

Game Method of Rehabilitation of Children with Infantile Cerebral Paralysis

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Abstract

Nowadays, the problem of the vital functions of patients with infantile cerebral paralysis in the combination of various aspects of rehabilitation: rehabilitation and recreation, physical and psychological, social, emotional and educational. In a comprehensive rehabilitation system, more attention has been paid recently to new organizational forms, such as the game method.

The aim of research: To develop a new rehabilitation system for children with infantile cerebral paralysis.

Materials and Method: We examined 52 children aged 2 to 12 years with various forms of infantile cerebral paralysis. The control group, we were engaged in physical therapy in a game form along with mothers.

Results: Children who played in a game way with their mothers improved movement in the limbs, improved mood, enjoyed doing exercises and had a positive result more than the previous group.

Keywords: *Game method, disability, speech disorders, rehabilitation.*

Introduction

Relevance: Disability of children with cerebral pathology takes the first place in the structure of childhood disability according to the neurological profile and its severity is due to both motor, mental and speech disorders. The rehabilitation success depends not only on the severity of the damage to the central nervous system (CNS) of the child, but also on timely diagnosis, correct organization of the treatment process, starting from the first years of the child's life⁴

The Aim of Research: To develop a new form and system of outdoor games in the rehabilitation of children with the consequences of infantile cerebral paralysis, by unconventional means.

Tasks of Research:

1. To develop new game method for children - with the consequences of infantile cerebral paralysis in order to correct motor abilities.
2. To substantiate the effectiveness of the game technique developed by us on the physical condition of children with the consequences of infantile cerebral paralysis.

The Object of Research: Examined children aged 2 to 12 years with the consequences of infantile cerebral paralysis.

Table 1: Forms of infantile cerebral paralysis in the studied patients.

Clinical forms of infantile cerebral paralysis	Number of patients with infantile cerebral paralysis	Boys	Girls	Age (Average)
Spastic diplegia	4-7.69%	1-1.9%	3-5.8%	2.8
Hemiplegic form	21-40.38%	9-17.3%	12-23%	5.4
Double hemiplegia	7-13.46%	4-7.7%	3-5.8%	3.7
Hyperkinetic form	6-11.5%	3-5.8%	3-5.8%	8.2
Atonic-astatic form	2-3.85%	-	2-3.85%	1.9
Mixed form	12-23%	4-7.7%	8-15.4%	2.2

Table 2: Number of main group patients

Clinical forms of infantile cerebral paralysis	Number of patients with infantile cerebral paralysis	Boys	Girls	Age (Average)
Spastic diplegia	2-3.85%	1-1.9%	1-1.9%	2.9
Hemiplegic form	11-21%	6-11.5%	5-9.6%	4.9
Double hemiplegia	4-7.7%	2-3.85%	2-3.85%	4.2
Hyperkinetic form	4-7.7%	1-1.9%	3-5.8%	7.3
Atonic-astatic form	1-1.9%	-	1-1.9%	1.3
Mixed form	8-15.4%	4-7.7%	4-7.7%	2.6

Table 3: Number of control group patients

Clinical forms of infantile cerebral paralysis	Number of patients with infantile cerebral paralysis	Boys	Girls	Age (Average)
Spastic diplegia	2-3.85%	1-1.9%	1-1.9%	2.9
Hemiplegic form	10-19.2%	6-11.5%	4-7.7%	4.7
Double hemiplegia	3-5.8%	1-1.9%	2-3.85%	3.8
Hyperkinetic form	2-3.85%	-	2-3.85%	6.6
Atonic-astatic form	1-1.9%	-	1-1.9%	1.6
Mixed form	4-7.7%	1-1.9%	3-5.8%	2.9

All children are divided into 2 groups (30 main and 22 control). All children after 10 days of treatment in the hospital were discharged home. All parents had lessons so that they could independently deal with the child with infantile cerebral paralysis at home. The main group all these activities should be performed in a game way, without forcing a child. Particular attention was paid to the fact that the child himself wanted to be engaged.

All used integrated systems in a game way together with mothers should be affected by the ability to feel the child's self-confidence. Since the rehabilitation of children with infantile cerebral paralysis is complex, it includes psychological, social, medical, pedagogical and

other aspects. At the same time, physical education is the most important part of the process⁶. Classes were held 6 times a week mainly in the morning. The lesson duration was 20-30 minutes depending on the condition and mood of the child. All children in dispensary settings received heat therapy for 1 month. Thermal procedures were applied in the form of paraffin-ozocerite applications with a temperature of 45-50°C on the hypertonic and hypotonic muscles of the limbs. A general massage was applied for 15 minutes daily. Massage is used with stroking, rubbing, kneading and vibration techniques depending on the age, severity and degree of the disease for 10 minutes №10. Dispensary conditions in the gym of physiotherapy exercises were performed physiotherapy

4-5 times a week for 15-20 minutes for a course of 30 procedures. To assess the psycho-speech development of the child, the clinical psychological assessment Gnome was used. The results of the study were transferred into points. The maximum score was 10 points.

With the functional classification of infantile cerebral paralysis - GMFCS (Gross Motor Function Classification System) proposed by R. Palisano et al. (1997), the degree of motor skills development and movement restrictions in everyday life was taken into account for 5 age groups of patients with infantile cerebral paralysis.

Table 4: Studied Population Level according to GMFCS

	Level 1	Level 2	Level 3	Level 4	Level 5
Main group	2	4	8	4	2
Control group	2	6	6	5	1

The motor characteristics were investigated on a 100-point scale, which after the study was again measured and compared with the previous result. Since the performance of physical exercises ensures the participation of higher mental functions in the process of mastering motor skills and has a great influence on the nervous system development, we contributed to the mental development of the child with conscious movements¹. They explained to their mothers that rehabilitation is timeliness, interconnectedness, continuity⁵. The treatment of this disease has long been unpromising⁵. Of great importance for the further rehabilitation of children with infantile cerebral paralysis is the early diagnosis of the disease. The sooner specialists begin to work with the child, the greater the chance to prevent, and not subsequently correct, the delayed reaction of parents, deviations in speech and psyche.³ Another important criterion for successful rehabilitation work with children with disabilities with infantile cerebral paralysis is to participate in a rehabilitation event for the mothers of a sick child. In this regard, the application. For the restorative effect on the body of a child with infantile cerebral paralysis, exercise therapy with the game method e is a very urgent problem. The technique is a game way and even more so with mothers as a means of physical rehabilitation of children with infantile cerebral paralysis has a very good result¹. Movement disorders that limit or impede normal physical activity adversely affect all aspects of personality development⁶. The nature of the rehabilitative effects on the child's body with the consequences of infantile cerebral paralysis was complex, supported the motivation of disabled

children to permanent classes, conducted classes in a mode corresponding to the child's capabilities, created a favorable psychological background.¹ The comprehensive system of rehabilitation impacts that we used in our work consisted of:

- Special physical exercises that do not bother the child.
- Physical exercises with light gymnastics.
- Game classes with mothers.
- Sports and lightweight outdoor games⁴.

The fundamental direction of our thesis is the game method without fail along with mothers.

Results

Physical rehabilitation expressing the improvement of motor abilities by the game method together with the mothers of children with disabilities showed high efficiency. Under the influence of prolonged physical exercises in the muscles of a child with infantile cerebral paralysis, adequate motor sensations arose. The postures and positions of the limbs in the process of medical gymnastics returned to normal, muscle tone and involuntary movements decreased. The child began to properly feel the postures and movements, which is the most important powerful incentive in the process of medical gymnastics⁷. As a result of an integrated rehabilitation system introduction, the game method with mothers and children suffering from the consequences of infantile cerebral paralysis gave a very positive effect.

Table 5: Comparative evaluation of psychocognitive parameters in children with infantile cerebral paralysis before and after the study

Field of study	Field parameters	Main group		Control group	
		Before treatment	After treatment	Before treatment	After treatment
Emotional Functions	Total emotions	3.0±0.2	4.2±0.3	3.1±0.1	3.4±0.1
	Activity	4.0±0.1	5.5±0.6	3. ±0.1	3.4±0.6
	Activity in response	3.0±0.3	4.0±0.3	2.8±0.5	2.9±0.8
Cognitive functions	Attention	4.8±0.6	5.5±0.8	3.8±0.3	4.2±0.5
	Thinking	2.4±0.2	3.4±0.5	2.5±0.1	2.6±0.3
	Game features	5.5±0.1	7.5±0.3	5.2±0.8	5.5±0.8
Child behavior	Food	5.4±0.3	6.5±0.6	5.0±0.8	5.2±0.8
	Life skills	5.2±0.8	6.6±0.3	5.0±0.1	5.4±0.2
Touch functions	Vision	6.5±0.6	7.2±0.8	5.8±0.8	6.2±0.3
	Hearing	6.4±0.8	6.8±0.1	5.8±0.6	6.0±0.2
	Tactile sense	4.5±0.1	5.2±0.3	4.4±0.3	4.4±0.6
Motor skills	Facial expression	3.5±0.3	4.2±0.6	3.6±0.1	3.8±0.3
	Statics Kinetics	3.6±0.3	4.0±0.1	3.2±0.3	3.4±0.6

Table 6: After the study, the obtained results of large motor functions

	Level 1	Level 2	Level 3	Level 4	Level 5
Main group	2	1	9	2	1
Control group	2	7	6	4	1

After the study, the level of large motor function moved in a positive direction.

Table 7: Motor characteristics before and after the study

Parameters	Main group		Control group	
	Before study	After study	Before study	After study
Support development	34.2±23.2	42.3±12.4	24.5±11.2	25.5±10.3
Head holding	42.3±14.5	54.4±14.4	36.6±15.4	37.6±38.2
Hand balance	51.2±13.4	57.6±15.6	48.7±5.6	51.3±12.3
Torso control	54.3±12.3	59.5±14.5	51.3±11.2	51.7±12.4
Walking Verticalization	44.3±15.4	49.4±12.4	38.4±12.4	41.3±42.3
Item Hold	7.5±3.4	8.4±2.2	6.7±1.5	6.8±1.4
Hold posture	42.2±11.3	48.4±14.5	44.5±11.3	43.7±14
Walking speed	18±3.4	22±1.5	15±2.2	15.5±1.4

After completing all the tasks, the child's position was evaluated using a 100-point value. The results above 80 points meant the children without infantile cerebral paralysis without significant motor impairment. 74-80 points - borderline motor disturbance, 64-73 - average degree and below 60 - severe degree.

All these activities, classes with mothers, especially game method, had a beneficial effect on both the physical and mental state of children with the consequences of infantile cerebral paralysis.

Wellness activities using long-term rehabilitation

with a set of exercises for the movement amplitude development, led to positive dynamics in the main groups, regardless of the pathology severity. The proposed rehabilitation program allowed children with infantile cerebral paralysis to increase the range of motion in the joints and muscles.

Thus, a comprehensive system of rehabilitation measures in the game method along with mothers has shown its effectiveness. It gives an improvement in the functional state of the musculoskeletal system, a change in the independence of the child and a positive result when used in practical work with people with disabilities suffering from the consequences of infantile cerebral paralysis.

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