

The development of motor abilities of students aged 8-9 years in physical education lessons

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ABSTRACT

Background

The problem of insufficient development of motor abilities of primary school children can be solved in physical education lessons at school by introducing Classical exercises.

Aims and objectives

To develop the responsiveness of younger students in physical education classes at school.

Materials and methods

The study took place in an ordinary school in Russia. All students studied 2 times a week, each physical education lesson lasted 40 minutes. The children from the control group performed the usual physical education program, and the children from the experimental group performed Classical exercises during the lesson. During the pedagogical experiment, 72 lessons were conducted in each group. The study used a test to determine the responsiveness of "Touch the ball." The student's T-test was used to determine the reliability of the results.

Results

After the study, the children from the control group improved their responsiveness by 3.1% ($p>0.05$), which is explained by the natural development of coordination abilities at primary school age. The data in children from the experimental group became 9.3% higher ($p<0.05$), which proves the effectiveness of introducing Classical exercises to physical education lessons at school.

Conclusion

In order to effectively develop the motor abilities of schoolchildren, including responsiveness, it is necessary to additionally perform a Classical exercise at each physical education lesson at school.

Keywords

Coordination; School children; Physical education; Motor abilities, Exercise, Health.

INTRODUCTION

Comprehensive personal development means good health, good physical development, an optimal level of development of motor and motor abilities, the development of theoretical knowledge and their transfer to subsequent generations^{1,2}.

The human motor system is a subject of physical education. It is important to strengthen health, develop physical qualities, tactical thinking, creative skills and other abilities.

The subject of physical education at school is designed to form students' stable needs and motivation to take care of their physical shape and health. When mastering the discipline of Physical education, comprehensive development, biological, psychological, and social is important.

Today, a teacher at school is faced with a number of tasks that can be called additional. These are the education of the values of physical education, the motivation of schoolchildren for physical and spiritual improvement, the formation of needs for physical education^{3,4}.

An important task is to orient children to independent physical exercises and physical education in the whole^{1,3,4}.

Despite the great importance of physical

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education for a person, there are a number of problems in the field of physical education at school. One of these problems is the lack of gyms or other facilities for physical education lessons. During the school year, severe weather conditions in Russia do not allow students to constantly play sports outside. One of the solutions to this problem may be the development and implementation of innovative methods and techniques in working with children in physical education classes at school. The use of such equipment or a set of exercises is necessary for the development of physical abilities and does not take up much space. The exercises of the “Classics” are well-known all over the world. Children play them not only at school, but also in courtyards. It is important that the school uses playful and competitive methods of physical education, they have proven their effectiveness in working with children of primary school age⁵. The sensitive period of development of physical abilities is crucial for the development of physical qualities. During such a period, it is necessary to develop these physical abilities purposefully and at a time when it is most relevant for their maximum development. Some experts suggest that primary school age is a favorable period for the development of motor abilities⁶.

A good level of development of such abilities is the basis for other physical qualities. To date, there are quite a lot of motor abilities, and there are several classifications^{7,8}. One of the most important for children aged 8-9 years is the ability to maintain balance in dynamic and static states^{9,10}. Factors determining the manifestation of motor abilities:

1. The ability of a person to perform an accurate analysis of movements.
2. The activity of analyzers (especially motor ones).
3. The complexity of the motor task.
4. The level of development of other physical qualities.
5. The level of general readiness for work (the volume of school movements).
6. It depends on the age.
7. Courage and decisiveness¹¹⁻¹³.

It should be noted that in modern literature, sufficient attention is paid to the development of physical qualities, but we have not found studies that would determine the effect of standard classical exercises on the physical and mental performance of schoolchildren. Thus, the aim of the study was to determine the effect of standard classical exercises on rapid reaction in children aged 8-9 years.

MATERIALS AND METHODS:

Participants

The pedagogical experiment was attended by elementary school children aged 8-9 years. The students studied in the 2nd grade of the ordinary school number 60 in the Russian Federation. Out of the total number of schoolchildren (118 children), 104 students took part in the study. The doctor admitted these children to physical education lessons at school and had no contraindications for health. At the same time, consent to the study was obtained from each parent (56 girls and 48 boys).

Ethical Statement

The Council of Vyatka State University approved the study №1 Jan 17, 2020. All procedures conformed to the ethical standards of the Helsinki Declaration of 2013. Furthermore, written informed consent was received from the participants from parents to ensure the anonymity of the participants, to store data, conduct and publish the study.

Inclusion criteria

Children who are engaged in physical education at school. Students who a doctor admits to physical education classes. The study involved ninth-grade students of secondary school No. 60 (Kirov, Russia) aged 8-9 years.

Exclusion criteria

Children with health problems do not have a basic medical group for physical education classes. Children who are not allowed to exercise by a doctor. Schoolchildren who have deviations in health status. Parents of children who do not wish to give informed consent.

Research procedure

It was a cross-sectional study. The pedagogical experiment was conducted from September 1 to May 30, 2021. Students were engaged in physical education 2 times a week for 40 minutes at each lesson. During the 9 months of the study, 72 lessons were conducted. Children from the control group (classes 2A and 2B) – 30 girls and 22 boys were engaged in the standard school program in physical culture. In physical education, there are two specific sides or parts: the training of movements (motor actions) and the education of physical qualities (abilities). The

essence of the education of physical qualities is to manage their development. The immediate object and, simultaneously, the controlling factor is the process of motor activity. Physical education forms a system of value orientations of a person for a healthy lifestyle and provides motivational, functional, and motor readiness for it. General and specific laws, principles, and rules of the pedagogical process carry it out. It affects a person's intellectual, mental, moral, purposeful, and other qualities. The general purpose of teaching the subject "Physical Culture" in primary school is the formation of the physical culture of the student's personality by mastering the basics of the content of physical activity with a general developmental orientation. The "Physical culture" course in primary school implements cognitive and sociocultural goals.

1. The cognitive goal involves forming students' ideas about physical culture as a component of a holistic scientific picture of the world and familiarizing students with the basic provisions of the science of physical culture.
2. The socio-cultural goal implies the formation of children's competence in performing basic motor actions as an indicator of human physical culture.

By the purpose of the educational subject "Physical Culture," the tasks of the educational subject are formulated:

1. Formation of knowledge about physical culture activity, reflecting its cultural-historical, psychological-pedagogical, and medical-biological foundations;
2. Improving skills in basic motor actions, their variable use in play activities and independent training sessions;
3. Expansion of motor experience by complicating previously mastered movements and mastering new motor actions with increased coordination complexity;
4. Formation of skills and abilities in performing physical exercises of various pedagogical orientations related to health prevention, physique correction, correct posture, and movement culture;
5. Expanding the functional capabilities of different body systems, increasing their adaptive properties due to the directed development of basic physical qualities and abilities;
6. Formation of practical skills necessary to organize independent physical exercises in their recreational and recreational forms, group interaction, outdoor

games, and elements of competition.

To achieve the planned results and achieve the set goals, the following practical tasks are being solved:

The material of the program is aimed at the implementation of the priority tasks of education – the formation of a comprehensive harmoniously developed personality; the realization of students' creative abilities, their physical improvement, the development of basic motor (physical) vital qualities; the formation of a scientifically grounded attitude to the world around students. Through the program, the educational process in the field of physical culture in primary school should be oriented:

1. To develop basic physical qualities and increase the functional capabilities of the body;
2. To enrich the motor experience with physical exercises with a general developmental and corrective orientation, technical actions of basic sports;
3. To master knowledge about physical culture;
4. To teach skills and abilities in physical culture and health and sports activities, an independent organization of physical exercises.

Physical education at school aims to promote the formation of a fully developed personality in physical improvement.

The achievement of this goal is ensured by solving related tasks aimed at:

- health promotion, promotion of normal physical development;
- training in vital skills and abilities;
- development of motor (conditioning and coordination) abilities;
- acquisition of necessary knowledge in the field of physical culture and sports;
- education of the need and skills to engage in physical exercises independently, consciously apply them for recreation, training, improving performance, and strengthening health;
- promoting the education of moral and volitional qualities, mental processes, and personality traits.

Children from the experimental group (2B and 2G) – 26 girls and 26 boys were engaged in the same program. Additionally, they performed the traditional exercise classics for 5-6 minutes during the lesson (Figure 1).

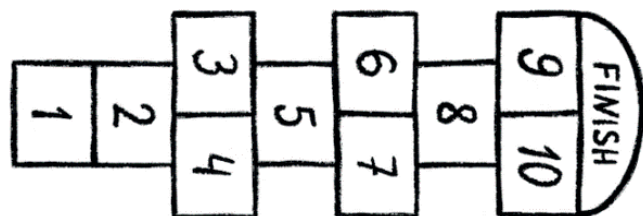


Figure 1. Standard classical exercises

Figure 1 shows the Standard Classical Exercise; in the school concert hall, you need to draw several drawings with simple chalk. The main requirements are jumping and alternating exercises of the right and left legs. After the first student performed jumps on the right leg, he returned to the starting position and performed jumps on the left leg. For 5-6 minutes, there were 5-6 students in each drawing (no more), so the motor load on each student was maximum. The control test “Touch the ball” determined the development level of the ability to react quickly. This test was chosen because it is often used in pedagogical research on physical culture and has high validity. Two gymnastic benches are attached with one side to the gymnastic ladder at the height of 1.5 m from the floor at a distance of 5 cm from each other. The benches are marked with a 5 cm marking. A volleyball ball is installed on top. The child is standing with his back to the benches at a distance of 4 meters. At the teacher’s signal, the ball is lowered down the bench from top to bottom. The child should quickly turn around, run up to the gym benches and touch the ball with his hand. The result is obtained with an accuracy of 5 cm⁵.

Statistical analysis

All the indicators of the children who participated in the study were entered into an Excel-2016 spreadsheet, the arithmetic mean and standard completion were determined, and the Student’s T-criterion was also used, with a significance level of $p < 0.05$.

ETHICAL CLEARANCE

This research was conducted in compliance with the needed research ethics. In addition, consent for participation was obtained from the participants before the beginning of their involvement in the study. All data were recorded and analyzed anonymously.

RESULTS

Before the study, no significant statistical differences existed between the control and experimental groups

($p > 0.05$). Table 1 shows the results of the standards at the beginning and the end of the study.

Table 1

Table 1. Results of the “Touch the ball” test at the beginning and the end of the study

Indicators	Before	After	%	p
Control group (n=52)	269.3±7.0	260.9±9.0	3.1	$p > 0.05$
The experimental group (n=52)	271.3±6.1	246.0±6.8	9.3	$p < 0.05$

Table 1 shows that children from the control group who studied according to the standard program improved their performance from 269.3±7.0 to 260.9±9.0 by 3.1%. Despite the positive dynamics of the results, the reliability of the results was insignificant ($p > 0.05$). In the experimental group, children who additionally performed exercises on the Standard classical exercises during physical education lessons improved their indicators from 271.3±6.1 to 246.0±6.8 by 9.3% ($p < 0.05$). It should be noted that in our previous studies, one of the variants of physical exercise Classics has proven its effectiveness.²⁵ Children who performed exercises in the Classics exercise (Table 2) improved their performance in the ability to combine movements significantly. It once again confirms the relevance of the problem and the ways to solve it using Classical exercises.

Table 2

Table 2. Exercise «Classics»

8	6	2	3	6	5	9	6	3
5	3	7	2	8	7	1	7	8
9	4	1	9	1	4	2	5	4
Square 1			Square 2			Square 3		

Table 2 shows that the exercises of the Classics are similar to each other, and the essence of performing this exercise is not only jump but also the ability to react quickly, combine your movements and react quickly.

DISCUSSION

The topic of children’s health and physical activity is often raised in secondary schools. There are problems of physical inactivity, obesity and other diseases that are getting younger every decade¹⁻⁴. Physical education teachers are engaged in solving this problem¹⁵⁻¹⁷.

In Russia, physical education teachers work according

to the general education standard physical education program, this program is multifaceted and universal. The program contains sets of exercises that affect different physical qualities of schoolchildren in a certain favorable period of their development. If we assume that you are purposefully influencing the development of certain physical abilities during the sensitive period, then the level of development of these qualities will be significantly higher than if you used the same complex at another age⁶.

The authors of the research note the benefits of physical education at school for the development of physical qualities and cognitive abilities of children¹⁸⁻²⁰. Some experts recommend their own methods^{21,22}, which are designed to completely replace standard school programs^{23,24}. However, this approach is quite coordinated and is unlikely to be able to cover such a set of tasks, tools and methods associated with the process of physical education at school for the entire period of study.

The results of the students from the control group were positive from the beginning to the end of the study, which tells us that, in general, the general education program gives a good result. Such results may indicate a natural increase and a favorable period for the development of such motor abilities at the age of 8-9 years.

The results in the experimental group showed significant improvements in motor performance, despite the fact that it took only 5-6 minutes from each lesson to complete the “Classics” exercise. For modern conditions, it is also important that special training or expensive equipment is not required to perform this exercise. The drawing can be drawn on the floor in the gym or on the asphalt on the sports field. It should be noted the emotional background from performing the physical exercise “Classics”, it was at the highest level, children performed it with satisfaction in every lesson, which is of crucial importance in working with children of primary school age^{3,7,8}. An individual approach was used, since each child performed physical exercise to the best of his abilities “Classics” independently¹²⁻¹⁴.

Thus, the effectiveness of using the standard physical education program at school has been confirmed and a sensitive period for the development of motor abilities has been proven. For the first time, the introduction of

the “standard classics” exercise into the pedagogical process of physical culture at school for the development of motor abilities of children aged 8-9 years has been scientifically proven. The study is promising because it is possible to study the effect of standard classical exercises on other motor abilities and physical qualities. Our previous study examined the effect of classical exercises on the coordination ability to combine movements.¹¹ The proposed addition to the standard program in the form of a set of classical exercises and standard classics for the development of coordination abilities shows a significant effect in primary school age. The topic is relevant and promising for further research, so, for example, it is possible to study the effect of coordination exercises on some mental processes. The topic of children’s health is relevant, since an increasing number of schoolchildren lack motor activity²⁶⁻²⁸. The low level of development of physical qualities^{29,30}, as well as coordination abilities^{31,32} catalyzes the formation of new ideas to improve the standard physical education program at school.

The physical qualities and physical development of school-age children are of great importance³³⁻³⁶. The problem of obesity in schoolchildren is relevant³⁷⁻⁴⁰. It should also be noted the leading role of physical education in solving the problem of obesity in children of different school ages⁴¹⁻⁴⁴. All this indicates the relevance of the research and its further perspective

CONCLUSION

During the study period, the literature on the topic of children’s health and the benefits of physical culture for the development of schoolchildren was studied. As a result, the effectiveness of the traditional classics in physical education lessons in working with young schoolchildren has been proven and confirmed. Therefore, using the familiar classics in each lesson for 5-6 minutes is recommended.

Recommendations

Conducting a physical education lesson at school follows certain principles and depends not only on educational standards but also on the age and physical condition of the students. For younger schoolchildren, the usual running, jumping, climbing, somersaults, and projectile throwing are characteristic. As a rule, 2-3

tasks are solved during the lesson. First, it is important to form a posture-mandatory use of outdoor games. Forming the right school and culture of movements from childhood is necessary. As a rule, static or heavy loads are not used to hold your breath. Finally, it is necessary to form a stable desire for self-development to lay the foundations of the technique of most motor actions.

Source of fund: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest: The author declares that he no conflict of interest.

AUTHOR'S CONTRIBUTION

Data gathering and idea owner of this study: Polevoy G.G.

Study design: Polevoy G.G.

Data gathering: Polevoy G.G.

Writing and submitting manuscript: Polevoy G.G.

Editing and approval of final draft: Polevoy G.G.

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