

1. Lasers Surg Med. 2009 Oct;41(8):572-7.

Effect of cluster multi-diode light emitting diode therapy (LEDT) on exercise-induced skeletal muscle fatigue and skeletal muscle recovery in humans.

[Leal Junior EC](#), [Lopes-Martins RA](#), [Rossi RP](#), [De Marchi T](#), [Baroni BM](#), [de Godoi V](#), [Marcos RL](#), [Ramos L](#), [Bjordal JM](#).

Source

Laboratory of Human Movement (LMH), University of Caxias do Sul (UCS), Caxias do Sul, RS, Brazil. ernesto_fisio@oi.com.br

Abstract

BACKGROUND AND OBJECTIVES:

There are some indications that low-level laser therapy (LLLT) may delay the development of skeletal muscle fatigue during high-intensity exercise. There have also been claims that LED cluster probes may be effective for this application however there are differences between LED and laser sources like spot size, spectral width, power output, etc. In this study we wanted to test if light emitting diode therapy (LEDT) can alter muscle performance, fatigue development and biochemical markers for skeletal muscle recovery in an experimental model of biceps humeri muscle contractions.

STUDY DESIGN/MATERIALS AND METHODS:

Ten male professional volleyball players (23.6 [SD +/-5.6] years old) entered a randomized double-blinded placebo-controlled crossover trial. Active cluster LEDT (69 LEDs with wavelengths 660/850 nm, 10/30 mW, 30 seconds total irradiation time, 41.7 J of total energy irradiated) or an identical placebo LEDT was delivered under double-blinded conditions to the middle of biceps humeri muscle immediately before exercise. All subjects performed voluntary biceps humeri contractions with a workload of 75% of their maximal voluntary contraction force (MVC) until exhaustion.

RESULTS:

Active LEDT increased the number of biceps humeri contractions by 12.9% (38.60 [SD +/-9.03] vs. 34.20 [SD +/-8.68], $P = 0.021$) and extended the elapsed time to perform contractions by 11.6% ($P = 0.036$) versus placebo. In addition, post-exercise levels of biochemical markers decreased significantly with active LEDT: Blood Lactate ($P = 0.042$), Creatine Kinase ($P = 0.035$), and C-Reactive Protein levels ($P = 0.030$), when compared to placebo LEDT.

CONCLUSION:

We conclude that this particular procedure and dose of LEDT immediately before exhaustive biceps humeri contractions, causes a slight delay in the development of skeletal muscle fatigue, decreases post-exercise blood lactate levels and inhibits the release of Creatine Kinase and C-Reactive Protein. *Lasers Surg. Med.* 41:572-577, 2009. (c) 2009 Wiley-Liss, Inc.

PMID:

19731300

[PubMed - indexed for MEDLINE]