Lancet. 2009 Dec 5;374(9705):1897-908. doi: 10.1016/S0140-6736(09)61522-1. Epub 2009 Nov 13.

Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis ofrandomised placebo or active-treatment controlled trials.

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Abstract

BACKGROUND:

Neck pain is a common and costly condition for which pharmacological management has limited evidence of efficacy and side-effects. Low-level laser therapy (LLLT) is a relatively uncommon, non-invasive treatment for neck pain, in which non-thermal laser irradiation is applied to sites of pain. We did a systematic review and meta-analysis of randomised controlled trials to assess the efficacy of LLLT in neck pain.

METHODS:

We searched computerised databases comparing efficacy of LLLT using any wavelength with placebo or with active control in acute or chronic neck pain. Effect size for the primary outcome, pain intensity, was defined as a pooled estimate of mean difference in change in mm on 100 mm visual analogue scale.

FINDINGS:

We identified 16 randomised controlled trials including a total of 820 patients. In acute neck pain, results of two trials showed a relative risk (RR) of 1.69 (95% CI 1.22-2.33) for pain improvement of LLLT versus placebo. Five trials of chronic neck pain reporting categorical data showed an RR for pain improvement of 4.05 (2.74-5.98) of LLLT. Patients in 11 trials reporting changes in visual analogue scale had pain intensity reduced by 19.86 mm (10.04-29.68). Seven trials provided follow-up data for 1-22 weeks after completion of treatment, with short-term pain relief persisting in the medium term with a reduction of 22.07 mm (17.42-26.72). Side-effects from LLLT were mild and not different from those of placebo.

INTERPRETATION:

We show that LLLT reduces pain immediately after treatment in acute neck pain and up to 22 weeks after completion of treatment in patients with chronic neck pain.

FUNDING:

None.

LOW LEVEL LASER THERAPY FOR PATIENTS WITH CERVICAL DISK HERNIA

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Background and Aims: In previous studies we have reported the benefits of low level laser ther- apy (LLLT) for chronic shoulder joint pain, elbow, hand and finger pain, and low back pain. The present study is a report on the effects of LLLT for chronic neck pain. **Materials and Methods:** Over a 3 year period, 26 rehabilitation department outpatients with chronic neck pain, diagnosed as being caused by cervical disk hernia, underwent treatment applied to the painful area with a 1000 mW semi-conductor laser device delivering at 830 nm in continuous wave, 20.1 J/cm2/point, and three shots were given per session (1 treatment) with twice a week for 4 weeks.
Results:
1. A visual analogue scale (VAS) was used to determine the effects of LLLT for chronic pain and after the end of the treatment regimen a significant improvement was observed ($p<0.001$). 2. After treatment, no significant differences in cervical spine range of motion were observed. 3. Discussions with the patients revealed that in order to receive continued benefits from treat- ment, it was important for them to be taught how to avoid postures that would cause them neck pain in everyday life.
Conclusion: The present study demonstrates that LLLT was an effective form of treatment for neck and back pain caused by cervical disk hernia, reinforced by postural training.
Key words: Low Level Laser Therapy, Cervical Disk Hernia, Chronic Pain, Postural training during Activities of Daily Living

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Efficacy of high-intensity laser therapy in the treatment of chronic neck pain: a randomized double-blind placebo-control trial.

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Abstract

The aim of the study was to investigate the effect of high-intensity laser therapy (HILT) in treatment of patients with chronic neck pain (CNP) on cervical range of motion (ROM), pain, and functional activity. Sixty male patients participated in this study with mean (SD) age of 35.47 (4.18) years. Patients were randomly assigned into two groups and treated with HILT plus exercise (HILT + EX) and placebo laser plus exercise (PL + EX) in groups 1 and 2, respectively. The outcomes measured were cervical ROM, pain level by visual analog scale (VAS), and functional activity by neck disability index (NDI) score. Statistical analyses were performed to compare the differences between baseline and post-treatment. The level of

statistical significance was set as $p < 0.05$. Cervical ROM significantly increased after 6 weeks of treatment in all groups. VAS and NDI results showed significant decrease post-treatment in both groups. HILT + EX effectively increased cervical ROM and decreased VAS and NDI scores after 6 weeks of treatment compared to PL + EX. HILT + EX is an effective physical therapy modality for patients with CNP compared to PL + EX therapy. The combination of HILT + EX effectively increased cervical ROM, functional activity, and reduced pain after 6 weeks of treatment.

KEYWORDS:

Chronic neck pain; Disability; Exercise; Functional; High-intensity LASER therapy; Pain

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Excerpt

In cases of chronic neck pain, low effect laser therapy can provide relief from pain for 2–6 months after the completion of treatment. The studies have not especially focused on side effects, but no serious complications or side effects have been reported. There are no cost-effectiveness studies comparing low level laser to other treatments. Several well-executed studies are necessary to determine with certainty the effects of treatment with low level laser compared to placebo and other methods, above all in cases of acute pain, and with regard to function and working capacity, and to long-term effects.

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The effect of 300 mW, 830 nm laser on chronic neck pain: a double-blind, randomized, placebo-controlled study.

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Abstract

A randomized, double-blind, placebo-controlled study of low-level laser therapy (LLLT) in 90 subjects with chronic neck pain was conducted with the aim of determining the efficacy of 300 mW, 830 nm laser in the management of chronic neck pain. Subjects were randomized to receive a course of 14 treatments over 7 weeks with either active or sham laser to tender areas in the neck. The primary outcome measure was change in a 10 cm Visual Analogue Scale (VAS) for pain. Secondary outcome measures included Short-Form 36 Quality-of-Life questionnaire (SF-36), Northwick Park Neck Pain Questionnaire (NPNQ), Neck Pain and Disability Scale (NPAD), the McGill Pain Questionnaire (MPQ) and Self-Assessed Improvement (SAI) inpain measured by VAS. Measurements were taken at baseline, at the end of 7 weeks' treatment and 12 weeks from baseline. The mean VAS painscores improved by 2.7 in the treated group and worsened by 0.3 in the control group (difference 3.0, 95% CI 3.8-2.1). Significant improvements were seen in the active group compared to placebo for SF-36-Physical Score (SF36 PCS), NPNQ, NPAD, MPQVAS and SAI. The results of the SF-36 - Mental Score (SF36 MCS) and other MPQ component scores (afferent and sensory) did not differ significantly between the two groups. Low-levellaser therapy (LLLT), at the parameters used in this study, was efficacious in providing pain relief for patients with chronic neck pain over a period of 3 months.

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Efficacy of 904 nm gallium arsenide low level laser therapy in the management of chronic myofascial pain in theneck: a double-blind and randomize-controlled trial.

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Abstract

BACKGROUND AND OBJECTIVES:

A prospective, double-blind, randomized, and controlled trial was conducted in patients with chronic myofascialpain syndrome (MPS) in the neck to evaluate the effects of infrared low level 904 nm Gallium-Arsenide (Ga-As) laser therapy (LLLT) on clinical and quality of life (QoL).

STUDY DESIGN/PATIENTS AND METHODS:

The study group consisted of 60 MPS patients. Patients were randomly assigned to two treatment groups: Group I (actual laser; 30 patients) and Group II (placebo laser; 30 patients). LLLT continued daily for 2 weeks except weekends. Follow-up measures were evaluated at baseline, 2, 3, and 12 weeks. All patients were evaluated with respect to pain at rest, pain at movement, number of trigger points (TP), the Neck Pain and Disability Visual Analog Scale (NPAD), Beck depression Inventory (BDI), and the Nottingham Health Profile (NHP).

RESULTS:

In active laser group, statistically significant improvements were detected in all outcome measures compared with baseline ($P < 0.01$) while in the placebo laser group, significant improvements were detected in only pain score at rest at the 1 week later of the end of

treatment. The score for self-assessed improvement of pain was significantly different between the active and placebo laser groups (63 vs. 19%) ($P < 0.01$).

CONCLUSION:
This study revealed that short-period application of LLLT is effective in pain relief and in the improvement of functional ability and QoL in patients with MPS.

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