

Low-Level Laser Therapy for Neuromusculoskeletal Conditions: A Mini-Review

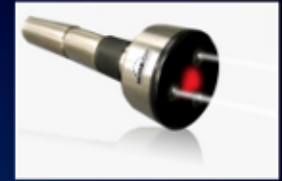
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Low-level laser therapy (LLLT) has been shown to have a biphasic dose response. Laser photobiostimulation accelerates tissue healing, reduces inflammation and provides analgesia. LLLT is commonly used to treat painful neuromusculoskeletal conditions.

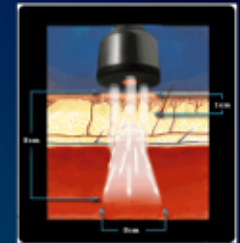
Proposed mechanisms include increased nociceptive threshold, blocking nerves through axonal flow or enzyme inhibition, increased endorphin production, COX-2 inhibition and attenuation of prostaglandin-2, and vasodilation.

PubMed search for “low-level laser therapy pain” resulted in 231 randomized controlled trials. Evidence of efficacy exists for temporomandibular joint disorder, knee osteoarthritis, diabetic neuropathy, myofascial pain, tendinopathy, chronic epicondylitis, low back pain and radiculopathy, carpal tunnel syndrome, lumbar disc herniation, frozen shoulder, tension headache, Raynaud's phenomenon, fibromyalgia, injury resulting from sports or motor vehicle trauma. Studies on the treatment of specific neuromusculoskeletal conditions have had mixed results, with some indicating benefit and others showing it to be no more effective than placebo. Conflicting results in the existing literature can be attributed to suboptimal wavelength, amplitude, and dose and the skill and experience of the operator.

LLLT is a safe and effective modality for many neuromusculoskeletal conditions and should be considered by the clinician for inclusion in a multimodal treatment plan. Further research is encouraged to determine the underlying physiological mechanisms and optimum treatment protocols.



Physicians, physical therapists and athletic trainers frequently use LLLT to treat pain and injuries.



830 nm laser tissue penetration. LLLT biostimulation depends on wavelength and dose.



LLLT is applied by the clinician using a hand held probe.