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# Low level laser therapy (Classes I, II and III) for treating rheumatoid arthritis.

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## Abstract

**BACKGROUND:** Rheumatoid arthritis (RA) affects a large proportion of the population. Low Level Laser Therapy (LLLT) was introduced as an alternative non-invasive treatment for RA about ten years ago. LLLT is a light source that generates extremely pure light, of a single wavelength. The effect is not thermal, but rather related to photochemical reactions in the cells. The effectiveness of LLLT for rheumatoid arthritis is still controversial. This review is an update of the original review published in October 1998.

**OBJECTIVES:** To assess the effectiveness of LLLT in the treatment of RA.

**SEARCH STRATEGY:** We initially searched MEDLINE, EMBASE (from 1998), the registries of the Cochrane Musculoskeletal Group and the field of Rehabilitation and Related Therapies as well as the Cochrane Central Register of Controlled Trials (CENTRAL) up to June 2001. This search has now been updated to include articles published up to June 2005.

**SELECTION CRITERIA:** Following an a priori protocol, only randomized controlled trials of LLLT for the treatment of patients with a clinical diagnosis of RA were eligible. Abstracts were excluded unless further data could be obtained from the authors.

**DATA COLLECTION AND ANALYSIS:** Two reviewers independently selected trials for inclusion, then extracted data and assessed quality using predetermined forms. Heterogeneity was tested using chi-squared. A fixed effects model was used throughout for continuous variables, except where heterogeneity existed, in which case, a random effects model was used. Results were analyzed as weighted mean differences (WMD) with 95% confidence intervals (CI), where the difference between the treated and control groups was weighted by the inverse of the variance. Dichotomous outcomes were analyzed with relative risks.

**MAIN RESULTS:** A total of 222 patients were included in the five placebo-controlled trials, with 130 randomized to laser therapy. Relative to a separate control group, LLLT reduced pain by 1.10 points (95% CI: 1.82, 0.39) on visual analogue scale relative to placebo, reduced morning stiffness duration by 27.5 minutes (95%CI: 2.9 to 52 minutes) and increased tip to palm flexibility by 1.3 cm (95% CI: 0.8 to 1.7). Other outcomes such as functional assessment, range of motion and local swelling did not differ between groups. There were no significant differences between subgroups based on LLLT dosage, wavelength, site of application or treatment length. For RA, relative to a control group using

the opposite hand, there was no difference observed between the control and treatment hand for morning stiffness duration, and also no significant improvement in pain relief RR 13.00 (95% CI: 0.79 to 214.06). However, only one study was included as using the contralateral limb as control. .

**AUTHORS' CONCLUSIONS:** LLLT could be considered for short-term treatment for relief of pain and morning stiffness for RA patients, particularly since it has few side-effects. Clinicians and researchers should consistently report the characteristics of the LLLT device and the application techniques used. New trials on LLLT should make use of standardized, validated outcomes. Despite some positive findings, this meta-analysis lacked data on how LLLT effectiveness is affected by four important factors: wavelength, treatment duration of LLLT, dosage and site of application over nerves instead of joints. There is clearly a need to investigate the effects of these factors on LLLT effectiveness for RA in randomized controlled clinical trials.

### Update of

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