

# Efficacy of pulsed Nd:YAG laser on forearm skin temperature and electrophysiology in normal subjects: a case-control study

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## Abstract

To investigate the effect of a pulsed Nd:YAG laser on the forearm local skin temperature (LST) and electrophysiology in healthy adults. A total of 30 healthy subjects with a mean age of  $21 \pm 0.74$  years, mass of  $63 \pm 9.97$  kg, and height of  $163.7 \pm 6.24$  cm participated in this study. The anterior surface of the left non-dominant forearm was scanned with a pulsed Nd:YAG laser at  $20 \text{ Jcm}^{-2}$  for a total of 2000 J in 15 min. The right forearm was considered as the control and was scanned with a placebo laser for the same time as the active laser. Forearm minimal, average, and maximum LST were measured using a thermographic camera. Electrophysiological assessment of the median nerve [distal motor latency (DML), motor nerve conduction velocity (MNCV), and sensory nerve conduction velocity (SNCV)] was performed on both forearms before and after the application of the pulsed Nd:YAG laser. Paired and unpaired t tests were used to compare within and between groups, respectively. The level of significance was set at  $p > 0.05$ . There were significant increases in the minimum, average, and maximum LST, as well as the MNCV and SNCV with a significant decrease in DML after laser application compared to the control. The average increase in LST and nerve conduction velocity post-treatment was 275.55 K and  $4.8 \text{ ms}^{-1}$ , respectively. The application of a pulsed Nd:YAG laser significantly increased the forearm LST, MNCV, and SNCV and significantly decreased the DML in healthy subjects. The average increase in the LST was 275.55 K with an average increase of  $5 \text{ ms}^{-1}$  in the motor and  $4 \text{ ms}^{-1}$  in the sensory NCVS.

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