

How Does Laser Therapy Work?

The Activo-Med Wave-Light-Pulse therapy cluster and pen works using PEMF therapy plus red and infrared Super Luminous LED diodes. They are used to trigger normal cell function.

How do the LEDs help heal?

The super luminous LEDs emit concentrated light at specific wavelengths to provide therapeutic benefits without adverse side effects. The red lights work at wavelengths of 635nm and penetrate tissue to a depth of approx. 10mm. This is good for the healing of problems close to the skins surface, e.g. wounds, cuts, scars. The infrared light works at a wavelength of 950nm and penetrates to a depth of approx. 40mm, working well to help with bone, joint and deep muscle tissue.

The Science behind the LED Super Luminous Therapy

The LEDs are set up on the control box to pulse at specific frequencies suitable for the ailment they are treating. The light energy diffuses through the body's cells allowing them to be in control of the absorption of the light therapy. So once a cell has received all the treatment it needs, it switches off the molecules that were absorbing the light therapy.

The part of the cell that is benefiting from the light therapy is called the 'mitochondria'. This is the cells powerhouse that produces all the energy that the cell requires to function. When the mitochondria absorb the light therapy they produce two substances:

- ATP (Adenosine Tri-Phosphate) which is an immediate energy source for muscles.
- ROS (reactive oxygen species) this releases nitric oxide (NO) leading to gene transcription --- the reading of DNA to RNA produce protein. Gene transcription leads to growth factor production, cell proliferation and extra cellular matrix deposition, i.e. production and growth of cells and the support systems the cells require.

The therapeutic effects of the treatment:

- Increases blood capillary circulation and vascular activity by promoting improvement in the metabolism of nitric oxide (NO). This facilitates improved regulation of vasodilation and leads to the formation of new capillaries --- this in turn provides additional oxygen and nutrients to accelerate the natural tissue healing processes and eventually evokes a cascade of beneficial biochemical processes.
- Relaxes muscles, reduces nerve excitability and stimulates nerve transmission.
- Reduces scar tissue and stimulates wound healing.
- Stimulates cellular reproduction and facilitates accelerated replacement of damaged cells.
- Increases production of endorphins and enkephelins (a pentapeptide molecule) from the brain --- promoting pain reduction and mood elevation.
- Reduces inflammation and swelling in chronic conditions of arthritis, bursitis, and tendonitis.
- Stimulates fibroblastic activity --- promoting repair of connective tissue and formation of collagen fibers.
- Stimulates tissue granulation and connective tissue formation --- an important process in the healing of wounds, ulcers and inflamed tissues.
- Increases lymphatic system activity and relieves edema and discomfort associated with swelling.
- Stimulates immune response.
- Stimulates production of collagen—the most important component of wound healing.
- Stimulates synthesis of Adenosine Tri---Phosphate (ATP)—an immediate energy source for muscle contraction and essential in the metabolism of all cellular processes and sustaining living systems.
- Increases phagocytosis --- the body's natural process to scavenge dead and degenerated cells and is important to the infection control process required for healing.
- Stimulates production of adrenals— which facilitate long---term pain relief and resilience to stress.

Cells, when they are receiving the light therapy, are in control of the treatment and shut off the molecules that benefit when they have received the amount of treatment they need. The treatment will continue deeper as the top cellular layers shut off.

Laser and LED Comparison

'Hot' Lasers are used by trained physiotherapists and professionals. They are used to achieve the same results as a LED laser but are more powerful, therefore the treatment time is much shorter. If a 'hot' laser was used the cells are not in control the practitioner is, if the laser is applied for too long or with too much strength the cells would not only be healed but degeneration would occur again. They are a professional's product.

ACTIVO-MED

The Activo---Med laser equipment uses the effective super luminous LED therapy but also benefits from having a PEMF coil within the unit. The treatment times are longer but the same result achieved.

Photo-Laser application examples:

- Fresh acute open wounds injury
- Bad healing open wounds
- Muscle system acute problem
- Muscle system with chronic pain
- Liquid in joints
- Liquid under skin
- Tendon injury
- Hock injury
- Muscle injury/tear/sore
- Swollen joint or limb
- Joint stiffness
- Arthritis
- Splint
- ...