Is electrotherapy more effective than other physical therapy approaches in reducing pain and disability in adults with supraspinatus tendonitis?

Is one modality of electrotherapy more effective than another?

Clinical Bottom Line

The clinical question focussed on supraspinatus tendonitis but the evidence identified was applicable to shoulder disorders in general. The evidence suggested that electrotherapy should not be used in combination with other physiotherapy approaches or as a first line approach to the management of shoulder disorders. However, there is some evidence for the benefit of electrotherapy in calcific tendonitis. Both ultrasound and pulsed electromagnetic energy were found to be more effective than placebo in pain relief in calcific tendonitis.

Laser therapy was found to be more effective than placebo laser for adhesive capsulitis but not for rotator cuff tendonitis. Laser therapy alone may be beneficial for individuals unable to perform exercise with subacromial impingement syndrome.

There was no evidence for the effectiveness of ultrasound in shoulder pain (mixed diagnosis), adhesive capsulitis or rotator cuff tendonitis. When compared to exercise ultrasound was of no additional benefit over and above exercise alone. There is weak evidence for the lack of efficacy for ultrasound in the management of subacromial pain. However one study demonstrated that ultrasound therapy was trusted by 71% of GPs and physiotherapists.

Laser therapy and ultrasound as an adjunct to exercise for subacromial impingement syndrome are not recommended. No evidence was found for the efficacy of transcutaneous electrical nerve stimulation (TENS) for subacromial pain.

There was limited evidence on the adverse effects of electrotherapy. Post-treatment pain following pulsed electromagnetic energy has been reported.

Further research

It is unknown as to when the Cochrane review by Green et al (2003) will be updated.

Criteria for Critically Appraised Topic

Population:

Male and female adults - 18 years and over

Shoulder disorders including supraspinatus tendonitis, subacromial impingement syndrome, rotator cuff pathology, shoulder pain, subacromial pain.

***Intervention*:**

Electrotherapy includes any of the techniques listed below used alone or in combination: Interferential therapy, ultrasound, ultrasound plus iontophoresis, laser, pulsed electromagnetic fields, transcutaneous electrical nerve stimulation (TENS).

Comparison:

Other physical therapies include:

- No treatment
- Placebo electrotherapy
- Physical therapy treatments e.g. exercise, acupuncture, cold therapy

Outcomes:

Primary Outcomes:

- Reduced shoulder pain
- Reduced shoulder disability

Inclusions:

Supraspinatus tendonitis, rotator cuff, shoulder disorders, shoulder injury, rotator cuff rupture, shoulder pain

Exclusions:

Fractures, surgical interventions, children, cadaveric studies

Search Terms

Database Search:

MEDLINE, CINAHL, EMBASE, AHMED

Types of study:

- Systematic reviews

- Randomised Controlled Trials (RCTs)
- English language

Key words searched:

Rotator-cuff, rotator-cuff injury, supraspinatus, tendonitis, pain, function, recovery of function. Physical therapy modalities, ultrasound, laser, exercise, cold therapy.

Available Evidence

Database Searched (Specific to CAT)	Time frame	Number of relevant abstracts
Medline	**1996-2007**	**16**
CINAHL	**1982-2007**	**10**
Embase	**1996-2007**	**12**
Ahmed	**1985-2007**	**2**
Total		**40**

Results

Four systematic reviews were identified that considered physiotherapy interventions for shoulder pathology. A Cochrane systematic review by Green et al (2003) on physiotherapy interventions for shoulder pain was the most comprehensive of the systematic reviews identified and included all studies in the other reviews. The other reviews specifically tried to consider evidence around particular clinical presentations e.g. rotator cuff pathology (Grant et al, 2004), subacromial impingement syndrome (Michener et al, 2004) and subacromial pain (Johansson et al, 2002).

The systematic review by Green et al (2003) considered 16 randomised controlled trials of electrotherapy, including interferential therapy, ultrasound, laser, pulsed electromagnetic fields and transcutaneous electrical nerve stimulation (TENS). The associated table provides a summary of the evidence for the effectiveness of specific electrotherapy treatments from these trials (Table 1).

The systematic review by Green et al (2003) also demonstrated that there was no additional benefit of adding electrotherapy to other modalities in treatment of shoulder disorders. Johansson et al (2002) performed a systematic review of evidence and also evaluated the clinicians' belief in the benefit of ultrasound and TENS. 71% of GPs and physiotherapists rated ultrasound as a trusted modality for the treatments of subacromial pain (80% of physiotherapists and 76% of GPs). There were no differences between GPs and physiotherapists' perceptions of trustworthiness of this modality. 9% of participants did not rate the intervention.

We recently conducted a study of ultrasound and placebo ultrasound in addition to usual physiotherapy care in shoulder disorders (Ainsworth et al, 2007) and found that there was no additional benefit of the active ultrasound over the placebo ultrasound. There is sufficient evidence to suggest that electrotherapy should not be used as a first line treatment for most common shoulder disorders. However, this appears to be at odds with physiotherapists' and general practitioners' beliefs on the benefits of some electrotherapy. Further research to evaluate the evidence for usual practice is now warranted.

The summary findings of this critical appraised topic are in keeping with the evidence based clinical guidelines for the diagnosis, assessment and physiotherapy management of shoulder impingement syndrome (CSP, 2004; Philadelphia panel, 2001). In particular, the guidelines recommend the use of pulsed electromagnetic fields and ultrasound in calcific tendonitis. No recommendation is made on the use of laser and transcutaneous electrical nerve stimulation in the guidelines.

References

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Philadelphia Panel evidence-based clinical practice guidelines on selected rehabilitation interventions for shoulder pain. *Physical Therapy* **81** (2001), pp. 1719–30.