

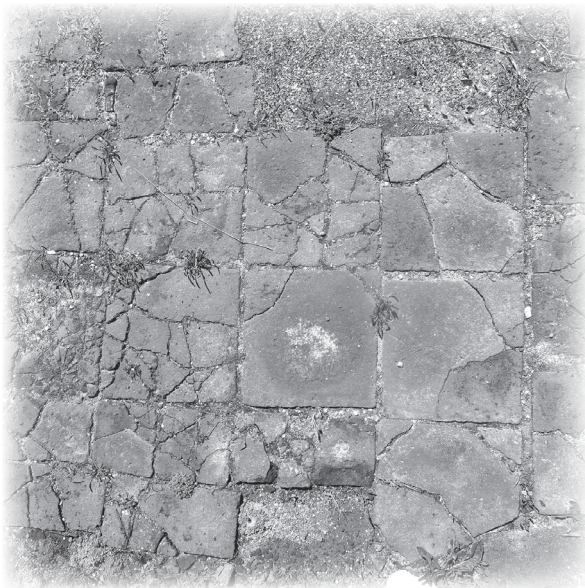
# Wellness Aqua Programs Through Adapted Physical Activity and Sports for Children with Special Needs

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**Abstract:** Motor activity practiced by children with special needs can be defined as any activity that adapts to the capabilities of each child, with the main emphasis on physical development and psycho-emotional state. Adapted exercises performed in an aquatic environment as part of wellness practices for children with various disabilities is highly recommended, as they can be modified and adapted for each age at different stages of motor development. Aqua practices are important as they improve the general condition of the child's body, facilitate daily activities and social interaction and enable independence and safety in the aquatic environment.

**Key words:** children, special needs, wellness aqua programs

**Ключови думи:** деца, специфични нужди, уелнес аква програми



According to the WHO, about 10 % of children and young people on Earth, which makes 200 million have intellectual, physical or sensory impairments. In the European Union, one in six people has a disability of various kinds, which affects around 80 million people, who are often unable to participate fully in public and economic life<sup>1</sup>.

Nowadays, adapted motor activities are a real and at the same time a decisive factor for the future development and realization of children with special needs. There is a steady increase in the number of publications confirming that even children with varying degrees of disability show good progress if they engage in aqua activities in a timely manner. Adapted motor activity in the aquatic environment can be part of the overall correctional, compensatory and rehabilitation process in children with such problems. This is one of the most effective social mechanisms for improving the quality of life, functional development and psycho-emotional state of children with special needs<sup>2</sup>.

Current trends require the inclusion of adapted motor activity in the complex rehabilitation and readaptation of children with various disabilities and disabilities as a healing, therapeutic, prophylactic and sports-animation tool in the Wellness Industry<sup>3</sup>.

The applied innovative and recreational programs improve the emotional dynamics

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and psycho-functional stability in children with physical, intellectual and sensory difficulties<sup>4,5</sup>.

The basis of wellness programs in the aquatic environment is the combination and effective use of theoretical and practical achievements of individual sciences and pedagogy, adapted sports in particular swimming, according to the characteristics of children with disabilities, which with good, diverse and systematic work can lead to a beneficial effect on the level of health, mobility, ability to work and socialization in these children. The first attempt was made to standardize the specifics, dosage, intensity and environmental conditions during the activities.

### 1. CHARACTERISTICS OF PROGRAMS IN THE AQUATIC ENVIRONMENT FOR CHILDREN WITH SPECIFIC NEEDS

Physical activity has a multifaceted effect on the human body, due to the nature and diversity of movements and conditions of the aquatic environment in which they take place (differing significantly from those of the air). In an aquatic environment, the stable position of the body changes, the feeling of support and orientation in space disappears, creating new conditioned-reflex connections<sup>6,7,8</sup>.

The specific properties of water (hydrostatic pressure, resistance, lifting force, temperature and chemical composition) can both facilitate and hinder the performance of a movement or exercise.

Wellness programs in the aquatic environment are a purposeful process in which specific tasks are solved in the presence of motor activity by adapting, modifying and changing the motor activity so that it is suitable for these specific group of children.

This is a qualitatively new concept for the organization and implementation of innovative tools and approaches to work and solving more complex problems regarding the preparation for active participation in public life<sup>9,10,11</sup>.

Systemic activities in the aquatic environment as part of the adapted physical activity in wellness programs for children with special needs have physical and specific effects on the musculoskeletal system, respiratory system, cardiovascular system and blood circulation.

Very useful are the positive changes that occur in the autonomic and central nervous systems, metabolism and stability of the vestibular apparatus.

In addition, it increases the emotional tone and immune responses of the body, and these processes are supported by all three factors of water: thermal, mechanical and chemical<sup>12</sup>.

Nowadays, the European Strategy for Educational and Social Integration is rapidly developing and disseminating, which is aimed at motivating, providing access and opportunities for people and especially children with disabilities to practice physical activity in the aquatic environment in different contexts – recreation, school sport, sport for all, rehabilitation.

Wellness aqua programs in the form of recreation are carried out in leisure time in a recreational and active way, so as to compensate for everyday life, and activities should be considered not only as physical exercise but also as a source of entertainment.

As an aspect of school sports, wellness programs in the aquatic environment are a pedagogical process aimed at the physical development of adolescents with special needs. Their content is characterized by the formation of useful skills, orientation and mobility and impact at different levels. From the point of view of sport, the main goal of all recreational programs in the aquatic environment is to reveal more of their social, health and application functions<sup>13</sup>.

Aqua practices can be practiced from an early age to old age, as a particularly useful tool for increasing physical activity, hardening, improving the functional capabilities and condition of the body and rehabilitation<sup>14</sup>.

According to the World Health Organization (WHO), rehabilitation is a complex of medical

<sup>1</sup> *Ivcov* 2013: 23-24.

<sup>2</sup> *Nesheva* 2019: 37-42.

<sup>3</sup> *Aleksandrova* 2021: 5-7.

<sup>4</sup> *Ivanova* 2019: 53-56.

<sup>5</sup> *Nesheva* 2020: 33-39.

<sup>6</sup> *Bulgakova* 2008: 14-15.

<sup>7</sup> *Bahchevanski* 2019: 77-82.

<sup>8</sup> *Kirilova et al.* 2018: 47-51.

<sup>9</sup> *Djobova* 2019: 89-97.

<sup>10</sup> *Nikolova* 2011: 15-21.

<sup>11</sup> *Aleksandrova et al.* 2017: 12-14.

<sup>12</sup> *Tumanova* 2019: 11-14.

<sup>13</sup> *Donev et al.* 2019: 369-374; *Aleksandrova* 2019: 43-51; *Nesheva* 2019: 135-142.

<sup>14</sup> *Nesheva* 2019: 135-142.

and social means, aimed at rapid recovery of the endangered disability persons who are applied at the beginning of the pathological process, continue throughout the period of the disease and aim at maximizing the return of the physical, mental, professional, social and economic capabilities of children to occupy a place corresponding to his state of health in society. The aim is to restore or improve the physical and functional condition based on the psycho-physical assessment of the child by determining and analyzing the impact, and ongoing monitoring to achieve the expected results.

The content of rehabilitation programs in wellness aqua practice is characterized by increasing the adaptive capacity and resistance to harmful effects on the environment, and specific therapeutic effects. In all cases, it is complex, not local. The means used can be selective or complex to improve the physical qualities and especially the coordination of movements. In order to obtain an effective therapeutic exercise in an aquatic environment, which is in addition to the therapy of drought in children with special needs, the following main tasks are solved:

- General strengthening, toning and increasing the body's resilience
- Development and maintenance of compensatory habits and skills
- Prevention of complications
- Supporting the recovery and maintenance of work habits and skills
- Stimulating social contacts
- Training and creating habits and skills for self-control and awareness of their own capabilities

## 2. TRAINING AND MOTOR THERAPIES IN AQUATIC ENVIRONMENT IN CHILDREN WITH SPECIFIC NEEDS

The spread of modern techniques and their use as motor and training therapy in the aquatic environment begins with the method of Bad Ragaz Ring method (BRRM); Halliwick method and passive relaxation methods: Jahara technique; Watsu; Oceanic rebalance; Aquasage; Aquamouvence; Aquadancing; Hydrorelax; Waving, Ai-Chi et al.

### ➤ Bad Ragaz Ring Method

It is built on the principles and motor models of Knupfer and proprioceptive neuromuscular facilitation whose goals are aimed at increasing muscle strength and recovery; increase the volume of movement; reduction of muscle tone and relaxation; improving body posture (Fig. 1).



Figure 1. Bad Ragaz Ring Method

### ➤ Halliwick method

Learning approach for mastering reflexes, initial swimming skills and dexterity, using the lifting force and water resistance for children with special educational needs<sup>15</sup> (Fig. 2).



Figure 2 Halliwick method

### ➤ Jahara technique

It is based on biomechanics and hydrodynamics. For this purpose, a floating flexible auxiliary device, called a "third hand", is used, which provides support and supports the body's movements in the water, without effort and with a sense of lightness.

Jahara technique's philosophy is the concept of relaxation, maintenance, effortlessness and adaptability / adaptation<sup>16</sup> (Fig. 3).



Figure 3 Jahara technique

<sup>15</sup> IHA 2021: International Halliwick Association. Promoting the Halliwick Concept of Swimming & Rehabilitation in Water : <http://www.halliwick.org> (Accessed april 2021).

<sup>16</sup> Jahara 1995: Jahara Mario. Jahara Aquatic Technique Becoming the water: <http://www.jahara.com> (Accessed juli 1995).

### ➤Watsu method

Combination of Shiatsu stretching and application of Shiatsu massage with smooth movements, causing deep relaxation and soothing (Fig. 4).



Figure 4. Watsu method

### ➤Ai-Chi

Form of active therapy for relaxation achieved by performing a series of slow movements in an aqueous environment, combined with breathing exercises (Fig. 5).



Figure 5. Ai-Chi

## 3. MINIMUM STANDARDS FOR CONDUCTING WELLNESS AQUA PRACTICES FOR PEOPLE WITH SPECIFICPECULIANTY

Adapted aqua practices for children with special needs help to develop useful skills, acquire spatial orientation, mobility and inclusion, thus ensuring the independent living of these children as much as possible. Based on the analysis of some good wellness practices for children with special needs, it is noteworthy that the programs implemented in the aquatic environment prove the positive effect of improving physical activity, cardio-respiratory system and social relationships, but in most of them the main parameters for water activities are not indicated – intensity of the load,

dosage and methodical sequence during the exercise.

The methodology created by us, based on many years of experience in practice, has proven to provide children with special needs the opportunity to gain the necessary knowledge and feelings about the real environment, to inspire them to believe that they can cope alone in the world around them and to feel equal personalities in society. Our methodology in recreational wellness programs has established the most effective pedagogical progress, when classes are held three times a week for 60 minutes according to a pre-prepared specific and adapted program to meet the personal needs of children.

The methodological approach sets the following minimum standards for the environment at the initial stage of pedagogical intervention:

- the activities take place in a shallow pool
- the water temperature is 27 – 28<sup>0</sup> C
- air temperature 25 – 26<sup>0</sup> C

➤the form of pedagogical realization is personalized – coach-chil

The intensity of the load and the dosage of the exercises are in accordance with the individual characteristics of the trained children and the characteristics of their difficulties. The teaching methods used are in accordance with the assimilation of the study material. They vary depending on physical ability, degree of impairment, presence of spatial orientation and the ability to use residual hearing or vision in sensory impairments.

In order to carry out the motor activity in the aquatic environment and depending on the tasks and functions that are performed, the individual approach and the methods of training are used – verbal, motor and visual method (demonstration)<sup>17</sup>.

## 4. EXPERIMENTAL RESEARCH AND RESULTS

In order to determine the effectiveness of the applied methodology in recreational wellness practices for children with special needs, an experimental study was conducted, including a target group of 30 children with special needs engaged in aqua practices 3 times a week for 60 minutes.

The aim of our study was to establish the impact of the specialized impact of the applied means in the aquatic environment on the physical qualities and specific skills of children.

<sup>17</sup> Popov et al. 2018: 150-154.

The object of the study were the specific motor skills and their development under the influence of the specialized impact of aqua practices. To determine the level of development of the signs of information about the special motor qualities and specific skills of the studied children were applied 6 tests – vital capacity, abdominal muscle strength, back muscle strength, explosive force of the lower limbs, explosive force of the upper limbs, balance of the body. The test was performed twice at the beginning and at the end of the observed one-year period.

To prove the effectiveness of the experimental work performed the results of the sports and pedagogical tests conducted at the beginning and end of the study period were processed using

mathematical and statistical methods – variation and alternative analysis. Important information for our study was the coefficient of variation.

The observed differences in the results of the studied children affected the homogeneity of the studied population.

The analysis shows that at the beginning of the observed period two of the indicators are relatively stable and the studied population is relatively homogeneous in terms of the signs for which these indicators carry information. During the observed period there was an increase in homogeneity and at the end of the period the target group was relatively homogeneous in terms of 4 studied traits (Fig. 6).

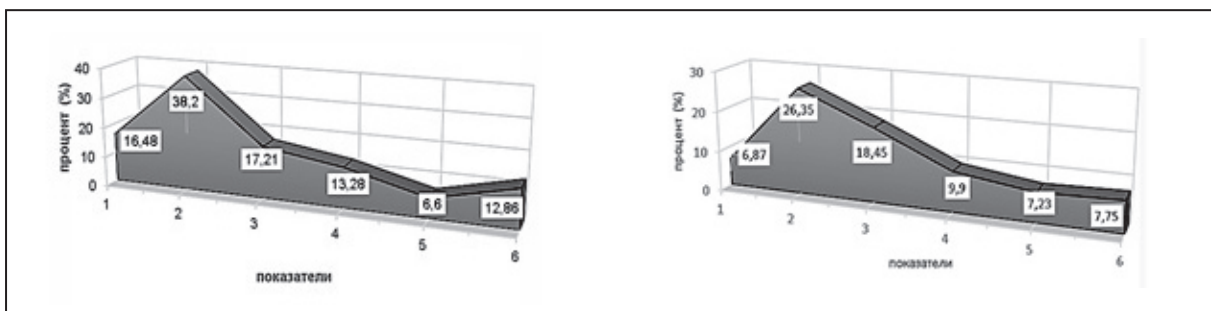


Figure 6. Values of the coefficient of variation (V %) – beginning and end of the studied period

An improvement of the average values of the studied indicators has also been achieved (Fig. 7).

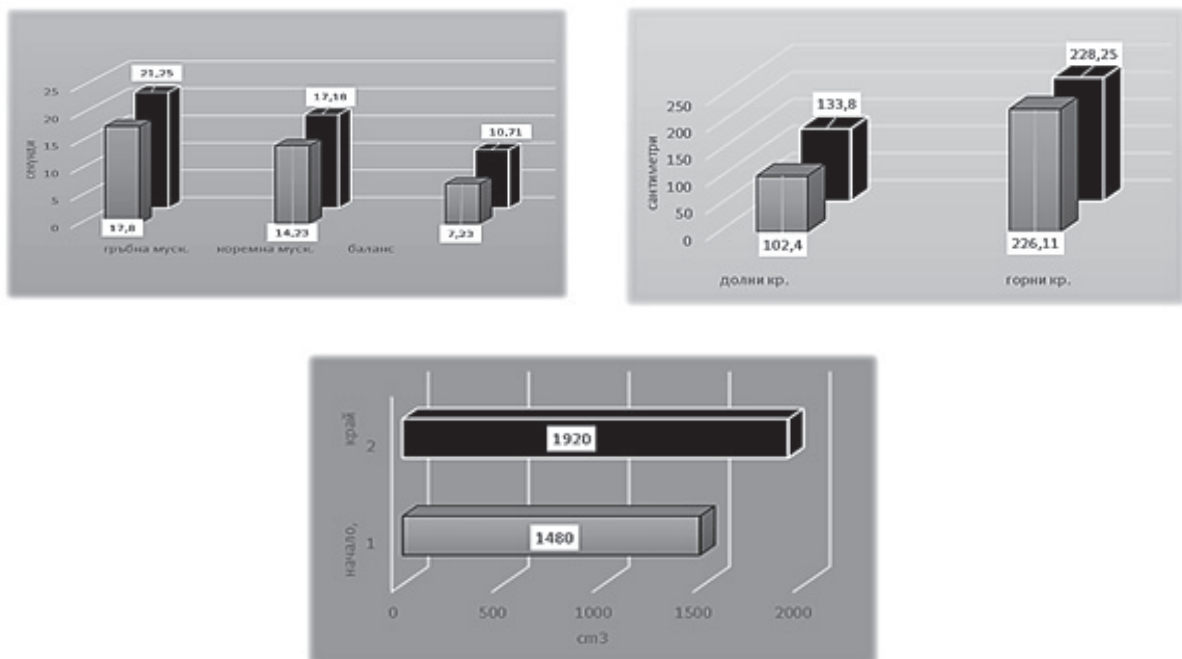


Figure 7. Mean values of the studied indicators – beginning and end of the experiment

For the purposes of the study, the final results of all children were evaluated, based on the average level of each of the observed signs. For this purpose, the so-called sigma estimates T, which are dimensionless quantities and allow to compare differently sized tests and indicators (measured in sec, cm, %, etc.).

The application of the T ratings as optimization criteria allowed to outline the accents in the future work with the studied group as a whole.

On the basis of these assessments, efforts should be focused on developing those features on which the T assessments calculated according to the relevant normative table are the lowest. They are determined by comparing the scores on all indicators examined in a given child and group<sup>18</sup>.

The development of the so-called individual models allowed to outline both the strengths in the preparation of individual children and the highlights in their future training work (Fig. 8).

From the analysis of the results obtained from the conducted experimental research we can

summarize that the applied aqua methodology has had a favorable effect on the development of motor skills of the studied children.

The recreational aqua practices are in accordance with the level of preparation of the children, the specific features of the different nosologies and the time for the implementation of the pedagogical interaction. The effective use of theoretical and practical achievements of adapted sports, in particular swimming, according to the characteristics of children with special needs, with good, diverse and systematic work can lead to a beneficial effect on health, mobility, ability to work and socialization. The content of the programs includes standardization of the specifics, dosage, intensity and environmental conditions.

In this way, we promote aqua wellness practices and provide access and opportunity to participate by implementing a variety of adapted aqua programs for physical activity, suitable for the interests, opportunities and limitations arising from the individual characteristics of children with special needs who can not be included.



Figure 8. Example of an individual model calculated on the basis of sigma estimates T

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<sup>18</sup> Carova 2013: 89-90.

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## Уелнес аква програми чрез адаптирана физическа активност и спорт при деца със специфични нужди

Величка Александрова

По данни на СЗО около 10 % от децата и младежите на Земята, което прави 200 милиона имат интелектуално, физическо или сензорно увреждане. В Европейския съюз един на всеки шест души е с различно по вид увреждане, което прави около 80 милиона души, които често нямат възможност да участват пълноценно в обществения и икономическия живот.

В днешно време адаптираните двигателни дейности са реален и същевременно решаващ фактор за бъдещото развитие и реализация на децата със специфични нужди. Постоянно се увеличава броят на публикациите, които потвърждават, че дори деца с различна степен на увреждане показват добър прогрес, ако своевременно се включат в аква дейности. Адаптираната двигателна активност във водна среда може да бъде част от общия корекционен, компенсаторен и рехабилитационен процес при деца с такива проблеми. Това е един от най-ефективните социални механизми за подобряване качеството на живот, функционалното развитие и психо-емоционалното състояние на децата със специфични нужди. Съвременните тенденции налагат включването на адаптираната двигателна активност в комплексната рехабилитация и реадаптация на деца с различни ограничения и увреждания като оздравително, лечебно, профилактично и спортно-анимационно средство в Уелнес индустрията.

Приложените иновативни и рекреативни програми подобряват емоционалната динамика и психо-функционална устойчивост при децата с физически, интелектуални и сензорни затруднения.

В основата на уелнес програмите във водна среда е съвкупността и ефективното използване на теоретични и практически постижения на отделните науки и дялове на педагогиката, на адаптирания спорт в частност плуване, съобразно с особеностите на децата с различни увреждания, която при добра, разнообразна и системна работа може да доведе до постигане на полезен ефект върху равнището на здравословното състояние, двигателната дееспособност, трудоспособност и социализация при тези деца. Направен е първи опит за стандартизиране на спецификата, дозировката, интензивността и условията на средата при провеждането на заниманията.

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