

The Effectiveness of Therapeutic Class IV (10 W) Laser Treatment for Epicondylitis

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Background and Objective: Photobiomodulation has been shown to modulate cellular protein production and stimulate tendon healing in a dose-dependent manner. Previous studies have used class IIIb lasers with power outputs of less than 0.5 W. Here we evaluate a dual wavelength (980/810 nm) class IV laser with a power output of 10 W for the purpose of determining the efficacy of class IV laser therapy in alleviating the pain and dysfunction associated with chronic epicondylitis.

Methods: Sixteen subjects volunteered for laser therapy, or an identically appearing sham instrument in a randomized, placebo-controlled, double-blinded clinical trial. Subjects underwent clinical examination (pain, function, strength, and ultrasonic imaging) to confirm chronic tendinopathy of the extensor carpi radialis brevis tendon, followed by eight treatments of 6.6 ± 1.3 J/cm² (laser), or sham over 18 days. Safety precautions to protect against retinal exposure to the laser were followed. The exam protocol was repeated at 0, 3, 6 and 12 months post-treatment.

Results: No initial differences were seen between the two groups. In the laser treated group handgrip strength improved by $17 \pm 3\%$, $52 \pm 7\%$, and $66 \pm 6\%$ at 3, 6, and 12 months respectively; function improved by $44 \pm 1\%$, $71 \pm 3\%$, and $82 \pm 2\%$, and pain with resistance to extension of the middle finger was reduced by $50 \pm 6\%$, $93 \pm 4\%$, and $100 \pm 1\%$ at 3, 6 and 12 months, respectively. In contrast, no changes were seen until 12 months following sham treatment (12 months: strength improved by $13 \pm 2\%$, function improved by $52 \pm 3\%$, pain with resistance to extension of the middle finger reduced by $76 \pm 2\%$). No adverse effects were reported at any time.

Conclusions: These findings suggest that laser therapy using the 10 W class IV instrument is efficacious for the long-term relief of the symptoms associated with chronic epicondylitis. The potential for a rapidly administered, safe and effective treatment warrants further investigation.

