

Use of Low-Level Laser Therapy (808 nm) to Muscle Fatigue Resistance: A Randomized Double-Blind Crossover Trial

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Abstract

Objective: The purpose of this study was to investigate whether low-level laser (light) therapy (LLLT) can provide fatigue resistance via maximum repetitions (RM) with an isokinetic dynamometer, and decrease electromyography fatigue index (EFI). Background data: LLLT has been used to increase muscle performance when applied before or after intense exercises.

Materials and methods: This study was a randomized, double blind, crossover trial with placebo. Seven young men (21 – 3 years of age) who were clinically healthy, were allocated into two groups: active laser (LLLT) and placebo laser (Placebo). Both groups were assessed at baseline, at one training session, and at the end of this study. Baseline and final assessments recorded the number of RM of knee flexion-extensions using an isokinetic dynamometer at 60 degrees/sec in conjunction with EFI recorded by median frequency. The training sessions consisted of three sets of 20 RM of knee flexion/ extensions using an isokinetic dynamometer at 60 degrees/sec plus LLLT (808 nm, 100mW, 4 J), or placebo, applied to quadriceps femoris muscles between sets, and after the last series of this exercise. After 1 week (washout period), all volunteers were exchanged among groups and then all assessments were repeated.

Results: LLLT group increased RM (52%; $p = 0.002$) with a small EFI for the vastus medialis ($p = 0.004$) and rectus femoris ($p = 0.004$).

Conclusions: These results suggest an increased muscle fatigue resistance when LLLT is applied during rest intervals, and after the last series of intense exercises.