Additive effects of low-level laser therapy with exercise on subacromial syndrome: a randomised, double-blind, controlled trial.

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Clin Rheumatol. 2011 May 4. [Epub ahead of print]

The subacromial syndrome is the most common source of shoulder pain. The mainstays of conservative treatment are non-steroidal anti-inflammatory drugs and exercise therapy. Recently, low-level laser therapy (LLLT) has been popularized in the treatment of various musculoskeletal disorders. The aim of this study is to evaluate the additive effects of LLLT with exercise in comparison with exercise therapy alone in treatment of the subacromial syndrome. We conducted a randomised clinical study of 80 patients who presented to clinic with subacromial syndrome (rotator cuff and biceps tendinitis). Patients were randomly allocated into two groups. In group I (nâ€‰=â€‰40), patients were given laser treatment (pulsed infrared laser) and exercise therapy for ten sessions during a period of 2 weeks. In group II (nâ€‰=â€‰40), placebo laser and the same exercise therapy were given for the same period. Patients were evaluated for the pain with visual analogue scale (VAS) and shoulder range of motion (ROM) in an active and passive movement of flexion, abduction and external rotation before and after treatment. In both groups, significant post-treatment improvements were achieved in all parameters (Pâ€‰=â€‰0.00). In comparison between the two groups, a significant improvement was noted in all movements in group I (Pâ€‰=â€‰0.00). Also, there was a substantial difference between the groups in VAS scores (Pâ€‰=â€‰0.00) which showed significant pain reduction in group I. This study indicates that LLLT combined exercise is more effective than exercise therapy alone in relieving pain and in improving the shoulder ROM in patients with subacromial syndrome.

Frozen shoulder: the effectiveness of conservative and surgical interventions--systematic review.

Favejee MM, Huisstede BM, Koes BW.

Br J Sports Med. 2010 Jul 20. [Epub ahead of print]
PMID: 20647296 [PubMed - as supplied by publisher]

Background A variety of therapeutic interventions is available for restoring motion and diminishing pain in patients with frozen shoulder. An overview article concerning the evidence for the effectiveness of these interventions is

lacking.
Objective To provide an evidence-based overview regarding the effectiveness of conservative and surgical interventions to treat the frozen shoulder.
Methods The Cochrane Library, PubMed, Embase, Cinahl and Pedro were searched for relevant systematic reviews and randomised clinical trials (RCTs). Two reviewers independently selected relevant studies, assessed the methodological quality and extracted data. A best-evidence synthesis was used to summarise the results.
Results Five Cochrane reviews and 18 RCTs were included studying the effectiveness of oral medication, injection therapy, physiotherapy, acupuncture, arthrographic distension and suprascapular nerve block (SSNB).
Conclusions We found strong evidence for the effectiveness of steroid injections and laser therapy in short-term and moderate evidence for steroid injections in mid-term follow-up. Moderate evidence was found in favour of mobilisation techniques in the short and long term, for the effectiveness of arthrographic distension alone and as an addition to active physiotherapy in the short term, for the effectiveness of oral steroids compared with no treatment or placebo in the short term, and for the effectiveness of SSNB compared with acupuncture, placebo or steroid injections. For other commonly used interventions no or only limited evidence of effectiveness was found. Most of the included studies reported short-term results, whereas symptoms of frozen shoulder may last up to 4 years. High quality RCTs studying long-term results are clearly needed in this field.

Low-power laser treatment in patients with frozen shoulder: preliminary results.

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Photomed Laser Surg. 2008 Apr;26(2):99-105.
PMID: 18341417 [PubMed - indexed for MEDLINE]

OBJECTIVE: In this study I sought to test the efficacy of low-power laser therapy (LLLT) in patients with frozen shoulder.
Background Data: The use of low-level laser energy has been recommended for the management of a variety of musculoskeletal disorders.
MATERIALS AND METHODS: Sixty-three patients with frozen shoulder were randomly assigned into one of two groups. In the active laser group (n = 31), patients were treated with a 810-nm Ga-Al-As laser with a continuous

output of 60 mW applied to eight points on the shoulder for 30 sec each, for a total dose of 1.8 J per point and 14.4 J per session. In the placebo group (n = 32), patients received placebo laser treatment. During 8 wk of treatment, the patients in each group received 12 sessions of laser or placebo, two sessions per week (for weeks 1-4), and one session per week (for weeks 5-8).
RESULTS: Relative to the placebo group, the active laser group had: (1) a significant decrease in overall, night, and activity pain scores at the end of 4 wk and 8 wk of treatment, and at the end of 8 wk additional follow-up (16 wk post-randomization); (2) a significant decrease in shoulder pain and disability index (SPADI) scores and Croft shoulder disability questionnaire scores at those same intervals; (3) a significant decrease in disability of arm, shoulder, and hand questionnaire (DASH) scores at the end of 8 wk of treatment, and at 16 wk posttreatment; and (4) a significant decrease in health-assessment questionnaire (HAQ) scores at the end of 4 wk and 8 wk of treatment. There was some improvement in range of motion, but this did not reach statistical significance.
CONCLUSIONS: The results suggested that laser treatment was more effective in reducing pain and disability scores than placebo at the end of the treatment period, as well as at follow-up.

LLLT is as well documented as NSAIDs and steroid injections for shoulder tendinitis/bursitis and epicondylaglia.

Jan M Bjordal

Physical Therapy Reviews. 1998; 3: 121-132.

The Norwegian physiotherapist Jan M Bjordal published his thesis â€œLow level laser therapy in shoulder tendinitis/bursitis, epicondylalgia and ankle sprainâ€ in 1997, at the Division of Physiotherapy Science, University of Bergen. It has also been published in Physical Therapy Reviews. 1998; 3: 121-132.
Here is the Conclusion of the thesis:
â€œA systematic review has been performed on the effect of LLLT for three diagnoses. LLLT was evaluated on similar criteria for methodological assessments of trials as previously established for medical interventions. No evidence was found to indicate that randomized controlled trials on LLLT for tendinitis/bursitis of the shoulder, lateral epicondylalgia and ankle sprains were methodologically inferior to RCTs on medical interventions. The clinical effects of LLLT were found to be supported by scientific evidence regarding short (0-4 weeks) and medium term (<3 months) efficacy for subacute or chronic lateral epicondylitis, and short term efficacy (>3 months) for subacute or chronic lateral epicondylitis, and short term efficacy (> 3 months) for subacute or chronic shoulder tendinitis/bursitis. The evidence of effect from LLLT for acute ankle sprain is inconclusive,

although there seems to be a slight tendency in favour of LLLT. Adverse effects of LLLT are rarely seen and only in minor forms (nausea, headache) compared to medication, where more serious gastrointestinal discomfort or ulcers are not uncommon. It has also been shown that trials in favour of active treatment had more treatments per week than the trials showing no difference in effect. In short one could say that LLLT should be used much in the same way as NSAID are used for short periods of time. Most trials showing significant effects used an IR 904 nm laser, but some results in favour of IR lasers with wavelengths of 780, 820 and 830 nm were also observed. Clinical effects of LLLT were best in subacute conditions. In chronic conditions a higher dosage and more treatments seem to be needed. The results of the high quality LLLT trials were all in favour of treatment with confidence intervals not including zero, and the trials came from several different research groups. Evidence was found to be at the highest or the second highest level depending on what level of clinical significance is decided according to the classification of Oxman (1994) and McQuay (1997). The review found little support for the alleged large placebo effects of LLLT. In chronic cases the placebo effect is probably less that 10%, after the natural history of the complaints is taken into account.â€
In the â€œSummary of discussion on clinical effect estimates for LLLTâ€ the author writes:
â€œThe majority of the included LLLT-trials found significant clinical effect from LLLT. Seven of the eleven LLLT-trials with acceptable methods included calculations of 95% confidence limits above zero, and one LLLT-trial on anke sprain included zero (Axelsen & Bjerno 1993). The clincal effect estimates from LLLT-trials for shoulder tendinitis/bursitis are similar or higher than for NSAID or steroid injections. For lateral epicondylalgia estimates for short term clinical effects are similar or lower for LLLT than for steroid injections, but medium clinical effect estimates are similar or higher for LLLT. Recurrence of symptoms in lateral epicondylalgia is less likely after LLLT than after steroid injections. Evidence of clinical effects from ankle sprain is inconclusive. Adverse effects from LLLT are seldom seen and they appear less serious than for patients treated with NSAID and steroid injections.â€