minutes of work in the position of the skater, separated by 2 minutes of running, for 1 hour.

2nd workout: Cycling 50 km.

7th day:

Day of rest.

The control group trained according to a microcycle typical for this transitional-preparatory period.

To compare the results of the control and experimental groups at the beginning and end of the experiment, we selected the following tests to determine the speed-strength abilities:

- 1) long jump from a place;
- 2) 10 "frog" jumps;
- 3) running 30 meters from start.

When selecting tests that reveal the level of development of speed-strength abilities, we were guided by the basic requirements, according to which the exercises should be:

- 1) sufficiently simple and accessible for all subjects who do not require lengthy preliminary training;
- 2) varied.

## RESULTS AND DISCUSSION

Comparative analysis of indicators between the groups at the beginning of the experiment showed that there were no statistically significant differences between the groups ( $p > 0.05$ ) (Table 1). This indicates the relative homogeneity of the groups at the beginning of the pedagogical experiment.

**Table 1: Comparative analysis of test indicators to determine speed-strength abilities between groups at the beginning of the experiment**

No.	Test name	n	Experimental group M1 + m1	n	Control group M2 + m2	t	P
1	Long jump from a place (cm)	12	189,8 + 2,31	12	189,5 + 1,76	0,1	> 0,05
2	10 jump "frog" (m)	12	19,61 + 0,28	12	19,67 + 0,3	0,16	> 0,05
3	Running 30 meters from the start (sec)	12	4,98 + 0,05	12	4,97 + 0,06	0,13	> 0,05

At the end of the pedagogical experiment, we carried out repeated testing. When comparing the results of repeated testing, we can see that the differences in all test results between the two groups are significant ( $p < 0.05$ ), i.e. the level

of development of speed-power abilities of sportswomen of the experimental group is higher than that of sportswomen of the control group (Table 2).

**Table 2: Comparative analysis of test indicators to determine speed-strength abilities between groups at the end of the experiment.**

No.	Test name	n	Experimental group M3 + m3	n	Control group M4 + m4	t	P
1	Long jump from a place (cm)	12	205,4 + 2,95	12	192,2 + 1,76	3,88	< 0,05
2	10 jump "frog" (m)	12	21,13 + 0,34	12	19,75 + 0,3	3,07	< 0,05
3	Running 30 meters from the start (sec)	12	4,70 + 0,05	12	4,95 + 0,05	3,57	< 0,05

The analysis of the work showed a positive dynamic of the developed complex in increasing the level of speed-strength readiness in the experimental group and minor changes in the control group.

The analysis of growth rates indicates an increase in the speed-strength readiness of girls aged 15-17 after six months of training. It follows from this that the microcycle we have proposed has a more intense effect on the increase in speed-strength readiness with the conjugate development of studied contingent motor abilities.

It is also recommended to apply tools aimed at the development of speed-strength qualities according to the periods of the training cycle: in the general preparatory period, jumping exercises should be allocated 50-55% of the total volume; in the special preparatory period - 30%; in the competitive period - 10-15%.

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