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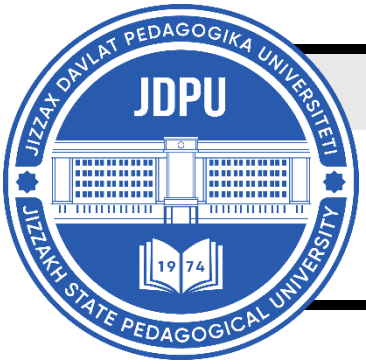

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THE DEGREE OF INFLUENCE OF SPEED-STRENGTH PREPAREDNESS ON THE MASTERY OF BASIC ELEMENTS IN GYMNASTS AT THE STAGE OF SPECIALIZED TRAINING

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ABOUT ARTICLE

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Abstract: This work is aimed at developing the speed-strength abilities of gymnasts at the stage of specialized training, taking into account the dynamic characteristics of all-around gymnastics exercises. Based on these indicators, a program for the development of strength qualities has been developed.

Introduction. Initial specialized training of young gymnasts places specific demands on the preparation of the sports reserve. Modern artistic gymnastics requires, in a short period of time, not only mastering basic skills but also improving them and learning to perform complex, highly coordinated gymnastic exercises under changing conditions. A high-class gymnast is expected to perform difficult gymnastic elements, which makes it possible to compete successfully in major competitions.

The growing requirements for elements with a high degree of difficulty and for the technical execution of competitive routines in all-around gymnastics indicate the necessity of developing forms and methods to improve the management of athletes' educational and

training processes (2,5). The ever-increasing trend of complication in gymnastic elements and frequent changes in competition rules require coaches to promptly and effectively adjust the training process, which in turn ensures the development of physical abilities and the improvement of technical execution of basic elements by young gymnasts.

At the early stages of training, it is essential to determine a methodology that enables high-quality instruction in the elements of all-around gymnastics. This will allow optimization of the educational and training process. Artistic gymnastics is a highly complex, coordination-intensive sport, in which the prospects for further development of gymnastic elements largely depend on the manifestation of speed-strength abilities.

Research aim: to determine the degree of influence of speed-strength preparedness on the mastery of basic elements in gymnasts at the stage of specialized training.

Research objectives: to experimentally substantiate the scientifically grounded content of basic training for gymnasts at the stage of initial specialization.

Research methods: analysis of scientific and methodological literature, pedagogical testing, pedagogical observation, pedagogical experiment, and methods of mathematical statistics.

Qualification requirements for the competitive activities of young gymnasts demand, year after year, the acquisition of new elements in all-around gymnastics. The motor characteristics of exercises are divided into hanging exercises, support exercises, acrobatic jumps, and vaulting. From one qualification category to another, elements consistently become more complex and increase in quantitative indicators. The variety of structural groups requires coaches to teach and master a large number of basic elements, which serve as fundamental skills for the subsequent acquisition of more complex motor actions.

The experiment involved gymnasts of the 2nd adult category. Analysis of the compulsory programs of competitive activity in all-around gymnastics determined the profiling elements (Table 1).

1st table

Basic Elements of Artistic Gymnastics All-Around

Exercises	Basic elements	Speed-strength actions of body parts
Acrobatic exercises	Forward handspring; backward salto; forward salto; backward handspring; forward handspring from two feet to two feet	Pushing off with the hands and feet.

Pommel horse (swings)	Circles with both legs (inward and outward on the body); circles with both legs in support on the pommel handles; circles on one handle; forward and backward scissors; circles with legs apart.	Abducting trunk strength actions of the arms.
Rings	High forward dislocates; high backward dislocates; strength handstand; backward salto in arch position as a dismount.	Extensor actions in the shoulder and hip joints.
Vault (support jump)	Forward handspring; forward handspring with pike and stretch; forward handspring to forward salto; round-off to salto "Tsukahara."	Pushing off with the hands and feet.
Parallel Bars	Leg lift to support from a hang; back swing to handstand; underswing; backward salto in arch position as a dismount.	Abduction and adduction actions in the shoulder and hip joints.
Horizontal Bar	Giant swings backward; giant swings forward; backward swing in support to handstand; "Tkachev" release; backward salto dismount in arch position; forward salto dismount.	Abduction and adduction actions in the shoulder and hip joints.

To master gymnastic elements, gymnasts are required to possess a high level of physical abilities (4). The performance of motor actions in gymnastic elements, whether cyclical or combined, demands speed-strength training from gymnasts. A high level of speed-strength preparedness enables gymnasts to perform all-around elements accurately and with quality.

At the general level of gymnasts' speed-strength preparedness, local specialization for each apparatus of the all-around is developed separately. When developing strength qualities, it is necessary to take into account the kinetic structure of gymnastic movements in selecting specialized exercises for the development of speed-strength.

The next stage of our research was to determine the level of speed-strength preparedness of the subjects (Figure 1).

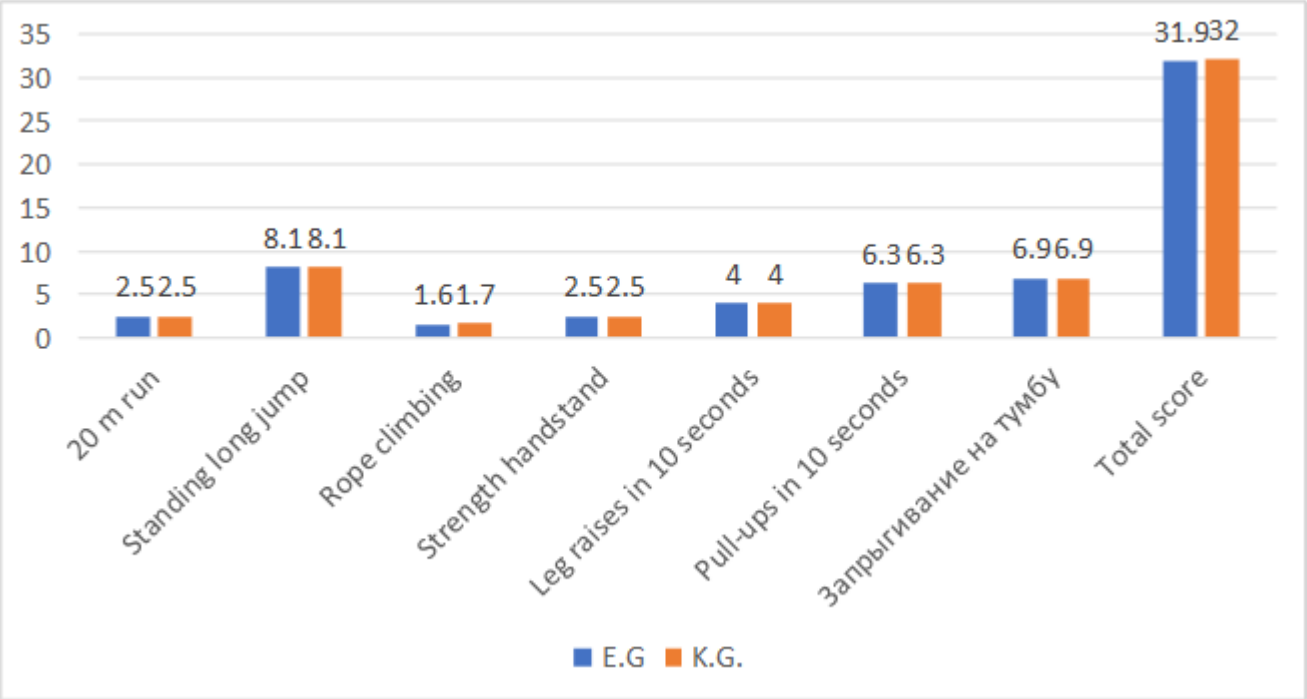

Figure 1. Results of speed-strength preparedness at the beginning of the experiment.

The results demonstrated by the gymnasts revealed shortcomings in their strength abilities. Only the long jump exercise met the requirements of the given category. To improve the level of physical abilities, complexes for the targeted development of speed-strength preparedness were developed.

When performing gymnastic exercises, it is essential to develop explosive strength. Explosive strength is required for its momentary manifestation in most all-around gymnastic exercises—during acrobatic and vaulting jumps, when rising from lower to upper positions, and when pushing off from apparatuses. According to the authors (1,3), the greatest increase in physical qualities occurs in athletes aged 9–11 years, and missing this potential of the body may hinder further improvement and the learning of new motor skills.

When compiling the complexes, in addition to repeating exercises within limited time intervals, the competitive method was also applied. Speed-strength exercises were included in the preparatory, main, and concluding parts of each training session. Twice a month, circuit training aimed at developing general strength and strength endurance was conducted. The number of repetitions was up to 3 sets.

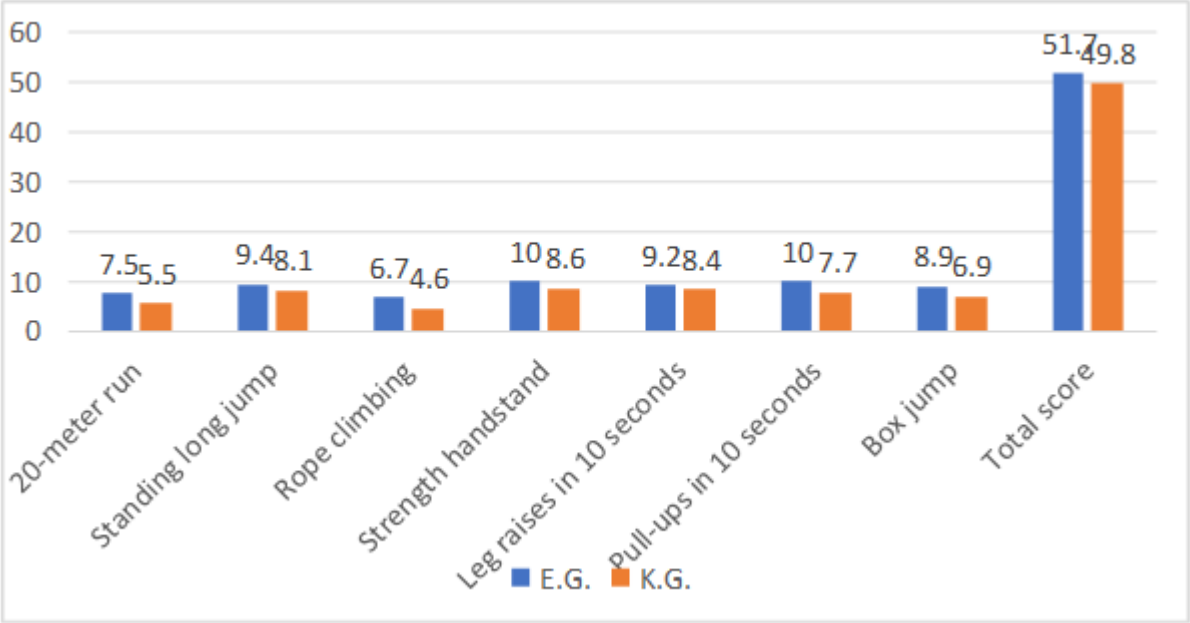

Figure 2. Results of speed-strength preparedness of 2nd category gymnasts after the experiment.

The analysis of the physical preparedness of the experimental group showed higher results compared to the control group. This indicates the effectiveness of the proposed exercise complexes.

Optimization of the content of the sports training program at the training stage made it possible to increase the level of physical preparedness of the gymnasts by 20 points, while in the control group the increase was 5 points. To determine the influence of strength preparedness in young gymnasts, combinations of elements from the list of basic elements were compiled.

2nd table

Control exercises from the basic elements.

Combinations	Errors	
	K.G.	E.G.
Forward handspring from one foot to two feet	0,4	0,4
Running forward salto	0,3	0.4
Round-off to salto	0,4	0,5
Circles on the pommel handles with transition: handle–body, crosswise inward.	0,6	0,5
Thomas circles	0,3	0.3
Two high backward dislocates, backward salto in arch position.	0,4	0.4

Forward handspring with pike–stretch.	1,3	1,4
Round-off to “Tsukahara” salto.	1,5	1,5
Salto under the bars, L-sit to strength handstand, backward salto in arch position dismount.	0,8	0.9
“Clear hip to support, back swing to handstand, giant swings backward, dismount with a stretched backward salto.”	0,8	0,8
Total	6,8	7,1

The analysis of the expert evaluations of the combinations of basic elements proposed to the subjects showed a small difference of 0.3 points. However, the score deductions for mistakes were significant.

The effectiveness of the proposed methodology for developing speed-strength enabled the gymnasts to improve their level of basic training in jumping exercises, movements, and lifts. The higher-level performance of basic exercises was reflected in the competition results.

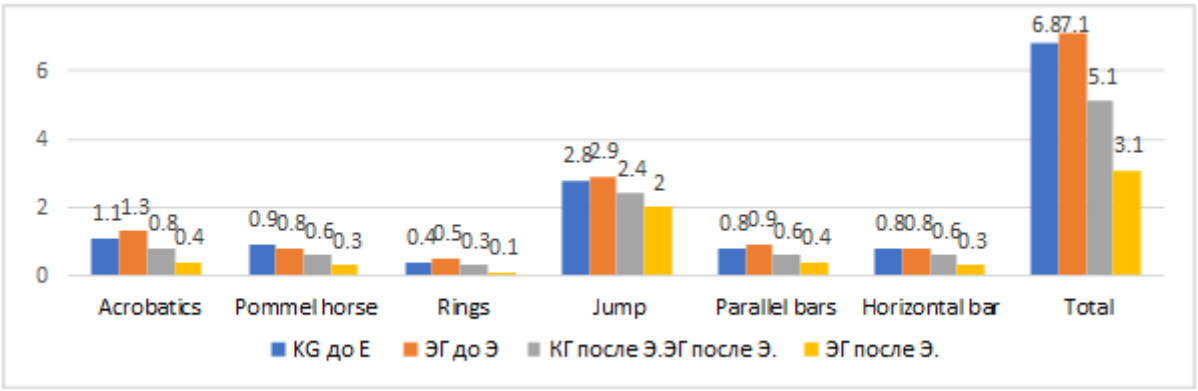

Figure 3. Results of expert evaluations after the experiment.

The expert evaluation of technical preparedness was determined by competition results. The average competition score of the experimental group was 8.45±0.35 points, while the control group showed 7.36±0.82 points. It was established that the differences in performance results across all exercises were statistically significant, both between the two groups of subjects and between the results demonstrated by the gymnasts of the experimental group at the beginning and at the end of the pedagogical experiment ($p<0.05$).

The advantage and effectiveness of applying the experimental program for the development of speed-strength preparedness are confirmed by the statistically significant differences in the level of basic technical preparedness of the groups at the end of the pedagogical experiment (EG – 8.45±0.35 points, CG – 7.36±0.82 points; $t=10.7$, $p<0.05$).

When teaching basic elements, the training process at this stage should be built on the principle of continuity: when learning elements, it is necessary to select structurally similar exercises on each apparatus. For example, while learning a pullover on the horizontal bar, it is

advisable to study the pullover on the parallel bars and rings in parallel. The principle of gradual progression should also be applied: for instance, mastering a forward handspring should be followed by a side handspring, and then by a handspring with a twist ("round-off"). In other words, the progression should go from simple to complex. A gymnast must master the basic elements in each structural group across all apparatuses, then move on to profiling elements, and from there to strategic elements and combinations.

Conclusion. Increasing the number of exercises aimed at developing speed-strength qualities in the training process contributes to the successful mastery of basic elements in gymnastics. It is necessary to take into account the power of movements along with the duration of push-offs from apparatuses, which are directly related to the precise technique of competitive exercises.

Considering the individual characteristics of gymnasts at the training stage, it is important to optimize the means of gymnastics and select effective modes of performing preparatory exercises, as well as to choose auxiliary exercises that allow the shortest path to mastering a competitive and high-level routine. It is advisable to combine exercises from three types of all-around gymnastics (jumping, hanging, and support exercises) within a single training session. Among these, two types should be the main focus (for learning and consolidating exercise techniques), while the third type should serve as supplementary (for improving elements, connections, and combinations)..

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