DOI: https://doi.org/10.37547/mesmj-V7-I3-39 Pages: 321-332

MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL

MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL

http://mentaljournal-jspu.uz/index.php/mesmj/index

COMPARATIVE STATISTICAL ANALYSIS OF PREPARATION INDICATORS OF YOUNG FREESTYLE WRESTLERS AT THE BEGINNING AND END OF THE STUDY

Adkhamjon Uktamjonovich Yuldashov
Tashkent Medical Academy, Termez Branch
Head of the Department for Youth Affairs, Spirituality, and Enlightenment
Email: adxamjon8397@mail.ru
Termez, Uzbekistan

ABOUT ARTICLE

Key words: young freestyle wrestlers, physical training, technical and tactical training, statistical analysis, comparative analysis, sports training, speed, strength, endurance, sports performance.

Received: 01.04.26
Accepted: 02.04.26
Published: 03.04.26

Abstract: This article examines the training indicators of young freestyle wrestlers based on a comparative statistical analysis at the beginning and end of the study. During the study, the level of physical, technical-tactical, and functional training of athletes was assessed using special tests. The results obtained were processed using mathematical and statistical methods, and the level of reliability between the indicators was determined. At the end of the study, it was found that young wrestlers showed significant positive changes in speed, strength, endurance, and special movement training. The results of the statistical analysis confirmed the effectiveness of the experimental training and practical recommendations were developed to improve the training process.

Introduction. Young freestyle wrestling is a complex sport that requires high competitiveness in the modern sports system, demanding the harmonious development of physical, technical-tactical and psychofunctional training. The growing performance of sports, successful participation in international competitions, and the effective formation of sports reserves require the scientific organization of the training process of young athletes. In particular, the use of accurate and reliable statistical analysis methods in assessing the

effectiveness of the training process is of great importance. The level of training of young freestyle wrestlers is a multi-factor system, closely related to their general and special physical qualities, technical and tactical skills, and functional capabilities. Proper planning and gradual monitoring of training loads allows you to determine the dynamics of individual development of athletes. In this context, a comparative analysis of the indicators at the beginning and end of the study is an important criterion for assessing the effectiveness of the training program.

Currently, the use of mathematical and statistical methods in scientific research aimed at improving sports training plays a special role. At the initial stage of the study, a set of pedagogical tests was conducted to determine the physical, special, and technical-tactical training status of young freestyle wrestlers. The main task of this stage is to determine the comparative state of the initial level of training of athletes involved in the experimental and control groups. This approach allows for a scientific analysis of the effectiveness of methodological interventions used in subsequent training.

Methodology. During the initial analysis, pedagogical tests were conducted to assess the general physical fitness of the athletes, including strength, speed, agility, explosive strength, and general endurance. The results of the tests showed that physical qualities were formed at an average and stable level in both groups, and no significant differences were found between the indicators. This indicates that the athletes' performance was shaped by a similar training regimen and pedagogical approach during their training.

Through special physical fitness tests, the fighters' coordination abilities, balance, and special strength capabilities were analyzed. The results obtained at the beginning of the study showed that the athletes' ability to perform complex movements was sufficiently developed, but these qualities needed to be further improved to achieve high sports results. However, no statistically significant differences were found between the experimental and control groups.

Table 1

When the training indicators of young freestyle wrestlers were studied at the beginning of the study

Types of training	No.	Name of test exercises	Experimental group			Control group			t	P
			$\overline{X}$	σ	V	$\overline{X}$	σ	V		
General physical fitness	1	Pull-ups on the horizontal bar (times)	5,3	0,6	12,1	5,5	0,7	13,4	0,6	P>0,05
	2	Long jump from the spot	149,5	8,3	5,5	151,4	7,7	5,1	0,5	P>0,05

	3	Handstand push-ups (times)	46,5	5,8	12,6	47,6	6,1	12,9	0,4	P>0,05
	4	Tennis ball throw	22,2	2,2	9,9	23,1	1,9	8,4	0,9	P>0,05
	5	3x10 run (s)	9,1	1,1	12,3	8,9	0,9	10,7	0,5	P>0,05
	6	60 m run (s)	12,4	1,1	9,1	12,1	1,3	11,1	0,4	P>0,05
	7	1000 m run (min.s)	5,1	0,5	10,1	4,9	0,4	9,7	1,2	P>0,05
Special physical training	1	Head rotation (times)	10,9	0,9	9,1	10,8	1,2	11,7	0,2	P>0,05
	2	Jumping in bridge position (30 s)	11,1	1,4	13,2	11,4	1,2	11,1	0,6	P>0,05
	3	Climbing a rope 5 meters high using your feet.	22,9	1,7	7,4	22,3	1,6	7,1	0,9	P>0,05
	4	Rolling over (30 s) (times)	18,7	2,2	11,7	19,5	2,1	11,1	0,9	P>0,05
Technical tactical training	1	Rolling over from the waist (30 s) (times)	11,8	1,1	9,4	12,5	1,2	9,9	1,4	P>0,05
	2	Overhead press (30 s) (times)	12,2	1,4	11,4	13,1	1,7	13,1	1,3	P>0,05
	3	Nakat (30 s) (times)	14,4	1,1	7,6	14,9	1,3	8,7	0,8	P>0,05
	4	Deceptive techniques (30 s) (times)	12,4	1,5	12,7	13,1	1,4	11,3	1,1	P>0,05

Results. The results of statistical processing confirmed that there were no significant differences between groups in all major training components. Comparative statistical analysis of the general physical fitness indicators of young freestyle wrestlers at the beginning of their pedagogical experience. General physical fitness indicators at the beginning of pedagogical experiment of 12-13 young freestyle wrestlers were studied and analyzed, on the basis of the results obtained, traction on the turnstile (Martha) was 5.1±0.6 times in the experimental group, on this indicator in the control group 5.5±0.7 times in the T-student criterion between the results t=0.6, p >0.05 reliability difference was not observed the beginning of pedagogical experiment of 12-13 young freestyle wrestlers were studied and analyzed, on the basis of the results obtained, traction on the turnstile (Martha) was 5.1±0.6 times in the experimental group, on this indicator in the control group 5.5±0.7 times in the T-student criterion between the results t=0.6, p >0.05 reliability difference was not observed (Figure 1).

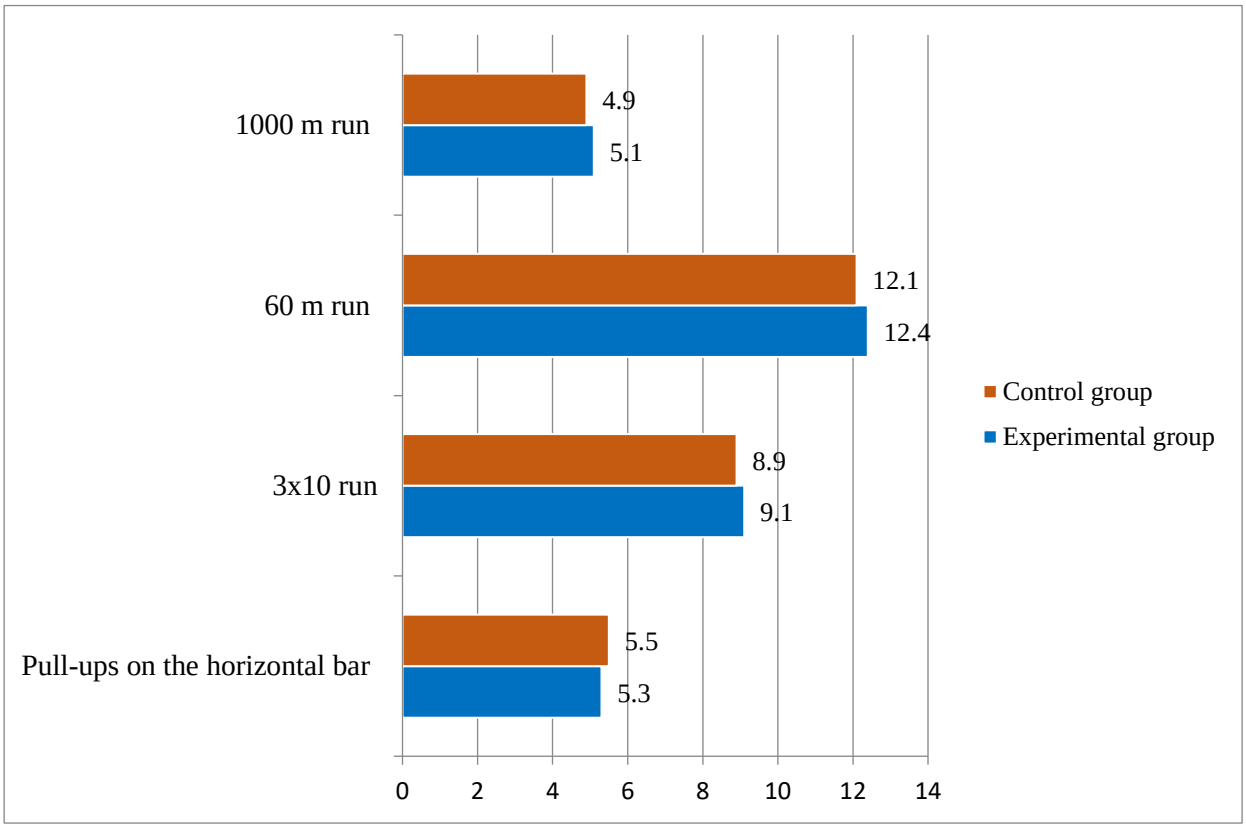

Figure 1. Analysis of the results of general physical fitness

Based on the results obtained at the beginning of the study, indicators were studied and analyzed, in which the jump from place to length (CM) was 149.5±8.3 (CM) in the experimental group, in the control group on this indicator, a difference in reliability t=0.5, P >0.05 in the T-student criterion between the results was not observed. The hand bending (marta) of young freestyle wrestlers was 46.5±5.8 times in the experimental group, compared to 47.6±6.1 times in the control group for this indicator, the difference in reliability t=0.4, P >0.05 in the T-student criterion between the results was not observed.

Based on the results obtained at the beginning of the study, indicators were studied and analyzed, in which the tennis ball throw (m) was 22.2±2.2 meters in the experimental group, in the control group according to this indicator, a difference in reliability t=0.9, P >0.05 in the T-student criterion between the results was not observed.

The 3 × 10 run (s) of young freestyle wrestlers was 9.1±1.1 seconds in the experimental group, with a T-student criterion between the results of 8.9±0.9 seconds in the control group according to the indicator t=0.5, p >0.05 reliability difference was not observed (Figure 2).

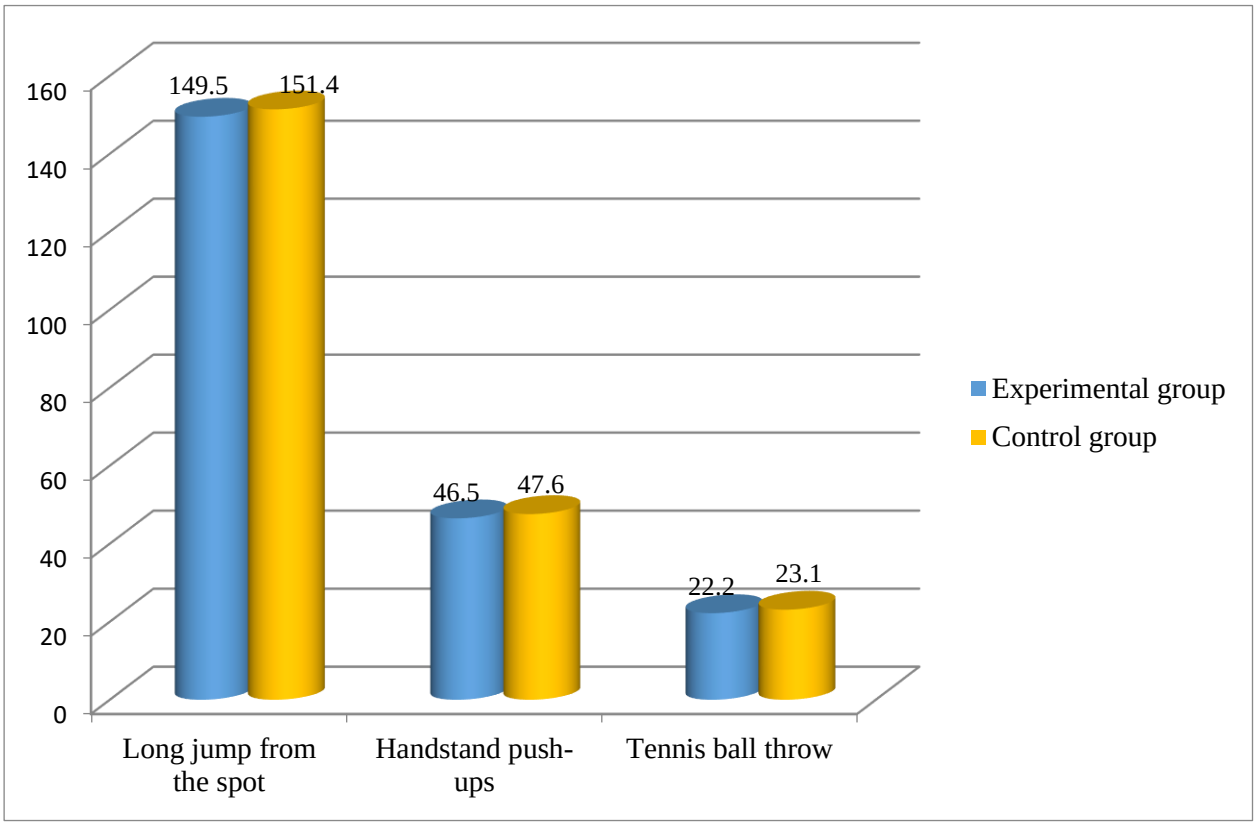

Figure 2. Analysis of the results of general physical training

1000 m run (min.s) indicators were studied and analyzed, based on the results obtained, in the experimental group it was 5.1±0.5 minutes-seconds, in the control group on this indicator it was 4.9±0.4 minutes-seconds, and the difference in reliability t=1.2, P>0.05 on the T-student criterion between the results was not observed.

Special physical fitness indicators were studied and analyzed, based on the results obtained, rotation around the head (times) was 10.9±0.9 times in the experimental group, in the control group according to this indicator, a difference in reliability t=0.2, P>0.05 according to the T-student criterion between the results was not observed.This indicates that there is no statistically significant difference between the experimental and control groups.

The indicators of technical tactical training were studied and analyzed, on the basis of the results obtained, waist exaggeration (30 s) (Times) was 11.8±1.4 times in the experimental group, on this indicator in the control group 12.5±1.2 times the difference in reliability t=1.4, P>0.05 on the T-student criterion between the results was not observed (see Figure 3).rol group 12.5±1.2 times the difference in reliability t=1.4, P>0.05 on the T-student criterion between the results was not observed (Figure 3).

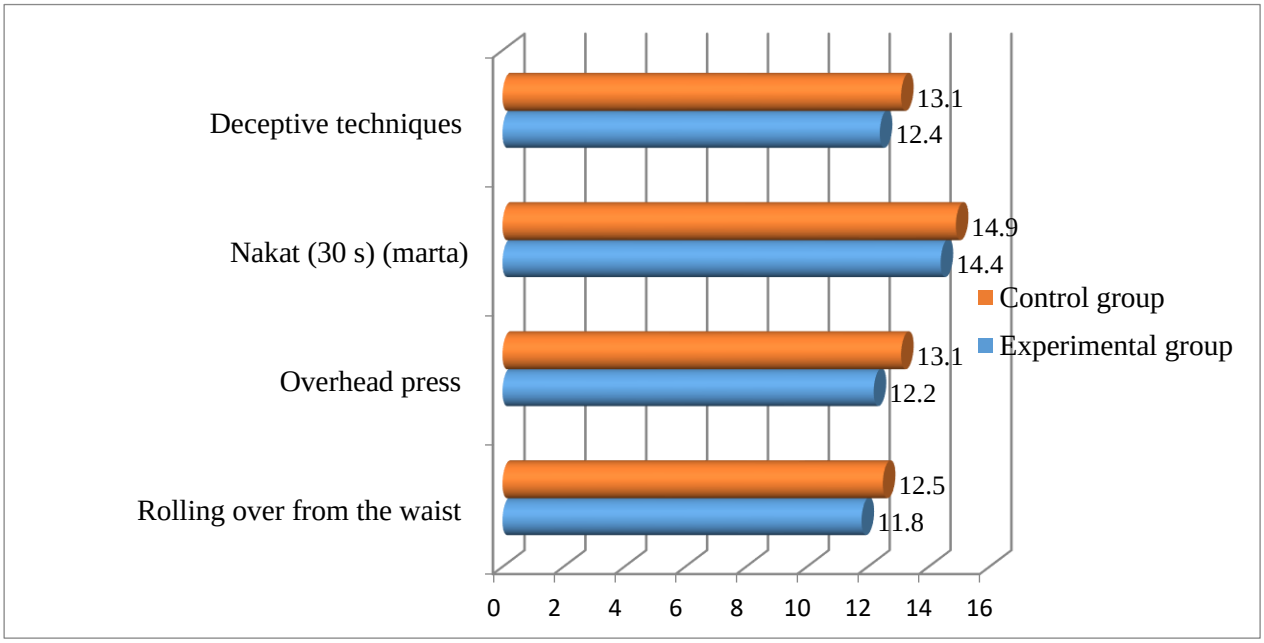

Figure 3. Analysis of the results of the control group of technical and tactical training

Based on the results obtained at the beginning of the study, the performance of young freestyle wrestlers in the shoulder throw (30 s) exercise was analyzed. In the experimental group, the average for this test was 12.2±1.4 times, and in the control group-13.1±1.7 times, and the results of the analysis showed t=1.3 and P>0.05 based on the T-student criterion. Overall fitness results showed significant improvements in athletes 'capacity for strength, speed, endurance and agility, proving that they have a positive effect on their ability to perform complex technical movements and make quick decisions while special fitness exercises showed a steady increase in coordination, balance and special strength performance, strengthening athletes' ability to perform various combinations of movements efficiently and accurately.

The results obtained in technical and tactical training showed an increase in the accuracy and speed of technical execution of the athletes in the exercises of throwing over the waist and shoulder, nakat, and deceptive techniques.the previous stage, scientifically confirming the improvement in their physical and technical-tactical training level. Overall fitness results showed significant improvements in athletes 'capacity for strength, speed, endurance and agility, proving that they have a positive effect on their ability to perform complex technical movements and make quick decisions while special fitness exercises showed a steady increase in coordination, balance and special strength performance, strengthening athletes' ability to perform various combinations of movements efficiently and accurately.

The results obtained in technical and tactical training showed an increase in the accuracy and speed of technical execution of the athletes in the exercises of throwing over the waist and shoulder, nakat, and deceptive techniques. This helped athletes develop the ability to make quick decisions, effectively coordinate movements, and think tactically during the competition. These changes significantly increased their ability to effectively apply strategic and technical movements in practice, which strengthened the athletes' skills in successfully maneuvering in combat with an opponent.

Table 2

When studying the general physical fitness indicators of young freestyle wrestlers at the end of the study

Types of training	No.	Name of test exercises	Experimental group			Control group			t	P
			$\overline{X}$	σ	V	$\overline{X}$	σ	V		
General physical fitness	1	Pull-ups on the horizontal bar (times)	7,1	0,9	13,3	6,1	0,7	12,1	2,7	P<0,05
	2	Long jump from the spot	175,3	23,4	13,3	154,2	20,2	13,1	2,3	P<0,05
	3	Handstand push-ups (times)	55,6	6,4	11,6	49,1	6,7	13,7	2,4	P<0,05
	4	Tennis ball throw	28,4	3,5	12,4	24,9	3,1	12,7	2,5	P<0,05
	5	3x10 run (s)	7,8	0,9	12,1	8,7	0,9	10,5	2,2	P<0,05
	6	60 m run (s)	10,7	1,3	12,2	11,9	1,2	10,8	2,3	P<0,05
	7	1000 m run (min.s)	4,3	0,5	12,1	4,7	0,4	10,4	2,2	P<0,05
Special physical training	1	Head rotation (times)	12,9	1,7	13,8	11,4	1,3	11,9	2,4	P<0,05
	2	Jumping in bridge position (30 s)	13,5	1,5	11,1	12,2	1,4	11,6	2,2	P<0,05
	3	Climbing a rope 5 meters high using your feet	18,7	2,4	13,3	20,9	2,2	10,9	2,3	P<0,05
	4	Rolling over (30 s) (times)	23,4	2,5	10,9	20,5	2,4	11,7	2,7	P<0,05
Tech nical	1	Rolling over from the waist (30 s) (times)	14,7	1,8	12,3	13,1	1,4	11,4	2,5	P<0,05

	2	Overhead press (30 s) (times)	15,8	2,1	13,3	14,1	1,5	10,9	2,2	P<0,05
	3	Nakat (30 s) (times)	17,7	2,4	13,7	15,6	1,9	12,5	2,3	P<0,05
	4	Deceptive techniques (30 s) (times)	15,8	2,1	13,5	13,7	1,9	13,9	2,4	P<0,05

Comparative statistical analysis of the overall physical fitness indicators of young freestyle wrestlers at the end of pedagogical experience. The total physical fitness indicators of 12-13 young freestyle wrestlers at the beginning of the pedagogical experiment were studied and analyzed, based on the results obtained, the tension on the turnstile (marta) was 7.1±0.9 times in the experimental group, the control group on this indicator was 6.1±0.7 times in the T-student criterion between the results, t=2.7, p <0.05 reliability difference was observed.

Based on the results obtained at the end of the study, indicators were studied and analyzed, in which the jump from place to length (CM) was 175.3±23.4 (cm) in the experimental group, in the control group on this indicator, a difference in reliability t=2.3, p<0.05 in the T-student criterion between the results was observed.

The 60-meter running (s) indicators were studied and analyzed, based on the results obtained, they were 10.7±1.3 seconds in the experimental group, 11.9±1.2 seconds in the control group according to this indicator, according to the T-student criterion between the results, t=2.3, p <0.05 reliability difference

observed (Figure 4).

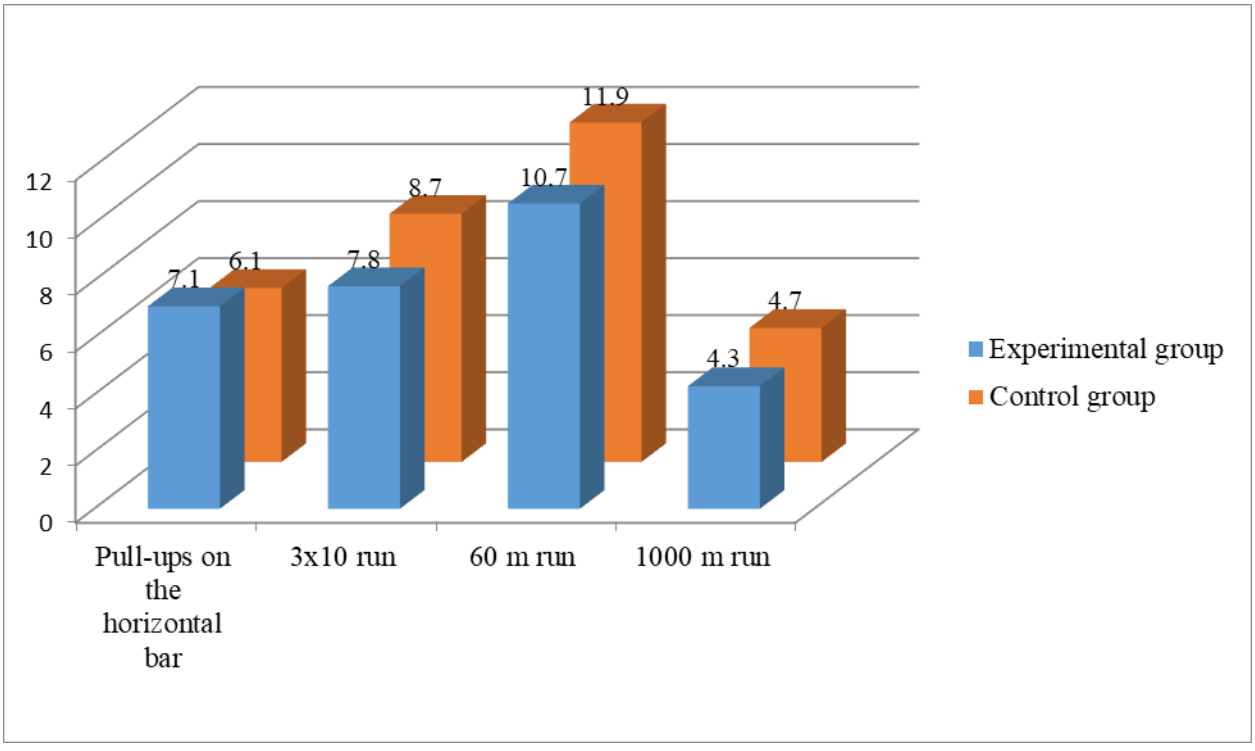

Figure 4. Analysis of the results of general physical training

1000 m run (min.s) indicators were studied and analyzed, based on the results obtained, in the experimental group it was 4.3±0.5 minutes-seconds, in the control group on this indicator it was 4.7±0.4 minutes-seconds, and in the T-student criterion between the results a difference in reliability t=2.2, P <0.05 was observed.

According to the study, the experimental group's indicators were 12.9±1.7 relatively lower than the control group's 11.4±1.3, and a significant difference in vestibular stability and coordination ability of athletes was observed. Based on the results obtained at the end of the study, indicators were studied and analyzed, in which the jump in the bridge position (30 s) was 13.5±1.5 times in the experimental group, in the control group according to this indicator, a difference in reliability t=2.2, p<0.05 was observed in the T-student criterion between the results.

Results obtained at the end of the study, indicators were studied and analyzed, in which the jump in the bridge position (30 s) was 13.5±1.5 times in the experimental group, in the control group according to this indicator, a difference in reliability t=2.2, p<0.05 was observed in the T-student criterion between the results (Figure 5).

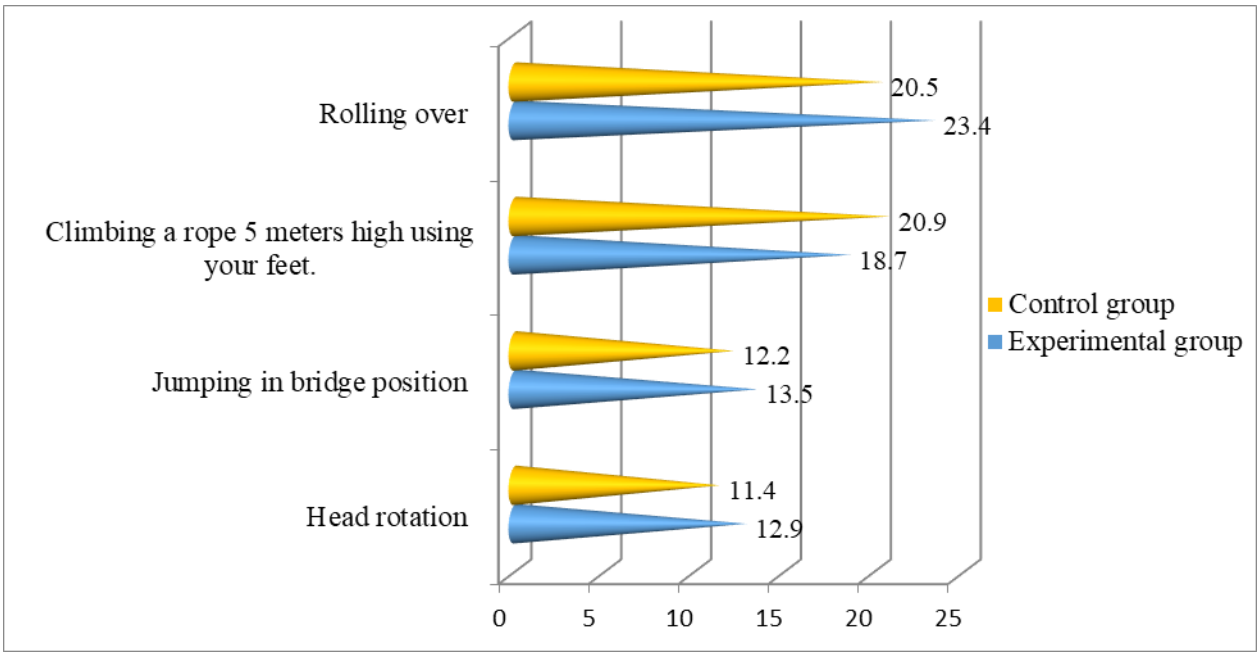

Figure 5. Analysis of the results of the control group of special physical training

In the experimental group, 18.7±2.4 seconds were observed, in the control group according to this indicator, a difference in reliability t=2.3, P<0.05, according to the T-student criterion between the results was observed.

The umbilical increase (30 s) (Times) of the young freestyle wrestlers was 23.4±2.5 times in the experimental group, with a difference in reliability of t=2.7, P <0.05 in the T-student criterion between the results as 20.5±2.4 times in the control group according to this indicator.

The indicators of technical tactical training were studied and analyzed, on the basis of the results obtained, waist exaggeration (30 s) (Times) was 14.7±1.8 times in the experimental group, on this indicator in the control group 13.1±1.4 times the difference in reliability t=2.5, p<0.05 was observed in the T-student criterion between the results (See Figure 6).imes the difference in reliability t=2.5, p<0.05 was observed in the T-student criterion between the results (Figure 6).

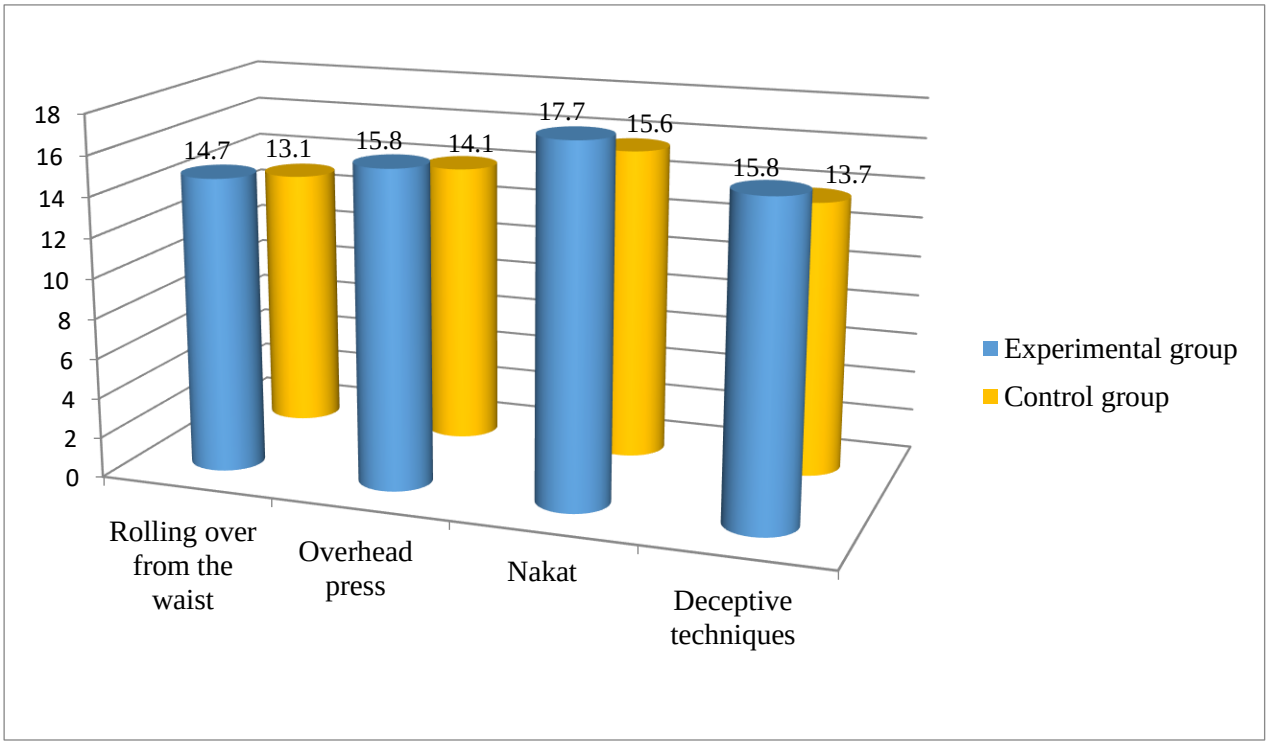

Figure 6. Analysis of the results of technical and tactical training

Discussion. At the end of the study, the technical and tactical training indicators of young freestyle wrestlers were analyzed in detail. In the experimental group on the results of the over-the-shoulder exercise, the indicators of 15.8±2.1 were relatively higher in the control group, and 14.1±1.5, which demonstrated the effectiveness of athletes in developing hand strength, coordination and accuracy and speed of performing movements. When statistical analysis was conducted using the T-student criterion, the indicators t=2.2 and P<0.05 confirmed that there was a reliable difference between the results, that is, the athletes of the experimental group were found to have a significant advantage in performing technical actions.

In the experimental group, the indicators of 15.8±2.1 are relatively higher than the control group of 13.7±1.7, which showed a significant development in the ability of athletes to

think technically and tactically, perform movements quickly and accurately, and distract the opposing opponent.ity of athletes to think technically and tactically, perform movements quickly and accurately, and distract the opposing opponent. When the results of the analysis were evaluated using the t-student criterion, t=2.4 and P<0.05 were found, confirming the presence of a significant statistical difference between the results. These data scientifically demonstrate the ability of athletes to increase the speed and accuracy of performing technical movements through the practice of deceptive techniques, as well as the effectiveness of developing technical and tactical training.

Conclusion. The results of the experiment made it possible to comprehensively assess the level of physical and technical-tactical training of young freestyle wrestlers. The results observed in general physical fitness exercises showed a significant increase in the strength, speed, endurance, and agility of the athletes. At the same time, the performance of the experimental group showed a clear advantage over the control group, which scientifically confirms the subsequent development of athletes from their initial level of training. The results of the specific physical training exercises showed an increase in the athletes' balance, coordination, and specific strength. The changes observed through dizziness, bridge jumps, rope climbing, and somersault exercises indicate that they helped athletes improve their ability to perform various technical tasks stably and effectively. These results confirmed that a special physical training program serves to comprehensively develop the functional and coordination capabilities of athletes. Analysis of technical and tactical training indicators showed that athletes of the experimental group had a clear advantage over the control group in terms of speed and accuracy of performing exercises for throwing over the head and shoulder, as well as for nakat and deceptive techniques. This indicates the ability to perform technical movements stably and effectively, make quick decisions, and think tactically. At the same time, the improvement of athletes' technical and tactical training serves to increase their chances of successfully acting in a fight with an opponent. Analysis of all exercises showed a significant improvement in the level of physical and technical-tactical training of athletes compared to the initial stage. The performance of the experimental group showed a clear advantage over the control group, which scientifically confirms the effectiveness of the methodological approach and training system used.

References:

1. Abdulaziz Usubjon ugli Xamidjanov. (2020). Belbog'li kurashda talabalarni tanlash tizimi va mazmuni. Namangan muhandislik-texnologiya instituti ilmiy-texnik jurnali, 1(4), 316-317.

2. Xamidjanov Abdulaziz Usubjon o'g'li. (2020). Belbog'li kurash bo'yicha bolalarni tanlash tizimi va mazmunini takomillashtirish. Ko'rsatkichlar, 8(11), 12-16.

3. Xudoyberdiyev I. A., Abduraxmonov S. E. "Kurash sportida yosh sportchilarning antropometrik xususiyatlarini aniqlash va saralash mezonlari." Jismoniy tarbiya va sport ilmiy-metodik jurnali, 2023, 6(2), 104–110-bet.

4. Axmedov U. N., Sobirov F. T. "Kurashchilar jismoniy tayyorgarligining asosiy ko‘rsatkichlari." Sport va innovatsiyalar ilmiy jurnali, 2022, 3(3), 82–87-bet.

5. Jo‘rayev R. A., Tursunov M. K. "Kurash sportida kuch va texnika muvozanatini aniqlash metodikasi." O‘zbekiston Fanlar Akademiyasi axborotnomasi, 2021, 4(2), 71–76-bet.

6. Bompa T. O. "Periodization Training for Sports." Human Kinetics, 2015, 400-bet.

7. Sterkowicz S. "Specific Fitness Preparation of Wrestlers Based on Anthropometric Characteristics." Journal of Human Kinetics, 2011, 30, 123–130-bet.

8. Koshikawa Y., Tanaka Y. "Anthropometric and Physiological Characteristics of Elite Wrestlers." International Journal of Wrestling Science, 2014, 4(1), 55–61-bet