

Effects of low-level laser therapy (808 nm) on isokinetic muscle performance of young women submitted to endurance training: a randomized controlled clinical trial.

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Source

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Abstract

Low-level laser therapy (LLLT) has shown efficacy in muscle bioenergetic activation and its effects could influence the mechanical performance of this tissue during physical exercise. This study tested whether endurance training associated with LLLT could increase human muscle performance in isokinetic dynamometry when compared to the same training without LLLT. The primary objective was to determine the fatigue index of the knee extensor muscles (FI_{ext}) and the secondary objective was to determine the total work of the knee extensor muscles (TW_{ext}). Included in the study were 45 clinically healthy women (21±1.78 years old) who were randomly distributed into three groups: CG (control group), TG (training group) and TLG (training with LLLT group). The training for the TG and TLG groups involved cycle ergometer exercise with load applied to the ventilatory threshold (VT) for 9 consecutive weeks. Immediately after each training session, LLLT was applied to the femoral quadriceps muscle of both lower limbs of the TLG subjects using an infrared laser device (808 nm) with six 60-mW diodes with an energy of 0.6 J per diode and a total energy applied to each limb of 18 J. VT was determined by ergospirometry during an incremental exercise test and muscle performance was evaluated using an isokinetic dynamometer at 240°/s. Only the TLG showed a decrease in FI_{ext} in the nondominant lower limb (P=0.016) and the dominant lower limb (P=0.006). Both the TLG and the TG showed an increase in TW_{ext} in the nondominant lower limb (P<0.001 and P=0.011, respectively) and in the dominant lower limb (P<0.000 and P<0.000, respectively). The CG showed no reduction in FI_{ext} or TW_{ext} in either lower limb. The results suggest that an endurance training program combined with LLLT leads to a greater reduction in fatigue than an endurance training program without LLLT. This is relevant to everyone involved in sport and rehabilitation.