



Low Level Laser Therapy

Background:

Natural source of electromagnetic radiation:

The Sun (diffused light)

Man-made sources of electromagnetic radiation:

LASER = Light Amplification by Stimulated Emission of Radiation (Coherent light – travels in the same direction at the same wavelength)

LED = Light Emitting Diode (photo stimulation)

Therapeutic Lasers:

Known as Low Level Laser Therapy (LLLT) devices

Commonly referred to as Cold Laser

Low power – typically less than 100 mW

Do not heat tissues

No known side effects and limited contraindications

Classes of lasers:

Class 1: Very mild (super market and post office scanners)

Class 2: Visible light (laser pointers, occasional therapy laser)

Class 3 A: Visible light (therapy lasers)

B: Non-visible light (survey lasers, therapy lasers) –

Can cause severe eye damage if viewed directly or reflected

Class 4: Surgical and industrial cutting lasers

How does it work?

Stimulation of mitochondria (alter cell metabolism)

Stimulation of enzymes

Increase ATP at cellular level

Increase collagen synthesis

Increase permeability of cell membranes

Stimulates fibroblast development

Biological Effects:

- ✓ Accelerated tissue repair
- ✓ Faster wound healing
- ✓ Reduced scar tissue formation
- ✓ Anti-inflammatory
- ✓ Analgesia
- ✓ Improved vascular activity
- ✓ Increased metabolic activity
- ✓ Improved nerve function

Applications:

- ✓ Arthritis (degenerative joint disease)
- ✓ Muscle, ligament and tendon injuries
- ✓ Sprains and strains
- ✓ Ulcerations and open wounds
- ✓ Post-surgical and soft tissue trauma
- ✓ Trigger points

Contraindications (human):

- ✓ Pregnancy
- ✓ Unclosed fontanel
- ✓ Malignancy
- ✓ Cornea
- ✓ Tattoos
- ✓ Pacemaker