



# Aquatic Exercise for Neurological Disorders

By Brent Zabrosky

A neurological disorder is any disorder of the nervous system resulting from structural, biochemical or electrical abnormalities in the brain, spinal cord or other nerves. Many people today deal with the hardships of a neurological disorder, such as Alzheimer's disease, cerebral palsy, and cerebrovascular accidents, and the number of cases is increasing. For example, by the year 2030 there is a proposed increase in Alzheimer's disease cases

by as much as 66 percent according to the World Health Organization.

Recent studies have shown that aquatic therapy might be one answer to help treat patients with various neurological disorders. The aquatic environment provides a safe, fun and effective environment to exercise, strengthen the muscular system, and to relieve pain. The aquatic environment also allows individuals to

exhibit tremendous progress in walking performance and overall dynamic balance. According to a study by Hall et al., the aquatic environment gave individuals the opportunity to better control their movement during activities such as weight transfer and gait. Success was also attributed to the viscosity of the water, which allows for longer response times and assists with balance and coordination. Exercises can be performed safely and



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confidently because the water negates the risk for falling; individuals were more likely to trust their balance while in the aquatic environment.

Pain can also be a concern with some neurological disorders. Reduction in pain creates an umbrella-like opportunity for enhancing the individual's quality of life. The aquatic environment is excellent for controlling pain, possibly leading to an increased volume of movement during exercise and throughout daily activities. While exercising in a warm-water pool, the temperature and buoyancy of the water may actually block nociception (sensation of pain) by activating thermal and mechanoreceptors (Hall et al.). In a much simpler sense, the warmth of the water may act as an effective muscle relaxer. Imagine submerging your body in a Jacuzzi tub for 15 minutes. Additionally, the warmth of the water increases blood circulation and diffuses pain-inducing chemicals (Marinho-Bucelli et al. 49).

Another benefit that only the aquatic environment offers is hydrostatic pressure. By definition, this is the pressure exerted by gravity at a given point within a fluid that is at equilibrium that increases in proportion to depth. When in the pool, this means that the pressure or slight squeezing sensation that the water has on the body allows for a reduction in peripheral edema and an increase in cardiac output with less stress on the cardiovascular system (Gibson and Shields). In other words, swelling in the body can be reduced and the heart does not have to work as hard to

achieve the same workload. Consequently, aquatic therapy has been recognized as slightly better for participation and/or continuation of the exercise prescription.

Aquatic exercise and therapy have both grown in popularity due to a multitude of factors, including the social aspect and the overall perception of a decreased injury risk. An enhanced level of motivation, adherence and retention may be achieved in the aquatic environment if exercise is recognized for the social aspect instead of solely a rehab process. In addition, exercise within a group setting often helps the individual to feel less isolated and offers the opportunity to make new friends.

It is easy to appreciate how valuable the water environment is for all ages, populations, ability levels and goals. Specifically, aquatic therapy has shown significant benefits in the overall treatment of neurological disorders by reducing pain, improving strength, and enhancing balance and gait. ■

## Resources

For a complete listing of resources from this article, please email [julie@aeawave.org](mailto:julie@aeawave.org).



## Author

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