**Page MJ, O’Connor D, Pitt V, Massy-Westropp N. Therapeutic ultrasound for carpal tunnel syndrome. *Cochrane Database of Systematic Reviews* 2013; Issue 3.**

**PMID:** 23543580

**Reviewer:** Linda Metzger 9-30-15

**Design:** Cochrane Systematic Review (No meta-analysis)

**Objective:** To assess the effectiveness of therapeutic ultrasound compared with no treatment, placebo or another non-surgical intervention in people with carpal tunnel syndrome (CTS).

**Summary of Results:**

* Includes 11 studies with a total of 414 participants with carpal tunnel syndrome. Two trials compared therapeutic ultrasound with placebo, two compared one ultrasound regimen with another, two compared ultrasound with another non-surgical intervention, and six compared ultrasound as part of a multi-component intervention with another non-surgical intervention (for example, exercises and splint).
* One low quality trial with 68 participants (Yildiz 2011) found that when compared with placebo, therapeutic ultrasound may increase the chance of experiencing short-term overall improvement at the end of seven weeks of treatment (RR 2.36; 95% CI 1.40 to 3.98). Losses to follow-up and failure to adjust for the correlation between wrists in participants with bilateral CTS in this study, as well as unclear allocation concealment, suggest that this data should be interpreted with caution.
* Another low quality trial with 60 participants (Dincer 2009) found that at three months post-treatment, therapeutic ultrasound plus splint increased the chance of short-term overall improvement (patient satisfaction) when compared with splint alone (RR 3.02; 95% CI 1.36 to 6.72), but decreased the chance of short-term overall improvement when compared with low-level laser therapy plus splint (RR 0.87; 95% CI 0.57 to 1.33). Participants were not blinded to treatment (performance bias), it was unclear if random sequence generation and allocation concealment were adequate (selection bias), and there was a potential unit of analysis error (reporting bias).
* Overall, there is insufficient evidence that one therapeutic ultrasound regimen is more effective than another.
* The authors concluded that there is only poor quality evidence from very limited data to suggest that therapeutic ultrasound may be more effective than placebo for either short- or long-term symptom improvement in people with CTS. There is insufficient evidence to support the greater benefit of one type of therapeutic ultrasound regimen over another or to support the use of therapeutic ultrasound as a treatment with greater efficacy compared to other non-surgical interventions for CTS, such as splinting, exercises, and oral drugs.

**Reasons not to Cite as Evidence:**

* Only 2 studies measured the primary outcome, short-term overall improvement at three months or less.
* The present search went through November 2012. One study was published in 2012, and all the others were older.
* The risk of bias and overall quality of the evidence was low in some studies, and unclear or high in other studies. Only two studies reported that the allocation sequence was concealed, and six reported that participants were blinded. Random sequence generation was present in 6 studies, and 6 studies reported blinding outcome assessors.
* No pooling across studies was possible. This low quality evidence does not meet our literature critique criteria and would not qualify for an evidence statement.
* 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.

**Assessment:**

* High quality Cochrane review that shows there is inadequate evidence for the effectiveness of therapeutic ultrasound compared with no treatment, placebo or another non-surgical intervention for the treatment of people with carpal tunnel syndrome (CTS).

**References:**

* Dincer U, Cakar E, Kiralp MZ, Kilac H, Dursun H. The effectiveness of conservative treatments of carpal tunnel syndrome: splinting, ultrasound, and low-level laser therapies. Photomedicine and Laser Surgery 2009; 27(1):119–25.
* Yildiz N, Atalay NS, Gungen GO, Sanal E, Akkaya N, Topuz O. Comparison of ultrasound and ketoprofen phonophoresis in the treatment of carpal tunnel syndrome.

Journal of Back and Musculoskeletal Rehabilitation 2011; 24 (1):39–47.