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The effectiveness of therapeutic class IV (10 W) laser treatment for epicondylitis.

Roberts DB¹, Kruse RJ, Stoll SF.

+ Author information

Abstract

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.

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This conclusion of this study must be questioned. Not only that a 10 W laser poses a much higher risk of burning and eye injury and is more expensive than a class 3B laser - a Class 3B laser is quicker! The high output forces a sweeping motion or irradiation from a distance, thereby causing a lot of energy loss at the deep target. The time spent was 5 minutes, which is more than required by a conventional Class 3B session for this condition. With a 3B laser in firm contact over tender points and a sweeping motion over the actual condyle, more energy at target can be applied in 2-3 minutes. The authors of the paper above swept over an area of 45 cm². By spreading the light over a large area, using a wide beam area and irradiating from a distance, the dose became 6.6 J/cm² and the power density only 22 mW/cm², which is very low. Irradiating in contact with 10 W is not possible, but with a 3B laser in firm contact, an optimal penetration is achieved and less time is required.

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