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APPROBATION OF THE METHODOLOGY FOR THE USE OF POWER, STATODYNAMIC EXERCISES USING THE "ISOTON" TECHNOLOGY IN THE TRAINING PROCESS OF YOUNG HAMMER THROWERS

Research article

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Abstract

The report examines the results of a study on the use of the technique of the statodynamic regime of performing strength exercises, and the impact on the athletic performance of young hammer throwers aged 13–14 years. The advantages and disadvantages of using the statodynamic regime of strength exercises before other techniques are considered.

The current level of sports development is characterized by increasing competition on the world sports arena and puts forward increasing demands to improve the effectiveness of the training process and increase the pace of preparation of reserves of big sports. Physical fitness and the level of development of a complex of special motor qualities largely determine the potential of an athlete to achieve high sports results. Athletics throwing refers to such physical exercises, which are characterized by a high, manifestation of strength and speed-strength qualities of athletes. Research, as well as practice, has established that the athletic result in throwing is due to the level of development of the strength and speed-strength qualities of the athlete. An important theoretical achievement of studying the problem of strength and speed-strength training of athletes is the provision that the development of physical qualities should be carried out simultaneously with the improvement of the technique of sports movements.

Keywords: hammer throwing, young athletes, development of strength abilities, training stage of sports training.

АПРОБАЦИЯ МЕТОДИКИ ПРИМЕНЕНИЯ СИЛОВЫХ, СТАТОДИНАМИЧЕСКИХ УПРАЖНЕНИЙ ПО ТЕХНОЛОГИИ «ИЗОТОН» В ТРЕНИРОВОЧНОМ ПРОЦЕССЕ ЮНЫХ МЕТАТЕЛЕЙ МОЛОТА

Научная статья

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Аннотация

В докладе рассмотрены результаты исследования об использовании методики статодинамического режима выполнения силовых упражнений, и влиянии на спортивные результаты юных метателей молота в возрасте 13-14 лет. Рассмотрены преимущества и недостатки применения статодинамического режима силовых упражнений перед другими методиками.

Современный уровень развития спорта характеризуется усилением конкуренции на мировой спортивной арене и выдвигает все возрастающие требования к повышению эффективности тренировочного процесса и увеличению темпов подготовки резервов большого спорта. Физическая подготовка и уровень развития комплекса специальных двигательных качеств во многом определяют потенциал спортсмена для достижения высоких спортивных результатов. Легкоатлетическое метание относится к таким физическим упражнениям, которые характеризуются высоким, проявлением силовых и скоростно-силовых качеств спортсменов. Исследованиями, а также практикой установлено, что спортивный результат в метании обусловлен уровнем развития силовых и скоростно-силовых качеств спортсмена. Важным теоретическим достижением изучения проблемы силовой и скоростно-силовой подготовки спортсменов является положение о том, что развитие физических качеств должно осуществляться одновременно с совершенствованием техника спортивных движений.

Ключевые слова: метание молота, юные легкоатлеты, развитие силовых способностей, тренировочный этап спортивной подготовки.

Introduction

After analyzing the literature on the topic of the study, we can say that specialists do not have an unambiguous opinion about the dosage and performance of strength exercises.

In recent years, there has been a trend in the world athletics community to involve young athletes in elite sports. This is confirmed by the holding of major international competitions (Youth Olympic Games, European championship under 18 years old) and national (Russian championships under 18 years old, and under 16 years old) [3, P. 16]. The presence of competitions of such a high level makes young athletes choose a sports specialization earlier, and forces unscrupulous coaches to use the means and methods of training used by athletes of a higher class in order to quickly obtain high results. Forgetting that forcing long-term training is unacceptable in the training of a young athlete. This threatens to deplete the adaptive reserves of the body of a young athlete, as a result of which the risk of injury and loss of health increases [1, P. 224], [2, P. 184].

Research methods and principles

The purpose of the study is to study the influence of the methodology of the static-dynamic mode of strength exercises on young hammer throwers.

Research objectives:

Results of research 1 task.

At the present stage, in the analyzed literature on the research problem, there are methods for preparing highly qualified athletes, and for working with a reserve that should perform at the international level, there is no objective data on the training process and directly on the preparation of young athletes for international starts.

1. Analyze the scientific and methodological literature on the research problem;

2. To develop and test complexes of strength exercises performed according to the method of the static-dynamic method;

3. Check the developed complexes in a pedagogical experiment and form conclusions.

Research hypothesis: it was assumed that the use of a static-dynamic mode of performing strength exercises in the training of young hammer throwers has an advantage over other models of performing strength exercises.

Main results

3.1. Organization of the study

The study was carried out in three stages. The study involved young athletes aged 13–14 years old, undergoing training at the training stage, focused on hammer throwing.

Athletes were divided into 2 groups – experimental and control, which included 8 boys and 8 girls. At the first stage, the current testing of all participants in the experiment was carried out.

Groups were observed for 18 weeks and covered two stages: preparatory (weeks 1-12) and competitive (weeks 13-18).

3.2. Complexes of strength exercises

In the process of training young throwers and hammer throwers, at the stage of initial specialization, an individual throwing technique is formed, which for various reasons does not always have a rational basis.

The stage of in-depth specialization is fundamental in the growth of highly qualified athletes. At the stage of in-depth specialization, errors in physical and technical training are especially acute, which hinders the further growth of sports results.

The development of strength training complexes was carried out on the basis of a comparative analysis of the physical fitness of young throwers and hammer throwers with model characteristics, strengths and weaknesses in physical training were established, and an individual training strategy for both boys and girls at the stage of in-depth specialization was determined [5, P. 66], [7, P. 30].

Strength exercises for the experimental group were selected with a focus on the main muscle groups, and when using strength exercises, the principles of statodynamic training "IZOTON" were used [4, P. 64].

Basic principles of "IZOTON":

1. Strength exercises are performed slowly, without muscle relaxation throughout the approach (exercises can be performed with your own body weight);

2. The duration of each approach is 45-70 seconds. A reduction in the duration of the approach is allowed, but not an increase;

3. Movements are performed at a slow pace;

4. You should use the greatest possible amplitude of flexion and extension in the joints. The weekly microcycle of the experimental group consisted of 5 training sessions. Classes in a weekly microcycle were planned according to the principle of a more favorable combination of the training load. Two sessions in a weekly microcycle were devoted to strength training, the focus of which changed every 4 weeks. During the study, the experimental group used more than 50 different strength exercises [4, P. 64].

At the competitive stage, the closer to the main start, the strength-oriented exercises were reduced, and gave way to speed-strength exercises.

The control group used mainly speed-strength exercises (classic snatch, barbell cleanup, etc.), and the exercises did not change at the entire stage of preparation. The control group used 26 strength exercises throughout the study.

Both groups were tested at the beginning and end of the study, for more complete control, control exercises of the following directions were used: strength, speed-strength, techniques for performing the main exercise (hammer throw) (Table 2). Anthropometric measurements were also made: height and body weight, at the beginning and end of the study (Table 1) [9, P. 29].

Table 1 - Initial and final anthropometric data (average) of the studied groups

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Group	Sex	Height (cm)		Body weight (kg)	
		Initial data	Final data	Initial data	Final data
C.G.	m	166	166	66	72
	f	161	160	55	58
E.G.	m	165	165.5	52.5	54.75
	f	162	163.5	60.5	57

Note: E.G. – experimental group; C.G. – control group

Table 2 - Initial and final results of the experiment

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Control exercises	sex	Initial data		Final data		
		E.G	C.G	E.G	C.G	
Run 30 m, sec	m	5.7	5.8	5.5	5.6	
	f	6.1	6.9	5.9	6.4	
Standing long jump, m	m	2.1	2.2	2.1	2.2	
	f	1.9	1.9	2.1	2	
Triple jump from a place, m	m	5.9	5.8	5.9	5.7	
	f	4.7	4.6	4.8	4.8	
Squats for 1 min, quantity	m	51	43	55	40	
	f	36	28	35	30	
Push-ups for 1 min, quantity	m	38	35	37	35	
	f	33	23	35	30	
Torso lift for 1 min, quantity	m	42	35	44	35	
	f	38	25	35	30	
Medicine ball throwing (standing facing the sector), m	4 kg	m	8.0	8.2	8.3	8.1
	3 kg	f	7.15	7.8	7.5	7.7
Throwing a stuffed ball (imitation of the final effort), m	4 kg	m	7.5	8	8.3	8.4
	3 kg	f	7.3	8.2	7.5	8.1
Hammer throwing (lightweight projectile), m	3 kg	m	31	30	35	37
	2 kg	f	22	22	32	34
Hammer throw (competitive projectile), m	4 kg	m	24	27	31	29
	3 kg	f	20	21	25	25

Note: E.G. – experimental group; C.G. – control group

Conclusion

The results of the conducted control tests and the results of anthropometric data allow us to draw the following conclusions.

The time of the study coincided with the winter competitive season. Sports results of groups:

- Experimental group: 1 winner of the All-Russian competitions, 2 winners of the championship of the subject of the Russian Federation, 1 finalist of the All-Russian competitions, 6 finalists of the championship of the subject of the Russian Federation;

- Control group: 1 winner of the All-Russian competitions and the championship of the subject of the Russian Federation.

1. According to the results of the study, control exercises of a power orientation (push-ups, squats and lifting the torso) increased in boys and girls in both groups, with the exception of squats in boys from the CG (-3) and girls from the EG (-1), push-ups in boys from the EG (-1) and lifting of the torso of the girls from the EG (-3);

2. The results of speed-strength control exercises increased, with the exception of the long jump, from a place in young men in both groups. The result of the boys of the control group in the triple jump from the spot worsened;

3. With the growth of technical skill, the results in the main activity (hammer throwing) increased. Boys from the EG showed the greatest increase in the result (7 m) than boys from the CG (3 m). In girls of both groups, the results at the end of the study improved and became equal;

4. Anthropometric data show that the performance of strength exercises in the static-dynamic mode does not give a large increase in body weight. In the young men of the experimental group, the increase in body weight was not more than 2.25 kg, compared with the young men in the CG, in whom the increase in body weight was 6 kg (10% of body weight), which is not desirable at this age, since a large weight gain is fraught with problems with musculoskeletal – musculoskeletal system and cardiovascular system. In the girls of the experimental group, the body weight decreased by 3.5 kg, and in the control group, they gained 3.5 kg in weight;

5. In the control group, where strength exercises with a barbell were used, it was found that the height of the boys remained the same, in the girls of the control group, the height decreased by 1 cm. in girls (1.5 cm);

6. Since statodynamics makes it possible to eliminate the weight growth factor of weights, and the intensity of the exercise is controlled by the athlete himself, the risk of injury is reduced.

The effectiveness of mastering complex technical exercises largely depends on the level of physical qualities and the degree of puberty.

The obtained data on the actual and necessary level of physical development of young throwers and hammer throwers at the stage of in-depth specialization open up a space for specialists to work creatively on the training process, adhering to the principle of comprehensive development of athletes.

Конфликт интересов

Не указан.

Рецензия

Все статьи проходят рецензирование. Но рецензент или автор статьи предпочли не публиковать рецензию к этой статье в открытом доступе. Рецензия может быть предоставлена компетентным органам по запросу.

Conflict of Interest

None declared.

Review

All articles are peer-reviewed. But the reviewer or the author of the article chose not to publish a review of this article in the public domain. The review can be provided to the competent authorities upon request.

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