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Low-level laser therapy improves skeletal muscle performance, decreases skeletal muscle damage and modulates mRNA expression of COX-1 and COX-2 in a dose-dependent manner.

[de Almeida P](#), [Lopes-Martins RA](#), [Tomazoni SS](#), [Silva Jr JA](#), [de Tarso Camillo de Carvalho P](#), [Bjordal JM](#), [Leal Junior EC](#).

Source

Post Graduate Program in Rehabilitation Sciences, Nove de Julho University (UNINOVE), São Paulo, SP - Brazil.

Abstract

We tested if modulation in mRNA expression of COX-1 and COX-2 can be related to protective effects of phototherapy in skeletal muscle. Thirty male Wistar rats were divided into five groups receiving either one of four laser doses (0.1, 0.3, 1.0 and 3.0 J) or a no-treatment control group. Laser irradiation (904 nm, 15 mW average power) was performed immediately before the first contraction for treated groups. Electrical stimulation was used to induce six tetanic tibial anterior muscle contractions. Immediately after sixth contraction, blood samples were collected in order to evaluate CK activity and muscles were dissected and frozen in liquid nitrogen in order to evaluate mRNA expression of COX-1 and COX-2. The 1.0 J and 3.0 J groups showed significant enhancement ($p < 0.01$) in total work performed in 6 tetanic contractions compared to control group. All laser groups, except the 3.0 J group, presented significantly lower post-exercise CK activity than control group. Additionally, 1.0 J group showed increased COX-1 and decreased COX-2 mRNA expression compared to control group and 0.1, 0.3 and 3.0 J laser groups ($p < 0.01$). We conclude that pre-exercise infrared laser irradiation with dose of 1.0 J enhances skeletal muscle performance and decreases post-exercise skeletal muscle damage and inflammation.

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