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Development of coordination skills in primary school students using a circuit training method

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Abstract

Purpose: Development of suggestions and recommendations on the use of circuit training method for the development of dexterous qualities of primary school students in physical education classes.

Methods: The following methods were used during the study: 1) Analysis of literary sources, research papers and scientific articles in which scientific research, scientific and practical experience of foreign and domestic scientists in the field of sports were studied and analyzed 2) A pedagogical test during which the technical actions of young gymnasts players during competitive activities were monitored 3) Mathematical and statistical calculation, in which the coefficient of useful movement of technical movements of young athlete's in attack was calculated using a mathematical formula 4) Methods of pedagogical control were used.

Results: During this experiment, there was a significant increase and improvement in the results for three of the 6 tested indicators for determining the development of coordination abilities in the EG, where an experimental program using a circuit training method aimed at developing coordination abilities was introduced, and significant statistical differences appeared ($p<0,05$), in three more: shuttle run 3x10 m, catching the ball after throwing it up, and in the rope jumping tests there were much more reliable shifts, and more reliable statistical differences appeared ($p<0,01$) .

Conlcusion: Thus, the results of pedagogical experience allow us to conclude that the proposed methodology, improved by us using option 3 of the extensional interval method of circuit training aimed at developing coordination abilities, provided much more serious changes in the indicators of physical fitness of children 7-8 years old.

Keywords: circuit training method, coordination abilities, sensitive periods, primary school students, physical education classes.

Introduction

Currently, the improvement of the development of mass sports aimed at the formation of physical culture and a healthy lifestyle among the population, the involvement of all segments of the population, in particular young people, in physical culture and sports, created on the initiative of our President Sh.M. Mirziyoyev, testifies to the concern of our government for the physical development of the population.

The sphere of physical education in the activities of secondary educational institutions of our country is to strengthen the health of children and teenagers by increasing their physical fitness using new effective methods. Based on this, it can said that in the system of physical education and sports of our independent state, increasing the level of their general physical fitness through the development of motor qualities of schoolchildren is becoming fundamentally relevant.

The educational process of schools of general secondary education is the formation of the foundations of basic physical training, the formation of the necessary foundation of motor skills and qualifications for students, provides for their harmonious development in all respects. Physical training is a necessary component of health, and its improvement is one of the main tasks of school physical education (1).

For the reasons that have arisen, it is currently impossible to conduct physical education classes every day of the week. Therefore, in order to improve the physical education of students, many experts suggest using a circuit training method for maximum purposeful development of physical qualities (5).

The circuit training method is an organizational and methodological form of physical exercises, in which the development of several muscle groups is carried out alternately, mainly aimed at the complex development of motor qualities. The main task of circular training is to develop the motor qualities of a person engaged in a strict selection of individual exercises for a limited time. These classes have a beneficial effect on the overall physical fitness, mental state and health of students (2, 6).

The rapid development of the coordination abilities of school-age children, taking into account the sensitive periods of physical development in the main part of the lesson, using exercises in the style of circuit training, at an accelerated pace, allows you to

increase the density of physical education, improve the quality of education, increase labor productivity (3, 4).

Results and discussion

Before the experiment, the first-graders were examined, and the following tests were used to determine and assess the level of development of their coordination abilities:
3x10 m shuttle run (assessment of the qualities of dexterity, agility of students);
Forward somersault (assessment of coordination abilities, dexterity quality, vestibular stability ability, three attempts were made, the best result was taken into account)
Throwing a tennis ball for accuracy, cm (assessment of coordination abilities, accuracy, three attempts were made, the best result was taken into account);
Catching the ball after throwing it up (1.5-2.0 m), times (assessment of coordination abilities, two attempts were made, the best result was taken into account);
Bypassing 3 obstacles bouncing the ball off the ground (the interval between obstacles is 2.5 m), s (assessment of coordination abilities);
Rope jumping, (assessment of the quality of dexterity, three attempts were made, the best result was taken into account);
Before the tests, the students were informed about the purpose of the control tests, they were explained and demonstrated the technique of correct execution of control exercises.

All participants in the experiment (n=48) were divided into two groups: "EG" – the experimental group and "CG" – the control group. Physical education classes at CG were conducted according to the traditional school curriculum. And at EG, physical education classes were conducted on the basis of a program developed and proposed by us.

The results obtained at the beginning of the experiment did not significantly differ from each other, initially in both boys and girls, in terms of physical fitness in participants of the two groups "EG" and "CG". This information indicates that students with the same physical fitness were selected for the control and experimental groups.

The experimental work was carried out in the 2021-2022 (October-December) academic year in the first grades (1-A, 1-B) of secondary school №1 of the Karshi district. The experiment was attended by first-graders aged 7 -8 years; control class (1–A - 24 people), experimental class (1-B – 24 people). The classes of the control group were conducted on the basis of a traditional physical education program under the guidance of a physical education teacher. The experimental group was trained on the basis of the same program, but in the main part of the lesson, a technique was introduced that was developed by us with improvements. The developed technique included performing exercises in one series (circuit training), based on variant 3 of a wide-range circular training, to develop coordination abilities in the main part of the course for 6 minutes. It took from 30 seconds to complete each exercise, the rest interval between them was also 30 seconds, and 1-2 minutes between series of exercises. A new exercise was introduced every week, which meant that the exercise became more difficult. Бир айланма таркиби 6 та бекатдан иборат. One circuit consists of 6 stops. The duration of this technique is a completed cycle of at least 16 lessons (8 weeks), from 2 lessons in a row in a week, according to which an extensive interval style of circular training is used. The number of cycles during the academic year is a minimum of 3, a maximum of 4.

The circuit training method included the following exercises:

1st stop. Shuttle run 3x5 m, s; shuttle run 3x6 m, s; shuttle run 3x7 m, s; shuttle run 3x8 m, s; shuttle run 3x9 m, s; shuttle run 3x10 m, s (distance is increased every week).

2nd stop. I.p., sitting and leaning forward, leaning on hands. After doing a forward somersault, getting into the initial position; i.p., sitting down and wrapping hands around feet. After doing a forward somersault, getting into the initial position; i.p., sitting legs spread. After doing a forward somersault, getting into the initial position; i.p., sitting on knee. After doing a forward somersault, getting into the initial position; i.p., sitting and leaning on hands on sides. After doing a forward somersault, getting into the initial position; i.p., sitting on knee and leaning on hands. After doing a forward somersault, getting into the initial position; i.p., semi-sitting, hands on knees. After doing a forward somersault, getting into the initial position; i.p., standing. After doing a forward somersault with a step forward getting to the initial position (the exercises get more complicated every week).

3rd stop.
i.p., two students are facing each other at a distance of 5, 8, 10, 12, 15 m (the distance is

Table 1. Dynamics of physical fitness indicators during the experiment of children in the control group [n=m-12; f-12]

№	Control tests	Gender	Before the experiment	V%	After the experiment	V%	t	p
1.	Shuttle run 3x10 m, s	M	10,94±0,43	3,9	10,78±0,40	3,7	0,94	>0,05
		F	11,42±0,40	3,5	11,25±0,38	3,4	1,07	>0,05
2.	Forward somersault (3 times), s	M	9,54±0,43	4,5	9,40±0,48	5,1	0,75	>0,05
		F	9,93±0,53	5,3	9,81±0,46	4,7	0,59	>0,05
3.	Throwing a tennis ball for accuracy, cm	M	95,8±7,88	8,2	93,6±7,90	8,4	0,68	>0,05
		F	90,2±10,5	11,6	87,7±9,7	11,1	0,61	>0,05
4.	Catching the ball after throwing it up (15-20 cm), times	M	19,5±2,25	11,5	20,4±2,10	10,3	1,01	>0,05
		F	18,1±2,43	13,4	19,0±2,40	12,6	0,91	>0,05
5.	Bypassing 3 obstacles bouncing the ball off the ground	M	27,92±1,52	5,4	27,41±1,54	5,6	0,68	>0,05
		F	28,85±1,83	6,3	28,32±1,90	6,7	0,70	>0,05
6.	Rope jumping (30 s), times	M	10,2±2,67	26,2	10,7±1,83	17,2	0,54	>0,05
		F	12,6±2,85	22,6	13,4±2,49	18,5	0,76	>0,05

added every week). Throwing a tennis ball with one hand precisely into the partner's hands and catching the ball thrown by the partner. i.p., they stand at a distance of 5, 8, 10.1-2.15 m

Table 2. Dynamics of physical fitness indicators during the experiment of children in the experiental group [n=m-12; f-12]

№	Control tests	Gender	Before the experiment	V%	After the experiment	V%	t	p
			$x\pm\sigma$		$x\pm\sigma$			
1.	*Shuttle run 3x10 m, s*	M	11,02±0,44	4,0	10,49±0,33	3,1	3,35	<0,01
		F	11,48±0,49	4,3	10,82±0,42	3,9	3,54	<0,01
2.	*Forward somersault (3 times), s*	M	9,61±0,48	5,0	9,11±0,40	4,4	2,77	<0,05
		F	10,03±0,54	5,4	9,43±0,47	5,0	2,90	<0,05
3.	*Throwing a tennis ball for accuracy, cm*	M	96,5±8,82	9,1	89,5±5,54	6,2	2,32	<0,05
		F	91,3±10,0	11,0	83,7±6,8	8,1	2,18	<0,05
4.	*Catching the ball after throwing it up (15-20 cm), times*	M	19,1±2,17	11,4	22,2±1,94	8,7	3,69	<0,01
		F	18,5±2,83	15,3	21,9±2,09	9,5	3,35	<0,01
5.	*Bypassing 3 obstacles bouncing the ball off the ground*	M	28,22±1,51	5,4	26,67±1,00	3,7	2,96	<0,05
		F	29,13±2,25	7,7	26,90±1,53	5,7	2,84	<0,05
6.	*Rope jumping (30 s), times*	M	9,8±2,75	28,2	13,5±2,08	15,4	3,77	<0,01
		F	12,3±2,33	19,0	15,8±1,88	11,9	4,05	<0,01

from the basketball board (the distance is added every week). A tennis ball is thrown onto a basketball board with one hand and the returned ball is thrown back onto the board by a partner

4th stop.

I.p., volleyball ball is on hands. Throwing the ball with two hands up to 15-30-50-80-1,0-1,20-1,50-2,0-3,0 cm (height is added every week) and catching it (, without going beyond the 1.0 m circle in diameter).

5th stop.

I.p., basketball ball on hands. Bouncing the ball with one hand; bouncing the ball with right and left hands; walking backward-forward while bouncing the ball; rotating and bouncing the ball with right and left hands; bouncing the ball with right and left hands; bouncing the ball till knee, hip, chest; bypassing 2 obstacles bouncing the ball; bypassing 3 obstacles bouncing the ball (the exercises get more complicated every week).

6th stop

Holding the rope on hands. Step-by-step jumping rope, jumping on two and one legs, crossing and spreading legs to simulate jumping movements;

i.p.: the rope on hand, passed by legs. Walking with rope step by step, jumping step by step; light jumps on the tips of feet; jumping changing the bent and straight legs; jumping 3 steps forward and 3 steps back; jumping high; side jumps on paired legs; jumping from one foot to the other (the exercises get more complicated every week).

According to the results of the data obtained after the pedagogical experiment (see table 1), it can be noted that a relative increase in the results of physical fitness indicators occurred in boys and girls of the CG engaged in the basics of the traditional program, but there were no significant statistical differences in this ($p>0,05$). These data confirm the data on the improvement of the reliability of the results in the control group during the experimental period. Thus, it can be noted that the traditional system of physical education has little effect on the development of coordination abilities of primary school children.

In the course of pedagogical experience, the results of physical training of EG boys and girls who were engaged in an improved method of developing coordination skills using the circuit training method, taking into account sensitive periods of physical development in physical education, as well as the results of the physical training described below clearly show that their level of physical fitness has improved significantly (see table 2).

Conclusion

As a result of the conducted research, factual data were obtained that allow a positive assessment of the recommended methodology for the development of coordination abilities that affect the level of physical fitness of primary school students.

Comparing the results of the conducted pedagogical experience with the effectiveness of the traditional and improved methodology developed by us based on the results of control tests, we can say that the implemented methodology had a more reliable and effective impact on the development of coordination skills in schoolchildren aged 7-8 years. ($p<0,01$; ($p<0,05$).

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