

IMPROVING THE PERFORMANCE OF SPEED AND STRENGTH ABILITIES OF ATHLETES AGED 11-12 YEARS BASED ON THE USE OF A SET OF SPECIAL EXERCISES

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Abstract

The article presents the material of the results of a pedagogical study devoted to improving the development of speed and strength abilities of young athletes aged 11-12 years of the second year of study in a specialized sports school. The material of the article contains special tools and methods implemented in special complexes and the results obtained at the end of the study.

Keywords: young athletes aged 11-12, exercise complexes, speed and strength abilities, means, methods.

Introduction

Relevance. In the system of the modern educational and training process for track and field athletes, a significant role is assigned to the optimization of physical training methods; this area is a leading factor in the modern system of sports training. In the physiology of sports it is known that the sensitive period for the development of motor abilities is primary school age; it is during this period of time that active morphofunctional changes occur in the body of children. It should be noted that the dynamics of the natural increase in motor abilities in different periods of development of the growing body of young athletes is not the same; this directly depends on the natural process of biological maturation at different stages of development.

In sports theory and practice, a significant part of the research is devoted to the development of speed-strength qualities of athletes, but to date there has been insufficient research aimed at improving the means and methods of speed-strength training for athletes of the initial training group, in the conditions of a specific region and directly a specific sports organization. There is insufficient available data on the regulation of load volumes, its dosage and intensity in immediate conditions; load planning does not reflect their optimal volumes and the dynamics of the development of motor qualities, in our case, speed-strength, in the process of the year-round educational and training process.

Purpose of the study

To develop and, within the framework of practical testing, justify the use of a set of special exercises aimed at developing the speed-strength abilities of boys aged 11-12 years old involved in athletics.



Organization of the study

The study was carried out on the basis of the MBU “Sports School of Olympic Reserve in Athletics” in the city of Abakan, Republic of Khakassia. The sample of subjects consisted of 26 athletes aged 11-12 years: the experimental group - of 12 athletes (boys), the control group - of 14 young athletes. The study groups included young athletes training in initial training groups of the second year of study. The control group studied according to the program provided for the corresponding period of study, the experimental group with an emphasis on the proposed special set of exercises aimed at developing speed-strength abilities.

Research results and discussion

The effectiveness of the educational and training process is ensured by activities that directly depend on the planning of the annual cycle of educational and training work, directly along with the successful solution of all training tasks; only in this case can the level of special physical fitness of athletes be increased. Taking this into account, the positive dynamics of the development of speed and strength indicators is ensured along with the general organizational structure of the entire educational and training process, with full control of the selection of means and training load.

Practice shows that the dynamics of the level of speed-strength indicators in track and field athletes increases relatively smoothly towards the competitive period. The total volume of speed-strength load gradually increases towards the middle of the preparatory period, and gradually decreases towards the end of the period. Our analysis of specialized literature showed that the development of speed-strength abilities in young track and field athletes must be carried out throughout the entire academic year. To conduct the study, a set of exercises was developed aimed at developing speed-strength abilities, which included running and jumping exercises, and throwing. The exercises we proposed in various combinations were used in the first half of the main part of the training session. Speed-strength means were used during almost every weekly microcycle of the preparatory period as follows: special running exercises - Monday, jumping exercises - Wednesday, medicine ball throwing - Friday, Saturday - endurance running followed by a small speed-strength load.

In the process of performing educational tasks, we used a repeated method, characterized by the fact that when performing motor work in a serial manner with a load of equal intensity of 75-80% of the maximum, the duration of work and periods of restorative rest were determined on the basis of an individually differentiated approach, taking into account the adaptive capabilities of the body every child.

The most prepared students used variable and interval methods:

- the variable method was used when performing a series of motor work with variable intensity, i.e., during the activity, the tempo was changed according to a signal, from low to high and vice versa;
- the interval method was used among athletes with higher levels of physical fitness and adaptive capabilities of the body. The work was carried out with a short period of execution and an intensity of about 90% of the maximum, restorative rest corresponded to the principle of rapprochement. The final weekly training cycle consisted of a training session consisting of



a long run based on a uniform method for 15-20 minutes, after restorative rest, 2 series of 3 speed-strength exercises were performed.

To confirm the research hypothesis and identify the effectiveness of using the developed complex aimed at developing the speed-strength ability of young track and field athletes aged 11-12 years, a pedagogical experiment was conducted during training sessions. At the ascertaining stage of the study, testing was carried out in order to determine the level of development of the studied motor quality, in order to record indicators for further monitoring of the effects of the experimental complex on the body of those involved. The second task of this stage of the study was the formation of control and experimental groups, and further comparison of the obtained indicators.

Control testing carried out at the end of the pedagogical experiment revealed that there were positive changes in the indicators in both study groups in comparison with the initial data. However, the rate of increase in the speed-strength abilities of young athletes in the experimental group, training using the proposed complex, turned out to be at a higher level with significant differences between the ascertaining and control indicators $p < 0.05$.

Thus, in the test "Throwing a medicine ball weighing 1 kg with both hands from behind the head," which was used to determine the level of development of the speed-strength ability of the muscles of the back of the upper limbs and shoulder girdle, the growth rate in the experimental group was 12.2%, in the control group – 4.6%.

The "Bending-extension of the arms while lying on the floor for 10 seconds" test was used to determine the level of development of the speed-strength abilities of the extensor muscles of the upper limbs and shoulder girdle. In the experimental group there was an increase of 47.2%, in the control group the increase was by 21.0%.

Table - Indicators of the level of development of speed-strength abilities of young athletes aged 11-12 years before and after the pedagogical experiment ($X \pm \sigma$)

Тесты		До	После	Прирост %	Достов.
Метание набивного мяча весом 1 кг двумя руками из-за головы (см)	ЭГ	306,8±4,7	349,2±6,3	12,2	$p < 0,05$
	КГ	307,1±5,0	321,9±4,9	4,6	$p > 0,05$
Сгибание-разгибание рук за 10 сек в упоре лежа на полу (кол-во)	ЭГ	4,6±0,9	8,7±0,6	47,2	$p < 0,05$
	КГ	4,9±0,7	6,2±2,5	21,0	$p < 0,05$
Подъем туловища из положения лежа на спине за 30 сек (кол-во)	ЭГ	16,2±2,5	24,8±1,9	34,7	$p < 0,05$
	КГ	15,9±1,7	18,0±2,6	11,7	$p < 0,05$
Выпрыгивания из положения «упор присев» за 20 сек (кол-во)	ЭГ	11,4±0,3	17,9±1,1	36,4	$p < 0,05$
	КГ	11,3±0,3	13,4±1,2	15,7	$p < 0,05$

Positive changes were also revealed in the performance of the test "Raising the body from a supine position on a gymnastic mat in 30 seconds," which was used to determine the level of development of speed-strength abilities of the abdominal muscles. In the experimental group,

the increase in results occurred by 34.7%, in the control group the increase in indicators occurred by 11.7%.

The changes that occurred in the test “Jumping from the position of “standing-crouching” to the position of “bending over, arms up in 20 seconds”, which was used to determine the level of development of speed-strength abilities of the muscles of the lower extremities, in the experimental group the increase was 36.4%, in control group – 15.7%.

Conclusions

Analysis of the data obtained allows us to state that in the experimental group there were significant positive changes in the indicators of speed-strength abilities. In the control group, during training sessions, not enough attention was paid to the modernization of the means used, aimed at developing speed-strength abilities; motor work was aimed only at solving general problems, however, the increase in the studied motor quality has a positive basis.

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