

# Therapeutic Benefits of Soft-Laser Therapy

During the last 50 years numerous clinical studies and research trials have been conducted on the beneficial effects of laser therapy for a whole host of clinical conditions. The following is a simplified list of the more widely studied biological effects of Soft-Laser Therapy.

## **1. Pain Relief**

Soft-Laser Therapy relieves pain through several different biological mechanisms:

1. Laser Therapy blocks the pain signals transmitted from injured parts of the body to the brain. This decreases nerve sensitivity and significantly reduces the perception of pain.
2. Laser Therapy also reduces pain by decreasing inflammation and swelling. This mechanism not “just” reduces the pain but speeds up the healing processes.
3. Laser Therapy also reduces pain by increasing the production and release of endorphins and enkephalins which are natural pain-relieving chemicals within our bodies.



## **2. Inflammation Reduction**

Soft-Laser Therapy causes the smaller arteries and lymph vessels of the body to increase in size – a mechanism called vasodilation. 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.

## **3. Faster Wound Healing**

Soft-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 Laser Therapy is effective at treating open wounds and burns.

## **4. 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 (mitochondria). This stimulation increases the energy available to these cells causing them to absorb nutrients and expel waste products more rapidly. This accelerates the repair of injured tissue leading to faster tendon, ligament and muscle healing.

## **5. Improved Blood Flow**

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

## **6. Increased Metabolic Activity**

Soft-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.

## **7. Improved Nerve Function**

1. Laser light speeds up the process of nerve cell regeneration which decreases the time necessary for nerve cells to heal after an injury.
2. Also increases the amplitude (strength) of action potentials (signals sent along nerve fibers) which improves overall nerve and muscle function.

Both of these reasons explain why Laser Therapy is so beneficial at reducing the symptoms related to nerve injury – namely sharp pain, numbness, tingling and burning.

## **8. Reduced Formation of Scar Tissue**

Laser reduces the formation of scar tissue (fibrous tissue) following tissue damage related to cuts, burns and surgery. It's able to reduce this formation by speeding up the healing process, improving the blood flow to the injured area and more effectively carrying away waste products. Faster healing always leads to less scar tissue formation.

## **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 laser 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.

US National Library of Medicine National Institute of Health: Biological Effects of Low Level Laser Therapy - Farivar S, Malekshahi T, Shiari R. Biological Effects of Low Level Laser Therapy. J Lasers Med Sci 2014;5(2):58-62

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