Effectiveness of Ultrasound (US) on Adults with Lateral Epicondylitis (LE)

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Effectiveness of Ultrasound (US) on Adults With Lateral Epicondylitis (LE)

Jensen Aubry & Ashley Ott

1 Ask: Research Question
Is the use of Ultrasound an effective treatment for adults with Lateral Epicondylitis?

2a Acquire: Search Terms
Patient/Client Group: Adults with LE
Intervention (or Assessment): Thermal US, non-thermal pulsed US
Comparison: Placebo, rest, stretching, other modalities (shock wave, E-Stim), counterforce brace

2b Acquire: Selected Articles
D’Vaz et al. (2006): Randomized controlled trial conducted in the United Kingdom. Compared the effects on grip strength and pain on patients diagnosed with LE using pulsed, low-intensity US (LIUS) to placebo group.

3a Appraise: Study Quality
D’Vaz et al. (2006): Level I. n=48; randomly assigned to active group (n=25) with US at 1.5 mHz, 30 mW/cm² for 20 minutes, daily for 12 weeks, or placebo group (n=23). Double blind study. Outcomes assessed at 12 weeks after baseline. Limitations: self-administration, depth of US and only used self-report as a measure. No indication the US was calibrated and only reported the US appeared to be fully functioning. Thirty participants in each group were needed for 80% power; however the active group had 25 and the placebo group has 23.
Akin et al. (2010): Level II. n=60; 40 females, 20 males were randomly assigned to the US group (n=30) or placebo group (n=30). US parameters were used were 1mHz, 1.5W/cm² for 5 minutes over three weeks for a total of 15 sessions. Single blind study; one researcher was blind to analyses, and one was blind to intervention (or Assessment): Thermal US, non-thermal pulsed US

3b Appraise: Study Results
D’Vaz et al. (2006): After 12 weeks pain improved in all but 6 subjects. Active group had a median reduction in pain by 80% from baseline compared with a 63% reduction from baseline in placebo group. Visual analogue pain scale (VAS) and the main outcome measure used (p=.80). Patient-Rated Forearm Evaluation Questionnaire (PRFEQ) was another outcome measure. There was no change in pain scores (p=.99) or functional impairment scores (p=.40).
Akin et al. (2010): After three weeks of treatment, results were analyzed and compared to the baseline. The outcome measure of pain was not statistically significant between groups, VAS rest pain (p=.654) and VAS movement pain (p=.318). The change in hand grip strength was statistically significant after three weeks of treatment for both groups (p<.05); however, the averages were similar between groups (p=.30). Disabilities of the Arm, Shoulder and Hand Questionnaire (DASH) scores were statistically significant after 3 weeks in both groups (p<.05), and averages were similar between groups (p=.861). Satisfaction levels were greater with US after 3 weeks (p<.001). Quality of life was measured using the 36-item Short Form Survey (SF-36). The US group showed statistically significant change after 3 weeks in social function and emotional situation (p<.05). General social function averages between groups were similar (p=.079), and general physical function averages were significantly higher in US group (p=.035).

4 Apply: Conclusions for Practice
For LE, the ECRB is a superficial muscle, and would require use of a 3.0 mHz sound head with a moderate increase in heat (2-3°C) to help reduce pain, muscle spasm and increase blood flow (Knight & Draper, 2013).

Research does not support the use of US for LE. However, the methodology used was inconsistent with research identifying parameters to change tissue temperature using US (Knight & Draper, 2013).

References:

Research does not support the use of US to treat LE. However, research uses inconsistent parameters that are not supported by previous literature.