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The effectiveness of the annual load plan in preparing young hammer throwers for competitions

Yusupov Ibrohimjon Abdumutal ugli [1]

[1]Uzbekistan state university of physical culture and sports, Chirchik, Uzbekistan

Abstract

Purpose: It consists in the effective preparation of the children's and youth sports school's hammer throwers aged 15-16 sports competitions at annual training camps.

Methods: To solve the tasks assigned to us, the following methods were used: Analysis of scientific and methodological literature on the research topic, pedagogical observation, pedagogical experience, questionnaires, pedagogical tests, instrumental method, methods of mathematical statistics.

Results: We see that the level of physical fitness of the control group subjects after the study increased compared to the general level of physical fitness of athletes when passing control samples at the end of the study. (Throwing a 69 kg projectile forward with two hands averaged 13.58 cm, throwing a 6 kg projectile with two hands forward from below averaged 14.55 cm, the long jump from a standing position averages 272 cm, the triple jump averages 728 cm, the 40 kg barbell squat averages 45 times, and the athletes' personal results are 50.85 cm)

Conlcusion: In hammer throwers' training, 12 months were divided into two periods, i.e. training planning in which 60 throws per week with a shortened rope of hammer, 40 throws with an elongated rope, 4x10 continuous jumps forward on a pair of legs were used from the 1st to the 8th week, and from the 9th to the 16th week-50 throws with a shortened rope per week. 60 throws with a normal hammer, 12x6 general physical exercises with a 15 kg barbell, From week 17 to 20, 40 throws with a shortened hammer, with a normal hammer 50 throws, 70x8 times, 80x6 times, from the 21st to the 24th week, 80 throws with normal hammer. From week 1 to Week 8, the number of throws is planned to be 60/40, with a total intensity of 60-70%, with the main focus on the technique of throws. At 21-24 weeks, the total intensity of throws was 90-100%.

In our study, the annual workload was developed, focusing on the general physical fitness and anthropometric parameters of students, and it was found that the anthropometric parameters of an athlete depend on sports results.

Keywords: The effect of trunk length on growth in hammer throwing, the study of rotation, overtaking projectile, power consumption, anthropometric indicator.

Introduction

Admission of pupils to children's and youth sports schools on the basis of their giftedness, taking into account individual characteristics, anthropometric indicators and physical fitness will have a good impact on achieving the intended goal. We know that today the issues of selection, involvement in training and distribution of training loads have been developed properly in accordance with the set goal, but there are also specific shortcomings in the preparation of athletes for competitions in throwing sports, the presence of which we found out in the process of analyzing sports results. Therefore, the effective training of throwing athletes in preparatory classes is one of the most pressing issues today.

Methods

It consists in determining the anthropometric indicators and the level of physical fitness of the throwers of children's and youth sports schools. Analysis of scientific and methodological literature on the research topic, pedagogical observation, pedagogical experience, questionnaires, pedagogical tests, instrumental method, methods of mathematical statistics.

Results and discussion

In total, we conducted a study among 12 pupils. The study was organized and conducted during athletics classes for students of grades 9-11 of the 18th school of the city of Chirchik, Tashkent region. The first stage was held in January 2019 according to our training plan, and the final stage was held in January 2020. In the course of the study, we studied anthropometric indicators that influence and are useful for throws. First, we determined the body structure and dimensions of the athletes selected for hammer throwing. In athletes of high and medium height, height, arm and swing length and leg length were measured.

When studying the body structure of throwers, the initial dimensions of the training group were 176 cm, and the average body

weight was 77 kg. When transfering the body structure into individual sizes, the average swing length was 177 cm, and the average arm length was 74 cm. To study the level of physical fitness of our test throwers, we asked athletes to throw a 6 kg projectile from the bottom forward with two hands and throw it with two hands from the bottom back. We used the long jump exercise from the spot to determine the speed at which the throwers push -off, this jumping exercise is an auxiliary exercise for quickly overtaking the thrower before the final, as well as to give the final strength.

Table 1. Anthropometric parameters of experimental and control group subjects before the experiment

Body structure	Experimental group	Control group
Height	176	177.8
Body weight	77	80.5
Swing length	177	178.6
Arm length	74	74.6

Note. *The numbers shown in the tables are the arithmetic mean.*

When studying the body structure of the control group throwers, the average height was 177.8 cm, and the average body weight was 80.5 kg. If we take the body structure in individual measurements, then the average swing length is 178.6 cm, the average arm length is 74.6 cm, the average leg length is 100.7 cm, hip length is 60.9 cm, shin length is 39.9 cm, waist circumference is 93.8 cm, average chest circumference is 109.6 cm.

The average results obtained from the control group throwers: the average result of throwing 6 kg projectile forward from below with two hands is 13.33 cm, the average result of throwing backward from below with two hands is 14.36 cm, the measurement of arm strength in dynamometry averages 55 kg in the right hand and 58.8 kg in the left hand, an average of 277 cm in the long jump from a place and an average of 718 cm in the triple jump from a place. On average, in squats with a barbell weighing 40 kg were 44 times, the results shown by athletes before the study averaged 44.12 cm. In order for the athlete to achieve better results in hammer throwing, along with heavy loads, we have included in the training schedule a change of the standard hammer, that is, hammer with a shortened rope, standard hammers and elongated hammers.

Table 2. Indicators of physical fitness of the experimental and control groups of subjects before the experiment

Exercises	Experimental group	Control group
Throwing a 6 kg projectile forward	14.30	13.33
Throwing a 6 kg projectile backward	15.38	14.36
Forward jump from place	278	277
Squats with a barbell 40 kg	50	44
Personal results	50.46	44.12

Note. *The numbers shown in the tables are the arithmetic mean.*

Acceleration was achieved by working with a shortened rope, a shortened rope allows the athlete to balance the ball due to the early placement of the receiving leg, and the rotation of the rope close to the center makes it difficult to balance for the thrower. An athlete who is able to perform rotations while maintaining balance in this difficulty can freely perform rotations due to centrifugal force with a standard hammer.

Working with hammer which's rope is

elongated, is not performed as intensively for the thrower as the rotation of the hammer with a shortened rope. That is rather performed slowly, while the athlete tries to pass the projectile onto the field as quickly as possible. The centrifugal force slows down due to distance when the thrower passes the projectile onto the field, and the athlete has more opportunities for precise movement.

In the second planned cycle, the throwers' training volume increases to the loads given in the first cycle, 8 times for throwing per week, 5 times for general physical training, weighted barbells of 10 kg. 4 weeks before the competition, the number of loads in training is reduced from 4 times a week, and in the last two weeks the number of throws is reduced to 20. In the first cycle, the last number of throws was 120. Two weeks before the competition, the number of throws 100 times in the first week and in the last before the competition makes 80 throws per week. So, in the last week, the daily number of throws is 20 times, the intensity of throws is 85-90% of the total.

According to the results of our study, the athletes of the experimental group worked out the training load created by us under our supervision (see table 5). The loads given to the athletes did not cause difficulties and injuries. Also, at the end of the study conducted with the subjects of the experimental group, we see that the athletes' anthropometric parameters have changed and their weight has increased. If the average height of the subjects before the study was 176 cm, then by the end of the study it increased by 1.9 cm (177.9), and the average body weight before the study was 77 kg and increased by 3.5 kg (80.5). At the end of the study, Table 5 shows that the length of the arms, swing, legs and hips also increased, and the circumference of the waist and chest increased in a positive way.

We see that the level of physical fitness of the athletes of the experimental group has changed significantly as a result of performing training loads according to the plan and in accordance with the planned training loads for young athletes aged 17-19 years. The results obtained from the subjects at the end of the study: throwing a 6 kg projectile forward from

Table 3. Anthropometric parameters of experimental and control group subjects after the experiment

Body structure	Experimental group	Control group
Height	177.9	180.3
Body weight	80.5	84
Swing length	178.9	181
Arm length	75.2	75.3

Note. *The numbers shown in the tables are the arithmetic mean.*

Table 4. Indicators of physical fitness of the experimental and control group subjects after the experiment

Exercises	Experimental group	Control group
Throwing a 6 kg projectile forward	14.75	13.58
Throwing a 6 kg projectile backward	15.83	14.55
Forward jump from place	281.8	282
Squats with a barbell 40 kg	54	45
Personal results	54.11	50.85

Note. *The numbers shown in the tables are the arithmetic mean.*

below with two hands 14.75 cm, throwing a 6 kg projectile backward with two hands 15.83 cm, long jump from a place 281.8 cm, squats with a barbell 40 kg 54 times, and we see that personal results increased on average by 54.11 cm.

Conclusion

According to the results of the test reflecting the physical fitness of the throwers, we see that the indicators observed at the beginning of the study changed at the end of the study. As a result of pedagogical testing, it was noticed that the qualities of speed, dexterity and strength are formed in a peculiar way and are formed at the level of the impact of the loads they receive in training. The difference in the participation of athletes in competitions and the results showed that the method we used is effective.

In the process of practical application of annual loads for athletes, we were convinced that it is very important to pay special attention to the general physical fitness of throwers, and it was found out that the anthropometric indicators of an athlete are also considered one of the necessary aspects.

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AUTHOR BIOGRAPHY:



Ibrohimjon Abdumutal ugli YUSUPOV
Employment:
Independent researcher at Uzbekistan state university of physical education and sport
Degree:
MD
Research interests:
Track and Field, Sports Physiology, Biomechanics, Physical Education, individual sports.
E-mail: info@jtsu.uz