**PHOTOBIOMODULATION (PBM) THERAPY**

A proven way to regenerate tissue at the cellular level.

**PHYSIOLOGICAL EFFECTS**

- Anti-inflammatory, analgesic, and anti-edematous
- Increased tissue oxygenation and nutrition

**PBM Mechanisms of Action**

The application of a therapeutic dose of light to impaired or dysfunctional tissue leads to a cellular response mediated by mitochondrial mechanisms that reduce pain and inflammation and speed healing.

The primary target (chromophore) for the process is the cytochrome c complex, found in the inner membrane of the cell mitochondria. Cytosol is a critical component of the electron transport chain that drives cellular metabolism. At light is absorbed, cytochrome c is stimulated, leading to increased production of adenosine triphosphate (ATP), the molecule that facilitates energy transfer within the cell.

In addition to ATP, laser stimulation also produces free radicals and reactive oxygen species. Mitochondria is a powerful vectorator and an important cellular signaling molecule involved in many physiological processes. Reactive oxygen species have been shown to affect many of the physiological signaling pathways including the inflammatory response. In concert, these molecules have been shown to increase growth factor production and promote extracellular matrix deposition. The resultant increase in cell proliferation and motility leads to increased tissue regeneration.

Use photobiomodulation therapy in conjunction with other modalities and treatment techniques with no side-effects.

- Acute conditions
- Chronic conditions

**Multiple Tissues**

- Nerves
- Tendons
- Joints
- Cartilage
- Muscles
- Ligaments

**APPLIED TISSUES**

- Chronic conditions
- Acute conditions

**APPLICATIONS & DELIVERY**

Versatile applications, maximum results.

**PHOTOBIOMODULATION DOSING**

A drug-free, surgery-free, non-invasive pain solution.

**PBM Dosing - The Key To Results**

Dosimetry in photobiomodulation (PBM) therapy is highly complicated — no single “dose” will work for all possible PBM therapies, and in some cases, different dosimetry can be equally effective. Safe and effective dosimetry must consider multiple treatment parameters including: wavelength, irradiance (often called power density or brightness), pulse structure, and irradiation time.

Furthermore, it is important to recognize that PBM is challenged by energy loss that occurs as light enters the skin and travels from superficial to deeper tissues. At the skin’s surface this is primarily due to reflection and below the surface by absorption from different tissues competing for different wavelengths of light. Proper configuration of the laser is a key factor in getting sufficient energy to target tissues.

**Factors that Impact Dose**

- Wavelength
- Irradiance (power & beam area)
- Mechanism of delivery (contact vs. non-contact)
- Treatment time
- Size of treatment area
- Type of tissue

**Laser Classes - What Do They Mean?**

Lasers are classified by the FDA according to their output power.

- Class I
- Class II
- Class IIIa, Maximum power output of 0.5 watts
- Class IIIb, Maximum power output of 5.0 watts
- Class IV, Maximum power output of over 0.5 watts

- Both Class I and Class IV lasers require that safety eye protection be worn during emission.

**The Impact of Power on Treatment Times**

For example, to effectively treat a 300 m² thoracic spine at 100 J/cm², 100 J of energy are required at the surface of the skin to deliver a therapeutic dose at depth. How long would that treatment take with a Class IIIb laser vs. a Class IV laser?

- Class IIIb
  - 3,000 J at 0.5 W = 6,000 min
- Class IV
  - 3,000 J at 15 W = 3.3 min

**The Benefits of the Massage Ball**

Maximize clinical results with the benefits of Lightforce’s patented, on-contact photobiomodulation therapy treatment application.

**Compression**

- Reduces obstacles of superficial absorbers
- Increases synthesis of ATP
- Increased rate of tissue regeneration
- Increased microcirculation

**Collimation**

- The massage ball acts to collimate the delivery of light to issue reducing energy loss

**Reflective Index**

- The fused silica composition of the massage ball minimizes light losses as it passes from the massage ball into the skin due to similar refractive indices

**Soft Tissue Work**

- Allows you to do manual soft tissue work with the massage ball applicator while delivering energy

**Effective Recovery For...**

- Headaches
- Rotator Cuff
- Epicondylitis
- Patellar Fracture
- Hip Pain
- Knee Pain
- Carpal Tunnel Syndrome
- Plantar Fasciitis
- Sciatica & Strains
- Lower Back Pain
- Shoulder Pain
- Cervical Pain
- Arthritis
- Fibromyalgia
- Bursitis
- Rotator Cuff
- Carpal Tunnel Syndrome
- Cervical Syndrome
- Plantar Fasciitis
- Rotator Cuff

**APPLICATIONS & DELIVERY**

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- Rotator Cuff
- CARPAL TUNNEL SYNDROME
- PLANTAR FASCIITIS
- ROTATOR CUFF SYNDROME
- CERVICAL SYNDROME
- BUMPS & BURSITIS
-雞足
- HEADACHES
- MUSCLES
- AND MORE

**Refractive Index**

- Minimizes energy loss due to reflection
- Allows you to do manual soft tissue work with the massage ball applicator while delivering energy

**The Impact of Power on Treatment Times**

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**Fusion Silica**

- The fused silica composition of the massage ball minimizes light losses as it passes from the massage ball into the skin due to similar refractive indices

**Laser Delivery**

- Contact application of delivery to tissue delivers energy to target tissues.
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**Application of a therapeutic dose of light**

- Reduces obstacles of superficial absorbers
- Increases synthesis of ATP
- Increased rate of tissue regeneration
- Increased microcirculation
Influence Technology takes into account your patient’s unique absorption characteristics and specific clinical condition to provide you with the most effective treatment. The combination of software and hardware advances provide you with custom protocols, consistent treatments, and unparalleled outcomes.

**EXPi FXi PRO EDS**
- Facilitates fast and efficient treatments to large treatment areas.
- Power: 0.5 - 25 watts
- Modes: CW or Pulsed
- Laser Type: Class IV

**PRO EDS**
- True portability with long-life battery operation capability.
- Power: 0.25 - 15 watts
- Modes: CW or Pulsed
- Laser Type: Class IV

**EDS**
- Functionally portable, an ideal first step into laser therapy.
- Power: 0.25 - 9 watts
- Modes: CW or Pulsed
- Laser Type: Class IV

The Empower Delivery System optimizes treatments with patented on-contact treatment heads. Includes 5 application-specific attachments.

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**Influence® Technology**

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**What’s in a Name?**

The evolution of PBM Therapy

“Cold Laser”, “Low-Level Laser Therapy (LLLT)”, what do these terms mean? In general, such terms refer to “treatment using irradiation with light of low power intensity so that the effects are a response to the light and not due to heat.”1 Many of the terms used to commonly describe this process do not ideall reflect the mechanisms involved. They also don’t adequately distinguish the therapy from other laser-based therapies that rely on heating tissue to achieve an effect. This lack of clarity has led to significant confusion about the modality and a need for better nomenclature.2

In September 2014, the North-American Association for Light Therapy (NAALT) and the World Association for Laser Therapy (WALT) convened and agreed upon the term “Photobiomodulation Therapy” as the preferred nomenclature for this modality. The term was added to the MeSH database in November 2015 and is the preferred name for researchers and key opinion leaders in the field because it more clearly characterizes the modality.2

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**LightForce Compass™**

Tools for practice navigation. The LightForce Compass helps you quickly and effectively implement your laser therapy program. The Compass includes comprehensive staff and patient education support materials.

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**LightForce Lasers®**

LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation. LightForce Lasers is a leader in the design, manufacture, and sale of laser therapeutic equipment for the reduction of pain and inflammation.

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**References**