

Below are several useful links to articles that validate the efficacy of Laser Therapy.

Bjordal et al: *A systematic review with procedural assessments and meta-analysis of Low Level Laser Therapy in lateral elbow tendinopathy (tennis elbow).* <http://www.biomedcentral.com/1471-2474/9/75> BMC Musculoskeletal Disorders 2008, 9:75

This study finds that LLLT is both safe and effective when treating tendinopathy of the elbow. In extended timeframe comparisons, LLLT is thought to be a far better alternative to NSAIDs and corticosteroid injections –the latter of which has a significantly worse long- term prognosis for the condition in question. Specifically, LLLT is thought to decrease tendon inflammation while at the same time increasing the tendon repair process by way of biological mechanisms.

Bjordal et al: *A systematic review of low level laser therapy with location-specific doses for pain from chronic joint disorders.* http://ajp.physiotherapy.asn.au/AJP/vol_49/2/AustJPhysiother49i2Bjordal.pdf Australian Journal of Physiotherapy 49: 107-116

This study compiles meta-analysis findings that low level laser therapy LLLT is effective in reducing pain by dose-specific anti-inflammatory effect when LLLT is applied to the joint capsule. Pain relief in the subjects studied was said to last for up to 4-6 months with no reported side-effects.

Ezzati et al: *Low-level laser therapy with pulsed infrared laser accelerates third-degree burn healing process in rats.* <http://www.rehab.research.va.gov/jour/09/46/4/ezzati.html> Journal of Rehabilitation Research & Development 2009, Volume 46 Number 4, Pages 543 — 554

An independent study finds a significant increase in the healing time of third-degree burn models in rats. This study highlights the advantages of the pulsed low level laser therapy (LLLT) application as it finds significantly increased healing in burn models treated with the pulsed laser as opposed to other control groups, including those treated with topical pharmaceuticals.

Y.-Y. Huang and others: *Biphasic Dose Response in Low Level Light Therapy* <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3315174/>

Harvard Study, review of the mechanics of dose and treatment responses. Specifically, the advantage of using low levels of light to repair tissue and stimulating healing, as opposed to higher levels of light. High levels of light are shown to cause detrimental effects at the cellular level.

Byrnes et al: *Light Promotes Regeneration and Functional Recovery and Alters the Immune Response After Spinal Cord Injury* http://www.nupen.com.br/port/odontologia/od_bibli/junho_2007/Byrnes_regeneration_2005.pdf Lasers in Surgery and Medicine 36:171–185 (2005)

Tests demonstrate that LLLT improves recovery after injury. Results of this study show that light in specific wavelength parameters (around 810 nm), will penetrate to the spinal cord and improve axonal regrowth. In addition, it is believed that there is improvement of locomotor function and a beneficial alteration of the immune response.

S. Rochkind: *Laser Phototherapy: A New Modality for Nerve Cell Tissue Engineering Technology, Cell Therapy and Nerve Repair* <http://www.biolase.com/Medical/Documents/Laser-Phototherapy.pdf> ©2008 by MEDIMOND S.r.l. KX19R9031 WALT 2008 – International Conference of the World Association of Laser Therapy

An article overview presented at WALT International conference synthesizes the findings of studies conducted to determine the beneficial results of photo therapy to promote the recovery of the severely injured peripheral nerve through the acceleration of axonal growth and spinal cord regeneration.

E.-L. Laakso: *Dose Thresholds and Effect Mechanisms for Pain Management with LASER Phototherapy*
http://www98.griffith.edu.au/dspace/bitstream/handle/10072/23394/52819_1.pdf?sequence=1

©2008 by MEDIMOND S.r.l. KX19R9020 WALT 2008 – International Conference of the World Association of Laser Therapy

A presentation of the author's body of work on the subject of phototherapy and its use in the management of pain. Specifically, applications, parameters and dose levels. Research shows that LASER phototherapy administered in varying and repeated low doses will stimulate physiological response and reduce pain in some subjects.

Alameida-Lopes et al: *Effects of continuous and pulsed infrared laser application on bone repair using different energy doses. Study in Rats* <http://www.biolase.com/Medical/Documents/Bone-Repair.pdf> ©2008 by MEDIMOND S.r.l. KX19C0006 WALT 2008 – International Conference of the World Association of Laser Therapy

Laser therapy applied in continuous and pulsed wavelengths increased and accelerated the time bone repairing process. The effect is dose-dependent and utilizes the effective therapeutic window resulting in biostimulation of the bone tissue in both continuous and pulsed applications. Higher energy levels resulted in tissue damage at the point of irradiation.

Matsumoto et al: Low-level laser therapy modulates cyclo-oxygenase-2 expression during bone repair in rats.
<http://www.ncbi.nlm.nih.gov/pubmed?term=Matsumoto%20Cyclo-Oxygenase-2> Lasers Med Sci (2009) 24:195–201;
DOI 10.1007/s10103-008-0544-4

Experimental study investigates the possibility that low-level laser therapy increases production of enzymes that promote bone regrowth, specifically cyclo-oxygenase-2 which is detected during osteogenesis and is thought to be vital to bone formation.