

PROTOCOLOS DE INVESTIGACIÓN - MEDICINA

**IMPACT OF HOME PHOTOBIMODULATION ON FUNCTIONAL AND
CLINICAL OUTCOMES AFTER SURGICAL TREATMENT OF DISTAL RADIUS
FRACTURES: A DOUBLE-BLIND RANDOMIZED CONTROLLED TRIAL**

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Impact of Home Photobiomodulation on Functional and Clinical Outcomes After
Surgical Treatment of Distal Radius Fractures: A Double-Blind Randomized
Controlled Trial

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Distal radius fracture (DRF) is a frequent injury in adults, treated conservatively or surgically. Regardless of the approach, it often results in pain, functional impairment, joint stiffness, reduced grip strength, prolonged work absenteeism, and possible loss of fracture reduction. Photobiomodulation (PBM) has demonstrated favorable outcomes in bone fracture management. This double-blind randomized controlled clinical trial will assess the adjuvant effect of home PBM on the rehabilitation of surgically treated DRFs combined with an unsupervised home exercise protocol. Forty-two participants will be randomly allocated (1:1) into two groups. The Control Group will undergo standard surgery, follow hospital-prescribed home exercises, and use an inactive LED plate (PBM device). The PBM Group will follow the same surgical and exercise protocol but will use an active PBM device. Home exercises will begin 24 hours after surgery, performed twice daily for 12 weeks. The LED plate will be applied once daily for 12 minutes (6 minutes on the dorsal side and 6 minutes on the palmar side). Participants will be blinded to group allocation and assessed at 24 hours, and at 2, 4, 6, and 12 weeks post-surgery by four blinded evaluators. The primary outcome will be wrist function, measured with the Quick-DASH instrument. Secondary outcomes will include wrist range of motion, grip strength, wrist function and pain (PRWE-BR), and fracture consolidation. Participants will be monitored daily through telephone messages. Data will be stored in a secure repository, and statistical analyses will be performed using appropriate tests for each variable, adopting a 5% significance level.

Palavras-chave: photobiomodulation; distal radius fracture; postoperative rehabilitation.