

Lasers and Osteoarthritis

By Don Fitz-Ritson

Low energy laser therapy (LELT) has been used clinically for over 35 years, and over 2,200 scientific papers have been published on it. There are no reported side effects. LELT is safe, painless, noninvasive, nontoxic and an elegant adjunct to chiropractic therapy. By elegant adjunct to chiropractic therapy, I refer to the ability of LELT to heal tissue via the use of all frequencies (i.e., Hz). The chiropractor is able to be precise regarding tissues or conditions to be treated. This will broaden the scope of services chiropractors may provide, such as the treatment of osteoarthritis.

Mechanics of LELT

"Low level" effects of lasers no macroscopically visible changes in the tissue structure and no measurable immediate rise in the tissue temperature.¹

Laser irradiation of isolated mitochondria induces changes in cellular homeostasis, which entails a cascade of reactions. The activation of the electron transport chain in this way results in enhanced synthesis of ATP. Hydrogen ion levels in the cell are also affected. This action, coupled with an increase of ATP, causes activation of membrane ion carriers such as sodium and potassium, and alters the flow of calcium between mitochondria and cytoplasm. The variations of such parameters are a necessary component in the control of proliferative activity of the cell.²

Considerable improvement occurs in tensile strength of irradiated wounds, with collagen content significantly increased after two weeks.^{3,4,5} Similarly, laser irradiation increases the healing rate of tendons.⁶ Lasers with specific optical parameters (wavelength, intensity, dose) can alter cell proliferation, mobility and secretion.⁷

Some of these laser-induced phenomena can be used clinically to enhance healing in the body. In vivo and clinical studies suggest that lasers can induce phenomena in injured tissues which promote acceleration of recovery after acute trauma.^{8,9,10} Faster edema reduction and lymph flow enhancement was observed in

laser-treated animals after surgery¹¹ and experimental rat arthritis.¹²

Healing Your Osteoarthritis

Surrounding all joints in the body, including the fingers, neck, spine, jaw, hips, knees and ankles, are capsules comprised of ligaments which are filled with fluid. This synovial fluid, as it is called, bathes the cartilage that lines the ends of healthy bones and keeps the bones from rubbing together. Due to factors that will be discussed momentarily, if the bones get too close and begin to rub, the lining of cartilage becomes scarred or worn out. When this happens, you experience pain, decreased range of motion, swelling and joint stiffness. This is arthritis.

In particular, osteoarthritis is characterized by the deterioration of the cartilage in the joints. Deterioration may be due to a recent or past injury, an inherited protein deficiency, overuse, or the aging process. No matter the cause, the healthy smooth cartilage becomes thin and rough in one or more joints. The thumb is often involved, while the fingers are a less frequent site. Most commonly affected, however, are the "weightbearing joints:" the knees, hips, sacroiliac and low lumbar spine. The risk of fractures increases with osteoarthritis.

Bones that were once blessed with normal cartilage, easily gliding past each other, now encounter friction, and can become pitted, defaced and less efficient in moving. The ligaments around the joint, tendons and muscles begin to weaken. The joint becomes deformed, stiff and painful to use. With movement, inflammation sets in and the joint becomes swollen and very painful.

According to researchers at Jefferson Medical College in Philadelphia, some individuals have a genetic defect in manufacturing collagen in cartilage-producing cells. These individuals are unfortunately prone to osteoarthritis.

Further, women are more likely than men to get osteoarthritis. Both men and women tend to develop osteoarthritis after age 60.

Statistics on Osteoarthritis

The population is aging, and with it comes an increase in osteoarthritis. Osteoarthritis occurs in approximately 1/3 of the adult population. By the age of 50, 80%-90% of adults will develop some degree of osteoarthritis. This contributes to absenteeism, difficulty in walking, in getting dressed, and getting in and

out of the bathtub. The annual cost in lost wages and medical expenses are approximately \$60-\$80 billion.

A double-blind study utilizing LELT, involving 406 elderly patients with osteoarthritis of the low back and knees, concluded that due to the results, LELT can be used to treat osteoarthritis pain.¹³

Specific protocols have been developed, along with 3-D assessment and treatment of the locomotor system. When LELT and 3-D are used together, synergy in the therapeutic regime occurs because of the healing of the tissues.

Preliminary Data

There were 57 osteoarthritis patients, 35 males, 22 females with ages ranging from 47 to 86 years old. Areas of treatment ranged from cervical spine, thoracic, low back, shoulder, hips, knees and ankles.

VAS scores were administered before and after 20 LELT treatments. All patients improved: 46 patients had excellent improvement (over 80%); six had good improvement (over 60%); and five had moderate improvement (40-60%).

Recently 19 patients with osteoarthritis (mix of conditions as above) 56 to 76 years old, were treated with LELT plus glucosamine sulphate/multi-vitamins and minerals, etc. Seventeen patients had significant improvement of over 90% in 20 treatments; two had good responses at 70-75% improvement.

A few cases are pertinent:

"Male, 54, a jogger who developed mid-back pain: X-rays showed osteoarthritis of the vertebral joints. 3-D correction, nutritional supplements, LELT, and specific exercises relieved his symptoms in 4-6 weeks. On six months follow up there was no recurrence."

"Female, 56, who had chronic left hip pain and used a cane: X-rays showed osteoarthritis of the left hip, and further examination revealed a short left leg. Orthotics and nutritional supplements were prescribed, together with LELT and specific exercises. After four months of treatment, the patient was cross-country skiing."

"Male, 84, with chronic osteoarthritis of the cervical and lumbar vertebrae: With 3-D treatment, nutritional supplements, LELT, a pelvic orthotic and specific exercise, he is now 80% pain free and is able to play golf again twice per week."

Arthritis causes pain, dysfunction, inflammation, and loss of movement in:

- *joints*
- *muscle*
- *tendons*
- *ligaments*
- *cartilage*

Symptoms of arthritis include two weeks or more of:

- *joint pain*
- *joint stiffness and difficulty*
- *moving the joint*
- *oint swelling*

LELT has been reported to show the ability to significantly decrease the pain and suffering of arthritis patients (Pfeiffer N. Low-intensity laser reduces arthritis symptoms. *Journal of Clinical Laser Medicine and Surgery*, 1992).

Pfeiffer quotes Andrew Meister, MD, a pioneer in low-intensity laser therapy: "I believe that low-intensity laser therapy has an important place in the treatment of osteoarthritis, other inflammatory disorders, and autoimmune diseases, as well as pain therapy and wound healing. It will be particularly useful in patients sensitive to antibiotics, or, simply, in those whose doctors do not want to expose patients to the possible side effects of medications currently in use."

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