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Effect of acute photobiomodulation treatment on the recovery of exhaustive exercise-induced motor dysfunction

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Objective Photobiomodulation (PBM), originally known as "low-level laser therapy", has been recognized as an effective methond to relieve pain, reduce inflammtion and improve healing. PBM induces photobiological effect at the the cellular level without thermal and toxic effects. Currently, PBM study on muscle recovery after exercise mainly focouses on the changes of molecular and immunological parameters. This study was designed to analyze the effect of acute PBM treatment on exhaustive exercise-induced behaviorial changes.
Methods 1. Sprague-Dawley rats were randomly divided into three groups (n=8, each group): Control group without exhaustive exercise (Cont), Exhaustive exercise group (EE) and acute PBM treatment group (APBM). Acute PBM were conducted immediately using a diode laser with continuous wave (CW) at 808 nm (350 mW/cm^2) after exhaustive exercise. Each paws were treated using PBM for 2 minutes. Grisp test were performed 24 hours after exhaustive exercise. The grisp strength score and the hanging time on the rope were recorded and analyzed using Sigmastat.
Results 1. Signficant decreases of the grisp strength score and the hanging time were observed in the EE group compared with control group. 2. The motor function in the acute PBM treatment group were significantly improved.
Conclusions Acute photobiomodulation treatment with 808 nm laser can signicicantly enchance the recovery of exhaustive exercise-induced motor dysfunction .