

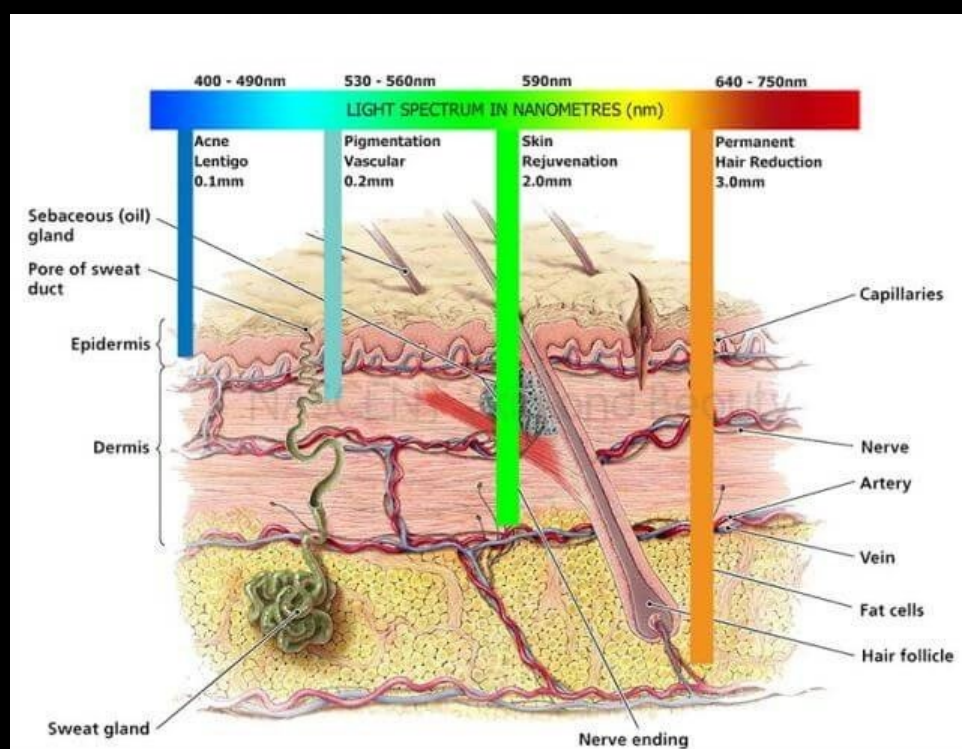
# LED

LED (light-emitting diode) light therapy treats various skin conditions, PAIN MANAGEMENT and MANY OTHER concerns, such as acne, fine lines, psoriasis AND PAIN . It comes in different types, including red light LED therapy and blue light LED therapy, which are sometimes used in combination.

Different LED colors do different things. For example, experts believe:

Red LED light therapy may reduce inflammation and stimulate the production of collagen, a protein responsible for younger-looking skin that diminishes with age.

Blue LED light therapy may destroy acne-causing bacteria (*P. acnes*).



Light Wavelength Depending On The Color

## RED LIGHT THERAPY

Unlike over-the-counter or prescription painkillers, red light therapy—also called photobiomodulation, or low-level light therapy (LLLT)—doesn't block our perception of pain. Instead, it works at the cellular level to promote optimal cell functioning that results in a healthier, pain-free body.

As a natural and effective treatment, red light therapy has shown great therapeutic potential in clinical trials for treating a variety of conditions. These include (but are not limited to) osteoarthritis and other joint pain, bone breaks, muscle injury, connective tissue disorders, nervous system disorders, and spinal disorders.

- REDUCE PAIN
  - Eases joint stiffness and soreness
  - Diminishes inflammation
  - Reduces muscle spasms and increases blood flow
- REDUCE INFLAMMATION
  - Soothes sore muscles, joint pain, and arthritis
  - Eases symptoms associated with autoimmune diseases, spinal cord and traumatic brain injuries
- REDUCE RECOVERY TIME
  - Accelerates muscle repair
  - Stimulates mitochondria and stem cells for faster recovery
- STIMULATE HAIR GROWTH
  - Stimulates stem cells in the hair follicle to encourage active growth
- IMPROVE CIRCULATION
  - Dilates blood vessels for increased flow
  - Protects red blood cells and platelets
- IMPROVED SKIN HEALTH
  - Generates production of collagen
  - Increased tissue repair
  - Reduction in appearance of fine lines, wrinkles, and scars

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## SIDE EFFECTS AND RISKS

There are no set guidelines for how long or strongly red light therapy should be applied, so there is a slight chance of adverse effects. Also, the long-term safety of this procedure is yet to be determined. If you use red light therapy devices incorrectly or too often, you may experience damage to your skin or eyes.

Immediate results are possible in some cases, but it can often take weeks or months before you see improvements.

## NEAR INFRARED THERAPY

Near infrared light therapy works exactly the same way red light therapy works. Visible red and invisible near infrared energy are absorbed by photoreceptors in each cell. Once absorbed, the light energy kicks off a whole series of metabolic events, stimulating the body's natural processes on a cellular level. There is an increase in blood flow, allowing the parts of the body to receive the oxygen and nutrients they need in order to function more effectively. Regeneration is stimulated. Inflammation and pain are reduced.

Light in the infrared range of the spectrum can penetrate more deeply to reach muscle tissue and nerves. Infrared lights have a longer wavelength than red lights, so they are best suited to reach deep inside



the body's muscles. As the muscle's cells absorb energy from infrared lights, they become more active and increase blood flow.

Increased blood flow is shown to help reduce inflammation, and this action also supports natural cellular regeneration. This extra support speeds up the body's natural healing processes and has been shown to help promote wound or injury healing. This is why infrared lights are an ideal choice for pain relief products. They help athletes speed up the muscle recovery process and help those who struggle with sore and tight muscles or achy bones.

Due to the regenerative properties of infrared lights, they are also commonly used in anti-aging skincare devices. The right dose of infrared lights can help reverse signs of sun damage or acne scarring.

## BLUE LIGHT THERAPY

Blue light therapy is a form of phototherapy that harnesses natural violet or blue light to treat conditions on or just underneath the skin. This type of light therapy can even become photodynamic when blue light is used to activate a light-sensitive drug used to address a specific condition or problem.

Clinical research suggests that blue light therapy is capable of healing and improving a number of conditions, including acne, skin cancer, fatigue and Parkinson's disease.

### ACNE

Blue light therapy can be used anywhere on the body to reduce and reverse signs of acne. So whether pimples are breaking out on your face, back, or another area of skin, blue light therapy can penetrate deep into your pores to kill acne-causing bacteria and nurture the skin back to health.

This safe, gentle treatment offers a welcome alternative to conventional acne medications such as antibiotics and oral retinoids

Thanks to blue light's anti-inflammatory benefits, this therapy can ease skin inflammation, reduce the size of oil glands, and even diminish the appearance of acne scars — all while keeping your most frustrating acne outbreaks under control.

### SKIN CANCER

**ONE OF BLUE LIGHT THERAPY'S MOST SIGNIFICANT APPLICATIONS INVOLVES SKIN CANCER TREATMENT. THIS TREATMENT, KNOWN AS PHOTODYNAMIC THERAPY.**

## GREEN LIGHT THERAPY

One of the more common uses for green light skin therapy is to help improve skin pigmentation damage that has occurred as a direct result of overexposure to the sun's UV rays.



Green light is also known to help reduce the appearance of sun spots, age spots, freckles, liver spots, and reddish or brown patches. While these are the most common forms of skin discoloration, green light can also help with several other types of hyperpigmentation and melanin problems that are a direct result of aging. Treatment can help lighten the areas of skin affected by these conditions.

## **GREEN LIGHT FOR CHRONIC PAIN**

In a recent study published in the medical journal Pain entitled “Long-lasting Antinociceptive Effects of Green Light in Acute and Chronic Pain in Rats”, the green light was found to offer a unique and non-drug treatment strategy to assist in managing pain [\(6\)](#).

This has very important ramifications for those who suffer from fibromyalgia, which is a chronic pain condition that affects millions of people around the world [\(7\)](#).

The best way to describe chronic pain is a pain that lasts for longer than three consecutive months or lasts far past what most consider normal wound healing time. Chronic pain can be caused by an injury, an underlying medical condition or disease, inflammation, medical treatment, or an unknown condition [\(8\)](#).

## **GREEN LIGHT THERAPY FOR MIGRAINES**

Anyone who suffers from migraines knows just how painful photosensitivity can be. There are times when even the smallest amount of light can cause excruciating pain. Most migraine sufferers tend to spend countless hours sitting in the dark waiting for the pain to pass. A new study conducted by Rami Burstein, PhD, Vice Chair of Research in the Department of Anesthesia, Critical Care and Pain Medicine and Academic Director of the Comprehensive Headache Center at BIDM and John Hedley-Whyte Professor of Anesthesia at Harvard Medical School (HMS) looked at the effectiveness of green light therapy on migraine symptoms [\(9\)](#).

Benefits of Green Light Therapy:-

- Pigmentation
- Rosacea / Erythema
- Chronic Pain (Eg Fibromyalgia)
- Migrain

Contraindication:

- Breast feeding
- Pregnancy
- Epilepsy
- Photoallergy
- Drugs that cause photosensitivity (Eg.Doxycycline, Tetracycline)
- Skin Cancer



## What are the benefits of Yellow light therapy?

- Reduces skin redness and flushing
- Heals skin irritation and rosacea
- Reduces fine lines and wrinkles
- Alleviates visible signs of sun damage
- Reduces the appearance of tiny blood vessels on the nose/face
- Boosts lymphatic flow, which helps remove toxins from the targeted area
- Increases cellular growth

## FAQS

### ARE THERE DIFFERENT KINDS OF LED LIGHT THERAPY?

LED light therapy uses various wavelengths that correspond to different visible colors.

Each color penetrates the skin at different depths.

Blue light affects the uppermost layer of your skin.

Yellow light penetrates deeper.

Red light travels further into your skin.

Near-infrared light penetrates deepest.

### DOES LED LIGHT THERAPY ACTUALLY WORK?

Research suggests that LED light therapy can help reduce and improve some skin conditions and issues. To see improvement in your skin, though, you need to have regular treatments.

In-office LED light therapy uses more powerful strengths than at-home devices, which makes it more effective. With LED masks and other portable devices, you likely won't see dramatic anti-aging or acne-reducing results. You might experience subtle improvements in your skin's appearance, though.

### WHO SHOULD NOT HAVE LED LIGHT THERAPY?

LED light therapy isn't appropriate for everyone, including people who:

Take certain medications that increase their sensitivity to sunlight, such as isotretinoin and lithium.

Have a history of certain conditions, including skin cancer and inherited eye diseases.

### WHAT HAPPENS AFTER LED LIGHT THERAPY?



After in-office or at-home LED light therapy, you can return to your regular activities with one exception: Stay out of the sun for several days and apply extra sunscreen.

#### WHAT IS THE RECOVERY TIME AFTER LED LIGHT THERAPY?

There isn't a recovery time for LED light therapy. Besides being careful about sun exposure in the 48 hours after treatment, you can return to your normal routine. Unlike other skin treatments, such as a chemical peel, there isn't any damage to the skin.

#### DOES BLUE LIGHT THERAPY HAVE SIDE EFFECTS?

Blue light therapy is generally safe, but it's important to consider the potential side effects of blue light used in photodynamic treatment.

Since photodynamic blue light therapy increases the skin's sensitivity, skin may swell, turn red, peel, blister or scab after treatment. You also need to take precautions in the two days following a photodynamic skin treatment:

- Stay out of strong, direct light.
- Wear protective clothing.
- Avoid surfaces that may reflect strong light.

#### IS GREEN LIGHT THERAPY SAFE?

Light therapy using light in the visible spectrum is relatively safe according to the studies done thus far. In fact, there are no side effects of exposure to green light in any of the tests completed to date. The only real side effect, if you can call it one, has been the relief of pain and the reduction of dark spots on the skin.