

ОЗДОРОВИТЕЛЬНАЯ И АДАПТИВНАЯ ФИЗИЧЕСКАЯ КУЛЬТУРА / WELLNESS AND ADAPTIVE
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ANALYSIS OF CHANGES IN THE INDICATORS OF THE MOTOR PROFILE IN PERSONS WITH MENTAL
DEVELOPMENT DISORDERS AND LESIONS OF THE MUSCULOSKELETAL SYSTEM IN THE COURSE OF
ADAPTIVE SWIMMING TRAINING SESSIONS

Research article

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Abstract

The article deals with the aspects of the initial stage of education and training of children with the musculoskeletal system lesions by means of adaptive swimming. Currently, the problem of introducing new health technologies with the effective use of tools and techniques of adaptive and recreational swimming for the full or partial return of children with locomotor disabilities to everyday life into the practice of adaptive physical culture and sports is critical. **The aim of the study** is to theoretically design and evaluate the effectiveness of initial sports training of children with lesions of the musculoskeletal system on the basis of the experimental method of adaptive swimming. **Scientific novelty of the research:**

1. An innovative scientific approach to the process of initial sports training of children aged 7–9 years with lesions of the musculoskeletal system (including cerebral palsy) based on adaptive swimming, which allows identifying qualitatively new conditions for organizing group classes based on individualization, has been developed taking into account the manifestation of motor activity of a child with cerebral palsy in the water environment of the pool;

2. The prospects of the use on the first practical group trainings exercises "on land" and "on water", attracting parents to affordable help and backup for children with lesions of the locomotor system "coach-parent-child", which significantly improves the efficiency and quality of child's mastery of specific techniques of movement in water have been proved: when teaching preparatory exercises for mastering with water, swimming with supporting devices and without support.

Keywords: musculoskeletal system lesion, delayed mental development, correction of motor actions in the aquatic environment, individual experimental method, adaptive swimming.

АНАЛИЗ ИЗМЕНЕНИЙ ПОКАЗАТЕЛЕЙ МОТОРНОГО ПРОФИЛЯ У ЛЮДЕЙ С НАРУШЕНИЯМИ
ПСИХИЧЕСКОГО РАЗВИТИЯ И ПОРАЖЕНИЯМИ ОПОРНО-ДВИГАТЕЛЬНОГО АППАРАТА В ПРОЦЕССЕ
ТРЕНИРОВОК ПО АДАПТИВНОМУ ПЛАВАНИЮ

Научная статья

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Аннотация

В статье рассматриваются аспекты начального этапа обучения и тренировки детей с поражениями опорно-двигательного аппарата посредством адаптивного плавания. В настоящее время остро стоит проблема внедрения новых оздоровительных технологий с эффективным использованием средств и приемов адаптивного и оздоровительного плавания для полного или частичного возвращения детей с нарушениями опорно-двигательного аппарата к повседневной жизни в практику адаптивной физической культуры и спорта. **Цель исследования:** теоретическое обоснование и оценка эффективности начальной спортивной подготовки детей с поражениями опорно-двигательного аппарата на основе экспериментального метода адаптивного плавания. **Научная новизна** исследования:

1. Разработан инновационный научный подход к процессу начальной спортивной подготовки детей 7-9 лет с поражением опорно-двигательного аппарата (в том числе с ДЦП) на основе адаптивного плавания, позволяющий обозначить качественно новые условия организации групповых занятий на основе индивидуального подхода, с учетом особенностей проявления двигательной активности ребенка с ДЦП в бассейне;

2. Доказана перспективность использования на первых практических групповых занятиях упражнений «на суше» и «на воде», с привлечением родителей для оказания посильной помощи и поддержки детям с поражением опорно-двигательного аппарата в виде системы «тренер-родитель-ребенок», что значительно повышает эффективность и качество освоения ребенком специфической техники передвижения в воде: при обучении подготовительным упражнениям для освоения в водной среде, во время плавания с поддерживающими приспособлениями и без поддержки.

Ключевые слова: поражение опорно-двигательного аппарата, задержка психического развития, коррекция опорно-двигательных действий в водной среде, индивидуальный экспериментальный метод, адаптивное плавание.

Introduction

Currently, the most common disorders of human health are disorders of mental development and intellectual sphere [8]. Among children with developmental disabilities, 80% are children with mental and intellectual disabilities. According to Rubtsova N. O. (2021), pedagogical influence is the only method that allows social adaptation and integration in society of persons with intellectual disabilities and mental retardation [2], [8]. A special place among the methods of pedagogical correction is occupied by adaptive swimming. Adaptive swimming sessions are the methods of physical development, correction and compensation of motor disorders in persons with mental disabilities. Previously, we conducted research and training sessions in adaptive swimming with children with musculoskeletal disorders, which allowed us to identify positive changes and develop a method of adaptive swimming.

Research methods and principles

The aim of the study is to theoretically design and evaluate the effectiveness of initial sports training of children with lesions of the musculoskeletal system on the basis of the experimental method of adaptive swimming.

Objectives of the study:

To develop and experimentally substantiate a set of sports training exercises at the initial stage of teaching children with musculoskeletal disorders by means of adaptive swimming.

Research methods: theoretical analysis and generalization of scientific and methodical literature on the issue of research, analysis and synthesis of the author's experience in the field of swimming training of children with lesions of the musculoskeletal system, pedagogical supervision, pedagogical experiment, methods of assessment of morphological and functional indicators, level of physical fitness, evaluations and level of psychomotor development and special physical preparation and, manually-muscular testing, content analysis, methods of mathematical statistics.

All this made it possible to obtain effective versatile, as well as reliable information about the psychophysical characteristics, morphofunctional state of children with lesions of the musculoskeletal system, as well as the peculiarities of changes in the level of physical fitness in this category of children, to analyze the dynamics of development in the process of conducting a pedagogical experiment [2], [3], [4].

Literary sources were analyzed and studied on theoretical and methodological problems of adaptive physical culture, psychological and pedagogical characteristics of people with lesions of the musculoskeletal system, the structure and content of the initial stage of sports training and social adaptation of children with lesions of the musculoskeletal system in adaptive swimming, as well as other questions that affect the topic of research. This made it possible to single out the main directions of the problem under study and to determine possible ways of solving and improving.

The analysis of the motor state of children with lesions of the musculoskeletal system brings relevance to the process of pedagogical observation in determining adequate methodological techniques, methods for the development of an experimental methodology of the initial stage of sports training in adaptive swimming. Throughout the study, we studied the characteristics of each child with the help of pedagogical observations, which were carried out purposefully and regularly. This contributed to an increase in the quality of the methodological techniques used in the process of a pedagogical experiment and the creation of prerequisites for increasing its effectiveness and relevance.

Main results

On the basis of the FOK "Dolphin", we conduct training sessions on adaptive swimming for a contingent with various lesions of the musculoskeletal system and disorders, and disorders of mental development and intelligence. The students, in the number of 10 people, were divided into two equal groups of 5 people each. The first group consisted of persons with musculoskeletal disorders, and the second group consisted of persons with impaired mental development and intelligence. Adaptive swimming training sessions are held 4 times a week, for 60 minutes each. Before each lesson, there was a briefing on the rules of behavior and safety in adaptive swimming classes. Due to the specificity of our contingent, an individual-group form was used in the classes. To determine the reliability of the data within the groups, the "Mann-Whitney test" was used.

Research methodology. The training sessions were based on an adaptive method, which was used for diseases in this category, in an individual form. In the first group, which included people with injuries of the musculoskeletal system, more time was spent on unloading the musculoskeletal system, taking a horizontal position, and swimming segments with the work of the legs and hands. In the second group, which included people with mental development and intellectual disabilities, the main task was to set the students up for the correct performance of the task, as well as to concentrate on the lesson, since this category shows distraction and lack of concentration, they are distracted by everything that interests them. Very much attention was paid to teaching proper breathing, both in the first and in the second group of students. In the course of the training session, we used special preparatory exercises that allowed us to successfully master the individual elements of the swimming technique "crawl on the chest" and "crawl on the back". And also used exercises of lower intensity, performed swimming segments of 25 meters at a slow pace, since all this is due to the weak nervous system in persons with impaired mental development, and in persons with lesions of the musculoskeletal system, the specifics of the disease and the defeat of the lower and upper extremities. It was noted that even small loads caused palpitations and shortness of breath, so after swimming segments of 25-50 meters, "exhalations into the water" were performed. Throughout the year, it was noted that the students do not recover so quickly after a training session, and they need time to rest. At the end of each training session, individual students were told the time and day when they should come to the next lesson. In the course of training sessions, the method of "conducting by movement" and "guiding assistance" was used [8]. Applying these methods of adaptive physical education allowed to effectively improve the quality and efficiency of the process of learning motor actions in the aquatic environment, and also contributed to the formation of motor skills in them.

It should be noted that the identification of a stressful situation allows us to adjust the training process, and also allows us to prepare for adaptive swimming competitions in positive dynamics.

To improve the coordination of movements, the simplest exercises were used. As they mastered the water, children experienced respiratory retention, and therefore, a modified Kifuta complex was used in each lesson in combination with breathing exercises, both on land and in water. Breathing exercises were performed in dynamics, with the performance of various swimming exercises.

Correction of motor disorders in children with intellectual disabilities and mental retardation is an important and necessary aspect of correctional and educational work with them.

Content analysis. Artyom Zat-n, 16 years old, cerebral palsy. He started attending classes at the beginning of the school year. Getting used to the water was not easy for him, he dived into the water using a swimming belt. It was noted that the most difficult thing for him was to perform slides with footwork, since a strong lesion of the lower extremities did not allow him to fully perform the work. In the future, after 10 classes, the swimming belt was removed, and again "I had to overcome the difficulties in working my legs to the full". Pedagogical observations showed that, after training sessions, Artyom showed muscle tone in the upper extremities, about the sensations in the lower extremities, he noted that "they are like in flight, like an astronaut landing on earth". Studies have shown that it is easier for Artyom to swim breaststroke, because of the damage to the lower extremities. As observations show, when swimming segments, Artyom practically does not perform footwork, but only makes strokes with his hands when moving forward. At the end of the training session, Artyom independently went out of the water on the side of the pool, despite the fact that "he was very tired and did not feel his legs". It was noted that Artyom was in a state of discomfort for a long time, but then he gradually learned to relax and relieve tension in the lower extremities. In the first classes, he would get out of the water on the side of the pool with the help of an instructor, and needed help and support before going to the shower and changing room. During the self-control of the student, it was revealed that after practicing adaptive swimming, he began to sleep better, as well as walk independently and walk more meters, at home he independently performed the exercises of the "adapted Kiphuth's complex".

Alexander Kur-v, 20 years old, mental development disorder. He started studying at the beginning of the school year. The student already knew how to stay on the water a little, he did not feel fear in the water environment. It is noted that in the first classes, Alexander was absent-minded, uncertain, he had to explain the task several times and he could forget it when he swam to the side. He was restless, always thinking that something was wrong with him, that he was doing the wrong thing. Sometimes he performed the wrong task, forgot himself and "swam as he wanted", explaining that he was "a little tired". But after the first six months, he became more responsible, memorized and pronounced the task himself, noted that the classes became interesting and useful for him. By the end of the first year, I began to swim more stretches on my own, read more sports literature, and watch various competitions on TV. But in the course of pedagogical observations, it was revealed that he has self-doubt, fear of losing and performing at competitions. During the systematic training sessions in adaptive swimming, during the year, Alexander had changes: he stopped being afraid of rivals, he began to perceive the volume of the load more calmly, he had a desire to perform at various competitions in adaptive swimming [2], [4], [6], [7].

S-na Daria, 17 years old, mental retardation, oligophrenia. At the beginning of the school year, she was noted for hydrophobia, so swimming training took place in the swimming belt. She has an inert type of nervous system, which is characterized by a slow switching from one exercise to another. In the locker room, she changed clothes for a very long time, she could not concentrate on what she needed to be already in class. During the training, it was revealed that when swimming the segment, there was a pronounced lack of concentration of attention. After several classes, the swimming belt was removed and swimming 25 meters was no longer a difficult task for her, although the speed was still very small. It is important to note that Daria almost can not concentrate on the lesson, all the time distracted. After the first competition for the prize of Russian Santa Claus, Daria showed even more interest in adaptive swimming training classes. She began to regularly attend classes on a schedule, and almost never missed them. But, when during the holidays there was a break, and she missed classes in adaptive swimming, there was absent-mindedness, lack of attention and there was a long pull in the training process [2], [3], [4].

Kul-na Sofia, 15 years old, cerebral palsy. She started studying at the beginning of the school year, and at the first classes she went to the pool with support. For the first half of the year, she worked out in a swimming vest, there was no fear in the water, which contributed to a faster acceptance of the horizontal position of the body. At the first classes, they began training with getting used to the water, sitting on the side of the pool, performed a slide into the pool, and came out of the water at the first classes with support, but then after several months of getting used to it, she could go out on her own, but on the side she still needed help not to fall, due to the specifics of her disease. Then they began to perform the simplest lying on the water, sliding. Sonya has an unstable psyche, can start crying abruptly, without having a reason, the mood changes constantly if something does not work out. After the first half of the year, when the auxiliary equipment was removed, Sonya began to swim confidently through the segments, trying to overtake her comrades on the track. It was noted that when swimming a task, she always forgot how much time she had left to swim. Sofia does not have the skills of independence, and constantly needs to be taken care of. After participating in the competition for the prize of Russian Santa Claus, she had an emotional outburst, which allowed her to remove negative moments during the training session.

It should be noted that the identification of a stressful situation allows us to adjust the training process, and also allows us to prepare for adaptive swimming competitions in a positive dynamic.

The violation of individual components of motor skills affects the overall psychomotor development of individuals in this contingent in different ways. Correction of motor disorders in persons with intellectual disabilities and mental retardation is an important aspect of all correctional and educational work with them. Motor development disorders are clearly visible when performing differentiated and precise movements. The main difficulties are usually noted when performing coordinated actions that require a quick switch between individual motor actions. For example, after completing one task in a swimming pool, they do not switch to another so quickly, they do not immediately begin to complete the task, but are involved in the process gradually, after a few minutes of rest. In this category, the ability to perform precise and subtle actions, movements, to develop relatively complex motor actions, as well as to quickly change motor settings, is practically not developed.

The analysis of the motor state of students with mental development disorders and with lesions of the musculoskeletal system makes the process of pedagogical observation relevant in determining adequate methodological techniques, methods for the development of experimental techniques in adaptive swimming. In the course of the entire study, which took place for one year, we studied the characteristics of each student in groups with the help of pedagogical observations. This contributed to the identification and improvement of the quality of the methodological techniques used in the research process during adaptive swimming training sessions [2], [3], [4].

Before starting the test, the exercises that needed to be performed were discussed several times, and instructions were given for each of the tasks. It should be noted that in the first group, the task was remembered by the subjects faster than in the second. The participants of the second group could not quickly concentrate, some could not remember and repeat the sequence of exercises. Before testing, a set of adapted general development exercises was conducted with two groups, during which the performance of tasks on the tests was shown and narrated, since people in this category do not have much motor experience and their level of development of physical qualities is not high enough.

Table 1 - Comparison of motor profile parameters in individuals with musculoskeletal system lesions before and after the experiment

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Types of experiments (tests)	EG before the experiment			EG after the experiment			U	Probability estimation
	Me	25 %	75 %	Me	25 %	75 %		
"Alternate opposition to the thumb of all the other fingers", points	7.1	6.1	8.1	8.95	8.4	9.5	1	$p \leq 0.01$
"Moving from a supine position to a standing position without using your hands", points	6.8	5.9	7.8	8.5	7.5	9.5	4	$p > 0.05$
"Alternate squeezing and unclenching of the fingers", points	4.1	3.5	4.7	4.5	3.5	5.5	7.5	$p \leq 0.01$
"360° jump", points	3.9	3.3	4.8	4.0	3.0	5.0	8.5	$p > 0.05$

Note: $n = 5$; Me - median; 25 % - first quartile; 75 % - third quartile; U - Mann-Whitney test

In individuals with lesions of the musculoskeletal system, there were noticeable changes for the better in the indicators of fine motor skills, and there were practically no changes in the indicators of large motor skills. According to the indicators of the test "Alternate opposition to the thumb", the increase in EG (an experimental group) for the year was 6.3%. (table 1). In the test "Transition from the supine position to the standing position without the help of hands", the increase was 4.05%. The index of fine motor skills "Alternately squeezing and unclenching fingers" increased and amounted to 8.8%. It is noted that there is

not a significant increase in the test "360° jump", which was 2.5%. Due to the specific nature of their disease, it was not easy to perform this test for patients with musculoskeletal disorders. (table 1)

Table 2 - Comparison of indicators of the motor profile of EG in persons with mental development disorders before and after the experiment

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Types of experiments (tests)	EG before the experiment			EG after the experiment			U	Probability estimation
	Me	25 %	75 %	Me	25 %	75 %		
"Alternate opposition to the thumb of all the other fingers", points	7.4	7.0	7.9	7.9	7.2	8.4	5.5	$p > 0.05$
"Moving from a supine position to a standing position without using your hands", points	7.1	6.4	7.9	7.4	6.6	8.3	8	$p \leq 0.01$
"Alternate squeezing and unclenching of the fingers", points	7.0	5.5	8.5	9.25	8.5	10	1	$p > 0.05$
"360° jump", points	6.25	5.0	7.5	8.5	6.5	9.5	2	$p \leq 0.01$

Note: $n = 5$; Me-median; 25 % - first quartile; 75 % - third quartile; U - Mann-Whitney test

The analysis of the results Table 2 showed that in people with mental development disorders, there were almost no changes in the indicators of fine motor skills, and in the indicators of large motor skills, it is clear that there were significant improvements.

According to the indicators of the test "Alternate opposition to the thumb", the increase for the year was 20.7%. In the test "Transition from a supine position to a standing position without the help of hands", the increase was 20%. The index of fine motor skills "Alternate squeezing and unclenching of the fingers" increased slightly and amounted to 24.3%. It is noted that a significant increase in the indicators in the test "360° jump", which amounted to 26.4%. (Table 2) When performing the tests, it was noted that this group of students had movements that were not agile, not confident, and there was a slow reaction to everything that was happening.

A comparative analysis of the two groups showed that the increase in the indicators of the test "Alternate opposition to the thumb" in persons with lesions of the musculoskeletal system was 14.4% compared to the other group. This is noted by the fact that people with mental disorders can not focus on the method, their attention is scattered, they can not remember the correct sequence of the task. The increase in the results in the test "Transition from the supine position to the standing position without the help of hands" was noted in the second group, and amounted to 16.6%. The analysis of the test indicators "Alternate

squeezing and unclenching of fingers" showed that the difference in the increase between the groups was 15.5%. The improvement occurred in the second group. There were difficulties in performing the "360° jump" test in people with musculoskeletal disorders, and a low increase was noted over the year compared to the other group, which was 23.9%. It is noted that the subjects of the second group with disabilities and intellectual disabilities did not experience difficulties in performing this task. During the training sessions, almost after swimming various segments, breathing exercises, diving, lying on the water were performed [2], [4], [6], [7].

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Discussion

It should be noted that during the academic year, all the subjects participated in two competitions held within the framework of the sports-adaptive school. Achieving results in adaptive swimming for people with mental development disorders and musculoskeletal disorders is possible only with regular visits to the training process. In this category of students, there is a violation of motor insufficiency in the motor sphere, so exercises aimed at correcting them were performed during training sessions. At the end of the training session, a competitive effect was used, i.e., "race swimming" to increase emotional arousal.

The improvement of fine motor skills in individuals with musculoskeletal disorders occurred due to the inclusion in the experimental program of exercises for the development of fine motor skills before adaptive swimming classes. The improvement of the indicators of the large motorboat in persons with mental development disorders occurred due to the improvement of the physical fitness of the participants, as well as the inclusion of Kiphuth exercises, breathing exercises in the experimental program [2], [3], [4].

Nowadays, the problem of introducing new health-improving technologies based on adaptive swimming into the practice of adaptive physical culture and sports in order to return people with disabilities to a full-fledged socio-cultural life is urgent.

Low physical activity is a distinctive feature of children with locomotor disabilities. Insufficient physical activity in children with locomotor disabilities is accompanied by a violation of the trophism of the muscular apparatus, a change in the regulation of the vegetative-vascular and respiratory systems, as well as a decrease in the intensity of metabolic processes. The relevance of the problem is determined by the small number of studies in the field of expansion of motor activity of children with disabilities with MI damage, use of aquatic environment, as well as insufficient study and efficiency of application of means, methods, methodological methods of adaptive navigation at the initial stage of sports training of children with musculoskeletal injuries, taking into account their psychophysical and psychomotor peculiarities.

Many authors believe that the main goals of attracting people with locomotor disabilities to regular health-improving and active motor activities of adaptive physical culture and sports are to restore lost contact with the outside world and create the necessary living conditions for communication with society, participate in everyday life, and thereby preserve their residual health. It is important to point out that the adaptive physical culture and sports enables people with locomotor disabilities to improve their mental and physical health, contribute not only to social adaptation and integration, but also physical rehabilitation, leading to an increase in their motor activity and compensation of lost functions.

It is noted, that at this moment there is a difficult situation in the state of health of children with locomotor disabilities, which is caused, among other things, by the underestimation of the social role of the actions of adaptive physical culture and, in particular, adaptive swimming. Currently, the problem of introducing new health technologies with the effective use of tools and techniques of adaptive and recreational swimming for the full or partial return of children with locomotor disabilities to everyday life into the practice of adaptive physical culture and sports is critical.

The experimental technique was aimed at increasing the motor activity of children with MI damage and training them in swimming movements, elements of swimming techniques, as well as preparation for performance in various adaptive swimming competitions.

The difference between the experimental technique is:

- In changes in organizational and pedagogical conditions: the lesson consisted of four parts (introductory, preparatory, basic, final);
- Application of the methods of "driving" and "guiding aid";

- Changing the pedagogical approach (explanation of the material studied was based on the following principle "not from head to hand," as in healthy children, but, on the contrary, "from hand to head");
- Respiratory exercises performed not only in water, but also on land;
- Due to the compression in the hip joint, exercises were added on land from the initial position, lying on the stomach and laying (they are postural exercises);
- For proper rowing, exercises were performed to form a stable skill using exercises on land and in aquatic environment;
- Exercises were performed to form fine motor science to activate the motor center of the brain;
- An individual approach to each child was applied.

It is noted that feature of our occupations was repetition of swimming exercises on overcoming fear in water, exercises on development with water which used at the beginning of the main part in order that children remembered all swimming movements as this contingent is not capable to remember quickly information if not to support it with repetitions.

Instruction of children in elements of sports technology of swimming was individualized. It should be noted that at the initial stage of preparation all children were adapted in the Palace of Water Sports. One of the important tasks of the initial phase was to teach hygiene skills in children. Pedagogical observations showed that almost all children did not know how to change their own clothes, take off their upper clothes. They did all this with the help of their parents and under our control. It was found that at low motor activity children with MI damage quickly frozen in water, so exercises were given at an average rate. The necessary condition for the occupation was the warming of the child under the shower, as due to low motor activity and spasticity children of this category quickly supercooled. As well as the water temperature in the pool bowl was 27-27.5 degrees, so the children experienced discomfort and felt supercooled. During pedagogical observations it was revealed that children with MI damage are quickly tired, so during the class it is necessary to combine swimming exercises with rest intervals.

The process of initial stage of preparation of children with musculoskeletal injuries in adaptive swimming will be the more productive the organization and complex of exercises of correction and training work built taking into account psychomotor and functional peculiarities of children with MI damage.

The results of the study by D. F. Mosunov (2010) show that "the lag in the group of children aged 7-9 years was more than 4 years in height and 2 years in weight" [9], [10]. The author notes that in the group of children aged 10-12 years, there was a delay in the development of growth, weight and chest circumference for 1.5-2 years. At the end of the study, D. F. Mosunov (2010) [9], [10] provides data that the average growth rates of children in the age group of 7-9 years significantly ($p < 0.001$) increased by 24.2%. In the age group of 10-12 years, the increase in growth indicators was 17.7% from the initial one ($p < 0.001$). There was a significant ($p < 0.001$) increase in average body weight in children in the age group: 7-9 years – 35.5%; 10-12 years – 43.8% [2], [3], [4].

The experimental technique was aimed at increasing the motor activity of children with MI damage and training them in swimming movements, elements of swimming techniques, as well as preparation for performance in various adaptive swimming competitions.

This situation is confirmed by the results obtained in the course of our study of changes in morphofunctional state, positive dynamics of physical preparation and motor profile, as well as changes in sports readiness of the investigated contingent, which occurred during application of complex experimental method of initial stage of sports training in adaptive swimming.

Prior to the first training session, a meeting with parents was held in the pool. By this time, the first acquaintance with children had already passed. The children were taught about the swimming pool, and the swimming pool bowl was shown. The story about athletes and champions who train in this pool allowed us to create a favorable environment between children, parents and the coach. At the first lesson, the schedule of training sessions was presented. After the first meeting the parents were given a task to psychologically prepare their children for swimming classes, since the first arrival in the pool, the first meeting with new people, staff, and a coach is a stressful situation that manifests itself in emotional and motor reactions to new conditions that differ from the usual conditions, home, and familiar ones. After the first session as a result, many children become withdrawn, shy, do not talk or answer questions, while others, on the contrary, become mischievous, more aggressive, and disobedient. The first meeting of children and parents is of great importance for the effectiveness of the educational and training process. In this case, it is necessary to tell about the upcoming classes in order to involve children in the training process and so that they will have a joyful experience of visiting the pool. Since the child could not come to the training session on their own, all the preparation for it was carried out with the help of parents. Parents helped their children change clothes, accompanied them to the pool, and attended the class until it ended [2], [3], [4].

At the first classes, all students were introduced to water, their level of motor activity was determined. All children were in the water with auxiliary equipment, as the depth of the pool was 220 cm. It should be noted that at the first classes, children were afraid, their parents held their hand, and then they independently held on with both hands over the edge of the pool, as they mastered the water environment, they pushed off with their feet from the edge and began to swim with support on the swimming board. But it should be noted some features of the children: many of them could not swim with the board, as the degree of the disease could not allow them to perform movements due to spasticity of the upper limbs. Children were taught about the need to follow safety regulations, the importance of distance between students, as careless touching each other can cause spasticity, choking, panic and fear [2], [4], [6], [7].

After the first classes on overcoming fear in the aquatic environment, they moved on to training exercises for familiarizing themselves with water, which included various dives in water, lying on water, diving, opening eyes in water, exhaling into water, "float", sliding. At the first classes, children could only be in the water in auxiliary swimming equipment, they could not lie down on the water or move around in it.

Then we went on to study the technique of swimming "crawl on the chest" and "crawl on the back". At the initial stage of training, we studied the elements of footwork movements, as we mastered the movements of the hand technique, and then in the coordination of leg movements, hands and breathing. The formation of special pedagogical conditions for organizing

adaptive swimming classes for children with cerebral palsy requires taking into account the psychological and pedagogical characteristics of the studied contingent, developing a program of pedagogical support for disabled children with the participation of parents, and observing safety measures in water classes.

The analysis of the study of physical fitness for people with health abnormalities showed that the students had significant changes in the indicators over the year, due to the performance of various breathing exercises, general development and motor tasks. And pedagogical observations showed that all the students began to move more, walk on the streets and play outdoor games with friends. All this contributes to the formation of adequate motivation for adaptive swimming classes, participation in the 'GTO' complex among people with health abnormalities.

Conclusion

The following conclusions can be drawn from the theoretical and experimental studies carried out:

In the resulting experiment, changes in basic anthropometric indicators (length and body weight) in children with MI damage tested by control and experimental groups are subject to general patterns and occurred independently of the experimental motor regime and motor activity.

At the end of the school year, all children were able to overcome a distance of 25 meters using the "crawl on the chest" and "crawl on the back" method at competitions without taking into account the time held by the sports adaptive school. On a free day from adaptive swimming, all the students attended the gym. They performed a load there that allowed them to perform a set of general developmental exercises.

Systematized, purposefully organized process in adaptive sports school of initial sports training of adaptive swimming of children with defeat of MI had a significant impact on improvement of indicators of physical preparation, Physical development, psychomotor and functional state of children with MI lesions, All this is confirmed by the positive reliable results of the pedagogical experiment on the author's complex of exercises for children with MI lesions, based on the use of systematic educational and training exercises by adaptive swimming.

Конфликт интересов

Не указан.

Рецензия

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Conflict of Interest

None declared.

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