

Clinician Quick Reference

Phototherapy is “a therapeutic physical modality, using photons (light energy) from the visible and infrared spectrum for tissue healing and pain reduction” as defined by the North American Association of Laser Therapy (NAALT). Also known as low level laser therapy (LLLT), cold or soft laser therapy, low energy laser therapy or laser therapy, the therapeutic light energy can be produced by either LED (light emitting diodes), SLD (superluminous diodes, or super bright LEDs), or low level laser diodes.

Mechanism of Action

Light energy penetrates through the skin and is absorbed by the mitochondria of cells of all types. Light energy is converted into bio-chemical energy, restoring normal cell function.

Effects of Phototherapy

- Increases Circulation and Angiogenesis
- Reduces or Eliminates Acute and Chronic Pain
- Reduces Inflammation and Swelling
- Stimulates and Improves Nerve Function
- Strengthens and Repairs Bone and Soft Tissue
- Increases Mobility and Muscle Function

Conditions Treated with Phototherapy

Based on the research and literature:

- Arthritis (osteo and rheumatoid)
- Carpal tunnel syndrome (repetitive strain injuries)
- Acute and chronic pain conditions (post operative, neuralgia, fibromyalgia or muscle tension/spasms)
- Soft Tissue injuries, strains and sprains
- Wounds (post operative, acute and chronic)
- Swelling and edema
- Inflammatory conditions (e.g. tendonitis, bursitis)
- Bone fractures and orthopedic implants

Depth of Therapeutic Effect

The wavelength, power and energy delivered determine the depth of penetration of the light and therefore the therapeutic effect. Visible red (600-700nm) penetrates up to 1cm for SLD and laser devices. Infrared (700–1000nm) penetrates deeper, from 2 - 5cm. Both SLD and laser have direct and indirect effects. Deeper target tissue requires more energy to achieve therapeutic effects.

Laser and SLD Treatment Protocols

See the MedX Treatment Manual for detailed laser and SLD treatment sites, time, dosage (Joules), and quick console settings. Most often combine laser (deeper, focused delivery) and SLD (broader less deep, but, even distribution of energy) for faster treatment results.

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Energy Delivery (Dose)

MedX Hand-held laser – Laser: 1 joule = 5 seconds

200mW of infrared (785nm) energy

MedX SLD cluster – SLD: 1 joule/cm² = 40 seconds

500mW of visible red (633nm) and infrared (880nm)

Determining Dose

Start with MedX Treatment Manual and consider the following influencing factors to determine the number of joules to be used:

- Age (small children and frail, dehydrated older individuals require smaller doses)
- Size of the treatment area (combine both SLD and Laser)
- Pigmentation (darker skin absorbs more energy, requiring larger dosage)
- Depth of the target tissue (deeper target tissue requires more energy and gentle pressure applied to clusters for deeper penetration)
- Type of tissue (muscle absorbs more energy than fat requiring larger dosage)

Continuous vs. Pulsed Wave Mode

Use continuous mode (no pulsing) for most treatments.

Use pulsing for 1) no treatment response after a few sessions or 2) positive progress hits a plateau.

Based on the literature, the following pulsing options are available:

- Option 1 = 8 Hz Pain, Neuralgia
- Option 2 = 146 Hz General Stimulation, Trigger points
- Option 3 = 1000 Hz Edema, Inflammation

Comprehensive Treatment Approach

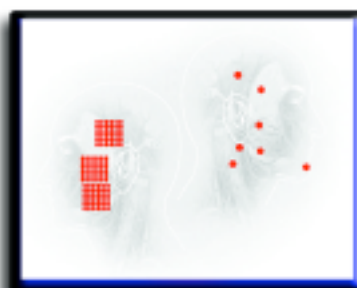
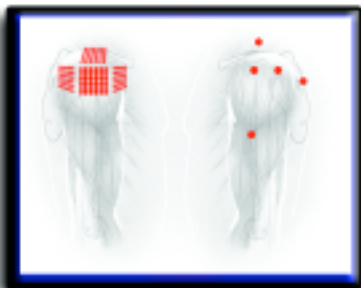
The assessment and diagnosis guides the care plan.

To accelerate clinical outcomes, use a comprehensive approach.

Treat relevant sites, two or more of:

- The entire injured or diseased area.
- Any trigger or tender points.
- Any referred areas.
- Nerve root or superficial nerve trunks.
- Acupuncture/ auricular points.

For extensive swelling, use Oshiro's Proximal Principle (i.e. start proximally or centrally and work distally or toward the extremities, thereby opening up the lymphatic pathway to enhance drainage).



Treatment Steps

- Degrease skin by cleansing with alcohol or soap and water
- If skin is broken, cover cluster or area with clear plastic wrap
- Position patient to best direct energy to target tissue
- Use protective goggles when using the laser
- Hold the treatment cluster in direct, firm contact with the skin (90 degree angle to target tissue)
- Keep cluster in one position for treatment duration

Treatment Schedules

Acute Conditions:

Week 1, daily to 3 times per week, after this, 2-3 times per week, 6-15 treatments in total.

Chronic Conditions:

2-3 times per week, up to 15 to 25 treatments in total.

Regular treatment schedule enhances accumulative effects and outcomes.

Phototherapy Combined with Other Modalities

Use phototherapy **after** cold therapy and **before** heat based treatments: ultra sound, phono/iontophoresis. Do not use heat therapy before phototherapy.

Note: Using more than one form of energy in one treatment may over-activate cells.

Contraindications

- Direct irradiation of the eye
- Pregnant patients
- Over any suspicious or cancerous lesions, or active carcinoma
- Over thyroid gland
- Over areas recently injected with steroids or anti-inflammatories
- Where masking pain might be harmful

Fewer Restrictions

Phototherapy has fewer contraindications than ultrasound or electrical stimulation. Treat patients with pacemakers, treat over metal, plastic or bone, increased sensation.

MedX Phototherapy Systems are available through Health Is Wealth Maui LLC, Quantum Healing Lasers and <http://ColdLaserSupplies.com>

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