**Article Full Title**

Effect of manual physiotherapy in homogenous individuals with subacromial shoulder impingement: A randomized control trial

**Author Names**

Land, H., Gordan, S., Watt, K.

**Reviewer Name**

Luke Vitale, SPT, CSCS

**Reviewer Affiliation(s)**

Duke University School of Medicine, Doctor of Physical Therapy Division

**Paper Abstract**

Objective: To compare the effect of specific interventions aimed at (1) the upper thoracic spine (passive mobilization) and (2) the posterior shoulder (massage, passive mobilization, and stretching) to (3) an active control intervention in a homogeneous group with extrinsic subacromial shoulder impingement (SSI). Study Design: Single‐centre, prospective, double‐blinded, randomized controlled trial. Method: Eligible individuals with clearly defined extrinsic SSI were randomized to each group. Treatment duration was 12 consecutive weeks consisting of nine treatments over 6 weeks, followed by 6 weeks when one home exercise was performed daily. Outcomes included (1) active thoracic flexion/extension range of motion, (2) passive glenohumeral internal rotation and posterior shoulder range, (3) pain rating, and (4) shoulder pain and function disability index. Data were analyzed at baseline, 6 and 12 weeks. Shoulder pain and function disability index scores were investigated via email 6 months after commencement of treatment. Results: Twenty participants completed treatment in each group. No differences were identified between groups at baseline. Upper thoracic and posterior shoulder interventions, with a targeted home exercise, both significantly decreased pain and increased function scores and increased posterior shoulder range compared with active control at 12 weeks, and 6 months following cessation of the trial. Conclusion: Manual therapy treatment that addresses these extrinsic factors, of thoracic spine or posterior shoulder tightness, decreases the signs and symptoms of SSI. The trial is registered with the Australian New Zealand Clinical Trials Registry (ANZCTR; 12615001303538). Keywords: manual therapy, randomized controlled trial, subacromial shoulder impingement, treatment

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

1. **Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

1. **Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Cannot Determine, Not Reported, or Not Applicable

1. **Was the treatment allocation concealed (so that assignments could not be predicted)?**

Yes

1. **Were study participants and providers blinded to treatment group assignment?**

Yes

1. **Were the people assessing the outcomes blinded to the participants' group assignments?**

Yes

1. **Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

1. **Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

1. **Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Cannot Determine, Not Reported, or Not Applicable

1. **Was there high adherence to the intervention protocols for each treatment group?**

Yes

1. **Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Yes

1. **Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

1. **Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

Yes

1. **Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Yes

1. **Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

Post-hoc analysis found a significant improvement in SPADI scores, passive IR, and posterior shoulder range in the thoracic and shoulder directed intervention groups compared to the active control group from baseline to week 6.

**Key Finding #2**

No differences in the above outcomes were seen between the shoulder treatment and thoracic treatment groups.

**Key Finding #3**

Improvements in SPADI scores in the intervention groups were above the MCID and maintained at 12 weeks and 6 months out from baseline. No significant improvement was seen between 6 and 12 weeks however.

**Please provide your summary of the paper**

Land et al. conducted a randomized control trial to assess the effect of: a) passive mobilization of the upper thoracic spine, b) massage, passive mobilization, and stretching of the soft tissues of the posterior shoulder, and c) an active control group, on pain, ROM, and function in a homogenous group of subjects with subacromial shoulder impingement. Participants were randomized into three groups. The control group received ultrasound for 6 weeks. The first intervention group received treatment directed at the thoracic spine for 6 weeks along with a daily HEP that was performed for 12 weeks. The second intervention group received intervention to the posterior shoulder soft tissues along with a daily home stretch that was performed for 12 weeks. Individuals included in this study were between the ages of 40-60 years, tested positive to 3/5 special tests (one positive test had to be Hawkins-Kennedy and/or Neer’s), and had an insidious onset of catching or aching pain to antero-lateral-superior shoulder without joint stiffness. The authors found significant improvements in passive IR, posterior shoulder range, and SPADI scores in both intervention groups when compared to the active control group. Passive IR and SPADI scores met the MCID in the intervention groups. It should be noted, however, that all groups (including control) experienced a statistically significant improvement in these measures between baseline and 6 weeks. SPADI scores maintained a significant increase between 12 weeks and 6 months when compared to the control group.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

This study presents data that supports the use of manual therapy and exercise in patients with subacromial shoulder impingement diagnoses. Further, the data shows that both intervention directed to the thoracic spine, and intervention directed at the posterior shoulder were equally effective (no significant difference between the two). The control group in this trial only received ultrasound for 6 weeks and then a daily home stretch for the remaining 6 weeks, which doesn’t give us a great comparison to other non-manual therapy treatments for subacromial shoulder impingement. Also, with the age of participants ranging from 40-60 years old, we cannot apply these results to a younger patient population. This paper makes a good case for implementing manual therapy techniques to either the thoracic spine or posterior shoulder when treating shoulder impingement, however, further studies comparing manual therapy + exercise to exercise alone, in various age groups, may provide useful information to discern how exercise alone stands up to manual therapy + exercise.