

# Changes in the preparedness of athletes engaged in track and field sprint in the conditions of a specialized sports club

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**Purpose:** to find out the influence on the preparedness of athletes-sprinters of the conditions for organizing training sessions in specialized sports clubs.

**Material & Methods:** in the study, students (young men) of the first year (age 17), who wanted to practice athletic sprint in a specialized sports club, participated in only 18 people, of which two groups (control and experimental) were formed. To assess the level of preparedness of athletes used common types of testing.

**Results:** conducted studies have shown that over the period of the experiment, the improvement in the results in the experimental group compared with the control group on average for all types of tests is 4,3%.

**Conclusion:** results of the experiment show that the athletes of experiment group, in comparison with the control, increased the level of general physical preparedness (improvement is 2,4%), the special strength preparedness (an improvement of 6,3%) and the special cross-country preparedness (an improvement of 4,2%).

**Keywords:** sports club, coach, athlete, training process, preparedness, sprint, athletics.

## Introduction

The problem of assessing the fitness of athletes under the influence of training and competitive loads is widely analyzed by leading scientists [1; 4; 6; 9 and etc.]. The results of these studies create objective prerequisites for the introduction of pedagogical technology for the formation of the personality of athletes by means of track and field sprint in a specialized sports club. As analysis of information posted on the Internet shows, sports activities in foreign universities are organized precisely in the form of club work. For example, at Cambridge University there are more than fifty sports clubs in which badminton, football, gymnastics, basketball, volleyball, triathlon, golf, etc. are cultivated (Data for 2016). At the University of Birmingham, for example, there are 53 sports clubs (from American football in windsurfing) that create opportunities for sports both for beginners and qualified athletes, and in the sports center of the University of Athens, students can choose any of the following sports: tennis, basketball, volleyball, football, traditional dances, classical sports, table tennis, gymnastics, physical training, aerobics, chess and other.

Among the sports that are cultivated in the student environment (athletics, sports aerobics, fitness aerobics, step aerobics, kickboxing, basketball, football and mini-football, table tennis, martial arts, volleyball, athletic gymnastics, gorodki sport and others), a special place is occupied by one of the most popular types of athletics – running for short distances. At present, the study of the features of the construction of the training process and the regularity of the process of long-term preparation of athletes-sprinters [1; 2; 5; 6; etc.], basic directions for improving the physical and technical preparedness of runners for short distances [3; 8], methods for the development of their speed-strength preparedness are being improved [2; 4, 7], various means of restoring runners to short distances are being studied [5; 8]. At the same time, without attention of scientists remains the problem of influence on the preparedness of athletes-sprinters in the conditions of orga-

nizing training sessions in specialized sports clubs.

**The purpose of the research:** to find out the influence on the preparedness of athletes-sprinters of the conditions for organizing training sessions in specialized sports clubs.

## Material and Methods of the research

To solve the research problems, 18 students were selected from the first year students (young men) of the first year (age 17) wishing to practice athletic sprint in a specialized sports club, of which two groups (control and experimental). In the training process of the experimental group the following provisions were introduced: first, with the athletes of the experimental group, a special work was carried out to explain the essence of the construction of the training process; secondly, during the entire training process, the awareness of the athletes of the research group was due to information about the changes that occur in their preparedness; thirdly, a number of joint trainings were conducted for the athletes of the experienced group with more qualified athletes. To assess the level of preparedness of athletes used common types of testing.

## Results of the research and their discussion

After conducting a complex natural experiment to introduce the pedagogical technology of the formation of the personality of athletes engaged in track and field sprint in the conditions of a specialized sports club in the training process, a comparison was made between the physical preparedness of the athletes of the experimental and control groups. Obtained results during the parallel pedagogical experiment are presented in Table 1, testifying to the following. For the period of the experiment, the development of speed-strength qualities for the athletes of the research group, which was estimated by the results of the tests in the "standing long jump" test (270,4 cm), significantly improved in comparison with the results of the control group athletes (264,8 cm) 5,6 cm, which

is 2,1%. Results of the study indicate that the athletes of the experimental group compared with the control group significantly improved the result of rapid development, which was evaluated based on the results of the test "running at 60 m". So, the athletes of the research group 60 meters ran on average for 7,4 seconds, while the athletes of the control group for 7,6 seconds. The difference in the results is statistically significant ( $t_p=4,1$  greater than  $t_{gr}=2,12$ ) and is 2,7%. Strength training is one of the strategic lines for building the training process of sprinters. The overall level of its development was assessed by the results of the athletes in the test "pull-ups". The obtained indices testify that during the experiment period the level of development of the general strength preparedness in the athletes of the experimental and control groups is not statistically different. The number of pull-ups is 13.9 and 14.2 times, respectively. Difference in the displayed results is statistically unreliable ( $t_p < t_{gr}$ ). The overall level of dexterity development was estimated by the results of athletes' performance in the "shuttle run 4x9 m" test.

The obtained data indicate that the athletes of the experimental group showed significantly better ( $t_p > t_{gr}$ ) results in this type of testing (8,5 s) compared to the athletes of the control group (8,8 s). Such an improvement is about 2,3%. To assess flexibility, the "angled position from sitting position" test is used. The results of the study showed that, after the end of the experiment, the level of development of flexibility in athletes of the experimental and control groups practically coincides. Thus, in athlete of the experimental group it was 14,1 cm, and in athletes of the control group – 13,6 cm. The existing difference between the average group indicators is statistically unreliable ( $t_p < t_{gr}$ ).

The results of the assessment of the special strength preparedness of student-athlete experienced and control groups after the introduction of pedagogical technology are present-

ed in Table 2. They show that during the experimental period in the experimental group, compared with the control group, there is a significant improvement in the results shown by the athletes in the "run on 30 steps" test, respectively 4,0 and 4,2 seconds. This improvement is approximately 5,0%. In the experimental group, in comparison with the control group for the period of the experiment, there was also a significant improvement in the results of the "triple jump test", respectively, 8,5 and 8,3 m. The difference in the mean group indices in these groups is 2,35%. The results of the study show that the athletes of the experimental group compared to the control showed better results in the test "5-fold jump" according to 14,2 and 13,8 m. This improvement is 9,7%.

The results of the experiment on the introduction of pedagogical technology also indicate that the athletes of the experimental group at the end of the experiment also showed high results in special tests "jumping on one leg", according to 40,0 and 39,0 times, as well as "squatting in 30 s" respectively 27,0 and 25,0 times. Increase in the average results is 6,8% and 7,4%, respectively.

The generalized results of the pedagogical experiment are presented in Table 3. They testify that the sportsmen of the experimental group showed the best results in the test "running 30 m from the turn" (3,2 s) in comparison with the results of the control group (3,3 s). This difference is statistically significant, since  $t_p$  is greater than  $t_{gr}$ . The results of the comparison show that the athletes of the experimental group showed results in this test 3,1% better than the athletes of the control group. The results of the comparison of the level of the special running readiness achieved during the period of the experiment based on the results of the test "running 30 m from the start" show the advantage of the athletes of the experimental group (4,2 s) over the control (4,3 s). The difference in the indications of the results is statistically significant ( $t_p > t_{gr}$ ) and is

**Table 1**  
Level of general physical preparedness of athletes engaged in sprinting at the final stage of the experiment (q=0,05)

No. i/o	Preparedness indicators	Experimental group (n=9)	Control group (n=9)	$t_p$	$t_{gr}$	L/P
		$\bar{X} \pm \sigma$				
1.	<b>Speed-strength:</b> standing long jump (cm)	270,4±4,3	264,8±7,4	3,7	2,12	suf.
2.	<b>Velocity:</b> running at 60 m (s)	7,4±0,12	7,8±0,21	2,2	2,12	suf.
3.	<b>Strength:</b> pull-ups (number of times)	13,9±3,9	14,2±4,2	1,9	2,12	n/s
4.	<b>Agility:</b> shuttle run 4x9 m (s)	8,6±0,02	8,8±0,03	4,6	2,12	suf.
5.	<b>Flexibility:</b> angled position from sitting position (cm)	14,1±1,2	13,6±2,4	0,9	2,12	n/s

**Table 2**  
Level of special strength preparedness of students in the experimental and control groups at the end of the experiment (q=0,05)

No. i/o	Preparedness indicators	Experimental group (n=9)	Control group (n=9)	$t_p$	$t_{gr}$	L/P
		$\bar{X} \pm \sigma$				
1.	Run on steps (n=30), s	4,0±0,06	4,2±0,12	3,8	2,12	suf.
2.	triple jump, m	8,5±3,2	8,3±4,7	4,6	2,12	suf.
3.	5-fold jump, m	14,2±0,46	13,8±0,84	3,2	2,12	suf.
4.	Jumping on one leg 20 m (s)	42,1±4,3	39,2±6,5	2,8	2,12	suf.
5.	Squatting in 30 s	27±4,6	25±5,2	2,6	2,12	suf.

Table 3

Level of the special running preparedness of the students of the experimental and control groups at the end of the experiment ( $q=0,05$ )

No. i/o	Preparedness indicators	Experimental group (n=9)	Control group (n=9)	$t_p$	$t_{gr}$	L/P
		$\bar{X} \pm \sigma$				
1.	Running 30 m from the turn, s	3,2±0,14	3,3±0,20	4,2	2,12	suf.
2.	Running 30 m from the start, s	4,2±0,01	4,3±0,06	3,6	2,12	suf.
3.	Running 60 m from the start, s	7,4±0,47	7,6±0,60	2,8	2,12	suf.
4.	Running on the spot for 10 s (number of cross-country movements)	23,0±3,0	21,0±4,1	1,6	2,12	n/s
5.	Response time to auditory stimuli (s)	0,19±0,032	0,21±0,032	2,86	2,12	suf.
6.	Reaction time to visual stimuli (s)	0,243±0,034	0,25±0,047	1,75	2,12	n/s
7.	Running at 100 m, s	12,1±0,2	12,3±0,34	4,4	2,12	suf.

about 2,3%. An important indicator, which indicates the level of development in the sprinters of special running readiness, the result, which show athletes in the test "running 60 m from the start". According to the results of the experiment, according to this indicator, the athletes of the experimental group showed significantly better average group results (7,4 s) compared to the athletes of the control group (7,6 s). improvement is 2,7%. An important indicator that significantly affects the result of a sprint run is the maximum number of cross-country movements that the athlete performs during the run "running on the spot for 10 s". The results of the conducted testing show that during the experiment the sportsmen of the experimental and control groups showed practically the same results, according to – 23,0 and 21,0 cross-country movements for ten second. The difference between the mean group results is statistically unreliable ( $t_p < t_{gr}$ ).

Experience shows that the result in sprinting significantly depends on the effectiveness of the start of athletes. Its effectiveness is significantly influenced by the level of development in athletes' ability to respond to auditory and visual stimuli. The conducted pedagogical experiment showed that the athletes of the experimental group compared with the athletes of the control group showed significantly better results in the test "response time to auditory stimuli", according to 0,19 s and 0,21 s, which is 10,5%.

At the same time, the athletes of both groups showed almost identical results in the test "reaction time to visual stimuli", according to 0,24 s and 0,25 s. The above-described results of testing the special running preparedness of the athletes of the experimental and control groups are the basis for an objective control of the training process. Result of such a process is the time spent by the competitors in the competitive distance. The results shown by the athletes of both groups in the 100m

run at the "Runner's Day" competitions show that the athletes of the experimental group compared to the athletes of the control group showed significantly better results, according to – 12,1 s and 12,3 s. Group average difference absolute values in these groups is 2,5%.

### Conclusions

1. During the period of introduction of pedagogical technology, the level of general physical preparedness among the athletes of the experimental group in comparison with the results shown by the athletes of the control group has significantly improved on 2,1%.
2. The results of the study of changes during the period of the pedagogical experiment of special strength training among the athletes of the experimental and control groups showed that the athletes of the experimental group are dominated by the control group athletes by the results of special strength tests – on average 6,3%.
3. Results of the study of changes during the period of the pedagogical experiment of special running preparedness in the athletes of the experimental and control groups showed that the athletes of the test group are predominant in the control group athletes according to the results of the tests in the "running at 30 m run" 3,1%), "running 30 m from the start" (improvement by 2,3%), "running 60 m from the start" (improvement of 2,7%), "response time to auditory stimuli" (improvement of 10,5%), "running 100 m" (improvement on 1,6%).

**Prospects for further research.** In the future, it is planned to study in more detail the peculiarities of the influence of specialized sports clubs on the preparedness of athletes.

**Conflict of interests.** The authors declare that no conflict of interest.

**Financing sources.** This article didn't get the financial support from the state, public or commercial organization.

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Received: 15.09.2017.

Published: 31.10.2017.

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