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IMPROVING THE PRE-COMPETITION PREPARATION OF ATHLETES IN PARA- NUCLEAR ATHLETES

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Abstract

This article presents the current state of the para-athlete sport, current problems in the development of this sport, types of training, the main tasks of pre-competition preparation of athletes and the content of training for their preparation. Also, the process of training athletes (athletes of class F37 in para-athlete) and the content and standards of the means used in it are presented, and finally, an analysis of the results obtained on their physical fitness is given. At the end of the work, a general conclusion is given.

Keywords: Para-sports, para-shot put , sport, athletes, means, preparation.

Introduction

PARA YADRO ITQITISH TURLARIDA SPORTCHILARNI MUSOBAQAOLDI TAYYORGARLIGINI TAKOMILLASHTIRISH

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O‘zbekiston davlat jismoniy tarbiya va sport universiteti, pedagogika fanlari
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Annotatsiya

Ushbu maqolada, para yadro itqitish turning bugungu kundagi holati, ushbu turni rivojlantirishdagi dolzarb muammolar, tayyorgarlik turlari, sportchilarni musobaqa olditayyorgarligining asosiy vazifalari va ularni tayyorlash uchun mashg‘ulotlarning mazmuni berib o‘tilgan. Shuningdek, sportchilarni



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mashg'ulot jarayoni (para yadro itqitishda F37 klass sportchilari) va unda bajariladigan vositalarni mazmuni va me'yorlari berib o'tilgan hamda yakunda ularning jismoniy tayyorgarligi yuzasidan olingan natijalar tahlili berilgan. Ishning so'nggida umumiy xulosa berib o'tilgan.

Kalit so'zlar: para yengil atletika, para yadro itqitish, sport, shug'ullanuvchilar, vositalar, tayyorgarlik.

Аннотация

В данной статье представлено современное состояние параатлетического спорта, актуальные проблемы развития этого вида спорта, виды тренировок, основные задачи предсоревновательной подготовки спортсменов и содержание тренировок по их подготовке. Также представлен процесс подготовки спортсменов (спортсменов класса F37 в параатлетике) и содержание и стандарты используемых в нем средств, и, наконец, дан анализ результатов, полученных по их физической подготовке. В конце работы дается общее заключение.

Ключевые слова: параатлеты, пара ядротолькателы, спорт, спортсмены, средства, подготовка.

Relevance of the topic:

The pace of para-athletics is rapidly increasing worldwide. This is due to the constant increase in the level of physical fitness, and through it the scale of sports achievements is increasing. This factor, along with the training of reserve athletes in para-athletics, places high demands on the physical fitness of young para-athletics athletes, which creates a need to increase the level of physical fitness of young para-athletics athletes and improve the quality of their training. Taking this into account, the organization of para-athletics clubs and improving the physical fitness of athletes involved in them is also considered an urgent issue. Regular monitoring of the level of physical fitness in modern para-athletics should also serve to ensure a high level of their physical fitness, and in



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this case, their physical fitness and physical development in line with the requirements of the times are the main factors.

On a global scale, it can be said that Uzbek para-athletics is at its peak. In particular, at the last Olympic Games (Paris - 2024), 8 out of 10 gold medals, 4 out of 9 silver medals and 4 out of 7 bronze medals, a total of 16 medals were won. This is the result of many years of fruitful work and practical work of specialists and coaches in this regard. This is due to the fact that a lot of experience has been accumulated in studying and analyzing the efficiency of movement in the activities of athletes involved in para-athletics, and the urgent problem of standardizing their training loads, improving their physical fitness and optimizing the means of training in accordance with rapid para-athletics competitions is considered to be an urgent problem. It is necessary to increase the physical fitness of athletes with disabilities by including them in para-athletics training, and constantly improve their training tools and methods, and there is a need to conduct various experiments on this problem. In addition to the training of para-athletes, proposals and recommendations aimed at constant monitoring of their physical fitness and prompt elimination of problematic aspects during training have not been sufficiently developed.

In our country, separate experimental and methodological developments are being carried out on the organization of the training process in para-sports, which can form the necessary fund of movement skills of athletes, create a basis for the basic physical training of para-athletes. At the same time, it is shown that insufficient attention is paid to the throwing types of para-athletes in separately organized training sessions, and there are many tasks that need to be solved in terms of covering this type of sport.

In particular, the development and implementation of the methodology of para-nuclear push-ups are based on a number of Decrees and Resolutions adopted by the President of the Republic of Uzbekistan in the field, including Decree No. PF-5924 of January 24, 2020 "On measures to further improve and popularize physical education and mass sports in the Republic of Uzbekistan", Resolution No. PF-443 of November 5, 2021 "On creating additional conditions for young people to regularly engage in sports", Resolution No. PF-221 of July 8, 2025



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“On comprehensive preparation of Uzbek athletes for the XXXIV Summer Olympics and XVIII Paralympic Games to be held in Los Angeles (USA) in 2028”, This dissertation work will serve to a certain extent in implementing the tasks set forth in Resolution No. PQ 373 of December 11, 2025 "On Additional Measures for the Further Development of Paralympic Sports", as well as other regulatory legal documents related to this area.

In the context of the problem, it is necessary to involve para-athletes in physical education and sports health-improving activities, sports training, and to effectively train athletes in the para-athletic sprinting disciplines and to apply various loading and methods in order to increase their physical fitness, which is one of the current problems today.

L. Sobirova, Sh. Gofurov, E. Orinboev conducted a number of studies on increasing the physical fitness of para-athletes, organizing their training, training and developing their basic physical qualities. A number of scientific studies were conducted by M.Kh. Mirjamolov, S.A. Yunusov, N.K. Svetlichnaya, M.S. Olimov, N.T. Tokhtaboev, I.R. Soliyev on the training of para-athletes, the specific features of the training of para-athletes of different ages and the types of training of young athletes. Today, given the popularity of para-athletics, the physical, technical, tactical and functional training of young people involved in it is one of the pressing issues facing specialists in the field.

Foreign scientists, such as S.P. Yevseyev, L.V. Shapkova, O.E. Yevseyev, have conducted a number of studies on the control of the physical fitness of para-athletes, the organization and conduct of training, and the improvement of the physical fitness of young para-athletes.

According to a number of scientists, such as A.D. Abalyan, D.G. Stepiko, M.D. Tulzukova, L.T. Davlatova, motor training is an important component, and its improvement, forming from a young age and further development, is one of the main tasks of physical education. In order to organize physical education classes in a purposeful and effective way, the physical training of students at each stage of education must be properly organized. The availability of this information is of great practical importance, especially at the stage of formation of motor



functions. The amount of loads given should be formed in accordance with the state of the growing young organism.

Today, in our country, L.Sobirova, Sh.Gofurov, Mirjamolov M.Kh., Yunusov S.A., Svetlichnaya N.K., M.S.Olimov, I.R.Soliyev, N.T.Tokhtaboyev, L.T.Davlatova and other scientists believe that the loads given to athletes in the field of physical education and para-athletes, para-sports are insufficient. Therefore, on the one hand, taking into account the health status of para-athletes, and on the other hand, there is a lot of work to be done to improve the level of development of basic physical qualities, that is, the physical fitness of para-athletes. That is, the study of this issue is relevant and requires further in-depth research.

The purpose of the research work is to develop proposals and recommendations for special and technical training based on improving the special physical fitness of para-athletes.

The objectives of the research work: 1. To determine the technique and methods of pushing in the training of para-nuclear pushers and to develop a selected set of exercises; 2. To determine the factors that develop explosive power in pushing, based on the individual characteristics of para-nuclear pushers;

The object of the research was the process of training and competition preparation of the F37 group, which is engaged in training in Paralympic sports. The subject of the research is the means and methods of training of the F37 group of para-nuclear pushers.

The scientific novelty of the research is the following:

The pushing technique was improved by introducing a complex of final strength exercises into the training process in order to identify the shortcomings of athletes who “scatter” the core;

The program for preparing athletes of the F37 group who are training in Paralympic sports for competitions has been improved based on their throwing style;

To conduct training and competition preparation of athletes of the F37 group who are engaged in para throwing based on the athlete's nosological condition.



Discussion of the results of the conducted research. The main goal of throwing in para athletics is the flight distance of the projectile, but the landing of the projectile on the ground must occur in the zone specified in the competition rules. Regardless of the shape of the projectile, the landing zone and the rules of the competition, all throws are subject to the general laws of technique. Para athletics throws require great neuromuscular tension, therefore the thrower must have good physical fitness and a high level of speed-strength qualities. However, the flight distance of the projectile largely depends on the athlete's mastery of the throwing technique.

Para athletics throws are considered single-act or acyclic exercises. Depending on the weight and shape of the projectile, different throwing methods are used. However, such diversity concerns only the thrower's form of movement, and their goal is the same - to give the projectile the greatest take-off speed, since the flight distance of the projectile depends on its initial take-off speed, take-off angle, air resistance, and take-off height relative to the landing point.

However, the effect of each of the factors is not the same. Only the initial take-off speed has a significant effect on the launch speed of the core in all cases. According to scientific research, the launch speed of the core is 14 m / s. The take-off angle is 39-42°. The running (swim or spin) phase of the movement accounts for 15%. The final power phase is 85%. In the jump and spin, the path of the shot put is 1.20 m and 2.30 m, respectively, and the final power path is 1.70 m. The total path from start to finish is from 2.90 m (in the jump) to 4 m in the spin. However, when performing the para-shot put, it should be taken into account that not every para-athlete can adapt to the spin push technique. Coaches need to implement the nosological aspects of the para-athlete in training.

Strength is manifested in the work of muscles in isometric (static) mode (when they do not change their length during tension) and isotopic (dynamic) mode (when tension is associated with a change in muscle length).

In the isotopic mode, two options are distinguished: concentric (overcoming), that is, resistance is overcome due to muscle tension as the length of the muscles decreases, and eccentric (retracting), that is, resistance is exerted simultaneously with muscle elongation, increasing their length.



It is necessary to distinguish the following main types of strength qualities: maximum strength, speed strength and strength endurance.

Maximum strength is understood as the highest potential that an athlete is capable of demonstrating during maximal voluntary muscle contraction. The maximum level of strength is the magnitude of external resistance, which the athlete overcomes or eliminates during voluntary full mobilization of the capabilities of his neuromuscular system.

The body's adaptation to strength training depends on changes in the muscles, nervous system and bone tissue. An increase in strength is associated with muscle hypertrophy, an increase in the density of contractile elements in the tissue, a change in the ratio of actin and myosin. Morphological changes in the nervous system departments lead, first of all, to the sprouting of motoneurons, an increase in ganglion cells, and functional changes lead to an increase in intra- and intermuscular coordination. Changes in the skeletal system are associated with an increase in bone density, an increase in their flexibility, hypertrophy of bone spurs at the junctions of tendons and muscles.

Thus, the main factors determining the level of strength qualities of an athlete can be divided into three main groups:

- morphological (the transverse size of muscles and fibers, the ratio of different types of fibers, muscle reactivity and their tensile properties, bone tissue changes, etc.);
- the efficiency of peripheral blood circulation, the nature of metabolic processes, etc.);
- neuromotor (impulse speed, intramuscular coordination, intermuscular coordination).

One of the most important aspects of training para-nuclear pushers is, first of all, focusing on strength training and special physical training. Taking these aspects into account, we have given training loads for special training and strength training below.

Day 1. Running with a dumbbell 1 km, general developmental exercises, special exercises, throwing the core forward 8-10 times, throwing the core back 8-10



times, throwing the core from a standing position 10-12 times, jumping throws 12-14 times, jumping exercises, final run 5 minutes.

Day 2. Running with a dumbbell 1 km, general developmental exercises, special exercises, lifting a barbell in a lying position weighing 70 kg, 2x70-80-90-,kg weights sit-ups, 6x40, 4x50, 2x60, deadlift, hanging on the horizontal bar, special stretching exercises.

Day 3. 1 km treadmill run, general development exercises, special exercises, core thrust forward, core thrust back,

Day 4. Rest.

Day 5. 1 km treadmill run, general development exercises, special exercises, sit-ups with weights, 1x10/20kg, 1x10/60kg, 1x8/90kg, 1x6/120kg, 1x/140kg, lying barbell deadlift, 1x10/20kg, 1x10/50kg, 1x6/90kg, 3x4/120kg, hanging on the horizontal bar, special stretching exercises.

Day 6. 1 km treadmill run, general development exercises, special exercises. 12-14 forward core throws, 10-12 back core throws, 10-12 standing core throws, 12-14 jumping core throws, jumping exercises, finishing run 5 min

Day 7. Rest.

Weekly cycle of shot putters in the pre-competition period.

1st day. 1 km sprint, general developmental exercises, special exercises, 8-10 times throwing the shot forward, 8-10 times throwing the shot back, 10-12 times throwing the shot from a standing position, 12-14 times jumping, jumping exercises, final run 5 min.

2nd day. 1 km sprint, general developmental exercises, special exercises, 4x70 kg barbell lying down, 2x70-80-90 kg squats, 6x40, 4x50, 2x60, deadlift hanging on the horizontal bar, special stretching exercises.

3rd day. 1 km treadmill run, general development exercises, special exercises, core thrust forward, core thrust back,

Day 4. Rest.

Day 5. 1 km treadmill run, general development exercises, special exercises, sit-ups with weights, 1x10/20kg, 1x10/60kg, 1x8/90kg, 1x6/120kg, 1x/140kg, lying barbell lift, 1x10/20kg, 1x10/50kg, 1x6/90kg, 3x4/120kg, hanging on the horizontal bar, special stretching exercises.



Day 6. 1 km treadmill run, general development exercises, special exercises. 12-14 times throwing the core forward, 10-12 times throwing the core back, 10-12 times throwing the core from a standing position, 12-14 times jumping, jumping exercises, final run 5 min

7th day. Rest.

Weekly cycle of core pushers during the competition period.

1st day. Running 1 km, general developmental exercises, special exercises. 8-10 times throwing the core forward, 10-12 times throwing the core back, 10-12 times throwing the core from a standing position, 12-14 times jumping, jumping exercises, final run 5 min

2nd day. Cross 5 km, jumping exercises, general developmental exercises.

3rd day. Rest (Bathroom, sauna,

5th day. Treadmill running 1 km, general developmental exercises, special exercises, sitting with weights, 1x10/20kg, 1x10/60kg, 1x8/90kg, 1x6/120kg, 1x/140kg, barbell deadlift 1x6/50kg, 1x8/50kg, hanging on the horizontal bar, special stretching exercises.

6th day. Treadmill running 1 km, general developmental exercises, special exercises, special exercises in the shot put, 10 times long jump from a standing position, 6x20 m side jump, 6x20 m jump on the right foot, 6x20 m jump on the left foot. final run 5 min.

7th day. Competition Treadmill running 2 km, general developmental exercises, special developmental exercises, in the competition participation.

Transition to special training aimed at developing various techniques - deeper mastery of the pushing technique, gradual increase in the volume of special exercises and training load, and constant participation in competitions allow for further improvement of the pushing technique. However, good mastery of the pushing technique is the main task required of athletes. Because the throwing technique (in the shot put) is one of the factors that directly affects the athlete's sports result.

In the para-nuclear throwing type, it is also necessary to pay attention to their (athletes') individual technique in the process of performing movements. In the



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para-nuclear throwing type, the pushing technique and the athlete's physical fitness play an important role. Shoulder and arm movements are technical factors that seriously affect the athlete's result. Today, various complex movements are called complex technical-tactical movements in some literature sources in modern wrestling. However, in the throwing types of track and field athletics, the technique is the most important factor in the athlete's effective and economical energy expenditure The main factor. Because technique is a whole body movement. In this case, the movements of the arms and legs perform coordinated movements, ensuring the effectiveness of the athlete's running technique.

Despite the fact that each training session is more focused on a specific goal, speed and endurance develop to some extent, and technique improves. If the acquired skills are correct, then the technique will also improve during speed throwing. After the throwing technique is perfectly mastered, the athlete may not even think about technique when showing results in competitions. But until then, he must master the technique at the level of art.

We also studied the physical development of para-athletes, and in general, when studying the physical training of athletes, the results of the experimental group of para-athletes changed somewhat. The growth process was in their weight. Some athletes changed their height, body, leg length, and thigh length, but since these were qualified athletes, there were no significant changes.



The results of the experimental and control group participants on the special physical fitness tests at the beginning and end of the study and their statistical characteristics (n = 8)

t/r	Groups	Experiment group			Control group		
		Control exercises	TO	TK	The difference, %	TO	TK
1.	20-meter run (s.)	4,58±0,29	3,95±0,29	13,8	4,64±0,37	4,26±0,31	8,9
2.	8 kg shot put (m.)	9,25±1,32	8,08±1,22	12,6	9,05±1,43	8,43±1,36	7,4
3.	3 kg. overhead throw (m.)	17,88±1,74	21,08±1,44	17,9	17,81±1,87	19,78±2,18	10,0
4.	Standing long jump (cm)	204,13±19,76	248,75±16,23	21,9	209,50±21,05	230,50±20,06	9,1
5.	60 kg. barbell curl (times)	10,89±0,47	12,2±0,59	12,0	10,79±0,74	11,57±0,97	9,7
6.	4 kg shot put (m.)	8,55±1,29	10,04±1,06	17,4	8,70±1,71	9,55±1,77	8,9

At the end of the study, the subjects of the experimental group improved their speed by an average of 3.95 ± 0.29 seconds in the 20-meter sprint test, the average result in the 8-kg shot put from a standing position improved by 8.08 ± 1.22 m, and the average result in the 3-kg overhead shot put improved by 21.08 ± 1.44 m. In the standing long jump test to determine the quality of explosive power, they recorded an average result of 248.75 ± 16.23 cm, and in the 60-kg barbell squat test to determine the quality of strength and agility, they recorded an average result of 12.2 ± 0.59 times.

In order to determine the quality of absolute strength, the subjects of the experimental group recorded an average result of 10.04 ± 1.06 meters in the standing 4 kg core push test at the end of the study.



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The subjects of the control group recorded an average result of 4.26 ± 0.31 s in the speed test at the end of the study, an average result of 8 kg core push from a standing position improved to 8.43 ± 0.36 m., and an average improvement of 19.78 ± 2.18 m. in throwing a 3 kg. filler ball over the head.

In the standing long jump test to determine the quality of explosive strength, an average result of 230.5 ± 10.06 cm was recorded, while in the standing long jump test to determine the quality of strength and agility, an average result of 60 kg. In the barbell squat test, the average result was 11.57 ± 0.97 times. In order to determine the quality of absolute strength, the experimental group of subjects achieved an average result of 9.55 ± 0.77 meters in the standing 4 kg core push test at the end of the study.

As can be seen from the results of the study, the absolute increase was significantly higher in the Experimental group than in the Control group.

In conclusion, in the case of para-nuclear pushers, the researchers believe that the development of speed-strength qualities affects the increase in sports results, since throwing movements in the push are one of the main factors ensuring the long flight of powerful projectiles, therefore, it is relevant to study the influence of physical qualities on sports results, that is, there are many changes in them.

The development of the general physical fitness of para-nuclear pushers in studies has shown that the faster the age increases, the faster the level of formation of physical qualities occurs, and according to the data studied, it was concluded that the development of the general physical fitness of athletes changes significantly, that is, the aspects of physical training, formation with the help of physical exercises, depending on the various functional and physiological states of the athlete's body, are shown.

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