

Romeo A, Parazza S, Boschi M, et al. Manual therapy and therapeutic exercise in the treatment of osteoarthritis of the hip: a systematic review. *Reumatismo* 2013; 65 (2): 63-74.

Design: Systematic review of clinical trials

Date: 3-12-15

Study question: Is manual therapy and/or therapeutic exercise effective in treating pain and improving function in patients with hip osteoarthritis (OA)?

PICOS:

- **Patient population:** Patients with clinical or radiological diagnosis of hip osteoarthritis
- **Interventions:** Interventions included different forms of therapeutic exercise or manual therapy such as aquatic therapy, land-based exercise and/or manual therapy, regardless of its type, duration, frequency and intensity.
- **Comparison interventions:** Also variable and included general practitioner care, different dosages of manual therapy, and hip only exercises (versus the whole kinetic chain of the lower limb).
- **Outcomes:** Variable depending on the study, but commonly measured outcomes included pain VAS, physical function, aerobic capacity, disease progression, quality of life, use of medications, and costs.
- **Study types:** Randomized controlled trials published in English or Italian in a peer-reviewed journal
 - o Exclusion criteria included pre- or post- hip arthroplasty surgery treatment, educational and therapeutic treatment based on unconventional therapies, such as Yoga and Tai Chi, or interventions based on either assumptions or methodologies not coherent with therapeutic exercise and manual therapy.
 - o Inclusion criteria included only studies that scored at least 7/10 on the PEDro Scale, so that they would be qualitatively sufficient.
 - o Eight systematic reviews were additionally examined and included in the discussion section, seven of which concerned therapeutic exercise and one manual therapy.

Study selection:

- Databases included PubMed, Cinahl, PEDro, Scopus, and the Cochrane Library between May 2007 and April 2012
- Two authors independently searched and selected articles for inclusion, reconciling the results with a third author.
- Determination of study quality was based on the PEDro Scale which rates study quality according to 11 items.

Results:

- 1534 articles were screened following the database search, and 10 articles were selected for the systematic review. Eight focused on therapeutic exercise and 2 on manual therapies.
- Due to a small number of studies, heterogeneous treatments, and small sample sizes, it was not possible to conduct quantitative pooling with a meta-analysis in order to statistically evaluate results.
- For many of the planned comparisons, the available study data were not sufficient to support clear conclusions, but the authors did find some consistencies in the included studies.
 - Therapeutic Exercise
 - Evidence of efficacy in reducing pain was insufficient or limited.
 - Three studies investigated the effectiveness of land-based exercises. These RCTs demonstrated no evidence of effectiveness for pain at mid- and long-term follow-up, but showed positive results (moderate evidence) for improving physical function.
 - One study observed a progressive improvement of physical function within the intervention group at 3, 6 and 18 months follow-up.
 - Booster sessions of exercise had a positive role on increasing patient's adherence to treatment.
 - There is no reduction of costs in comparison with the control group.
 - A home strengthening program and activity pacing provided no significant improvements.
 - Behavioral grade activity (BGA), which includes the progressive and gradual exposure of difficult activities and exercise, seemed to enhance short and midterm outcomes of pain and function, and also improved adherence to a home program and increased physical activity, but no difference was observed at long term follow-up (5 years), except for less hip replacement surgery in the BGA group.
 - Two studies investigated the effectiveness of aquatic exercises. One study failed to show functional improvements or a decreased fall risk, but the second study showed that a combination of both land and water exercises significantly reduced fall risk compared to those who did only water exercises and to no-exercise controls.
 - Manual Therapy
 - One study compared different dosages of manual therapy, specifically traction, and found that forceful traction was superior to standard traction mobilization showing short-term reduction of pain and decreased disability.

- One study showed no significant difference between manual therapy addressing the whole kinetic chain of the lower limb and manual therapy focusing on the hip only.
 - Adherence to Treatment
 - One study showed that compliance decreased with fewer sessions and over time.
 - One study demonstrated that the educational component and the functional training increased treatment adherence.
- No significant results from 3 studies were obtained between intervention and control groups on the quality of life outcome measure.

Authors' conclusions:

- The evidence of effectiveness of therapeutic exercise for pain and quality of life was insufficient or limited, whereas moderate evidence was found with respect to improvement of function.
- Manual therapy could decrease pain, whereas exercise does not cause the same effect.
- Booster exercise sessions had a positive role on increasing patient's adherence to treatment.
- With regard to manual therapy, results of this review reported that joint mobilization using forceful traction showed short-term reduction of pain and decreased disability compared to standard traction mobilization.
- Manual approaches combined with exercise addressing the whole kinetic chain of lower limb do not lead to better outcomes than the same approach only focused on the hip.
- It was not possible to identify the most effective type, intensity, duration and frequency of treatment. Exercise intensity, quantity, and progression of treatment did not often follow recommendations of current literature.
- Further studies should be of good quality with an adequate sample size, to investigate yet unexplored issues, such as type and amount of conservative treatment.

Comments:

- The research on the treatment of hip OA with exercise and manual therapy is qualitatively and quantitatively inferior if compared with other joints. Few clinical trials were found.
 - Only 6 RCTs had a sample size with greater than 50 subjects per group, which is the minimum amount of patients needed to consider statistically significant differences between experimental and control groups, and to guarantee homogeneity between groups, and therefore to achieve *golden* and *platinum* level evidence.
 - Different exercises in the same session, each characterized by a short duration, are not intense enough to lead to significant changes.

- Perhaps the second aquatic study showed that a combination of both land and water exercises significantly reduced fall risk, because this intervention group performed twice the amount of exercise as the water only exercise group.
- Another factor that could possibly confound the results was sample characteristics. In several studies, subjects were directly enrolled from surgery waiting lists, hence they presented an advanced stage of OA, resulting in less responsiveness to any conservative treatment.
- The adherence to the exercise program and a frequent physical activity seem to be the most predictive factor of positive long-term outcomes.
 - o Strategies that enhanced exercise program adherence in the long term were phone calls, diary self-monitoring, graphic feedback and booster sessions.
- Education and programs addressed to the activities of daily living that are difficult to perform (activity pacing) appeared to be effective on increasing overall activity at short- and mid-term follow-up. The BGA approach, based on the principles of the behavioral therapy, led patients to better follow home programs and to improve physical activity in short- and long-term. At long-term, this approach also seemed to reduce the risk to undergo joint prosthesis surgery.
- This review suggests that combining exercise and manual therapy could produce positive effects for both pain and function.
- It has been suggested that long-term exercise might produce positive outcomes for physical function, which gradually improves over time.
- Heterogeneity was found not only in the studies' design and outcome measures, but also in modality, and frequency duration, and intensity of exercise programs. For example, treatment frequency was scheduled at one to four times per week with session durations of 30 to 60 minutes.
- The authors evaluated the quality of studies using the PEDro score, but did not include a table indicating which studies satisfied which quality criteria; while quality scoring is not usually a useful exercise, a table showing which studies were well-randomized, adequately blinded, and had sufficient control of attrition, would have made the review more informative.

Assessment:

Adequate systematic review to support good evidence that for patients with hip osteoarthritis, land-based exercises showed insufficient evidence of effectiveness with respect to pain and quality of life, but positive results were found for physical function. Water exercises significantly reduced fall risk when combined with functional exercises. Programs containing progressive and gradual exposure of difficult activities, education, and booster exercise sessions promoted better outcomes, higher adherence to home treatment, and increased amount of physical activity, especially walking. Manual therapy seemed to reduce pain and decrease disability at short-term. Manual therapy combined with exercise addressing the whole kinetic chain of lower limb do not lead to better outcomes than the same therapy focused only on the hip.