

Biological Effects of Therapeutic Lasers

Laser therapy aims to bio-stimulate injured and dysfunctional tissues. Clinical studies and trials of Class III & IV laser technology indicate the following beneficial effects of light therapy on tissues and cells.

Accelerated Tissue Repair And Cell Growth

1

- Photons of light from lasers penetrate deeply into tissue and accelerate cellular reproduction and growth.
- Therapeutic lasers increase the energy available to the cell so that the cell can take on nutrients faster and get rid of waste products.
- As a result of exposure to laser energy, the regenerative cells of tendons, bone, ligaments and muscles repair disruption faster.

Faster Wound Healing

2

- 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 are repaired faster.

Reduced Fibrous Tissue Formation

3

- LLLT reduces the formation of scar tissue following tissue damage from cuts, scratches, burns or surgery.

Anti-Inflammation

4

- Laser light therapy has an anti-edemic 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.

Anti-Pain (Analgesic)

5

- Laser therapy has a high beneficial effect on nerve cells which block pain transmitted by these cells to the brain and which decreases nerve sensitivity.
- Also, due to less inflammation, there is less edema and less pain. Another pain blocking mechanism involves the production of high levels of pain killing chemicals such as endorphins and enkephalin's from the brain and adrenal gland.

Improved Vascular Activity

6

- 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.
- Additional benefits include acceleration of angiogenesis, which causes temporary vasodilatation, an increase in the diameter of blood vessels.

Increased Metabolic Activity

7

- Laser therapy creates higher outputs of specific enzymes, greater oxygen and food particle loads for blood cells.

Improved Nerve Function

8

- Slow recovery of nerve functions in damaged tissue can result in numbness and impaired limbs.
- Laser light will speed up the process of nerve cell reconnection and increase the amplitude of action potentials to optimize muscle action.

Immunoregulation

9

- Laser light has a direct effect on immunity status by stimulation of immunoglobines and lymphocytes.
- LLLT is absorbed by chromophones (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.

Trigger Points and Acupuncture Points

10

- Laser therapy stimulates muscle trigger points and acupuncture points on a non-invasive basis providing musculoskeletal pain relief.

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