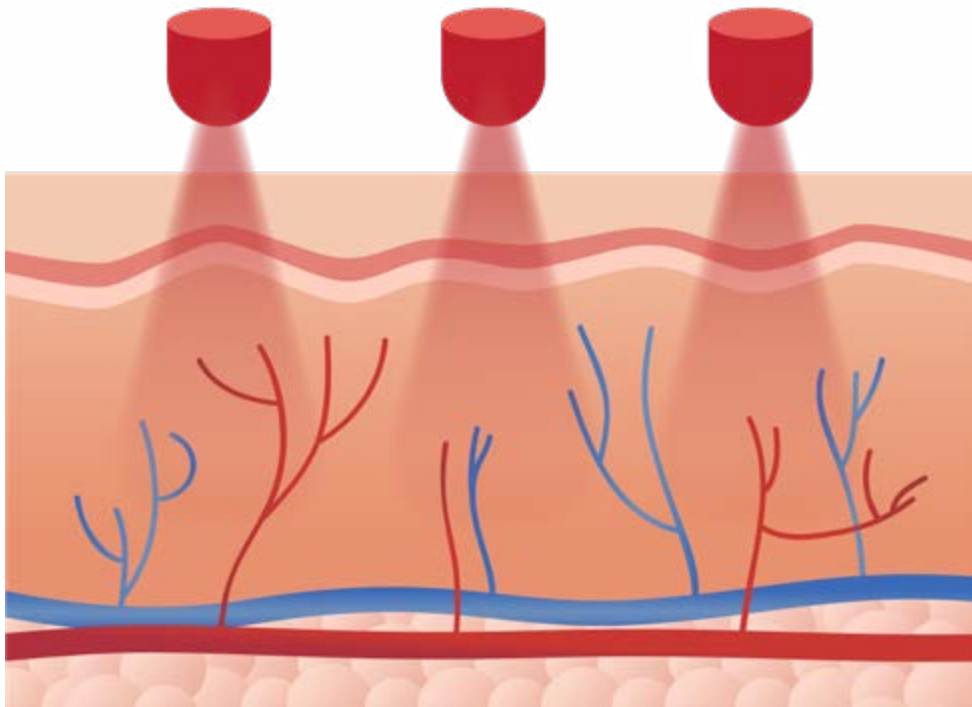


FREQUENTLY ASKED QUESTIONS



HOW DOES LIGHT THERAPY WORK?

Light therapy works by increasing ATP (adenosine triphosphate) synthesis in the mitochondria, activating the electron transport system, and many other biochemical and biophysical reactions in the tissue.



Decades of research have found that certain wavelengths of light within the blue, red, and infrared bands can be beneficial to living tissue.

- The light triggers the release of nitric oxide from blood vessels and red blood cells.
- Nitric oxide causes local vasodilation that lasts several hours after the therapy session has ended.
- Vasodilation significantly improves blood flow.
- Improving blood flow promotes positive change in patients, lessens pain and helps nerves to begin to carry sensations again.

WHAT IS NIR USED FOR?

- 1. Pain**
- 2. Circulation**
- 3. Relaxation of Muscles**
- 4. Relief from Muscle Spasms**
- 5. Aches/stiffness Caused by Arthritis**



HOW DOES LIGHT THERAPY RELIEVE PAIN?



Increased nitric oxide production

a) Nitric oxide has both a direct and indirect impact on pain sensation. As a neurotransmitter, it is essential for normal nerve cell action potential in impulse transmission activity.

b) Indirectly, the vasodilatation effect of nitric oxide enhances nerve cell perfusion and oxygenation.



Increase in beta-endorphins

The localized and systemic increase of endogenous peptides after Light Therapy irradiation has been clinically reported in multiple studies to promote pain reduction.



Decreased bradykinin levels

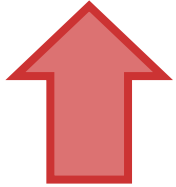
Bradykinins elicit pain by stimulating nociceptive afferents in the skin and viscera, mitigation of elevated levels through Light Therapy can result in pain reduction.



Ion channel normalization

Photobiomodulation promotes normalization in Ca^{++} , Na^{+} and K^{+} concentrations, resulting in pain reduction as a result of these ion concentration shifts.

HOW DOES LIGHT THERAPY RELIEVE PAIN? (CONTINUED)



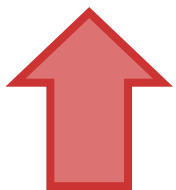
Increased nerve cell action potentials

- a) Healthy nerve cells tend to operate at about -60mV , and fire at about -20 mV . Compromised cell membranes have a lowered threshold as their resting potentials average around the -40 mV range.
- b) That means that normal non-noxious activities produce pain.
- c) Light Therapy normalizes the body's electrical system and/or charging cells back to -60 mV range.



Blocked depolarization of C-fiber afferent nerves

- a) Pain blocking effects of light therapy can be pronounced, particularly in low velocity neural pathways, such as non-myelinated afferent axons from nociceptors.
- b) Light irradiation suppresses the excitation of these fibers in the afferent sensory pathway.



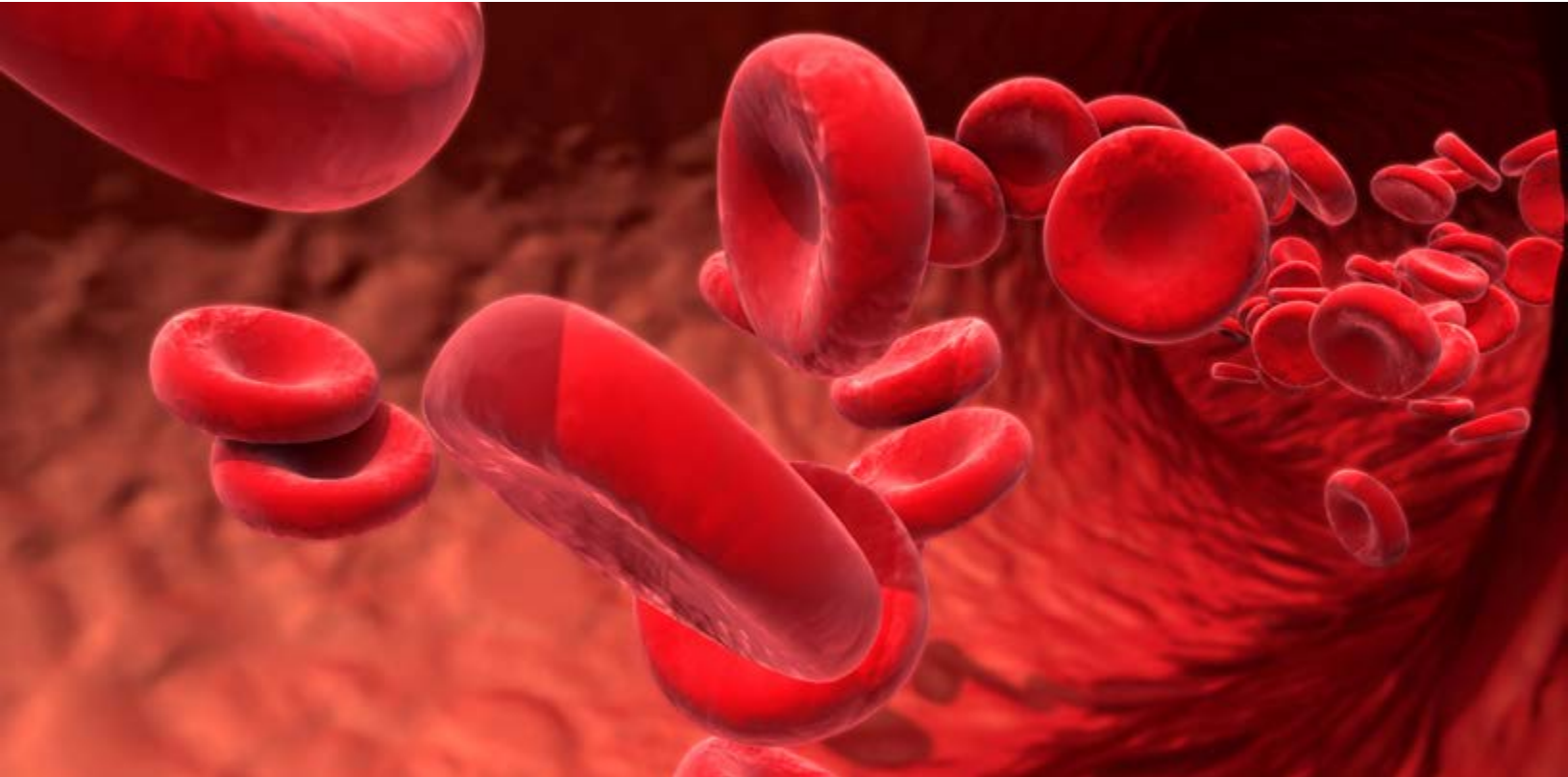
Increased release of acetylcholine

Increasing the available acetylcholine, Light Therapy helps in normalizing nerve signal transmission in the autonomic, somatic and sensory neural pathways.

Axonal sprouting and nerve cell regeneration

- a) Several studies have documented the ability of Light Therapy to induce axonal sprouting and some nerve regeneration in damaged nerve tissues.
- b) Where pain sensation is being magnified due to nerve structure damage, cell regeneration and sprouting may assist in reducing pain.

HOW DOES LIGHT THERAPY RELIEVE CIRCULATION?



One of the most dramatic aspects of light therapy is its triggering of the release of nitric oxide. Nitric oxide is the body's natural vasodilator — it widens the blood vessels and capillaries.

After just 20 minutes of light therapy, blood flow is increased to nerves and other tissues, and this boost in local circulation lasts for several hours.

Nitric oxide is also a messenger molecule that triggers healing processes in the body. By increasing the production of nitric oxide, infrared and red light therapy increases circulation, speeds healing and relieves pain.

HOW DOES LIGHT THERAPY RELIEVE MUSCLE SPASMS, ACHES, & STIFFNESS? ⁷

Light Therapy dramatically stimulates muscle trigger points and acupuncture points non-invasively providing musculoskeletal pain relief.

After just 20 minutes of light therapy, patients experience relief from muscle spasms, aches, and stiffness.

Acute conditions will respond more quickly than chronic conditions.

For acute conditions: we get users starting to feel a difference in the first few treatments.

For chronic conditions: we find the level of maximum improvement is between 24-36 treatments. Ongoing maintenance treatments will be needed.





ARE THERE ANY SIDE EFFECTS⁹ TO LIGHT THERAPY?

There are no known side effects. Light therapy is painless and easy.

However, keep away from the thyroid and uterus if pregnant. Also, do not use to treat active cancer.

