People can now find Cold Laser Therapy in Basalt, Colorado. Lankering Chiropractic and Wellness now offers Class IV Cold Laser Therapy. This is the most powerful cold laser on the market. It is a proven, safe, non-invasive and highly effective therapy for providing pain relief associated with Low Back Pain, Fibromyalgia, Migraine headaches, Carpal Tunnel, Arthritis, Tennis Elbow, Plantar Fasciitis, Frozen shoulder and much, much more…

For the 15 years that I have been using Cold Laser Therapy in my practice, I continue to be amazed at how fast this therapy helps brings relief to patients who have tried other treatments with little or no success.

What is Cold Laser?

Cold Laser Therapy is utilized to treat pain conditions, from chronic to acute. Cold laser therapy is also used for people suffering from back and neck pain, musculoskeletal pain, joint pain associated with arthritis, fibromyalgia, tendonitis, bursitis, disc conditions, Achilles tendon pain, sports injuries, bunions, migraine headaches, sprains and strains, carpal tunnel and other associated pains. It has also been widely used in aiding smoking cessation and other non-physical injury conditions. Cold laser therapy also treats conditions such as TMJ, reflex sympathetic dystrophy (RSD) and other inflammatory and scarring conditions.

How does the cold laser work?

Light comes in many forms. The light we see around us is visible light. It is a part of the spectrum of electromagnetic radiation. Imagine a rainbow. The light that is visible to us is a specific range of colors in that spectrum…but not the whole spectrum. Other parts of the spectrum are not visible, such as the ultra-violet light that tans (or burns) your skin.

The cold laser is not the same as natural light. When natural sun light hits it can damage your skin your skin because it produces heat. Cold laser is one color and one wavelength. It travels in a straight line and its beam can be concentrated in a small area. It can penetrate the skin without creating heat. It will not damage your skin. There are no known side effects! There is no pain experienced with the treatment.

When laser light is absorbed by a living tissue, it creates a biological response in the cells. Chemicals are produced, released and carried by blood and lymphatic flow to other parts of the body. This is how the effects of cold laser light may not be only local, but can also create wide systemic effects. Here are some of the specific physiological responses:

There is a decrease in pain by producing natural pain killers or endorphins.

A reduction in inflammation occurs by suppressing inflammatory enzymes that create redness, pain, swelling, and heat.

Lymphatic drainage is improved. This increases circulation and accelerates healing.

Tight muscles relax. These can create chronic pain, joint problems, and decreased mobility.

Increased speed, quality and strength of tissue repair and wound healing

Increased circulation

Strengthens the immune system

Improves nerve function

Reduces inflammation (swelling)

Bone repair is facilitated by stimulating fibroblastic and osteoblastic production.

Cold laser therapy increases serotonin levels. This supports the body in the self-healing process. Cold laser therapy does not produce heat and is noninvasive. Of course there are variables which may affect the treatment program. Cold laser therapy is not only significant in reducing treatment times, it is a very cost effective modality.

Cold Laser, also called Low Level Laser Therapy (LLLT) is a handheld, noninvasive, light-emitting medical device which is used over the body. It provides an unmatched advantage in the treatment of conditions such as:

There are two types of medical lasers: high power and low power. High power lasers are used to cut or burn through tissue while low power lasers stimulate tissue repair and healing.

LLLT is the application of laser energy to an injury to improve soft tissue healing and provide relief for both chronic and acute pain. Cold laser light energy directs the energy to the body's cells without injuring them. This significantly boosts the body's natural healing response!

Cold Laser Therapy can be used as a treatment by itself. It is often utilized with chiropractic adjustments to enhance the positive healing effects in the body.

Is Cold Laser Therapy painful?

No. Low level lasers do not create heat that people can feel. Many people do feel anything at all while a few may feel a slight tingling or warmth during the treatment.

How many treatments will I need, and how often will I need them?

A patient usually comes in for a treatment several times a week. If that is not possible, for instance if you work or live far away, then alternate arrangements would be made. The number of treatments can range anywhere from 2-20, depending on the nature and severity of the condition.

HOW MANY TREATMENTS WILL I NEED TO START FEELING BETTER?

Many individuals feel better after the first treatment, but it may take as many as four treatments before significant symptom reduction and healing is noticed.

HOW MANY TIMES A WEEK SHOULD I RECEIVE TREATMENTS?

The frequency of sessions per week depends on your specific treatment plan. In general, treatments are scheduled between one and three times a week.

WHAT CAN I EXPECT DURING MY LASER THERAPY SESSION?

During your laser therapy session, we will focus the laser over the area to be treated. The light painlessly penetrates the skin to heal the injury. Each session can last anywhere from two to 10 minutes.

ARE THERE ANY SIDE EFFECTS FROM RECEIVING LASER THERAPY?

There are nearly no side effects associated with laser therapy. Some individuals may feel a warm or tingling sensation during the treatments, and the treated areas may feel slightly tender after the session.

CAN LASER THERAPY BE USED ALONGSIDE OTHER TREATMENT OPTIONS?

Since laser therapy contains virtually no side effects, it is perfectly safe to combine it with other forms of treatment to achieve total body healing, health and wellness. Most of our treatments plans are multi-pronged and include chiropractic adjustments and spinal decompression.

How does the Cold Laser Therapy compare to other laser therapies?

Our Laser therapy system utilizes a high power, Class IV, “soft,” “cool,” or “cold” laser, which has longer wavelengths than Class I, II, III systems. This promotes a reduction of pain faster, speeds up the healing time, and accelerates tissue regeneration and repair.

Cold lasers are called “cold” because they do not induce any temperature change in the body’s tissues. “Hot” lasers have shorter wavelengths, which have catabolic or destructive effects that can deliberately destroy tissue in cauterizing and surgical applications. The cold laser has been called “The Therapy” of the 21st century. In more than 2,500 scientific research studies on laser therapy, there is verification of the clinical value of laser therapy with no recorded negative side effects. This versatile tool is totally safe, painless and medication-free, non-toxic, and with virtually no negative side effects.

Cold laser therapy has stimulative effects rather than destructive ones. Clinical applications of the cold laser have included acute and chronic pain reduction from many etiologies, inflammation reduction, enhanced tissue healing, and cell regeneration. Extraordinary results occur when applied to head, neck and shoulder regions of the body. The results have shown very rapid pain reduction and accelerated recovery times, far exceeding conventional methods.

Other therapies may provide pain relief but they do nothing to promote deep healing of damaged tissue. Electrical stimulation is often uncomfortable. It lacks the consistent pain reduction of laser and does not provide the same stimulation of tissue healing. Ultrasound is not as effective at blocking pain

as a laser. It can mildly stimulate healing, but studies show that it does this by weakening the tissue, whereas laser actually causes tissue to strengthen.

Many clinical studies have been conducted on the benefits of laser therapy for numerous clinical conditions. The following is a simplified list of the more widely studied biological effects of Laser Therapy.

Benefit of Cold Laser Therapy #1: Pain Relief

Pain relief occurs through several different biological mechanisms. 1) Pain signals transmitted from injured parts of the body to the brain are blocked. This decreases nerve sensitivity and significantly reduces the perception of pain. 2) This also reduces pain by lessening swelling and inflammation. 3) By increasing the production and release of endorphins and enkephalins which are natural pain-relieving chemicals within our bodies, pain is lessened.

Benefit of Cold Laser Therapy #2: Improved Nerve Function

Laser light speeds up the process of nerve cell reconnection which decreases the time necessary for nerve cells to heal after an injury. This therapy also increases strength of action potentials (signals sent along nerve fibers) which improves overall nerve and muscle function. Both of these reasons explain why this therapy is so beneficial at reducing the symptoms related to nerve injury – namely sharp pain, numbness, tingling and burning.

Benefit of Cold Laser Therapy #3: Inflammation Reduction

Laser Therapy causes vasodilation, the increase in size of smaller arteries and lymph vessels of the body. This increased vasodilation allows inflammation, swelling and edema to be cleared away from injury sites more effectively. Vasodilation of lymph vessels also promotes lymphatic drainage which also aids in this vital healing process. Bruising is often resolved more quickly as a result of this particular biological effect.

Benefit of Cold Laser Therapy #4: Faster Wound Healing

Laser therapy stimulates the production of fibroblasts which are the building blocks needed to create collagen. Collagen is the essential protein required to replace old tissue or to repair damaged tissue. Because of this effect it is valuable for treating open wounds and burns.

Benefit of Cold Laser Therapy #5: Accelerated Tissue Repair and Cell Growth

Photons of light emitted by therapeutic lasers penetrate deeply into the tissues of the body to stimulate the production centers of individual cells. This stimulation increases the energy available to these cells causing them to absorb nutrients and expel waste products more rapidly. This dramatically accelerates the repair of injured tissue leading to faster tendon, ligament and muscle healing.

Benefit of Cold Laser Therapy #6: Improved Blood Flow

Cold Laser significantly increases the formation of new capillaries (tiny blood vessels) within damaged tissues. As more blood is brought to the injury site, healing is sped up, wounds are closed more rapidly and scar tissue formation is reduced.

Benefit of Cold Laser Therapy #7: Increased Metabolic Activity

Laser Therapy also has a profound impact on individual blood cells that pass through the laser beam during treatment. The laser light significantly increases the oxygen and nutrient load capacity of the red blood cells (RBCs). This allows for increased metabolic activity and production of certain specific enzymes. Both of these effects can be felt across the entire body and are not just limited to the area exposed to the laser light.

Benefit of Cold Laser Therapy #8: Reduced Formation of Scar Tissue

Scar tissue formation is reduced (fibrous tissue) following tissue damage related to cuts, burns and surgery. This formation speeds up the healing process, improves the blood flow to the injured area and is more effective at carrying away waste products – all are mechanisms mentioned above. Enhanced healing always leads to less scar tissue formation.

Benefit of Cold Laser Therapy #9: Enhanced Immune Function

Photons of laser light are directly absorbed by chromophores (molecular enzymes within cells) that are embedded within most cells of the body. This light absorption activates a specific enzymatic process that triggers the production of ATP. ATP (adenosine tri-phosphate) is the single most important form of energy that powers ALL chemical reactions within ALL cells of the body. Higher energy production leads to faster and more efficient function – especially true of immune-specific cells that are exposed to Laser Therapy. This improved efficiency aids the immune system in fighting off undesirable microbes and pathogens.

Benefit of Cold Laser Therapy #10: Acupuncture Point Stimulation

Laser Therapy is also an effective alternative to traditional Acupuncture treatment. Traditional Acupuncture delivers therapeutic effects through the mechanical stimulation of “Acupuncture Points” throughout the body. This is achieved by piercing the Acupuncture Points with needles and then twisting the needles by hand, tamping them or connecting them to electrical stimulation devices. Laser Therapy may be used to stimulate the same Acupuncture Points without the need for invasive needling or similar mechanical stimulation.

Class IV laser therapy stimulates all cell types so it can be used to help promote healing in muscle, ligament, cartilage and nerves. It can be used with any of the following:

- Arthritis pain
- Back pain and spinal conditions
- Carpal tunnel syndrome
- Knee pain
- Neck pain
- Tendonitis
- Musculoskeletal Pain
- Stenosis
- Fractures
- Frozen shoulder
- IT Band syndrome
- Shin splints
- Restless Leg syndrome
- Leg cramps
- Soft Tissue Injuries
- Migraine Headaches
- Myofascial Trigger Points

•Tennis Elbow / Golfer's Elbow

•Bell’s Palsy

•Plantar Fasciitis

•Sports Injuries (ligaments and tendons)

•Sprains & Strains

•Bursitis

•Hamstring Tears

•TMJ

•Disc disorders

•Skin conditions and surgical incisions

Our Unique Approach to Solving Your Pain Problems

We take a holistic approach to providing pain relief as well as improving your overall health. We cover the bases by addressing structural integrity, emotional stress, toxins, and nutritional deficiencies. Our clinic combines multiple non-invasive therapies for treatment, including Class IV Laser Therapy, to treat discomfort and inflammation with effectiveness that accelerates the body’s normal healing abilities.

To schedule an appointment or to simply have your questions answered, call the office today at (970) 927-9900 and ask to speak with Dr. Lankering.

Recent Research

World Health Organization (Bone and Joint Task Force) for neck pain Low Level Laser Therapy "more effective than no treatment, sham, or alternative interventions". (2008)

American Physical Therapy Association guidelines recommend LLLT for Achilles tendonitis. (2010)

Lancet systematic review: "LLLT reduces pain immediately after treatment in acute neck pain and up to 22 weeks after completion of treatment in patients with chronic neck pain". (2009)

In August 2010 The Lancet reported that the systematic review of LLLT for neck pain was in their top 20 most downloaded papers for 2010.

The BMJ sports medicine journal, systematic review of surgical and conservative interventions for frozen shoulder found "strong evidence" for LLLT. (2010) The International Association for the Study of Pain

(Global Task force on musculoskeletal pain) found "strong evidence" for Low Level Laser Therapy on myofascial pain syndrome. (2010)

The BMJ clinical evidence recommendations for tennis elbow 2011 now include LLLT.

Efficacy of low power laser therapy and exercise on pain and functions in chronic low back pain.

Lasers Surg Med. 2003;32(3):233-8

Gur A, Karakoc M, Cevik R, Nas K, Sarac AJ, Karakoc M.

Physical Medicine and Rehabilitation, School of Medicine, Dicle University, Diyarbakir, Turkey.

The study was aimed to find out if low power laser therapy (GaAs laser) was useful for a therapy on chronic low back pain.

They studied 75 patients; (25 patients laser alone, 25 patients laser and exercise, and 25 patients exercise alone).

Their tests included; “Visual analogue scale (VAS), Schober test, flexion and lateral flexion measures, Roland Disability Questionnaire (RDQ) and Modified Oswestry Disability Questionnaire (MODQ) were used in the clinical and functional evaluations pre and post therapeutically. A physician, who was not aware of the therapy undertaken, evaluated the patients.”

CONCLUSION: In the treatment of chronic low back pain, low power laser therapy was an effective method in reducing pain and functional disability.

Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis of randomized placebo or active-treatment controlled trials

Dr Roberta T Chow MBBS, Prof Mark I Johnson PhD, Prof Rodrigo AB Lopes-Martins PhD, Prof Jan M Bjordal PT

Nerve Research Foundation, Brain and Mind Research Institute, University of Sydney, Sydney, NSW, Australia.

Lancet. 2009 Dec 5;374(9705):1897-908. Epub 2009 Nov 13. [PMID: 19913903]

CONCLUSION: The authors identified 16 randomized controlled trials that included a total of 820 patients. They did a systematic review and meta-analysis of the trials to determine the efficacy of LLLT in neck pain. They showed that LLLT reduces pain immediately after treatment in acute neck pain and up to 22 weeks after completion of treatment in patients with chronic neck pain.

LLLT with trigger points technique: clinical study on 243 patients

Simunovic Z, Journal of Clinical Laser Medicine and Surgery (Aug. 1996) 14(4):163-167.

CONCLUSION: This study was performed on >200 patients that were suffering with low back and radicular pain, skeletomuscular ailments, headaches, facial pain, myogenic neck pain, shoulder and arm pain, epicondylitis, tenosynovitis, and Achilles tendonitis. They used various LLLT methods which included; infrared 820-830 nm continuous wave, 632.8 nm visible red, and 904 nm pulsed emission on "trigger points" and focal pain points due to ischemic conditions. They observed spontaneous or induced pain decreased or even disappeared by movement, mobility was restored, rigidity decreased, and microcirculation improved along with improvement of oxygen supply to hypoxic cells in the treated areas and removal of collected waste products. Results measured according to VAS/VRS/PTM: in acute pain, diminished >70%; in chronic pain >60%. They also concluded that LLLT (Cold Laser) may be used by its self or as an added supplement to other therapeutic procedures for pain treatment. No negative effects were noted with LLLT and the use of analgesic drugs could be reduced or completely excluded.

Laser-Accelerated INFLAMMATION/PAIN REDUCTION AND HEALING

Practical Pain Management, Nov/Dec 2003, by Richard Martin, BS, CLT, (photo biologist)

Low Level Laser Therapy (LLLT) precipitates a complex set of physiological interactions at the cellular level that reduces acute inflammation, reduces pain, and accelerates tissue healing.

Injured cells and tissues have greater affinity for LLLT than healthy cells and tissues. LLLT in the treatment of inflammation, pain and healing is a highly integrated process, but the author separates those processes categorically for identification.

Acute Inflammation Reduction (flowchart provided in the original article) – After injury, tissues initiate a series of biological responses and cellular membrane reactions which manifest in a combination of edema, inflammation, pain and functional debility.LLLT mediates by: (1) Stabilizing cellular membranes; (2) Enhancing molecule ATP production and synthesis; (3) Stimulating vasodilation via increased

Histamine, Nitric Oxide and Serotonin; (4) Accelerating leukocytic activity; (5) Increasing Prostaglandin synthesis; (6) Reducing Interleukin-1; (7) Enhancing lymphocyte response; (8) Increasing angiogenesis; (9) Modulation temperature; (10) Enhancing superoxide dismutase levels; and (11) Decreasing C-reactive protein and neopterin levels.

Pain Reduction (flowchart provided in the original article) – Evidence justifies a conclusion that LLLT reduces pain by combination of processes: (1) Increase in b-Endorphins; (2) Blocked depolarization of C-fiber afferent nerves; (3) Increased nitric oxide production; (4) Increased nerve cell action potential; (5) Axonal sprouting and nerve cell regeneration; (6) Decreased Bradykinin levels; (7) Increased release of acetylcholine; and (8) Ion channel normalization.

Tissue Healing – LLLT enhances wound healing by: (1) Enhanced leukocyte infiltration; (2) Increased macrophage activity; (3) Increased neovascularization; (4) Increased fibroblast proliferation; (5) Keratinocyte proliferation; (6) Early epithelialization; (7) Growth factor increases; (8) Enhanced cell proliferation and differentiation, and (9) Greater healed wound tensile strength

The information above was taken from Practical Pain Management, Nov/Dec 2003 by Richard Martin (see bio below). For the full study go to Practical Pain Management at www.ppmjournal.com/abstract.asp?articleid=P0311F02

Richard Martin, BS, CLT is a photo biologist specializing in laser therapy and holds the position of Director of Science at Microlight Laser, a subsidiary of Innovative Medical Group Corporation in Santa Monica,CA. He has taught laser physics and photodynamics for eight years. He has served as manager for several biomedical design and service facilities and participated as lead researcher for biomedical devices involved in emergency cardiac care, warmed intravenous fluid therapy and laser therapy. Richard has participated in medical clinical trials for 15 years as a clinical trial analyst and contributing clinician.

HERNIATED LUMBAR DISC; LLLT Using a Diode Laser in Successful Treatment of a Herniated Lumbar/Sacral Disc, With Magnetic Resonance Imaging (MRI) Assessment: A Case Report

Tatsuhide Abe, Abe Orthopedic Clinic Futuoka City Fukuoka Prefecture Japan X12' Laser Therapy 1989

A forty (40) year old woman presented at the Abe Orthopedic Clinic suffering with pain in the low back and left hip and leg for 2 years. MRI showed a ruptured disc in the last lumbar disc (L5-S1). Her condition failed to respond with convention treatment methods including; NSAIDS (Non-steroidal anti-

inflammatory drugs), lumbar/pelvic traction, dural block anesthetic injections. Cold Laser (LLLT), GaA1A diode laser with 830 nm wavelength, 60 mW, was used on the patient as an outpatient therapy. CONCLUSION: The patient's condition dramatically improved which was demonstrated by motility exercises. A follow-up MRI confirmed the improvement with significant results showing a normal condition of the previous lumbar disc herniation at L5-S1.

Retrospective Study of Adjunctive Diode Laser Therapy for Pain Attenuation in 662 Patients: Detailed Analysis by Questionnaire

Shigeyuki Nakaji, M.D., Ph.D., Chiyuki Shiroto, Misako Yodono, Takashi Umeda, Qiang Liu.

Photo medicine and Laser Surgery. February 2005, 23(1): 60-65. doi:10.1089/pho.2005.23.60. (Published in Volume: 23 Issue 1: March 1, 2005)

The authors noted, under "Background Data", that the use of LLLT (cold laser) for chronic pain attenuation has been reported in international literature for over 20 years.

The study was assessing the long term effects of Cold Laser (LLLT) through retrospective surveys using questionnaires. 1,087 patients were treated with LLLT from April 1992 to August 1995 at the Shiroto Clinic.

662 patients (397 females, 265 males) replied to the questionnaires that were sent to September and October 1996. The treatment method consisted of Cold Laser (LLLT) diode laser system using 830 nm wavelength, continuous wave 60 mW, (which they noted was the most effective wavelength).

The total efficiency rating immediately after treatment was 47% in women, and 46.8% in men, at the time of the survey the rating soared to 76.8% in women, and 73.3% in men, which was considered good – excellent. Additional factors were also positive including; physical energy, well-being, general fatigue, emotional stability, and mental vigor.

CONCLUSION: Cold Laser (LLLT infrared diode), is considered effective, safe, and side-effect free, therefore making the treatment an ideal adjunctive therapeutic modality for intractable chronic pain and other pain.

Low-power laser treatment in patients with frozen shoulder: preliminary results

Laboratory of Health, Fitness, and Rehabilitation Management, Faculty of Human Movement and Quality of Life, Peloponnese University, Sparta, Greece. asterg@uop.gr Photomed Laser Surg. 2008 Apr;26(2):99-105.

The author noted in background data that the use of Low Level Laser energy has been recommended for the management of a variety of musculoskeletal disorders.

This study tested the efficacy of Cold Laser (LLLT), 810 nm wavelength, continuous 60 nW applied to eight points on the shoulder in patients with frozen shoulder. A total of 63 patients were treated; 31 active laser group, 32 placebo laser group. With the active laser group, there was significant decrease in shoulder pain, a significant decrease in overall, night and activity pain, significant decrease of shoulder, arm, and hand, and significant decrease in health-assessment questionnaire (HAQ sores. Most activity pain scores were tested at the end of 4 weeks, 8 weeks, and 16 week post-randomization.

CONCLUSION: Cold Laser (LLLT) treatment was more effective in reducing pain and disability scores than a placebo at the end of the treatment period and at the follow-up period.

The effect of low-level laser in knee osteoarthritis: a double-blind, randomized, placebo-controlled trial

Hegedus B, Viharos L, Gervain M, Gálfi M.

Physio- and Balneotherapy Center, Orosháza-Gyopáros, Hungary. arthrodent@freemail.hu

Photomed Laser Surg. 2009 Aug;27(4):577-84. [PMID: 19530911]

CONCLUSION: This was a study to examine how LLLT (Cold Laser) 830 nm wavelength, continuous, power 50 mW, with 6 J/per point skin contact, had an pain relieving effect and microcirculatory changes to osteoarthritis in knee pain sufferers. There was a placebo controlled group that was treated with the same appearance laser. Both groups were examined at two weeks and two months after cold laser (LLLT) therapy. Thermography was performed using an AGA infrared camera and checked, circumference, joint flexion, pressure sensitivity, and the visual analogue scale was recorded.

RESULTS: Significant improvement in the treated group, with Cold Laser; was found in pain (before treatment [BT]: 5.75; 2 mo after treatment: 1.18); circumference (BT: 40.45; AT: 39.86); pressure sensitivity (BT: 2.33; AT: 0.77); and flexion (BT: 105.83; AT: 122.94). In the placebo group, changes in pain and joint flexion were not significant. Thermographic measurements showed at least a 0.5 degrees C increase in temperature—and therefore an improvement in circulation compared to the initial values. Changes did not occur in the placebo group. The results showed that Cold Laser (LLLT) reduces pain in Osteoarthritis in the Knee and improved microcirculation in the treatment area

Effects of Low-Level Laser Therapy on Pain and Scar Formation after Inguinal Herniation Surgery: A Randomized Controlled Single-Blind Study (Post-surgical pain)

de Paiva Carvalho RL, Alcântara PS, Kamamoto F, Cressoni MD, Casarotto RA.

Postgraduate Program in Rehabilitation Sciences , University of São Paulo, São Paulo, Brazil.

Photomed Laser Surg. 2009 Oct 12. [PMID: 19821701]

CONCLUSION: This was a study to investigate the efficacy of an infrared GaAlAs laser, 830 nm wavelength, on post-surgical scarring process after inguinal hernia surgery. They concluded that 830nm LLLT applied after inguinal hernia surgery was efficient is preventing keloids (excessive growth of scar tissue) from forming. In addition, cold laser (LLLT) resulted in better scar appearance and quality six months post-surgery. For the full study go to - Photomed Laser Surg. 2009 Oct 12. [PMID: 19821701]