



In-Water Aquatic Outcome Measures To Establish Hydrotherapy Efficacy: A Systematic Review

Aim: To identify in-water aquatic measures used to evaluate treatment effects of hydrotherapy and to assess their clinimetric properties.

Methods: A systematic search of Medline, EMBASE and PEDro databases in February 2016. In addition, reference lists of final selected articles were searched. Records were screened and appraised by two independent reviewers using the following inclusion criteria:

- Published 2006-2016.
- Written in English.
- Outcome measure was performed in the water.
- The record aimed to assess the outcome measure.

Results:

- 3459 articles were returned across three databases.
- Four records were selected (see Table 1).
- Summary of records:
 - n= 159 participants.
 - Age range = 3 to 65 years.
- Due to the heterogeneity of the studies, no statistical data analysis was completed.
- The overall quality of the studies was low.

Significance of the findings to Allied Health: Aquatic physiotherapy is a common treatment option used in Victorian public hospitals. There is significant evidence to support aquatic physiotherapy as a viable treatment option however, our review shows that there are no reliable or valid water based measures. Future work needs to develop in-water outcome measures and demonstrate the clinimetric properties. Alternatively, land based measures may demonstrate change and goal achievement.

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Table 1: Results

RECORD	Type of Study and Measure	Evidence Level	Limitation/ Implication for practice
The Borg scale as an important tool of self-monitoring and self-regulation of exercise prescription in heart failure patients during hydrotherapy. A RCT	Type: Randomised Blinded Controlled Trial Measure: BORG	Evidence Level: Low to Moderate	<ul style="list-style-type: none"> - Good study design - Results not statistically significant - Require more information re water protocol (depth of immersion, turbulence, number of patients in pool, improvement on land function)
Content validity and inter-rater reliability of the Halliwick-concept-based instrument 'Swimming with Independent Measure'	Type: Content Validity Study Measure: SWIM	Evidence level: Low	<ul style="list-style-type: none"> - Potential for bias with participant selection. Nil randomisation. - Participants attempted test 7 times which is unlikely to translate clinically - Unclear measurement time between assessments
The relationship between aquatic independence and gross motor function in children with neuro-motor impairments	Type: Diagnostic Test Study (Concurrent Validity) Measure: Aquatic Independence Measure	Evidence level: Moderate	<ul style="list-style-type: none"> - Nil comment on blinding and unclear time frame between tests - Correlated to PEDI and GMFM - Would require training in use of tool - May be useful for monitoring progress in paediatric populations
Aquatic assessment of motor skills in muscular dystrophy: A case study	Type: Case Study Measure: Aquatic Functional Assessment Scale	Evidence level: Low	<ul style="list-style-type: none"> - Inappropriate study design - Two subjects who were sisters therefore unlikely to be representative of population - Large bias likely - Nil comparison to standardised measure - Unclear if other treatments were concurrently given

