

COLD LASER THERAPY WILL DO 2 PRIMARY THINGS:

- 1. Reduce Pain**
- 2. Stimulate Collagen Production
(heal damaged cartilage)**

DESCRIPTION OF COLD LASER THERAPY

LASER is an acronym for Light Amplification by Stimulated Emission of Radiation. Cold laser therapy is defined by the North American Association of Laser Therapy (NAALT) as “a therapeutic physical modality, using photons from the visible and infrared spectrum (600nm-1000nm) for tissue healing and pain reduction”. Cold Laser Therapy using laser light energy has been proven to penetrate tissue and to be absorbed at a cellular level. A series of photochemical reactions occur resulting in enhanced tissue healing, pain control and stimulation of the vascular, immune and lymphatic systems. It is the only therapeutic modality with a cumulative effect in the cells and tissue. Cold laser therapy is safe, painless, and non-invasive and the results are often immediate and sustainable. **NASA has been using laser therapy for over 30 years to accelerate the healing process for their astronauts while in space.**

HOW COLD LASER THERAPY WORKS

Cold Laser Therapy uses laser light energy to stimulate cells to function optimally. Cold laser therapy is similar to photosynthesis in plants; sunlight is absorbed by the plant and converted into energy the plant can utilize for growth. In the body, light sensitive chromophores and other elements within the cell absorb energy, initiating a series of important photochemical changes such as increased production of nitric oxide, singlet oxygen and ATP, as well as an increase in the cell membrane’s permeability. The mitochondria and Krebs’s Cycle stimulation initiates the production of ATP, providing the cell with the extra energy needed to accelerate the healing process and positively influence pain etc. The additional energy and effects result in normalization of cell function when cell function is impaired. Since the following activities can occur in all types of cells (muscle, ligament, cartilage, nerves etc.) a number of wide-ranging conditions can be treated. Research and clinical experience has demonstrated the following:

Cellular Activities

Increased cell metabolism (Increased cell function)

Increased collagen synthesis (Increased healing of soft tissues)

Increased osteoblast production (Increased healing of bone)

Increased circulation

Increased formation of new capillaries (tiny blood vessels) by release of growth factors

Increased T-cell production (Increased immune function)

Increased production of neurotransmitters such as endorphins, serotonin, ACTH etc. (Increased nerve function)

Increased chronic pain threshold through decreased C-fiber activity (Decreased pain)

Physiological Effects

Accelerated tissue healing and repair by 40%

Increased tensile strength in tissue repair

Increase callous and bone formation

Reduced or eliminated pain

Decreased edema and inflammation

Improved immune response

Stimulates nerve function

Promotes Cellular Oxygenation/Detoxification

Rapid cell growth: CLT accelerates cellular reproduction and growth for faster wound healing i.e. Sports injuries, and repetitive movement injuries.

Faster wound healing: CLT stimulates fibroblast development and accelerates collagen synthesis in damaged tissues. Collagen is the essential protein used to repair damaged tissue. It is the substance that holds cells together and has a high degree of elasticity i.e. Soft tissue injuries, sports injuries, and overuse injuries.

CLT increases metabolic activity Causing higher outputs of specific enzymes, greater oxygen and food particle loads for cells thus causing greater production of ATP (energy). ATP is the major carrier of energy to all cells. Increases in ATP allow cells to accept nutrients faster and get rid of waste products faster by increasing the energy level in the cell resulting in faster and better wound healing i.e. Soft tissue injuries, sports injuries, arthritis and overuse injuries.

Reduced fibrous tissue formation: CLT reduces formation of scar tissue. By increasing collagen production less scar tissue is formed at the damaged site. Scar tissue has little elasticity i.e. Sports injuries, soft tissue injuries, and repetitive movement strains and overuse injuries.

Anti-inflammatory action: CLT helps to reduce swelling to offer enhanced joint mobility following injury i.e. Sports injuries, soft tissue injuries, arthritis and tendonitis.

Increased lymphatic system activity: Edema, which is the swelling or natural splinting process of the body, has two basic components. The first is the liquid part, which can be evacuated by the blood system. The second is comprised of proteins, which have to be evacuated by the lymphatic system. Research has shown that the lymph vessel diameter and the flow of the lymph system can be doubled with the use of laser therapy. The venous diameter and the arterial diameters can also be increased. This means that both parts of edema (liquid and protein) can be evacuated at a much faster rate to relieve swelling and thus reducing pain as well i.e. Sport injuries, soft tissue injuries, and overuse injuries.

Increased phagocytosis: This is the process of cleaning up dead or degenerated cells i.e. Sports injuries, soft tissue injuries, arthritis, tendonitis, and shoulder, elbow, wrist, hip, knee, and ankle injuries. Clean up must take place before healing can occur.

Reduce the excitability of nervous tissue: CLT speeds nerve cell processes, which decreases pain and numbness, associated with certain conditions. The photons of light energy enter the body as negative ions. This calls upon the body to send positive ions like calcium and others to go the area being treated. These ions assist in firing the nerves thereby relieving pain i.e. Arthritis, soft tissue injuries, sports injuries and tendonitis.

Cold Laser Therapy has been successfully used around the world for over 30 years, with no reported long-term side effects. In the United States the FDA has ruled that the therapy is safe. The laser used in our office is an FDA certified laser.



Is Cold Laser Therapy Safe?

For the past 30 years the technology of Cold Laser Therapy (also known as Low Level Laser Therapy or LLLT) has been formally accepted in Canada and in many other parts of the world such as Europe, Scandinavia, Russia and Japan. In all this time there have been no recorded long-term adverse effects from its use. It is considered to be non-invasive, painless and safe. The question is often asked "If it's a laser aren't they used in surgical operations, to cauterize tissue?" The answer is "Yes" - Hot Lasers are able to cauterize (cut) tissue. Our Laser stimulates and energizes the cells.

Is Cold Laser Therapy painful?

No. Low level lasers do not generate perceivable heat. Therefore, when the laser contacts the skin the patient experiences no warmth or burning as a result of the laser. Most people feel nothing at all while a few may feel a slight tingling (energy) during the treatment.

How many treatments will I need?

In order to heal the tissues in and around the area quickly and to maintain the cells in biostimulation, a patient initially comes in for a treatment 2 to 4 times a week. The average number of treatments can range anywhere from 12 for acute conditions and 25 for chronic conditions.

What is Laser Therapy?

Laser therapy is the therapeutic application of laser light at low intensities.

Four effects are widely accepted in the literature.

- 1) Biostimulation/Tissue Regeneration
- 2) Reduction of Inflammation
- 3) Analgesia
- 4) Antibacterial/Antiviral

What conditions does the Cold Laser Therapy help treat?

Therapeutic applications which have shown promising results based on studies include:

Acne • Arthritis • Back Pain • Carpal Tunnel Syndrome • Cerebral Palsy • Dental Applications • Detoxification • Fibromyalgia • Hearing Disorders • Herpes • Hypertension • Lymphedema • Maxillofacial Disorders • Meniere's Disease • Migraine Headaches • Nerve Regeneration • Neuralgia • Neuropathy • Pain (Musculoskeletal, Myofascial, Nerve) • Peyronie's Disease • Plantar Fasciitis • Prostatitis • Sinusitis • Scars • Skin Disorders • Sjogren's Syndrome • Sports Injuries • Tendonitis • Tinnitus • Tension Headaches • Wound Healing • and Many Other Conditions •

Laser Technology is also used in Meridian and Acupuncture Therapy. Laser therapy is being used throughout Europe and Asia to treat all the above and much more. Over 2,500 studies have been performed. In more than thirty-five years of clinical and research use, an adverse reaction has never been documented.

Laser better than NSAIDS? By Jan Tunér, Swedish Laser Medical Society

In the Dec 4th paper issue of the British Medical Journal, a new meta-analysis on the effect of NSAIDs on knee osteoarthritis pain appears, that may become important to the recognition and future development of laser therapy. A research group from Norway, headed by dr. Jan M. Bjordal summarizes that non-steroidal anti-inflammatory drugs (NSAIDs), including cyclo-oxygenase-2 inhibitors (coxibs), reduce short-term pain associated with knee osteoarthritis only slightly better than placebo, and long-term use of these agents should be avoided. Up for analysis were 23 placebo-controlled trials involving 10,845 patients, 7767 of whom received NSAID therapy and 3078 placebo therapy.

21 of the NSAID-studies were funded by the pharmaceutical industry, and the results of 13 of these studies were inflated by patient selection bias as previous NSAID-users were excluded if they had not previously responded favorably to NSAID. Such an exclusion criterion for non-responders, has never been seen in any controlled trial of laser therapy or other non-pharmacological therapies of osteoarthritis. In the remaining 10 unbiased NSAID-trials, the difference from placebo was only 5.9 mm on a 100mm pain scale. This is far less than established data on differences that are considered minimally perceptible (9 mm) or clinically relevant (12 mm) for knee osteoarthritis patients. In addition, none of the trials found any effects beyond 13 weeks.

Adverse events of long term medication with NSAIDs and particularly coxibs, has recently received much attention in the Vioxx-scandal. Consequently, coxibs like Vioxx has been withdrawn and Prexige has been withheld from the market, and the whole group of coxibs, are now under special observation by drug agencies in both Europe and the United States. In contrast to the virtually non-existent side-effects of laser therapy, NSAID side-effects cause an estimated number of 2000 deaths annually in Great Britain alone, because half of the 8.5 million osteoarthritis patients there take these drugs on a regular basis. The considerable international interest for the findings of the Norwegian research group has been highlighted by articles in several major newspapers across Europe and North America (see facsimile from Reuters below), and more than 60 unique website-listings within two weeks after publication. The recent development is further moving the balance in disfavor of NSAIDs and coxibs, and may well be the end of the era where they served as reference treatment for osteoarthritis.

The current situation may pave the road for other risk-free alternatives such as laser therapy, which has appeared to provide clinically relevant changes in several randomized placebo-controlled trials. From the findings of a recent Norwegian Health Technology Assessment Report, laser therapy was given potential of becoming at least twice as effective as NSAIDs, if applied with optimal dose and energy (> 2.5 Joule per point for 810-30 nm, and > 0.6 Joules per point for 904 nm, and at least 3 points irradiated). Although the number of laser trials is still smaller than for NSAIDs, the unequivocal scientific findings so far, has earned laser therapy a top spot in levels of evidence and treatment recommendations for knee osteoarthritis issued by the Norwegian Drug Agency (!). Laser therapy is also reimbursed in the physiotherapy program of the National Health Insurance Agency, and is slowly becoming one of the standard therapies for knee osteoarthritis pain in Norway.