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DEVELOPMENT OF THE BALLISTIC EFFICIENCY OF JAVELIN THROWERS

Teacher: Muxammadjonov Muslimbek Muxsinjon o‘g‘li
Department of Education, Kokan University
muslimbekmuxsinvich@gmail.com

Relevance of the topic: Undoubtedly, today in world sports there is an increase in irreconcilable disputes, and accordingly, the training of athletes is built on a certain system and creates an image compatible with science.

Although the athletes of our country have achieved certain achievements in the world arenas in javelin throwing, it is necessary to develop training structure programs in order to maintain these indicators and achieve new results. In the course of the current competition, it is necessary to achieve high sports results based on the improvement of the necessary abilities in the system of training athletes in javelin throwing. For this, it is necessary to further develop the ballistic performance of javelin throwers. This is one of the urgent tasks that must be solved today in the system of training athletes.

The purpose of the work: Selection and implementation of exercises aimed at increasing the ballistic performance of javelin throwers.

Tasks of the research: In order to achieve the goal set before us, the following tasks were defined.

- scientific methodological literature on the subject
- to determine the level of initial physical development of the selected athletes.
- to determine the results of ballistic performance of athletes through certain tests.

Object of research: students of the training group of the University of Physical Education and Sports of Uzbekistan studying athletics.

Research subject: Training training planning system and formation of the training process aimed at increasing the ballistic performance of javelin throwers.

Research methods:

- Analysis and generalization of scientific and scientific methodological literature on muscle condition.
-Assessment and analysis of ballistic performance of javelin throwers.
- Analyzing the process of training cycles and training loads aimed at increasing ballistic performance.
- Pedagogical observation.
-Mathematical analysis method.

Ballistic work is aimed at overcoming resistance by the muscles in a very short time, and according to its execution, it enters into dynamic work. In the ballistic type of work, the muscles show a large force for a short period of time, and this work is expressed by the formula A=F.t (A-work, F-force, t-time).

The training group under study had athletes perform exercises such as pull-ups, push-ups with hands on the floor, and sit-ups with arms extended forward for three months to improve ballistic performance. z-weight and a number of weightlifting exercises were used extensively. As a result, along with strength, the physical quality of speed developed, and most importantly, movement coordination was preserved. One of the main tasks of javelin throwers is to maintain coordination of movement. Regular work with heavy stones can cause loss of movement coordination. As a result, it was found that the creatine reserve in the muscle fibers accumulates excessively and has a negative effect on the movement technique.

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In the study, the following training tools aimed at developing ballistic work efficiency were used during training of javelin throwers:
-Taking thirty percent of the weight of the body weight on the shoulders, in a semi-sitting position, return the response reaction to the trainer's whistle, jumping up.
-Repeatedly jumping and landing on a 1-1.10 cm pole in a semi-sitting position.
- Pushing up with the hands in the position of putting the hands on the ground (conventional).
-Repeated jumping while holding a barbell of thirty percent of the body weight on the shoulders.
-Putting a barbell of 40 percent of body weight on the shoulders and sitting at maximum speed for thirty seconds.
-Exercise from the minimum weight by lifting the barbell up to the maximum weight and lowering it to the optimal weight. (variable method).
-Jumping from a thirty-centimeter pole on one leg and jumping up repeatedly.
-Running up and down from a certain height.
Training aimed at the development of similar ballistic efficiency was used more widely. This proved effective at the end of the experiment. The general indicators of the level of physical development of the athletes of the experimental and control groups are shown in the table below.

Pre- and post-study results of experimental and control group subjects
Table 1.

Groups	Standing long jump (cm)	30 m sprint (sec)	60 m sprint (sec)	Throwing the nucleus forward with two arms (m, cm)	Throwing the core back with two hands (m, cm)
Experimental group	2,78	4,36	7,47	15,97	16,71
	2,89	4,16	7,22	16,4	17,22
	0,11	0,20	0,25	0,43	0,51
	4,0	4,6	3,3	2,7	3,1
T	2,4	2,8	1,2	5,4	1,1
P	P<0,05	P<0,05	P>0,05	P<0,05	p>0,05
Control group	2,77	4,37	7,51	15,95	16,85
	2,86	4,23	7,36	16,1	17,13
	0,09	0,14	0,15	0,15	0,28
	3,2	3,2	2,0	0,9	1,7
T	2,5	2,8	0,5	1,5	0,7
P	P<0,05	P<0,05	P>0,05	p>0,05	P>0,05

Analysis of the obtained results: A number of pedagogical experiments aimed at testing the ballistic performance of javelin throwers were carried out. During the general physical training of javelin throwers, the rotational method of training (stopping at stations) was used more widely.

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The results obtained after the experiment showed that standing long jump in the experimental group increased by 11 cm by 4%, while in the control group it increased by 9 cm by 3.2%. The 30-m sprint increased by 4.6% per 20 doliseconds in the experimental group, and by 3.2% per 14 doliseconds in the control group. The 60-meter sprint increased by 3.3% per 25 seconds in the experimental group, and by 2% per 15 seconds in the control group. The results of the two-arm forward lunge increased by 43 cm by 2.7%, while in the control group, 15 cm changed by 0.9%. We can see that the results of the two-arm back throw in the experimental group changed by 51 cm by 3.1%, while in the control group it increased by 28 cm by 1.7%. Although some indicators of the results of the control group have improved, but if we pay attention to the level of significance of the obtained results, the level of significance of the indicators of the experimental group is slightly higher compared to the indicators of the control group, which is better for the experimental group. indicates that the effectiveness of the tools and methods used is superior to the tools and methods used in the control group.

Conclusion: In conclusion, it can be said that the level of significance of the training tools and methods used in the experimental group is slightly higher than the results shown by the control group, and we can achieve certain achievements by spreading this more widely. In addition, the javelin throwing technique is a technically complex process, and it is important to create a general physical training base without negatively affecting the effectiveness of the technique. The results of javelin throwers are directly related to their physical qualities, in which the development of the athlete's ballistic performance is clearly visible. If the qualities of strength and speed of the athlete are well developed, but the quality of agility is not sufficiently formed, the technician will have difficulties in performing the movement as a whole, which in turn leads to the stagnation of the athlete's results. Such problems are solved based on the skills of the coach.