

12-15-2020

Effectiveness of methods for improving the technique of performing the snatch in qualified weightlifters

Shuhrat Toshturdiyev

Uzbekistan state university of physical education and sport

Anvar Khodjayev

Uzbekistan state university of physical education and sport

Follow this and additional works at: <https://uzjournals.edu.uz/eajss>



Part of the [Health and Physical Education Commons](#), [Sports Sciences Commons](#), and the [Sports Studies Commons](#)

Recommended Citation

Toshturdiyev, Shuhrat and Khodjayev, Anvar (2020) "Effectiveness of methods for improving the technique of performing the snatch in qualified weightlifters," *Eurasian Journal of Sport Science*: Vol. 1 : Iss. 1 , Article 4.

Available at: <https://uzjournals.edu.uz/eajss/vol1/iss1/4>

This Article is brought to you for free and open access by 2030 Uzbekistan Research Online. It has been accepted for inclusion in Eurasian Journal of Sport Science by an authorized editor of 2030 Uzbekistan Research Online. For more information, please contact sh.erkinov@edu.uz.

EFFECTIVENESS OF METHODS FOR IMPROVING THE TECHNIQUE OF PERFORMING THE SNATCH IN QUALIFIED WEIGHTLIFTERS

^aSh.X. Toshturdiyev, shuhrat.toshturdiyev@bk.ru, ORCID: 0000-0002-1848-6358

^aA.Z. Khodzhaev, anvarkhodjayev@mail.ru, ORCID: 0000-0001-6777-325X

^aUzbekistan state university of physical education and sport, Chirchiq city, Uzbekistan

ABSTRACT

Aim: of the study is to develop suggestions and recommendations for improving the technique of performing the snatch in qualified weightlifters.

Methods: usage of special auxiliary exercises and simulators in training sessions aimed at improving the technique of performing the snatch in qualified weightlifters.

Results: pilot program using a new approach the ability to spread training loads in the preparatory and pre-competition cycles had a positive impact on improving the level of physical fitness, which contributed to the growth of technical skill of weightlifters.

Conclusion: usage of special auxiliary exercises, simulators in training sessions and program using a new approach improved level of physical fitness along with results of the competition snatch among qualified weightlifters.

Keywords: Snatch, lifting height, angles in the knee joints, technical training, “XM-tren” simulator, muscle strength.

I. INTRODUCTION

In the article, the authors studied the improvement of the snatch technique in qualified weightlifters, as well as scientific and methodological literature related to the training of qualified weightlifters. During the study, I found shortcomings in scientific validity. The author has revealed that the dynamics of the increase in sports results depends on the choice of the number of special auxiliary exercises used to improve the snatch technique in the training of qualified weightlifters. First of all, increasing the height of lifting the bar will contribute to the adequacy and focus on improving sports skills(3,5).

Since its inception, sport has served as a powerful force that brings different Nations closer together. Therefore, the role of sport is incomparably great in ensuring peace and stability between States, creating a strong Foundation for socio-economic cooperation. Sport has become one of the most important factors not only for physical, but also for spiritual improvement of a person. At present, the high achievements of our athletes at the largest prestigious international competitions have become an incentive to carry out various activities aimed at increasing the authority of Uzbekistan around the world, ensuring the improvement of the sports potential and achievements of our athletes(4,6).

In the world, in the field of training weightlifters of different qualifications to improve the level of technical readiness of athletes, many studies have been conducted in various areas, in particular, on the distribution and planning of training loads to improve the technical skill of weightlifters, movement management when performing competitive and special exercises and their biomechanical analysis, determining the impact of training loads on technical readiness, selection of special auxiliary exercises for improving the technique of performing the snatch and determining their impact on the biomechanical structure of competitive exercises. However, there is not enough research on increasing the height of the barbell lift and the angles of extension of the legs in the knee joints in the final acceleration phase in different intensity zones using a special trainer, as well as improving the technique by increasing the strength of the arm muscles involved in performing the snatch technique in the final acceleration phase in qualified weightlifters(5,8).

In our Republic, a number of important measures are being taken in the field of sports development to implement and develop the innate inclinations and talent of athletes, to attract gifted athletes to professional sports. Therefore, in our country, increasing the popularity of sports and the development of professional sports are considered a priority. "Education of the harmonically developed young generation, implementation and the development of natural abilities, the selection of talented athletes from among the gifted youth in professional sports becomes important." Uzbek athletes have achieved high victories on the world sports arenas and received worthy recognition all over the world(2,8-9).

In particular, weightlifters have a lot of credit for glorifying the sports part of Uzbek sport. It is known that the achievement of high results by athletes depends on their level of physical and technical fitness. Currently, in many works, it is recommended to use the method of an integrated approach in improving the performance of competitive exercises by qualified weightlifters at a high level of technical skill. However, we have not found any studies devoted to the problems of determining the significance and effectiveness of distribution and planning of training loads by intensity zones, aimed at increasing the lifting of the bar in special auxiliary exercises while improving the snatch technique in qualified weightlifters. In addition, there are no scientifically based criteria for determining the optimal height of lifting the bar and the angles of extension of the legs in the knee joints in different intensity zones, taking into account the technical readiness and strength abilities of qualified weightlifters. Taking into account the above, it should be noted that the issues of overcoming large weights at competitions by improving the physical capabilities and technical skills of qualified weightlifters are one of the most pressing problems(3,5,9).

II. METHODS

The object of research is the process of technical training of qualified weightlifters. Tasks of our research are:

- develop a training device that helps increase the height of lifting the bar when performing a snatch and determine its impact on the technical and physical fitness of weightlifters;
- improve the criteria for evaluating the technical readiness and skill of qualified weightlifters (lifting height of the bar and angles of extension of the legs in the knee joints (°) by intensity zones);
- to determine the dynamics of training loads in the preparatory and pre-competition cycles of weightlifters of the sports improvement group;
- to develop and experimentally justify the effectiveness of the optimal method of planning training loads in different intensity zones in special auxiliary exercises aimed at improving the technique of performing the snatch in the training process.

The article presents the current views of scientists and specialists on improving the technique of performing the snatch in weightlifting. Information is given about the stability and variability of sports movement techniques, criteria for evaluating the height of lifting the bar, improving the technique of performing individual periods and phases of the snatch, the influence of the weight of the bar on the coordination structure of weightlifting exercises, and the level of physical fitness of weightlifters.

There are recommendations for using different load values and weights for optimal improvement of the technique of performing exercises while improving the athletic skills of athletes. It is noted here that in exercises, in addition to traction, weights of 88-92% of the limit have a positive effect on improving technical skills. It can be noted that in the scientific and methodological literature on weightlifting, the problem of the relationship between the parameters of the exercise technique and the weight of the barbell is studied in sufficient detail. Also, issues related to the number of lifts and approaches when improving the technique of performing the snatch in highly qualified weightlifters are covered in detail in the literature.

However, there is still no consensus among experts on the height of lifting the bar by qualified athletes in the snatch in the final acceleration phase in different intensity zones

Currently, the issues of improving the technique of the snatch of highly qualified weightlifters studied in detail, but specific features of a technique of improvement techniques breakthrough for skilled athletes remained outside the attention of experts.

In the reference review some authors provides many of the control exercises to determine physical fitness, which can be used in the diagnosis of physical preparedness of weightlifters. Among them there are jumping exercises, as well as exercises with a barbell. In research, the following exercises are often used: squats with a barbell on the shoulders, deadlift, snatch from the vise. Indicators of these exercises have a high correlation with athletic performance(1,5-7)

Speaking about the conclusions made in the course of studying the practice, it can be noted that they are, of course, close to reality, but this is only part of all the training loads that characterize the effects of training. If you do not take into account the number of repetitions when lifting the bar in different intensity zones or the overall training load, this can dramatically reduce the information content of the data obtained.

The choice of the amount of weight should be related not only to the effectiveness of strength development, but also to the level of development of motor skills and changes in other characteristics of the weightlifter's condition.

III. RESULTS AND DISCUSSION

This article presents the results of a comparative analysis of physical, technical fitness and athletic achievements of qualified weightlifters of the control (CG) and experimental (EG) groups who participated in a twelve-week pedagogical experiment.

At the beginning of the experiment, the indicators of physical and technical fitness and athletic performance of both groups were the same.

During the experiment, weightlifters of CG were engaged in traditional methods of training sessions. The experimental group was engaged in the method of training sessions developed by us based on the optimal distribution of training loads in special auxiliary exercises in intensity zones while improving the technique of performing the snatch.

Planned training loads had a positive impact on the growth of physical fitness indicators of the experiment participants after a twelve-week training cycle (see table 2).

In the control group, in subgroups A₁ and A₂, the increase in the strength of the extensor muscles of the back and legs was statistically significant ($p < 0.05$). However, the increase in arm flexion strength on the "XM-tren" simulator and jumping abilities was statistically unreliable ($p > 0.01$).

This indicates that during training sessions, athletes of subgroup A₁ and A₂ mainly improved the strength abilities of the leg extensor and back extensor muscles, but did not pay attention to increasing the jumping abilities (explosive force) and the strength of the arm flexion muscles in movements similar to the snatch movement.

Changes in the experimental group in athletes of subgroups B₁ and B₂ are slightly higher. In subgroups B₁ and B₂, the increase in indicators of leg muscle strength, as well as jumping abilities in upward jumps is statistically significant ($p < 0.05$). Increase in flexion strength of the arm muscles on the simulator "XM-tren" also turned out to be statically reliable ($p < 0.01$). Thus, along with an increase in the results of the strength of the back extensor muscles and the strength of the leg extensor muscles, the jumping ability (explosive power) of weightlifters increased. It should be noted that when training absolute muscle strength, which is the main physical qualities of a weightlifter, it is advisable to reduce the proportion of strength exercises (deadlifts and squats) by 20% and allocate 10% to the jump up exercise, which develops jumping ability (explosive force), and systematically apply exercises performed on the "XM-tren" simulator to develop the strength of the flexor muscles of the arms.

Studies have revealed that a comparative analysis of the physical fitness indicators of athletes in the experimental and control groups in the subgroups of technical and strength types showed slight differences in the results between them (see figures 1,2).

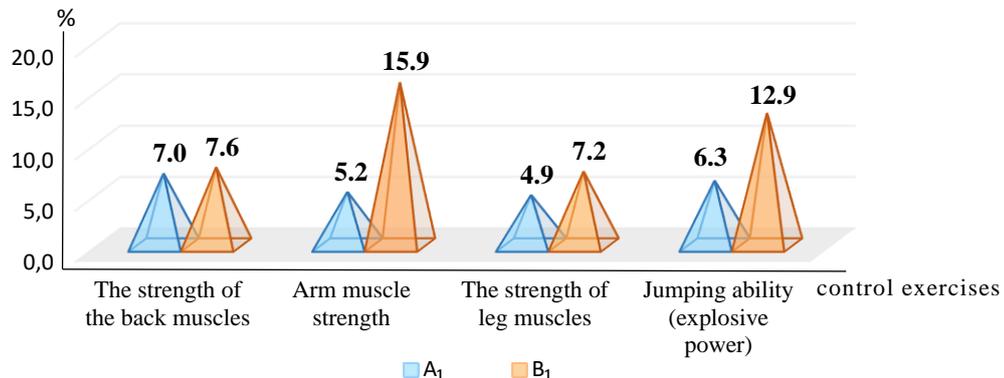


Figure 1. The indices of physical fitness between sub-groups of the technical type

In the control and experimental groups of athletes of the technical type, the strength capabilities of the back extensor and leg extensor muscles are developed almost equally, their difference in growth was 0.6% in the strength of the back extensor muscles, and -2.3% in the strength of the leg extensor muscles. However, the difference in the increase in the strength of the flexor muscles of the arms was 10.7%, and the jump up indicators -6.6%.

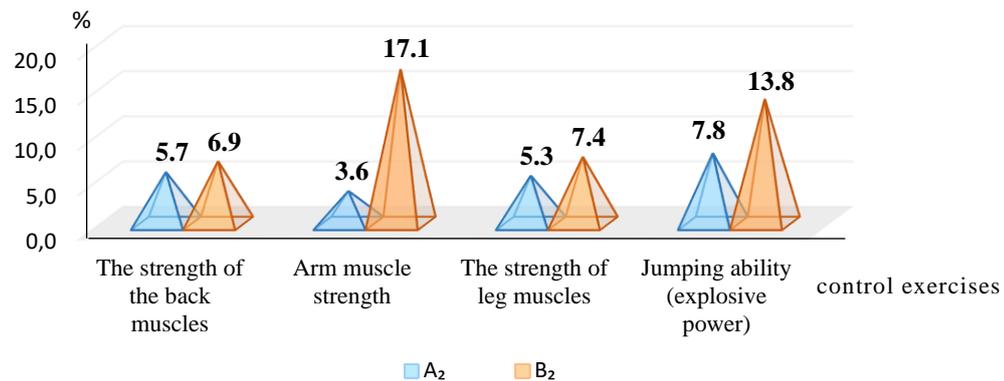


Figure 2. Indicators of physical fitness between subgroups of the power type

In the strength-type subgroups, the difference in the increase in the strength of the back extensor muscles was 1.2%, and the strength of the leg extensor muscles was 2.1%. However, the difference in arm flexor muscle strength was 13.5% and jumping ability was 6.0%. A slight difference in the indices increase force of muscles of extensors of back and legs shows that both subgroups performed the same exercise: thrust and squats, but unlike the control in the experimental group, the exercises were performed in the 5th and 6th zones of intensity.

A significant difference in the gain of strength of the arm muscles similar to the movement of the leap and jumping abilities can be explained by the fact that in the training process in the control group, there were no special exercises that affect the development of muscle strength of the flexors of the hands and jumping abilities of athletes.

Studies have shown that to determine the technical skill of weightlifters, it is necessary to determine the height of the barbell lift by intensity zones. If the height of the bar lift is expressed as a percentage (%) of the subject's height, then as the weight of the bar increases

(81-90%, 91-100%, 101 or more), the angle (°) of the leg extension in the knee joint decreases (see table 1).

Table 1

Indicators of the bar lifting height at the end of the final acceleration phase in the snatch of different weights

Groups	Subgroups	Statistical parameter		Intensity zones		
				IV 81-90%	V 91-100%	VI 101% и больше
CONTROL L	A ₁	$\bar{x} \pm \sigma$	before	69.7±2.7	68.7±2.8	67.6±2.5
			after	70.6±2.5	69.4±2.6	68.1±2.4
		tct	1,83	1.86	1.82	
		p	>0,05	>0.05	>0.05	
CONTROL	A ₁	diffirence	%	0.9	0.7	0.5
			%	1.3	1.0	0.7
	A ₂	$\bar{x} \pm \sigma$	before	70.7±3.0	69.4±2.8	68.5±2.6
			after	71.7±3.7	70.0±2.4	69.1±2.7
		tct	1,83	1.80	1.84	
		p	>0,05	>0.05	>0.05	
	diffirence	%	0.9	0.7	0.6	
		%	1.3	1.0	0.9	
EXPERIMENTAL	B ₁	$\bar{x} \pm \sigma$	before	69.5±3.4	68.9±3.2	67.7±1.9
			after	72.7±4.5	72.3±4.6	71.2±1.0
		tct	2.96	2.73	2.22	
		p	<0,05	<0.05	<0.05	
		diffirence	%	3.2	3.5	3.5
			%	4.6	5.0	5.2
	B ₂	$\bar{x} \pm \sigma$	before	71.0±3.5	69.4±2.6	68.0±3.2
			after	74.5±4.26	73.6±2.8	73.1±1.7
		tct	2.98	2.90	2.25	
		p	<0.05	<0.05	<0.05	
		diffirence	%	3.5	4.2	5.1
			%	5.0	6.1	7.4

Note 3: A₁, B₁ - groups of technical type with a high level (criterion) of technical skill;
A₂, B₂-groups of the power type with a low level (criterion) of technical skill.

Weightlifters of the control group of the technical type have subgroups A₁ the difference in growth relative to their initial indicators was in the 4th zone intensity 2.0 cm., i.e. 1.2%, in the 5th zone of intensity - 2.0 cm, i.e. 1.2%, and 6th zone of the intensity - 1.5 cm, i.e. 0.9 percent and the power lifters of the type subgroups A the difference in growth relative to the initial rates were equal in the 4th zone intensity by 2.0 cm, i.e. 1.7%, in 5th zone of intensity - 2.9 cm, i.e. 1.7%, in 6th area in the intensity - 2.0 cm, i.e. 1.2%. The growth results for all intensity zones are statistically unreliable (p>0.05).

In the experimental group in subgroup B₁, the difference in growth relative to their initial indicators was 5.5 cm in the 4th intensity zone, i.e. 3.2%, 6.1 cm in the 5th intensity zone, i.e. 3.5%, and 6.3 cm in the 6th intensity zone, i.e. 3.5%. And in weightlifters of the power type of subgroup B₂, the increase in relation to the initial indicators was equal to 6.1% in the 4th intensity zone, 7.4 cm in the 5th intensity zone, and 8.9 cm in the 6th intensity zone, i.e. 5.1%.

If we compare the indicators of increase in results in technical weightlifters of the experimental and control groups, the following differences are obvious.

Athletes of the control group of technical type showed an increase in results in the 4th, 5th and 6th intensity zones compared to the initial indicators. Athletes of the power type in subgroups A₂ and B₂ showed an increase in indicators in the 4th, 5th and 6th intensity zones. However, even here the athletes of the experimental group have a slightly higher increase in indicators than in the control group.

The results of the study indicate that the height reached by the barbell at the end of the final acceleration phase depends on the level of physical and technical fitness of the weightlifter. Athletes of the control group of subgroup A₁ do not use energy sparingly and put more effort than is necessary to increase the speed of the bar. The bar is reported to have a significant speed, so the height of lifting the bar in these athletes is lower than in subgroup A₂. In weightlifters of the experimental group in subgroup B₁ and B₂, the indicators of changes in the height of lifting the bar are reliable (p<0.05) (see table 2).

Table 2

Angles (°) in the knee joints at the end of the final acceleration phase in the snatch of different weights (n=32)

Groups		Statistical parameters		Intensity zones			
				IV 81-90%	V 91-100%	VI 101% и больше	
CONTROL	A ₁	$\bar{x} \pm \sigma$	before the experiment	163.9±1.7	161.7±1.2	160,7±1,1	
			after the experiment	165.4±1.5	162.9±1.0	161.7±1.0	
		t	1.95	1.86	1.85		
		p	>0,05	>0.05	>0.05		
		difference (°)	1.5	1.2	1.0		
		difference (%)	0.9	0.7	0.6		
	A ₂	$\bar{x} \pm \sigma$	before the experiment	164.2±1.1	162.3±1.0	160.6±0.9	
			after the experiment	165.3±1.0	163.3±0.8	16.4±0.7	
		t	2.00	1.82	1.91		
		p	>0.05	>0.05	>0.05		
		difference (°)	1.1	1.0	0.8		
		difference (%)	0.7	0.6	0.5		
	EXPERIMENTAL	B ₁	$\bar{x} \pm \sigma$	before the experiment	164.7±2.0	163.6±3.1	162.3±4.3
				after the experiment	169.6±2.1	169.1±3.1	168.8±4.1
t			2.71	2.68	2.96		
p			<0.05	<0.05	<0.05		
difference (°)			4.9	5.5	6.5		
difference (%)			2.9	3.4	4.0		
B ₂		$\bar{x} \pm \sigma$	before the experiment	165.3±2.2	164.6±2.4	164.6±4.1	
			after the experiment	170.9±3.4	170.8±2.5	170.9±4.2	
		t	2.55	2.84	2.88		
		p	<0.05	<0.05	<0.05		
		difference (°)	5.6	6.2	6.3		
		difference (%)	3.4	3.8	3.8		

The height of the barbell depends on the angles of extension of the legs in the knee joints. The results of the study prove that in the snatch, leg extensions in the knee joints have different values. Between the subgroups A, there are significant statistical differences in all intensity zones.

Indicators, obtained before experiment, the lifters of the control group technical type subgroup A in the intensity zone 81-90% were 163,9 °, 91-100% - 161,7 °, 101 and more – 160,7° and podlupa A power type indicators amounted to respectively 164,2 °, 162,3 °, ° 160,6. Weightlifters of the experimental group of the technical type in the subgroup B₁ had indicators of 164.7°, 163.6°, 162.3°, respectively, and in the subgroup b₂ of the power type –165.3°, 164.6°, 164.6°, respectively.

After the implementation of the planned training loads in the course of research, weightlifters had changes in the angles of leg extension in the knee joints. So, in the control group technical type subgroup A and power in the subgroup A growth angles of the leg extension in the knee joints not statistically significant ($p > 0.05$). In the experimental group of the technical type in the subgroup the results were statistically significant ($p < 0.05$) in the subgroup B₁ and power type.

Comparison of the results of the control and experimental groups shows that weightlifters of the technical and strength subgroups showed an increase in comparison with the initial data.

In the athletes of the control group of the technical type in the subgroup A₁ the increase in leg extension angles in the knee joints by intensity zones is lower than in subgroup B₁. If we compare the growth rates in both subgroups, the difference is 2.0% in the 4th intensity zone, 2.7% in the 5th intensity zone, and 3.4% in the 6th intensity zone.

In the control group, athletes of the power type have subgroups A₂ indicators increased in the 4th zone of intensity by 0.7%, in the 5th zone 0.6% and the 6th zone 0.5%, for weightlifters of subgroup B₂ they were 3.4%, 3.8% and 3.8%, respectively. In subgroups A₂ and B₂, the difference in growth was 2.7% in the 4th zone of intensity, -3.2% in the 5th zone, and -3.3% in the 6th zone.

In athletes of the control group and the experimental group in subgroups A and B technical and subgroups A and B power type is a significant difference between the parameters ($p < 0.05$) was observed only in the last three zones of intensity, and performance of the lifting rod light weight the difference is small. Less extension of the legs in the knee joints in the snatch in subgroups A₁ and A₂, it can be explained by the fact that athletes, due to the increase in the weight of the bar to the maximum values in the 4th, 5th, 6th intensity zones, prematurely begin to perform the squat phase under the bar. If we consider the dynamics of changes in the angles of extension of the legs in the knee joints when the weight of the bar increases separately in each intensity zone, this fact is confirmed by the results presented in table 4.

The amount of leg extension in the knee joints is also related to the athlete's qualification. Athletes of subgroups A₁ and A₂ do not use the strength of the leg extensor muscles enough, so they have a maximum value of angles in the knee joints in the final acceleration phase less than weightlifters of subgroups B₁ and B₂. In all intensity zones, there are significant differences between both subgroups ($p < 0.05$).

In the traction and undermining of the a₁ and A₂ subgroups, the barbell is lifted by athletes primarily due to the efforts of the back and shoulder girdle muscles. Experimental subgroups B₁ and B₂ for breeding knees take a rational pose before the final acceleration of the bar. This position allows them to re-use the strength of the leg extensors and perform a more powerful and accentuated movement.

IV. CONCLUSION:

1. The analysis of literature sources has shown that there are no recommendations for using the simulator to determine and develop the strength of the arm muscles in the final acceleration phase in the snatch, there are no system recommendations for optimal distribution of the training load by intensity zones in special auxiliary exercises aimed at improving the technique of performing the snatch by increasing the height of lifting the bar and the angles of extension of the legs in the knee joints.

2. For the first time in weightlifting, the "XM-tren" simulator was developed in practice to improve the level of physical and technical fitness of weightlifters, in particular to determine and develop the strength of the arm flexor muscles when performing the snatch in the final acceleration phase and to control the trajectory of the bar, as well as to improve the technique of performing the snatch in the final acceleration phase.

3. The use of the simulator "XM-tren" allowed to improve the muscle strength of the flexors of the hands of weightlifters technical type 15.8%, power type of 17.2%, the height of lifting barbells of maximum weight in athletes technical type 5.6%, power type 7.5 percent, and the angles of leg extension in the knee joints athletes technical type of 5.1%, a power of 5.7 percent, as well as a positive impact on improving the trajectory of the rod.

4. The level of physical fitness of qualified technical weightlifters increased: the strength of the back extensor muscles by 7.6%, the strength of the arm flexor muscles in the snatch - 15.9%, the strength of the leg extensor muscles -7.2%, jumping (explosive force) -12.9%. Weightlifters of the power type had improvements in the following indicators: strength of the back extensor muscles - by 6.9%, strength of the arm extensor muscles in the snatch -17.1%, strength of the leg extensor muscles -7.4%, jumping (explosive force) -13.8%.

5. The results of the competitive snatch in technical athletes increased by 11.8%, power -12.8%, the reliability of the performance of the competitive snatch in technical athletes increased by 33.3%, power -23.7%. Also, the ratio of the results of the double event in kilograms stabilized and amounted to 23.7% for technical athletes, and 22.2% for power athletes.

References

1. Chernyak AV. Criteria of technical preparedness. Methods of planning a weightlifter. FIS.1978;114.
2. Dvorkin L. Weightlifting. 2nd ed. Publisher Yurayt. 2017;242.
3. Ge ND, Tyutebaev BK. Assessment of the level of technical readiness of weightlifters. J Olympus. 2016;2(3):47-8.
4. Ge ND, Tyutebaev BK. Experimental substantiation of the method of selection of special-preparatory exercises for weightlifters. Bulletin of physical culture. 2002;4:71-5.
5. Kanevsky VB. Method of expert assessments of the level of technical preparedness of weightlifters in the competition process. Olymp publisher. 2002;3(4):44-6.
6. Poletaev PA, Campos H, Quest A. Analysis of the technique of weightlifters in the snatch with a single and double lifting of the bar with the maximum and close to the maximum load. J Theory and Pract of physical culture. 2005;5:74-9.
7. Sivokhin IP. Comparative analysis of the biomechanical characteristics of the movement of special preparatory exercises and the classic barbell jerk. Bulletin of physical culture. 2009;2:33-6.
8. Tyo SE Biomechanics of weightlifting exercises depending on the self-type / Theory and practice of physical culture. OMSK, 2009;9:22-4.
9. Zaciorskij VM Physical qualities of the athlete: basic theory and method of education. 3rd ed. Soviet sport, 2009;199.