**Heiser R, O’Brien VH, and Schwartz DA. The use of joint mobilization to improve clinical outcomes in hand therapy: A systematic review of the literature. Journal of Hand Therapy 2013; 26: 297-311.**

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**Reviewer:** Linda Metzger

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**Design:** Systematic review of randomized and controlled clinical trials (no meta-analysis)

**Objective:** To assess the evidence to determine the effectiveness of joint mobilization in treating conditions of the elbow, wrist and hand and to provide clinical guidance for treatment protocols for therapists choosing this intervention for their patients.

**Summary of Results:**

* This review of 22 studies compared 3 types of joint mobilizations (oscillations, sustained mobilizations, and manipulations) for the elbow, wrist, and hand with or without adjunctive therapy, to a control group that did not receive joint mobilization, but received the same adjunct therapies or different therapies or combinations of therapies. Various mobilization techniques were used in the included studies including Maitland, Kaltenborn, Mulligan, and mobilization with movement (MWM). MWM is an additional manual therapy technique that corrects a minimal positional abnormality of the joint.
* This systematic review included 18 randomized clinical trials (RCTs) and 4 controlled clinical trials (CTs). According to the Structured Effectiveness for Quality Evaluation of Study (SEQES), a method for evaluating the quality of research studies, 11 studies were rated high quality, 11 were medium quality, and none were rated low quality.
* Outcome measures included various assessments of pain (VAS), function, pain-free grip strength, the pain-free wrist extension test, ROM, strength testing, and global improvement.
* No statistical pooling of the combined results was performed to produce an overall effect due to the high heterogeneity of the study populations and a variety of comparisons in the included studies. Therefore, a meta-analysis was not conducted, and instead a best-evidence synthesis was used to summarize the results.
* Nine studies on joint mobilization of the elbow evaluated Mulligan’s MWM and comprised a total of 525 patients. Four studies were rated as high quality and 5 studies were of moderate quality. All of the studies found a benefit of MWM. Pain-free grip strength test (PFGT) was the most commonly improved outcome measure across the studies. Other positive outcomes included decreased pain in the short and long term, improved strength, function and ROM. These 9 studies offer moderate evidence for MWM of the elbow to affect change in pain, strength, function and ROM in patients with LE.
* Five studies (347 patients) on joint mobilization of the elbow compared Cyriax physiotherapy (PT) to other treatments including the use of anti-inflammatory cream and a forearm strap, injections, routine physical therapy treatments, or phonophoresis with exercises. Three studies were rated as high quality and 2 studies were of moderate quality. An overview of Cyriax PT for LE reveals mixed results for this intervention.
* Four studies comprising a total of 120 patients looked at joint mobilizations of the wrist. One study was rated as high quality and 3 studies were of moderate quality. This limited evidence supports joint mobilization of the wrist to reduce pain and increase ROM in patients with wrist fractures and carpal tunnel syndrome.
* Only 2 high quality studies (47 patients) described joint mobilization techniques in the hand providing limited evidence. In one study, the mobilization group did significantly better in ROM measures and in the other study, pain was significantly improved immediately post-intervention, but no significant difference was found at the 1- or 2-week follow-up visit.
* The authors concluded that there is limited support for joint mobilizations of the wrist and hand, and moderate support for joint mobilizations of the elbow for LE. Additionally, there is moderate support for mobilization with movement.

**Reasons not to Cite as Evidence:**

* The authors tried to include only higher-level studies of good quality by excluding any lower-level studies, such as case series or case reports, but because of the limited number of quality clinical trials, the authors were inclined to overestimate the quality of most of the included studies. For example, 3 of the trials were not even randomized and were rated moderate quality. Three studies were correctly scored as non-randomized controlled clinical trials, but at least one other study that used sequential allocation, a non-randomized process, was scored positively for randomization by the authors. The authors admitted that even though the studies were rated moderate to high quality there were still many design flaws, such as small sample sizes and short follow-up periods. The quality ratings of the studies may be somewhat inflated compared to the DOWC standards, and some of the studies may actually be marginally adequate due to methodological weaknesses which puts them at a greater risk of bias. Only half of the studies described an adequate randomization procedure and less than half of the studies blinded outcome assessors. Thus, realistically, most of the studies were low to moderate quality.
* These 22 studies represent a large number of studies that are methodologically compromised with a high risk of bias. Even though joint mobilization, and particularly mobilization with movement, is likely to be beneficial and supports the active participation of the patient which is preferred, the studies fail methodologically and their overall quality of evidence is low or unclear. This low quality evidence does not meet our literature critique criteria and cannot support a good evidence statement for the beneficial effects of joint mobilization of the elbow, wrist, and hand.
* Because the limited evidence is of low quality, further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate, and so we are uncertain about the magnitude of the effect, and thus no useful conclusions can be drawn.
* Most studies lacked comparable treatments and outcomes measures, especially functional outcomes with established psychometric properties, which are needed to determine the overall short- and long-term effects of joint mobilization.
* Joint mobilization is rarely used as an isolated treatment intervention for LE, but is instead generally combined with multimodal therapy as in the studies in this review, especially exercise or physical therapy. It is difficult to discern if the addition of joint mobilization produces effectiveness beyond using multimodal therapy alone or stems from the combined effects of the treatment protocols. However, multimodal treatment protocols are reflective of real world practice.
* This review provides insufficient evidence and very low quality evidence of effectiveness for joint mobilization for improving symptoms and functional ability for people with lateral epicondylitis, and wrist and hand conditions. More high quality randomized controlled trials assessing the effectiveness of joint mobilization is needed before recommending this intervention.

**Assessment:**

* Low quality, inadequate systematic review that overrates the quality of the included studies that is inadequate to support any evidence for the effectiveness of joint mobilizations of the wrist and hand, and joint mobilizations of the elbow for the treatment of patients with lateral epicondylitis included within a multimodal therapy program.