

The benefits of participation in aquatic activities for people with disabilities

Amelia Elena Stan

Faculty of Physical Education and Sport, Ecological University, Bucharest, Romania

Abstract. Participants to adapted aquatic activities learn motor skills. However, through proper planning with specialist instructors, through cross-disciplinary participation and a corresponding report patient – therapist it can achieve multiple benefits. Aquatic activities provide a form of exercise as relaxing and enjoyable observed from socially point of view. Swimming has many benefits physical, social, emotional, cognitive and recreational. Through swimming can learn other various functional activities and quality of aquatic activities can create skills for lifelong learning, independence and a sense of fulfillment. Swimming is a fun activity that makes it attractive to participants and therapists. **Conclusions.** Exercising in water can promote the development of physical skills, social, emotional, cognitive skills and leisure skills. Water attraction is given by its recreational, educational and therapeutic value, long recognized.

Key words: *aquatic rehabilitation, people with disabilities.*

Introduction

Aquatic adaptations, adapted aquatic exercises, adapted therapeutic exercises, aquatic therapy and adapted swimming are concepts that have been associated with aquatic participation of persons with disabilities. Adapted aquatic notion was used to signify different things. Before the aquatic activities to be separated in use for education and recreation and used for therapy, some professionals have used them to describe all suitable aquatic activities for people with disabilities, without consideration for the purpose or result. Some professionals believe that the term adapted aquatic follow its course, has negative connotations and expresses the old concept of care which focuses on therapeutic applications rather than the typical aquatic activities (1). At one point „adapted aquatics was what anyone was doing in water with any individual with a disability” (2).

Most of people enjoy aquatic activities and considers it part of their lives. Water allows us to perform certain movements that can be carried out on land only with great difficulty or not at all.

Development of issues that led to water use for medical purposes (hydrotherapy, hydrokineto-therapy), in addition to its use for recreation, and fitness instruction, called the formation of various aquatic programs. By the 1960s formally began the separation of water used as therapy and its use

for people with disabilities in recreational and instructional processes. Efforts made by medical staff to use water therapy led to meeting the needs of people with disabilities, including educational programs, recreational and competition created by different organizations. The therapeutic part of aquatic disciplines for people with disabilities divided into physical and occupational therapy and its use by accredited medical staff.

Learning adapted swimming may complete a program of basic physical activity, but can also be an independent party as a valuable segment of physical education for students or physical activity program for adults and elderly. Because of physical support that water gives, many people whose disability affects the mobility of land can function more independently in an aquatic environment without using braces, crutches, or wheelchair frame.

Water is an environment that, in terms of physical issues, releases people with disability, allowing them to participate safely in physical activity.

Although participation in therapeutic aquatic has a long history, people with disabilities were not always able to participate in training programs and swimming pool for educational or recreational.

Society and even professionals working with people with disabilities have not encouraged these people to participate in water activities because of numerous barriers, including philosophical conflicts on services and professional responsibilities. Water offers a unique opportunity to develop fitness and the aquatic opportunities have developed from passive programming, therapeutic, to swimming training, aquatic recreational and even international competitions.

The term adapted aquatics denotes aquatic programs involving people with disabilities and (a) changes necessary in educational strategies, facilities and equipment, (b) changes and support mobility from one area to another; and (c) changes in communication processes and movements for swimming strokes, water safety skills and other aquatic activities. In this area adapted aquatic is used to improve fitness, swimming procedures, safety skills and quality of leisure by educational tasks, corrective feedback and structured practice. There are other expressions used and confused with adapted aquatic programs, like adapted aquatic exercise, exercising aquatic therapy and aquatic therapy.

Adapted aquatic exercise programs transfer exercises that are usually conducted on land to the aquatic environment. Aquatic fitness specialists or aquatic therapy adapt exercises practiced on land to the needs acute or chronic of people with disabilities. The goals of these programs are similar to those of hydrotherapy, but adapted aquatic exercise programs do not use whirlpools, contrast baths or as passive exercises performed in hydrotherapy. Professionals participating in such programs are aquatic instructors trained specifically in physical therapy, physical educators, specialists recreational therapists, sports trainers and sports medicine specialists and physical therapists and professionals.

Aquatic therapy aquatic exercises are aquatic movements specially prescribed for a particular person. Therapeutic aquatic exercise protocols must be authorized by a physician and conducted by a physical therapist, coach or physiotherapist who has aquatic training. Aquatic programs that use the medical model, such as hydrotherapy and adapted aquatic exercise and therapy, can be classified under the broad category of aquatic therapy. Aquatic therapy is "the process of working with patients to actively or passively rehabilitate musculoskeletal, neurological and/or cardiopulmonary conditions, using water and the pool as the primary therapeutic medium" (3).

A adapted swimming program changes swimming strokes for people without power, mobility and strength to perform the standard version. Adapted swimming is a comprehensive name for programs that use swimming, water safety skills and recreational aquatic activities to promote health and recovery. While adapted activities comprise more than swimming strokes, does not include therapeutic aquatic exercise, hydrotherapy or aquatic therapy. Some industry professionals refer rather to adapted aquatics for adapted swimming when discussing the issues in this area. Their concern is the misunderstanding of the implications of adapted aquatics. This concept comes from the potential participants in adapted aquatics and medical staff, thinking that a program labeled like adapted aquatic includes therapeutic exercises. These professionals believe that the term adapted aquatic reflects entire scope of activities of adapted aquatic, including swimming, exercise, recovery, security features and recreation. Adapted aquatic reflects philosophical activities of adapted aquatic, of safety and recreational methods to the needs of people with special needs. Adapted aquatics is a method, a parallel program and process, adapted to physical education, similar to those on land.

"As a method, adapted aquatics parallel adapted physical education in that it strives to modify any existing swim stroke, game, or activity to meet the needs of individuals with special needs" (4).

In the United States adapted aquatics is included in a separate program for people with special needs. People and their careers can opt for a separate program for water games, activities, swimming and recreation procedures according to their comfort levels and needs.

As a process, adapted aquatics are oriented on providing complete aquatic programs for people with disabilities. This process includes the identification, placement, learning and assessment issues to ensure that the location is appropriate.

Although aquatic activities does not solve like magic the problems of life, swimming enriches life and gives an opportunity to increase the morale and physical appearance (5), improved mood (6) and a low level of depression (7). For people with disabilities, an empty chair or a pair of crutches left side of the pool means freedom of movement and feeling of success that enhances self-image.

Physical benefits

Physical benefits of aquatic activities are well documented, like aquatic immersion, that is the ideal environment for imitating the imponderability. Physiological benefits came from two different sources: biological effects of water and physical and therapeutic benefits of participation in aquatic activities. Although adapted aquatics activities not focus on the therapeutic exercise in water, warm water facilitates therapeutic purposes and is useful for treating certain diseases and ailments. "The application of water, usually through immersion, is called medical hydrology" (8). "Biological effects of immersion in warm (33.3 to 35.6⁰ C) water include the effective transfer of heat to the body, which in essence relieves pain and promotes relaxation due to thermal energy transfer; the weightlessness effects produced by the interaction between buoyancy and pressure hydrostatic; and the viscosity and cohesion properties of water which support the body and at the same provide resistance" (3). "Other biological benefits of immersing the body in water up to chest (or higher) include lymphatic compression, venous compression, increased central blood volume, increased cardiac volume, increased atrial pressure, increased stroke volume, increased cardiac output, increased work of breathing, increased oxygen delivery, improved dependent edema, increased muscle blood flow, offloading of body weight, decreased joint compression with movement, increased flow to kidneys, higher pain threshold, suppression of sympathetic nervous system activity, and promotion of excretion of metabolic waste" (8).

"Movement in water, including water movement through adapted aquatics activities, can therefore yield the following physical benefits: relaxation, relief of pain and muscle spasms, maintained or increased range of motion in joints, reeducation of paralyzed muscles, and improvement muscle strength and endurance" (9). The aquatic environment helps establish initial patterns of movement that may represent the beginning of the possibility of movement. "Specifically, swimming strengthens muscles that enhance posture, thereby helping to develop the stability needed to learn skills for locomotion and control objects" (10). Due to buoyancy, people with disabilities can perform certain movements in the water that are impossible in other situations and they are very helpful. Where can practice doctors prescribe swimming strongly, as a curative factor in various

diseases of the musculoskeletal and nervous system.

Lack of physical movement and aerobic exercising often causes people with disabilities reduction of vital capacity of lungs. Adapted aquatic activities can help improve breath control and cardio-respiratory training. "Blowing bubbles, holding the breath, and breathing out through the mouth and nose all improve respiratory function as well as oral motor control, which can aid speech and decrease drooling and feeding problems" (11). In addition, immersion in water inflict pressure on the respiratory system and respiratory work increases by about 60%. Rhythmic breathing and breath control activities so prominent in aquatic programs strengthens respiratory muscles and improve breathing. Water supports the body and counteracts gravity so that a person who cannot walk on land may be able to go in the water. Thus, it strengthens the muscles needed for walking on land. The use of adapted aquatic activities to increase the level of training may be beneficial for people with disabilities, as movement is easier in a program in water than in a dry land.

Also "stimulates the sites where the body takes in information (water acts as a perceptual stimulant), such as the skin, the vestibular system (...) and the visual and auditory systems" (12). The skin reacts to different temperatures and sensations (provided by water, towel, bottom of the floor and walls), the vestibular system to water turbulence, the eyes to the permanent changing surface of water and ears to the pressure increased from diving. Thus, for people with disabilities who require sensory stimulation, water can be an important part of therapy. By sharing their goals for the benefit of the patient, physical and occupational therapists can help the instructor to provide aquatic activities that are both therapeutical and educational beneficial for participants. In fact, as is practiced more the same skill in a variety of surroundings, the more skills are generalized to other situations.

A disabled person can use aquatic training and swimming skills to participate in enrichment aquatic activities such as surfing, waterskiing and scuba diving. The benefits of increased physical fitness and functional skills can influence other physical activities and recreational opportunities. Aquatic activity can be a fun way to improve the vital capacity, mobility, muscle tone and overall physical training without putting excessive pressure on joints, in the development of

locomotor system – infantile paralysis or damage to the joints. Debilitated children, asthenic, with disorders in psychophysical development, with traces of rickets, etc. – it is envisaged, addition of beneficial effects of sunlight, which promotes bone growth and proper swimming action, which stimulates appetite, breathing and heart function, calm sleep, radically changing the appearance of these children.

Social and emotional benefits

"A quality aquatics program can facilitate social and emotional benefits in addition to physical wellness" (5, 6, 7). Hot water has a sedative effect and cause physical and mental relaxation. The ability to move more easily through water fosters a level of independence and control that some people with physical disabilities can not reach on land. The joy of swimming is a "social asset" (12) that can stimulate other aspects of life. A person with physical disabilities to become more independent movement in water can improve self-image, which is a strong motivation for further work. "For young people, whose sense of self may be a direct result of body image and athletic proficiency, residual motor impairment can be a particularly negative variable" (13). Freedom of movement in water not only feasible cheer but also offers "incentive to maximize their potentials in other aspects of rehabilitation" (9). Social benefits are favored in an aquatic program carefully planned and implemented by a qualified instructor. A better knowledge and appreciation of aquatic activities, including educational opportunities, recreation and competition, increase the variety of activities that may involve people with disabilities. Opportunity to participate in fun activities can lead to age-appropriate awareness raising, community experiences. Wellbeing and sense of freedom releases temporary tension, which in many cases may be part of the effects of physical disability.

Social and emotional benefits from recreational experiences gained have lasting positive effects on people with disabilities or to any other person. Aquatic entertainment speed an appropriate and fun use of leisure time and help to achieve the goals of cognitive, physical, social and emotional. "Statistics show that many individuals with disabilities have more than the average amount of leisure time" (14). "Using leisure time wisely often makes the difference between a person who is socially isolated and has poor self-esteem and one who is stimulated through socialization with others to achieve self-actualization" (15).

Influence on the psyche of the children is perhaps the most important feature of aquatic adaptation. Winning the confidence of the small (and not only) suffering in the success of the treatment, factor that increases when the child feels he masters the water, influences favorably the nervous system, indispensable for the success of the healing process.

Cognitive and intellectual benefits

"The motivational and therapeutic properties of water provide a stimulating learning environment, even for individuals with more severe disabilities" (16). Exploring movement helps in understanding the body and how it moves. May especially benefit people with traumatic injuries who do not know how their bodies move in this condition. "Some instructors have integrated academic learning with adapted aquatic, successfully reinforcing cognitive concepts" (17). Some instructors have focused on creative water games associated with math, spelling, reading, and other such skills. Participants may include counting laps or letters from plastic read on the surface of water, or diving for the letters, or they can describe letters or numbers with their members. These activities also help to enrich the judgments and orientation to surroundings.

Recreational options for people with disabilities at swimming pool

A major issue in recreational model is where is the best placement and services for people with disabilities, in countries where the legislation receive locations and equipment. Most of the recreational settings (segregated, integrated and inclusive) must be available to match the capacity of individuals, although they are lacking in our country. There are people who believe that all individuals must participate together in recreational settings general. These two concepts refer to the Least - environment restrictive (LRE) and inclusive recreation. Philosophy of inclusion refers to "attitudes and beliefs of acceptance that promote positive, meaningful integration" (4). Methodology for teaching swimming and aquatic recreational activities can be carried out together with family, neighbors and friends at the same settings regardless leisure of individual needs. With condition that all persons are provided with appropriate qualified recreational staff. Adapted aquatic recreational is a subcomponent of special recreation. Number of instructional options is less important than ensuring that students participating in the inclusive program is safe and still driving to

their successful participation. Services available in any community in United States can provide to a participant different recreational leisure environments. Some experts have pointed out that "a continuum of community recreation options and services for individuals with disabilities" (18). The continuum includes the following opportunities for involvement:

- when the community cannot provide the needs for disabled members, as is the case in our country – is called *noninvolvement*. Professional from recreational community do not include the needs of people with disabilities. In this segment of the community the disabilities are seen in passive leisure activities rather than actively participating in them. This places the passive observer at risk, population already being in jeopardy, deeper social isolation and psychological and physiological damage to health can occur. Another barrier to inclusion of persons with disabilities may be a misconception of the organizers of the recreational that the needs of this segment of the population are already met by other recreational activities and sports retailers.
- recreational participation is often dictated by the nature of the activity or level of skill or imposed or social competency – *segregated*. Participation in activities can be an end – sport competition, the reflection of the wishes of the participant – socializing with others with similar skills, or a temporary measure until the person has the prerequisite skills for inclusive recreation. In this section can be included the most severely disabled participants, requiring the greater support, offering a lifetime activities, that are best learned from homogeneous population.
- when disabled people participating in leisure activities in the community generally with leisure opportunities it is called *integrated* – participation requires support from specialized staff or services, that is going with heterogeneous population.
- *inclusive* leisure programming is specified as to zero exclusion – recreation programming for all community members. It is where theory meets reality.

And where stereotypes take on the human element. At this level participants with disabilities can freely choose which activity they want and receive the same attention as any other participant. Participants will follow their purpose without limitations of abilities, or psychosocial concerns.

"Inclusion process, because is touching the mentality in changing, takes time and has to be addressed by constant and consistent activities. By achieving this ideal, we believe that beginning to be supported, the next steps will follow a logical course"(19).

To the top of the pyramid it is the Least Restrictive environment.

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Corresponding author

Amelia Elena Stan
Faculty of Physical Education and Sport, Ecological
University
Bucharest, Romania
E-mail: amelia.stan@gmail.com

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