

Did you know?

Laser Therapy is one of the **strongest** evidence-based therapies according to Clinical Guidelines for:

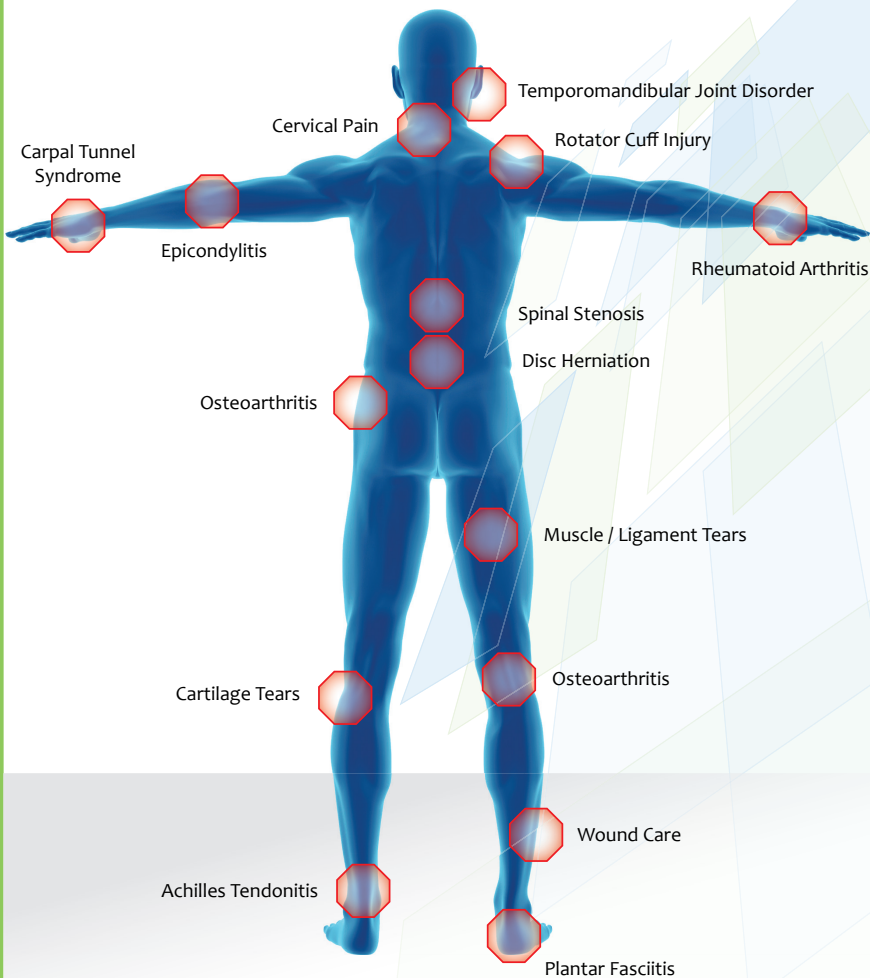
- **Achilles Tendonitis**
- **Neck Pain**
- **Osteoarthritis**
- **Epicondylitis**





WHAT DOES LASER THERAPY TREAT?

Laser Therapy safely and effectively treats musculoskeletal conditions, soft tissue injuries and wounds. BioFlex Laser Therapy offers physiotherapists a safe and technologically advanced “All-in-One” modality that is supported by an extensive amount of research and clinical evidence.





DOES IT WORK?

Neck Pain

The Bone and Joint Decade 2000-2010 Task Force on Neck Pain and its Associated Disorders involved seven years of work compiled from a database of more than 50 researchers located in nine different countries and 19 specialized clinical and scientific disciplines. Based on the Task Force findings regarding epidemiology, risk factors, course prognosis, the review concluded that **low-level laser therapy was one of only 6 treatments that were found to be beneficial.**

Lateral Epicondyle Tendinopathy

The BC Physiotherapy Tendinopathy Task Force has published evidence-informed guidelines to facilitate clinical decision making regarding the management of tendinopathy of the lateral epicondyle. Included in these guidelines are Laser therapy dosage calculations.²

Adhesive Capsulitis

In 2014, the Cochrane Collaboration published “Electrotherapy modalities for adhesive capsulitis (frozen shoulder) (Review) and concluded: “Overall, based on moderate quality evidence, LLLT is probably an effective adjunct to home exercises in terms of pain up to four weeks and function up to four months.” The Cochrane Review was NOT able to conclude any other electrotherapeutic modality was effective for frozen shoulder.

Achilles Tendinitis

According to the 2010 American Physical Therapy Association’s Clinical Practice Guidelines - “**Clinicians should consider the use of low-level laser therapy to decrease pain and stiffness in patients with Achilles tendinopathy. (Recommendation based on moderate evidence.)**”⁴

¹ Altman R et al. Achilles Pain, Stiffness and Muscle Power Deficits: Achilles Tendinitis. Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability and Health from the Orthopaedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther. 2010;40(9):A1-A26

² Developed by the BC Physical Therapy Tendinopathy Task Force: Dr. Joseph Anthony, Dr. Angela Fearon, Diana Hughes, Caro I Kennedy, Dr. Alex Scott, Michael Yates, Alison Hoens. A Physical Therapy Knowledge Broker project supported by:

UBC Department of Physical Therapy, Physiotherapy Association of BC, Vancouver Coastal Research Institute and Providence Healthcare Research Institute. June 2013

³ Page MJ, Green S, Kramer S, Johnston RV, McBain B, Buchbinder R. Electrotherapy modalities for adhesive capsulitis (frozen shoulder). Cochrane Database Syst Rev. 2014 Oct 1;10:CD011324. doi: 10.1002/14651858.CD011324.

⁴ Ottawa Panel et al. Ottawa panel Evidence-Based Clinical Practice Guidelines for Electrotherapy and Thermotherapy Interventions in the Management of Rheumatoid Arthritis in Adults. Phys Ther. 2004 Nov;84(11):1016-43



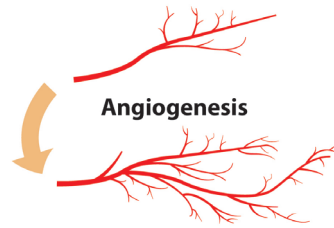


HOW DOES LASER THERAPY WORK?

Laser Therapy is a non-invasive, pain-free, light-based therapy that uses red and infrared light to target inflamed, injured and diseased tissues. Photons of light stimulate ATP production, thereby accelerating the healing process. Patients recover from musculoskeletal and peripheral nerve injuries with less scar tissue, accelerated cell regeneration and improved function.

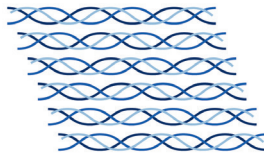
↑ **Angiogenesis & Neovascularization**

An increase in oxygenated blood to the injured tissue accelerates tissue healing.



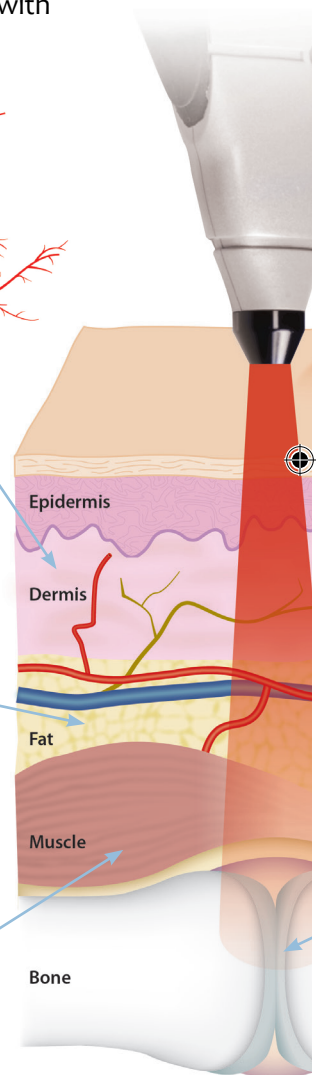
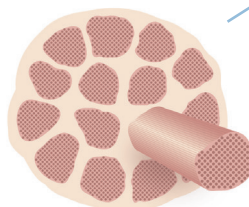
↑ **Collagen Production**

Proper alignment and remodeling of collagen reduces internal scar formation and enhances tissue elasticity.



↑ **Muscle Regeneration & Muscle Atrophy**

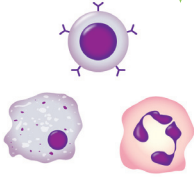
Repair of damaged muscle fibers and activation of myogenic satellite cells leads to regeneration of muscle tissue.





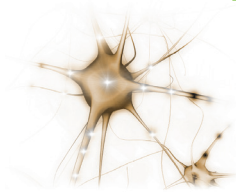
Inflammation & Edema

Increase in inflammatory mediators such as macrophages, neutrophils and lymphocytes accelerates and resolves the inflammatory process.



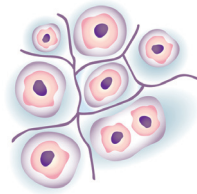
Nerve Regeneration

Proliferation of growth factors promotes neuronal sprouting and myelin formation for optimal nerve recovery.



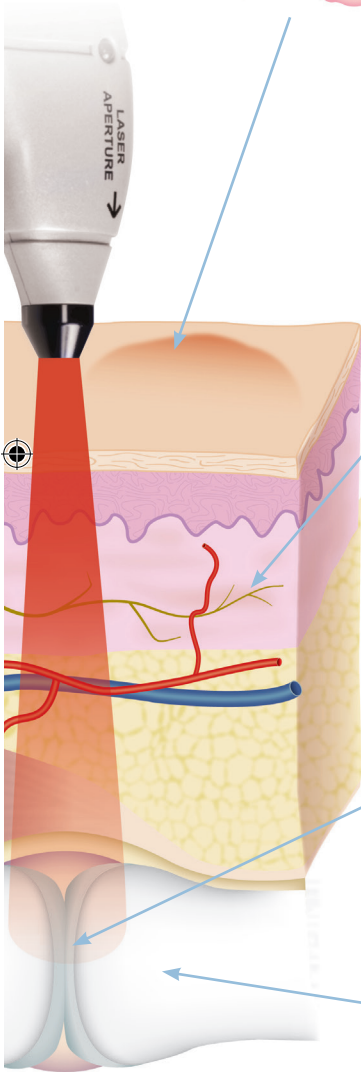
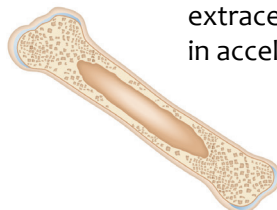
Cartilage Production

Increase in chondrocyte and collagen production allows for improved cartilage deposition and joint function.



Bone Formation

Proliferation of osteocytes and remodeling of bone extracellular matrix results in accelerated bone repair.





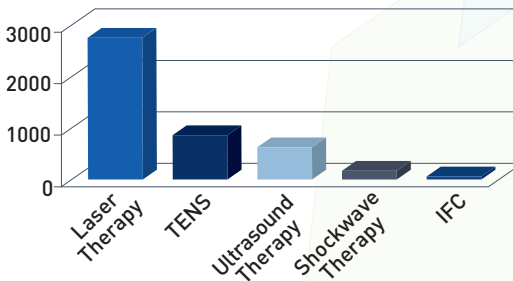
LASER THERAPY VS OTHER MODALITIES

Laser Therapy can be differentiated from other basic modalities by its mechanism of action. The effects of Laser therapy are unique and are mediated by athermal photochemical reaction that alters cell membrane permeability that leads to increase ATP production, mRNA synthesis, and cell proliferation & differentiation. Recent evidence based guidelines have recommended laser therapy above standard physiotherapy modalities like ultrasound and shockwave.

BC Physiotherapy Tendinopathy Task Force

Interventions (strongest to weakest evidence)	Take Home Message For Chronic Elbow Tendinopathy
Exercises	There is a large amount of clinical evidence to support the use of exercise in the chronic stage
Laser Therapy	May be effective when used in accordance with the WALT guidelines, and particularly if used in combination with other treatments
Acupuncture	There is weak but consistent clinical evidence to support the use of acupuncture for pain control in patients with chronic LET
Ultrasound	Weak evidence for effectiveness of US in the management of chronic LET
Shockwave	Systematic reviews that pool data in studies with dissimilar designs by meta-analysis do not support SWT for lateral elbow pain

Evidence-Based Research



- Indications include commonly used applications of each therapeutic modality
- Evidence-Based Research graph is based on a Pubmed search of the following keywords "LLLT", "transcutaneous electrical nerve stimulation", "ultrasound therapy" OR "therapeutic ultrasound", "shockwave therapy", "interferential current"





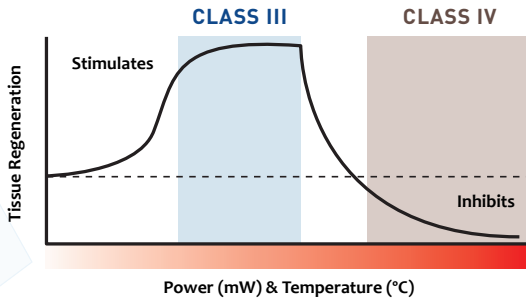
CLASS III VS. CLASS IV LASERS

Deeper Penetration of Photons

CLASS III
Contact with skin ensures that photons penetrate deep into the target tissue.

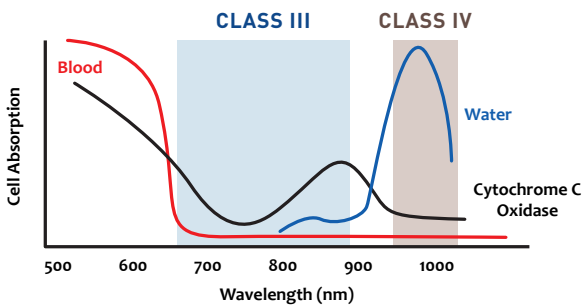
CLASS IV
Up to 80% of light is reflected away.

Optimal Power for Tissue Regeneration



Too little power has no effect and too much power can cause tissue damage through heating (Arndt-Schultz Law)

Best Wavelengths for ATP Production



Avoiding photon absorption by blood and water ensures maximum ATP production through Cytochrome C Oxidase absorption





FOR MORE INFORMATION

