University of South Australia

What evidence is there for the effects of aquatic-based therapies for children with cerebral palsy, compared to other physical therapy?

Authors	Dalyce Jenner, Kate Hall, Kazia Pivetta, Ngan Van and Tamsyn Stephens
Relevant Allied Health Discipline	Occupational Therapist, Physiotherapist
Sources searched	Cochrane, PubMed, Medline, Pedro and Google Scholar were searched to the 1st of September 2020.
Quality appraisal of the body of Evidence	**Strength of Evidence:** Based on the NHMRC Levels of Evidence, the review contained 4 studies of level II evidence and 1 study of level III-2 evidence. The 4 studies of level II evidence provide a strong base for a quality review.
	Quality of Evidence: The studies were of moderate-high quality, however, contained various possibilities of bias. The main biases identified throughout were language and reporter bias.
	Statistical significance: Studies included in the review concluded significant differences in their findings (p value <0.05). Majority of the studies in the review had relatively small sample sizes, hence impacting the generalisability of the results.
	Clinical significance: Majority of studies commented on the benefit of implementing aquatic-based therapies alongside land-based therapies - potentially impacting therapy for; those with CP, families of children with CP and health professionals delivering therapy.
	External Validity/Applicability: The evidence is applicable to Australian healthcare setting across the therapy and management of CP. This type of therapy can be costly if an appropriate pool is not available to use and relies on the availability of trained staff.
Summary of Evidence findings	Adar et al. (2017) conducted a program comparing the effectiveness of aquatic exercise interventions with land-based exercises in the treatment of CP and did not find significant differences in the functional outcome measure between the groups. Ballington and Naidoo (2018) investigated the carry-over effect of an aquatic-based intervention to land in children with CP, showing physical effects of aquatic based intervention on the gross motor function of children with CP - only in the short term. Akinola et al. (2019) study focused on the effect of aquatic exercise training and gross motor function in children with CP and found that this therapy is effective in gross motor rehabilitation. Lai et al. (2015) investigated the effectiveness of pediatric aquatic therapy in improving motor function and enjoyment of therapy for children with spastic CP of various motor severities, finding that the effects did not translate into activities of daily living - however did improve enjoyment and gross motor function. Olama, Kassem & Aboelazm. (2015) investigated the impact of an aquatic exercise program on muscle tone in spastic hemiplegic children with CP, which reflected an improvement in muscle tone when aquatic therapy and land-based therapy is used together.
Conclusions	Aquatic-based therapies is an alternative to land-based and is most effective when the therapy is ongoing and also used in conjunction with other land-based types of therapies.
Implications for clinical practice	Availability of an appropriate pool, trained health professionals, high cost, ongoing intervention.

1. Adar, S., Dundar, U., Demirdal, U.S., Ulasli, A.M., Toktas, H. & Solak, O. (2017). The effect of aquatic exercise on spasticity, quality of life, and motor function in cerebral palsy, *Turkish Journal of Physical Medicine and Rehabilitation*, *63*(3), 239-48.
2. Akinola, B., Gbiri, C. & Odebiyi, D. (2019). Effect of a 10-Week aquatic exercise training program on gross motor function in children with spastic cerebral palsy', *Global Pediatric Health*, *6*, 2333794X1985737.
3. Ballington, S.J. & Naidoo, R. (2018). The carry-over effect of an aquatic-based intervention in children with cerebral palsy, *African Journal of Disability*, *7*, e1–e8.
4. Lai, C.J., Liu, W.Y., Yang, T.F., Chen, C.L., Wu, C.Y. & Chan, R.C. (2015). Pediatric aquatic therapy on motor function and enjoyment in children diagnosed with cerebral palsy of various motor severities, *Journal of Child Neurology*, *30*(2), 200–208.
5. Olama, K.A., Kassem, H.A. & Aboelazm, S.N. (2015). Impact of aquatic exercise program on muscle tone in spastic hemiplegic children with cerebral palsy, *Clinical Medicine Journal*, 1(4), 138-144.

This evidence summary has been prepared by undergraduate students as part of the HLTH 3057 Advanced Evidence Based Practice course. Due to limitations of assignment requirements reviews are limited to a maximum of 8 evidence sources. Conclusions and implications for clinical practice reported are provisional based on the evidence identified in this review and should be contextualized to local practice, clinical expertise and patient values. For further information on the review process please contact steve.milanese@unisa.edu.au