

## Top Ten Biological Effects of Laser Therapy (LT)

Clinical studies and trials of laser therapy technology indicate the following beneficial effects of laser therapy on tissues and cells:

1. **Anti-Inflammation:** Laser Therapy has an anti-edema effect as it causes vasodilation, but also because it activates the lymphatic drainage system (drains swollen areas). As a result, there is a reduction in swelling caused by bruising or inflammation.
2. **Anti-Pain (Analgesic):** Laser Therapy has a very beneficial effect on nerve cells by blocking pain transmitted by these cells to the brain and decreasing nerve sensitivity. Also, due to less inflammation, there is less edema and less pain. Another pain blocking mechanism involved the production of high levels of pain killing chemicals such as endorphins, enkephalins, and opioids from the brain and adrenal gland.
3. **Accelerated Tissue Repair and Cell Growth:** Photons of light from laser penetrate deeply into tissue and accelerate cellular reproduction and growth. The laser light also increases the energy available to the cell by increasing ATP production so that the cell can take on nutrients faster and get rid of waste products. As a result of exposure to laser light, all cells, including the cells of tendons, ligaments and muscles are repaired faster.
4. **Improved Vascular Activity:** Laser light will significantly increase the formation of new capillaries in damaged tissue; that speeds up the healing process, closes wounds quickly, and reduces scar tissue. In addition to angiogenesis, it causes temporary vasodilatation, an increase in the diameter of blood vessels.
5. **Increased Metabolic Activity:** Laser Therapy creates higher outputs of specific enzymes, greater oxygen and food particle loads for blood cells.
6. **Trigger Points and Acupuncture Points:** Laser Therapy stimulates muscle trigger points and acupuncture points on a non-invasive basis, providing musculoskeletal pain relief.
7. **Reduced Fibrous Tissue Formation:** Laser Therapy reduces the formation of scar tissue following tissue damage from cuts, scratches, burns or surgery.
8. **Improved Nerve Function:** Slow recovery of nerve functions in damaged tissue can result in numbness and impaired limbs. Laser light will speed up the process of axonal regeneration, nerve cell reconnection, and increase the amplitude of action potentials to optimize muscle action.
9. **Immunoregulation:** Laser light has a direct effect on immunity status by stimulation of immunoglobulins and lymphocytes. Laser Therapy is absorbed by chromophores (molecule enzymes) that react to laser light. The enzyme flavomono-nucleotide is activated and starts the production of ATP (adenosine-tri-phosphate), which is the major carrier of cell energy and the energy source for all chemical reactions in the cells.
10. **Faster Wound Healing:** Laser light stimulates fibroblast development (fibroblasts are the building blocks of collagen, which is predominant in wound healing) in damaged tissue. Collagen is the essential protein required to replace old tissue or to repair tissue injuries. As a result, Laser Therapy is effective on open wounds and burns.