



Differentiation of conditions for mobile games for children with different degrees of motor disorders

UDC 796



PhD **E.V. Naumova**¹

PhD **I.S. Maltseva**¹

A.V. Vinogradova¹

D.E. Berestova¹

¹Tchaikovsky State Physical Education and Sport Academy, Tchaikovsky

Corresponding author: zebzeev85@mail.ru

Abstract

Objective of the study was to differentiate the conditions for conducting outdoor games in the process of adaptive physical education of children with cerebral palsy with varying degrees of motor impairment.

Methods and structure of the study. The pedagogical experiment was conducted at the Tchaikovsky State Academy of Physical Culture and Sports from September to December 2021. Extracurricular classes on adaptive physical education for children with cerebral palsy were organized. The main content of the classes was corrective outdoor games. The subjects were 16 children with cerebral palsy aged 3 to 12 years of varying severity.

Before the start of classes, the primary diagnosis of children was carried out according to the following scales: determination of global motor function disorders (GMFCS); dysfunction of the hands and manual skills MACS; impaired communication function (CFCS); definition of mobility of the child (FMS). According to the diagnostic results, all children were divided into 3 groups, depending on the severity of motor disorders.

Results of the study and their discussion. Based on the primary diagnosis, the conditions for conducting active game were selected, which were adapted depending on the severity of motor disorders in children. The following components were subjected to differentiation: initial position, type of movement in the game, dosage, and the role of the child in the game. During the experiment period, statistically significant changes occurred in children of the 3rd group in terms of: fine motor skills, coordination of movements, muscle spasticity.

Keywords: cerebral palsy, adaptive physical education, outdoor games.

Introduction. Currently, there is an increase in the number of children with the consequences of cerebral paralysis of various forms. Despite the different forms of cerebral palsy, the general of such children is a delay in motor and speech development, the originality of the psycho-emotional sphere. The adaptive physical education of children with cerebral palsy is aimed at the formation of the main types of movements, the development of physical and mental qualities, the correction of existing disorders, the prevention of concomitant diseases and secondary deviations [2]. Extracurricular forms of adaptive physical education have great potential for correcting motor disorders. A feature of extracurricular forms is that in one lesson children with different diagnoses, of different ages and varying degrees of motor and mental disorders can be present. Since the severity of motor disorders has a significant impact on the

child's functionality, this must be taken into account when planning and conducting classes on adaptive physical education [1, 3]. In the classroom, children can be proposed to perform different role functions, various tasks, altered starting positions, exercises with a handicap depending on their functionality.

One of the effective means of adaptive physical education of children with cerebral palsy is outdoor games. Outdoor games are valuable in that they simultaneously affect both the physical and mental spheres of those involved, in games you can easily change the conditions for their conduct and adapt the rules to the functionality of any child [4, 5].

Objective of the study was to differentiate the conditions for conducting outdoor games in the process of adaptive physical education of children with cerebral palsy with varying degrees of motor impairment.



Methods and structure of the study. The pedagogical experiment was conducted at the Tchaikovsky State Academy of Physical Culture and Sports from September to December 2021. Extracurricular classes on adaptive physical education for children with cerebral palsy were organized. The main content of the classes was corrective outdoor games. The subjects were 16 children with cerebral palsy aged 3 to 12 years of varying severity.

To assess the impact of adaptive physical education classes based on the use of outdoor games, selected taking into account the severity of motor disorders in children with cerebral palsy, an expert assessment was carried out. The number of experts included: 3 candidates of pedagogical sciences, specialists in the field of adaptive physical culture and 2 teachers of adaptive physical culture working in a correctional school. The experts assessed the change in the functional state of the musculoskeletal system of children over the period of the experiment in terms of indicators: mobility (assessment of the

ability to sit, stand, walk), development of fine motor skills, coordination of movements. The assessment was carried out on a five-point scale, where 5 points - independent performance of exercises without errors, 4 points - independent performance with minor errors, 3 points - performance of the exercise with help or independent performance with gross errors, 2 points - performance of the exercise with assistance with minor errors, 1 point - performing the exercise with the help of gross errors or the impossibility of performing. Muscle spasticity was also assessed on a five-point Ashworth scale. In the course of mathematical processing, the median (M) and median error (m) were calculated.

Results of the study and their discussion. Before the start of classes, the primary diagnosis of children was carried out according to the following scales: determination of global motor function disorders (GMFCS); dysfunction of the hands and manual skills MACS; impaired communication function (CFCS); definition of mobility of the child (FMS).

Changes in the indicators of the functional indicator of the musculoskeletal system in children with cerebral palsy during a pedagogical experiment

Indicators		Test groups		
		1st	2nd	3rd
Mobility: assessment of the ability to sit (points)	Before experiment M±m	2,1±0,16	2,1±0,22	4,1±0,12
	After the experiment M±m	2,4±0,23	4,1±0,21	4,9±0,2
	p	>0,05	>0,05	>0,05
Mobility: assessment of the ability to stand, points	Before experiment M±m	2,2±0,27	2,9±0,14	4,7±0,2
	After the experiment M±m	2,8±0,3	3,8±0,17	4,9±0,13
	p	>0,05	>0,05	>0,05
Mobility: assessment of the ability to walk (points)	Before experiment M±m	1,2±0,13	2,5±0,11	4,2±0,2
	After the experiment M±m	2,3±0,29	3,7±0,16	4,7±0,13
	p	>0,05	>0,05	>0,05
Fine motor skills, points	Before experiment M±m	2±0,15	3,2±0,1	3,3±0,43
	After the experiment M±m	3±0,15	3,7±0,12	4,5±0,23
	p	>0,05	>0,05	≤0,05
Coordination of movements, points	Before experiment M±m	1,1±0,13	2,8±0,14	3,1±0,12
	After the experiment M±m	2,6±0,19	3,6±0,15	4,6±0,23
	p	>0,05	>0,05	≤0,05
Muscle spasticity, points	Before experiment M±m	3,4±0,29	2,9±0,12	2,1±0,1
	After the experiment M±m	2±0,11	1,6±0,1	0,6±0,11
	p	>0,05	>0,05	≤0,05



According to the diagnostic results, all children were divided into 3 groups, depending on the severity of motor disorders. The first group included children with spastic tetraparesis. In children of this group, motor disorders are expressed to a large extent, walking is possible only with the help of additional devices, hand movements are limited. Communication functions are moderately developed. The second group included children with spastic diplegia. Children have movement disorders, but they are less pronounced than in the first group. Walk independently with little assistance at a slow pace. The manipulative function of the hands is preserved, but it is difficult to perform exercises on fine motor skills. Communication functions are moderately developed. The third group included children with hemiparesis and mild spastic diplegia. They had a good level of motor development, however, during playing activities, especially with the ball, there was a violation of motor dexterity, responsiveness, tempo and rhythm of movements. Communication functions are moderately developed, there was a violation of behavior, the use of non-verbal communication (gestures, facial expressions, screaming).

Based on the primary diagnosis, the conditions for conducting outdoor games were selected, which were adapted depending on the severity of motor disorders in children. The following components were subjected to differentiation: initial position, type of movement in the game, dosage, and the role of the child in the game. For the children of the 1st group, the main initial positions in the game were lying (on the back, on the stomach, on the side) and sitting; for children of the 2nd group, the initial positions are sitting and standing, if necessary with support; for children of group 3, the starting position is predominantly standing. In sedentary games for children of all groups, the initial sitting positions were used.

We also differentiated the types of movements of children during the game - for children of the 1st group, crawling, walking on all fours (with help), turns from a prone position were used; for children of the 2nd group, walking and running with support were used; for children of the 3rd group running. In addition, games were used in which children of all groups performed one type of movement, which is typical for children in group 1. During the games that were played in pairs (for example, if it was necessary to pass the ball between the players), the size of the playground and the distance between the players were reduced for the children of the 1st and 2nd groups.

The number of repetitions of exercises during the game for children of the 1st group was reduced (6-8

times), the pace of the exercises was used slowly, the task included high-quality performance of the exercises. For children of the 2nd and 3rd groups, the number of repetitions increased up to 10-12 times, the pace was medium and high (for the 3rd group). The children of the 1st group needed a longer rest between games, therefore, during intensive outdoor games with running and jumping, in order to give the children of the 1st group a rest, and the children of the 2nd and 3rd groups the necessary load, they were assigned the role of teacher assistant and judge.

The table shows the data of expert evaluation of indicators of the functional state of the musculoskeletal system in children with cerebral palsy.

An analysis of the results of the expert assessment showed (table) that statistically significant changes occurred in children of the 3rd group in terms of indicators: fine motor skills, coordination of movements, muscle spasticity. For other indicators in all groups, there is a slight improvement in the results, which, in our opinion, is associated with the severity of the main diagnosis, the complexity of correcting the functional state of the musculoskeletal system, and the short duration of the experiment.

Conclusions. In order for every child to be successful in the game, and for adaptive physical education classes to effectively solve all the main tasks, it is necessary to differentiate the conditions for conducting outdoor games. Differentiation of the conditions for conducting outdoor games had a positive effect on the indicators of mobility, range of motion in the joints, muscle spasticity and coordination of movements in children with cerebral palsy with varying degrees of motor impairment.

References

1. Aksenov A.V. Inklyuzivnoye fizicheskoye vospitaniye detey mladshogo shkolnogo vozrasta [Inclusive physical education of children of primary school age]. *Uchenye zapiski universiteta im. P.F. Lesgafta*. 2016. No. 3 (133). pp. 17-21.
2. Batishcheva L.D., Evstigneeva M.I., Dengova L.E. Osobennosti razvitiya koordinatsionnykh sposobnostey detey s DTSP [Features of the development of coordination abilities of children with cerebral palsy]. *Uchenyye zapiski universiteta im. P.F. Lesgafta*. 2021. No. 5 (195). pp. 37-42.
3. Maksimova S.Yu. Metodika adaptivnogo fizicheskogo vospitaniya detey 5-6 let s narusheniyami oporno-dvigatel'nogo apparata na osnove differentsirovannogo podkhoda [Methods of



adaptive physical education of children aged 5-6 years with disorders of the musculoskeletal system based on a differentiated approach]. *Nauka i sport: sovremennyye tendentsii*. 2015. No. 6 (1). pp. 46-50.

4. Narzulaev S.B., Petukhov N.A., Pivovarov R.A. Podvizhnyye igry v sisteme reabilitatsii detey s detskim tserebralnym paralichom [Outdoor games in the system of rehabilitation of children with cerebral palsy]. *Sibirskiy pedagogicheskiy zhurnal*. 2011. No. 2. pp. 285-290.
5. Ryshkova L.M. Reabilitatsionnyye vozmozhnosti igry v rabote sotsialnogo pedagoga s detmi s osobymi potrebnyami [Rehabilitation possibilities of the game in the work of a social teacher with children with special needs]. *Spetsialnoye obrazovaniye*. 2014. No. II (X). pp. 258-260.