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Format: Abstract

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Changes in local skin temperature after the application of a pulsed Nd:YAG laser to healthy subjects: a prospective crossover controlled trial.

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Abstract

Pulsed Nd:YAG laser (1064 nm) is a recent modality that is used for the rehabilitation of musculoskeletal disorders, but there is no evidence about its thermal effects. The aim of the study was to investigate the changes in local skin temperature (LST) after the application of a pulsed Nd:YAG laser to healthy subjects. The study participants were 30 male subjects with an average age of 21.96 (\pm 0.92) years. A rectangular area (15 \times 10 cm²) was marked at the front of the dominant thigh and scanned with a laser beam at 3000 J with 20 J/cm² for 15 min. The other thigh was considered as a control side. The minimum, average, and maximum LSTs were measured using a thermographic camera. The measurements were performed before laser application, immediately after, and then every minute until the LST returned to the pre-treatment value. An independent t test and repeated measures ANOVA were used to analyze the changes in LST. The level of significance was set at $p < 0.05$. The pulsed Nd:YAG laser significantly increased the minimum, average, and maximum LSTs in comparison with the control. The increase was significant for up to 5 min after the application, and it took 10 min to reach the baseline values. The level of increase was 1.23-4.03 °C, and the average increase was 2.6 °C. The pulsed Nd:YAG laser significantly increased the minimum, average, and maximum LSTs of the thigh area in normal subjects, and the thermal effect lasted for 5 min after application.

KEYWORDS: Pulsed Nd:YAG laser; Thermal effect; Thermographic camera

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