Benefits of Aquatic Therapy for Children and Adolescents with Cerebral Palsy

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Introduction

Since the beginning of creation, water has been a vital tool to function in life. Without it, all living beings would have no chance of survival. Although water’s original purpose is for life, its qualities can be used for other important activities, such as physical exercise and therapy. Swimming can provide individuals with physical exercise that improves cardiovascular health, circulatory and respiratory functions, and muscle strength and endurance (Benefits of swimming.org, 202). Water also offers qualities that help individuals with disabilities improve their quality of life physically, cognitively, and emotionally. Due to its buoyancy and resistance, the water acts as a physical support system. It is said to help with pain, movement, overall body function, and mood. The National Center on Health, Physical Activity and Disability (NCHPAD) (2014), define aquatic therapy as “the use of water and specifically designed activity by qualified personnel to aid in the restoration, extension, maintenance and quality of function for persons with acute, transient, or chronic disabilities, syndromes or diseases” (p.1).

Understanding how aquatic therapy affects the individuals who utilize it is important to understanding the therapy and how it can be improved upon.

Framing Question

Many people with a wide variety of disabilities use aquatic therapy to help with pain, mobility, physical functioning, and overall quality of life. One disability that is quite prominent in the use of aquatic therapy is cerebral palsy. Cerebral Palsy onset is before birth or at a young age, so it is important to begin therapy and treatment as soon as possible. “Cerebral palsy is the most common of all childhood disabilities, affecting about two to three live births out of 1,000 in the United States (Cerebral Palsy.org, 2014).” The question being asked and researched
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throughout this paper is whether aquatic therapy is effective or beneficial for children and adolescents with cerebral palsy.

A Review of the Literature

Cerebral palsy is said to be one of the most common childhood on-set physical disabilities with varied impact on daily activities. The Cerebral Palsy International Research Foundation (2013), states that 17 million people have cerebral palsy all around the world. About 500,000 of the 17 million are children under age of 18 that currently have cerebral palsy (CerebralPalsy.org, 2014). According to Getz, Hutzler, Vermeer, Yarom, and Unnithan (2012) “Cerebral palsy is defined as a group of permanent disorders of the development of movement and posture that cause activity limitation, and are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain” (p.1). Certain therapies have been the topic of discussion for this disability and whether they actually work. Physical exercise is important in any life style, but especially important for people with cerebral palsy. In order to maintain mobility and body function, it is important to keep the level of physical fitness high.

There are many types of exercise that can help with mobility and body function, but one that seems to be highly beneficial is aquatic therapy. Aquatic therapy refers to treatments and exercises accomplished in water to maintain fitness, physical rehabilitation, relaxation, and other therapeutic benefits with the direction of qualified personnel. Aquatic therapy normally happens in a pool or area of water that is heated in order to keep the muscles, joints, and body warm so movement does not result in injury. Many people find it beneficial for a person with cerebral palsy to exercise in the water. According to research and other professionals, aquatic therapy does benefit children and adolescents with cerebral palsy because they have seen it with their
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own eyes. There are many research-based articles that discuss if there is real scientific evidence that aquatic therapy benefits a person with cerebral palsy.

Broach and Dattilo (1996) use multiple studies and articles to create nine implications that aquatic therapy is important in Therapeutic Recreation and in the lives of people with disabilities. The nine implications are split into three groups: physiological, psychological, and leisure (Broach & Dattilo, 1996, p. 215-226). The physical implications include decrease pain, prevent bone loss, increase strength, increase endurance, and improve pulmonary functioning (Broach & Dattilo, 1996, p. 215-221). The psychological implications consist of positive body image, decrease depression, and enhance mood (Broach & Dattilo, 1996, p. 221-223). The last implication consists of leisure and how aquatic therapy can enhance functional ability so aquatic therapy can be a life-long leisure activity (Broach & Dattilo, 1996, p. 224). Broach and Dattilo (1996) state that aquatic therapy can help maintain health and daily functioning and participants improve their comfort, while increasing confidence in order to reach functional independence (p. 226).

Many other articles suggest aquatic therapy and aquatic aerobic interventions are beneficial for children and adolescents with cerebral palsy in improving many aspects of their health, just as Broach and Dattilo suggest. Gorter and Currie (2011) agree with the benefits of aquatic therapy presented by Broach and Dattilo. They emphasize the therapy as being important for individuals with significant movement limitations which cause land-based activities to be difficult (Gorter & Currie, 2011, p.1-2). Similar to other professionals, Gorter and Currie (2011) have found research supporting the use of aquatic interventions with cerebral palsy but they also state that evidence to prove aquatics as beneficial is scarce.
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Kelly and Darrah (2005) seem to agree that evidence is lacking in the area of aquatic therapy. They discuss that exercise therapy for children with cerebral palsy is becoming popular among pediatric physicians (Kelly & Darrah, 2005). Focusing on all aspects of exercise for children with cerebral palsy, Kelly and Darrah (2005) take note that water exercise appeals to children with cerebral palsy because the buoyancy of the water reduces joint loading and impact and lessens poor balance and poor posture. It is noted that children with cerebral palsy may benefit more from aquatic exercise than land-based exercise, because it allows the child to engage more easily in aerobic and strength activities (Kelly & Darrah, 2005). While personal preference is important, it is also important to have scientific proof that aquatic therapy works. Kelly and Darrah (2005) conclude their article by relating that there is a lack of evidence for assessing the potential of aquatic exercises for children with cerebral palsy.

Dimitrijević, Aleksandrović, and Madics’ (2012) objective for their study was to investigate the effect of aquatic therapy on gross motor function and on aquatic skills of children with cerebral palsy with the belief that aquatic therapy can be beneficial. They used a group of twenty-nine children, ranging in age from five to fourteen years, with cerebral palsy for their case study. The study measured motor function using the Gross Motor Function Measure and measured aquatic skills knowledge using Water Orientation Test Alyn 2. Results of the study indicate that children with cerebral palsy can improve gross motor function on dry land and aquatic skills with a six week water intervention. Within the same year of this study, Jorgić, Dimitrijević, Lambeck, Aleksandrović, Okičić, and Madić (2012) reviewed and analyzed a series of thirteen articles from the years 1990 to 2011 that investigate the effects of aquatic programs on children and adolescents with cerebral palsy. The discussed study consists of at least a ten-week aquatic program that meets three times a week for forty-five minutes (Jorgić et
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The results found consisted of what Dimitrijević, Aleksandrović, and Madic (2012) found in their study: aquatic programs do have a positive effect on improving physical fitness and social behavior in children with cerebral palsy.

Retarekar, Fragala-Pinkham, and Townsend (2009) conducted a one subject study with a five-year-old female with cerebral palsy. The study consisted of aquatic aerobic exercise intervention that was carried out three times per week for twelve weeks (Retarekar, Fragala-Pinkham, and Townsend, 2009). Retarekar, Fragala-Pinkham, and Townsends’ (2009) results found that there were significant improvements in participation of activity, functional abilities, and walking endurance and speed. The study found that aquatic aerobic exercise programs were beneficial and effective for this child with cerebral palsy. Fragala-Pinkham, Haley, and O’Neil (2008) also conducted a study of the effectiveness of aquatic exercise on children with disabilities. Improvements were seen in the half-mile walk/run, but not in the strength or motor skills measurements (Fragala-Pinkham, Haley, & O’Neil, 2008). The article concludes that aquatic exercise provides a safe and beneficial low-impact exercise for children with disabilities.

The recurring theme amongst the articles reviewed is that aquatic therapy is and can be beneficial for children with cerebral palsy. Through the research and studies mentioned throughout this paper, aquatic therapy has been found to have some benefits scaling from small to large. With this information, it is also important to know that there is still a need for more research about the effects of aquatic therapy on children with cerebral palsy and children with disabilities in general. There needs to be more studies completed with a wider and greater pool of participants so there can be clearer evidence that aquatic therapy works. It is also important to focus on the factors that affect the outcomes of the aquatic therapy. Factors consist of the families’ availability, other illnesses or symptoms present in the participant, the duration of the
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therapy, and the number of individuals in the study. Keeping these factors and the benefits of aquatic therapy in mind can help create a study that can show more scientific evidence that aquatic therapy works for children and adolescents with disabilities.

**Knowledge Translation Plan**

Research on aquatic therapy has shown that the intervention can help individuals with disabilities reap numerous health benefits. The studies and research collected show that aquatic therapy helps improve gross motor skills, mobility, functional independence, social behavior, and physical fitness and health in children and adolescents with cerebral palsy. Some evidence found shows the possibility that the enjoyment of water within aquatic therapy can be a key component to the benefits received by the children with cerebral palsy. It is suggested that not only physical aspects of health are improved, but behavioral and emotional health is affected as well.

Research suggests that benefits are evident with aquatic therapy, but the need for further research and studies on the intervention is vital. Most research states within their findings that more scientific research and information is needed on how aquatic therapy affects children with cerebral palsy. The methods used within the collected research consist of developing studies with 1 to 20 participants or a collection of literature and studies to find more information about the therapy. More studies with larger pools of clients are needed. Most studies find it difficult to get families and the participants to come to each therapy session due to time and illness. Future studies need to focus measuring the benefits of aquatic therapy in a more scientific way other than by observation.

It seems aquatic therapy can be beneficial for children and adolescents with cerebral palsy, but there are reasons that a child would not benefit. The fear of water and not knowing
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how to swim can be reason enough for a child not to receive benefits from aquatic therapy. The temperature and pressure of the water is also a factor that could contribute to the child not benefiting from the aquatic therapy. The water temperature and pressure can be positive, but in some cases, it can affect a child or person negatively; the water could be a contraindication to the child’s body and disability. A child with cerebral palsy must consistently be active in aquatic therapy in order to receive full benefits. A quality aquatic therapy intervention that results in benefits for children consists of weekly sessions with regular attendance from the client. The consistency of aquatic therapy sessions improves the quality service provided to each child while working on necessary goals for their health.

Conclusion

In the study of whether aquatic therapy is beneficial for children and adolescents with cerebral palsy, research has shown that most children benefit from this intervention. Aquatic therapy improves such issues as gross motor function, increased strength, improved pulmonary functioning, decreased pain, and improved behavior. Even though most studies found that there needs to be more research and scientific evidence of how aquatic therapy is beneficial, aquatic therapy can be helpful to children by increasing their quality of life.
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