Hale LA, Waters D, Herbison P. A randomized controlled trial to investigate the effects of water-based exercise to improve falls risk and physical function in older adults with lower-extremity osteoarthritis. Arch Phys Med Rehabil 2012;93:27-34.

Reviewer: Linda Metzger 7-14-15

Design: Randomized Clinical Trial

Objective: To investigate the effectiveness of a water-based exercise program specifically targeting balance to reduce falls risk and improve measures of balance and physical function in older adults with osteoarthritis (OA).

Summary of Results:

- The primary outcome measure was a reduction in falls risk, measured by using the short form Physiological Profile Assessment (PPA) assessed before and after 12 weeks of water-based exercise (intervention) or a time-matched computer training program (control group). This assessment includes 5 impairment level tests found to be the key factors discriminating fallers from non-fallers.
- Secondary outcomes included the Step Test, Timed Up and Go Test, Western Ontario and McMaster Universities OA Index, Arthritis Impact Measurement Scales 2, and Activity specific Balance Confidence Scale.
- No statistically significant between-group differences were found for the primary outcome (PPA score) or any of the secondary outcomes measured.
- A 12-week twice-weekly water-based exercise program that specifically targeted balance in older adults with OA did not reduce falls risk in this population or result in a significant difference in falls risk compared with attending a time-dose–equivalent seated community-based computer skills training class.

Reasons not to Cite as Evidence:

- Sample size for this study was calculated at a minimum of 18 participants per group to have 80% power with a significance level of 0.05. A recruitment target was set at 50 participants to allow for loss to follow-up. Only 39 participants were originally included in the study, and 4 withdrew, leaving only 35 assessed at 12 weeks.
- There were a high number of dropouts, which means that the study did not reach the desired number of patients in each group. The smaller than optimal sample size weakened the study's statistical power and ability to find significant results.
- The sample size of the study was too small (less than 20 in each group) and underpowered to find a large effect (10% decrease in PPA score), let alone a moderate effect that may also be clinically significant.
- The primary outcome measure, PPA score, which is related to the risk of falling, is not an outcome measure of interest to the workers' compensation population.
- The relevant outcomes of WOMAC function and pain did not differ between the intervention and control groups after 12 weeks of water-based exercise.

Assessment:

- Inadequate for evidence of the effectiveness of a 12-week twice-weekly water-based exercise program aimed at reducing falls in older adults with OA compared with attending a time-dose–equivalent seated community-based computer skills training class.