

Physical activity for children with autism in a school setting

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Abstract

Objective of the study was to pinpoint the unique aspects of implementing physical education and sports programs for children with autism spectrum disorder within an educational institution.

Methods and structure of the study. The process of examining and summarizing the implementation of physical education and sports programs for children with autism spectrum disorder is underway. The research focuses on children aged 9-10 who attend both special (correctional) schools and mainstream schools.

Results and conclusions. The data collected during the testing demonstrate the physical fitness of children with autism spectrum disorder. There is a notable disparity between the examined parameters of children who participate in after-school activities and those who only attend regular classes. The outcomes of the experimental group, in contrast to the control group, improved for girls from 7% to 30% and for boys from 9% to 28%. This underscores the necessity of integrating extracurricular physical education and sports into the subject "Physical Culture" to specifically target the enhancement of motor skills, coordination, self-control of movements, and the ability to maintain a stable posture.

Keywords: *physical education, children, autism spectrum disorder.*

Introduction. An analysis of scientific papers studying the problems of physical development of children with autism spectrum disorder shows that regular physical activity can help reduce anxiety, improve mood and increase the level of social interaction [1-3]. Many children of primary school age have undeveloped motor skills, the child does not know how to change body positions, step over obstacles, throw a ball, control movements, etc. To overcome problems with motor disorders, special exercises are recommended aimed at developing motor skills and improving overall physical fitness. As a rule, many preschool children of this nosological group attend rehabilitation centers, but the experience of working in an educational organization is not significant. The organization of physical education within the educational process with children with autism spectrum disorder of school age has been studied only in correctional schools. The question remains open, what is the content of the means and methods of physical education, as well as the regulation of the load will be more effective in achieving optimal results of physical fitness.

Objective of the study was to pinpoint the unique aspects of implementing physical education and sports programs for children with autism spectrum disorder within an educational institution.

Methods and structure of the study. The analysis and generalization of the implementation of physical education and sports activities for children with autism spectrum disorder was conducted. The study involved children aged 9-10 years, attending educational organizations both in special (correctional) schools and general education schools.

Organized physical education and sports activities are aimed at restoring impaired motor functions of the body. Solving multi-aspect tasks of the educational process, physical education is aimed at mastering the basic content of training, developing the communicative sphere, sensory perception for the implementation of full-fledged social connections. The program for the subject "Physical Education" consists of 80% of the compulsory part and 20% formed by the participants of the educational process, in moderate and severe forms of the disease, the ratio of parts



changes (70-30%, 60-40%). The selection of means, methods and methodological techniques depends on the mental state and motor experience of children. Autism spectrum disorder has individual typological features, since children's locomotor functions are developed depending on the severity and manifestations of the disease (mild, moderate, strong and severe). During classes, the teacher selects accessible game exercises using balls, skittles, gymnastic sticks, hemispheres, etc. The subject "Physical Education" is aimed at developing the child's knowledge about his body (understanding the connection between bodily well-being and mood, his own activity, independence and autonomy); the capabilities and limitations of his physical functions, compensatory mechanisms, the ability to follow the rules of a healthy lifestyle, maintain a daily routine with the necessary health procedures, adhere to an individual diet and sleep; the permissible amount of physical activity, the attitude to maintaining and strengthening health. Mastering accessible types of physical education and sports activities allows you to join in outdoor games accessible to the child, develops basic physical qualities (strength, speed, endurance, coordination, flexibility). As practice has shown, students with autism spectrum disorder are most often not adapted to the educational environment and are dependent on their parents. Difficulty interacting with people around them, especially if it is a class of 25-30 students, which leads to the lack of opportunity to engage in physical education. It is possible to compensate for the lack of physical activity through additional forms of physical education and sports activities outside of school hours. However, it is also not advisable to completely isolate a child from the class, since the function of an educational organization is to socialize all children. Extracurricular activities contribute to the correction and development of impaired functions, prevention of secondary deviations, optimization of social adaptation and integration of students due to physical and / or mental deficiencies. The result of the work is personal, subject and meta-subject universal actions. The personal result contributes to the formation of an attitude towards a safe, healthy lifestyle, the presence of motivation for creative work, work for results, a careful attitude to material and spiritual values. The meta-subject result is aimed at the ability to define a goal and find the most effective ways to achieve it. Subject results are focused on the formation of initial ideas about the importance of physical education for strengthening human health (physi-

cal, social and psychological); the positive impact of physical exercise on human development (physical, intellectual, emotional, social); the ability to properly organize health-preserving life activities (daily routine, morning exercises, health activities, etc.). Taking into account the complexity of the nature of the disease, the skills are divided into four groups:

1. Developing the skill of systematically monitoring one's physical condition, the amount of physical activity, health monitoring data (height, body weight, etc.), indicators of the development of basic physical qualities (strength, speed, endurance, coordination, flexibility).

2. Understanding simple instructions during games and when performing physical exercises; mastering, in accordance with age and individual characteristics, accessible types of physical education and sports activities.

3. Developing the ability to maintain a lifestyle appropriate to age, needs and health limitations, maintain a daily routine with the necessary health procedures, monitor one's physical condition, the amount of physical activity in proportion to one's own individual health characteristics.

4. Ability to perform accessible types of movements in physical education classes and outside of them, mastering basic movements (walking, running, jumping, climbing) to a degree accessible to each child, performing accessible types of exercises by imitation, by example, by verbal instructions, participating in accessible outdoor games and activities, mastering accessible types of physical education and sports activities.

Results of the study and discussion. The work carried out in educational organizations has shown that children with autism who are engaged in physical education demonstrate better results in social and communicative interaction and social and everyday independence. They adapt more easily to the educational environment. Maximum efficiency is achieved when using a structured program that includes both group and individual lessons, which emphasizes the importance of an individual approach. The testing results showed that all children have mild (5-24%) violations of motor-reflex functions. For example, functions associated with the coordination of simple and complex voluntary movements, or the execution of movements in a given combination. There is a moderate violation of the right-left coordination, visually guided movements associated with the control and coordination of simple



or isolated voluntary movements. The indicators of the primary and repeated testing are given in Table 1. The table shows that in the repeated testing, children in the experimental and control groups achieved positive dynamics.

When comparing the results of re-testing, a significant increase in indicators in the experimental group is noted (Table 2). In the process of motor activity, afferent information occurs in the cortical structures of the cerebral cortex, a holistic idea of the spatial orientation, the projection of the body's scheme, and control the position of the body with the movement of the eyes are created.

To compare two independent samples, the Mann-Whitney method of mathematical processing of information was used; when calculating the obtained data, the criterion value and the probability of difference between the obtained values in the groups were deter-

mined. All control exercises showed a reliable change in the feature and are in the significance zone, that is, when comparing values, they are higher than the U-empirical value.

Conclusions. The experiment showed that children with autism spectrum disorder find it difficult to perform precise tasks. Where the child does not make intellectual efforts, the result was higher, which is confirmed by the present study. This means that it will be more difficult for a child with autism spectrum disorder to master the educational program, so work on correcting motor disorders should begin at an early age. For this category of children, it is necessary to strengthen work in the field of extracurricular physical education and sports activities aimed at improving motor-reflex and cognitive characteristics. Physical exercises have a versatility of motor actions, differing in structure and nature, providing an opportunity to engage in favorite

Table 1. Physical fitness testing indicators for 9-10 year old children with autism spectrum disorder

П/п		Control exercises (in points)	Group of children with musculoskeletal disorders			
			Experimental		Control	
			girls - 5	boys - 6	girls - 4	boys - 7
1	Static balance	before	12,2±0,7	12,2±0,6	12,0±0,7	12,1±1,0
		after	14,4±0,5	14,3±1,0	12,7±0,7	13,0±0,6
2	Dynamic balance	before	4,0±0,5	4,0±0,5	3,7±0,4	4,1±1,4
		after	4,3±0,5	4,7±0,4	4,0±0,1	4,3±0,7
3	30 m run	before	1,0±1,0	1,8±0,4	1,3±1,0	1,1±0,8
		after	3,0±0,5	3,2±0,4	1,7±0,4	2,9±0,3
4	6 min run	before	1,5±0,75	1,3±1,0	1,3±1,0	1,7±1,0
		after	3,25±0,6	3,2±0,6	1,7±0,4	2,25±0,6
5	Shuttle run	before	1,0±1,0	1,8±0,4	2,0±0,0	1,7±0,5
		after	3,0±0,5	3,2±0,6	2,3±0,4	2,8±0,3
6	Pull-ups while hanging on a low bar	before	1,0±1,0	1,8±0,4	1,3±1,0	1,0±1,0
		after	3,25±0,6	3,2±0,4	2,7±0,4	2,25±0,6
7	Long jump from a place	before	1,0±1,0	1,7±0,5	2,0±0,0	1,0±1,0
		after	3,0±0,5	3,3±0,4	2,3±0,4	2,25±0,6

Table 2. Dynamics of physical fitness testing indicators for 9-10 year old children with autism spectrum disorder

№	Control exercises (in points)	girls		Δ%	boys		Δ%
		ex. gr. 5 pers.	cont. gr. 4 pers.		ex. gr. 5 pers.	cont. gr. 6 pers.	
1	Static balance	14,4±0,5*	12,7±0,7	14	14,3±1,0	13,0±0,6	10
2	Dynamic balance	4,3±0,5*	4,0±0,1	7	4,7±0,4	4,3±0,7	9
3	30m run	3,0±0,5	1,7±0,4	23	3,3±0,4	2,25±0,6	28
4	Shuttle run	3,0±0,5	2,3±0,4	30	3,2±0,6	2,8±0,3	14
5	Pull-ups while hanging on a low bar	3,25±0,6	2,7±0,4	20	3,2±0,4	2,25±0,6	28
6	Long jump from a place	3,0±0,5	2,3±0,4	30	3,2±0,4	2,9±0,3	10

at $p < 0,05$ (* – significant differences between groups).



types of motor activity, have a health and correction effect. The complexity of the use of physical education tools and methods contributes to the targeted support of optimal results of physical fitness.

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