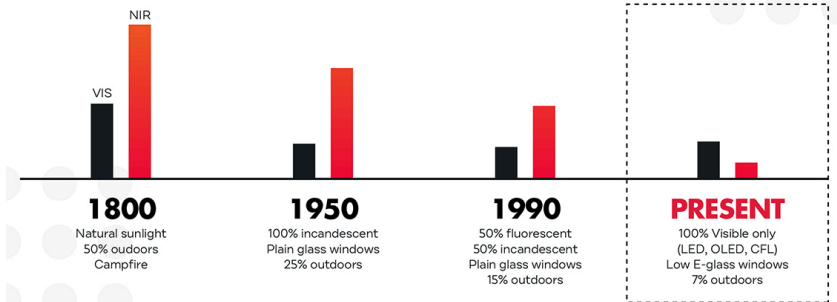


Why use Red Light:

Imagine feeling more energized, recovering faster, and having better overall vitality — that's exactly what red and infrared light therapy can do for you. By boosting the energy production in **ALL** your cells and optimizing their performance, it helps you feel more active and perform at your best, whether you're working out, recovering from an injury, or just looking to optimize your health. It's a simple, non-invasive way to support your body's natural healing, vitality and performance!

NIR HUMAN EXPOSURE IS DECREASING OVER THE LAST CENTURY

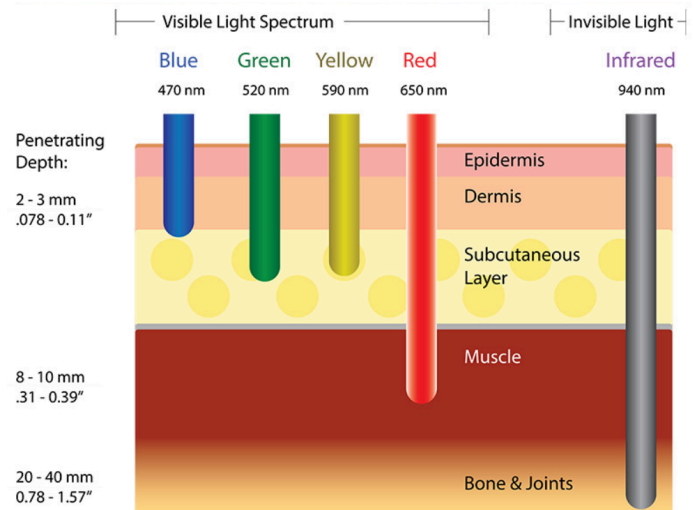


Reference: <https://doi.org/10.32794/mr11250016>

What is Red Light:

At OsteoStrong, we use two types of red light therapy. Red and infrared light refers to specific wavelengths of light that fall within the electromagnetic spectrum:

- **Red Light:** Typically ranges from about 620 to 750 nanometers (nm). It is visible to the human eye and is often used for therapies targeting skin rejuvenation and wound healing.
- **Infrared Light:** Extends from about 750 nm to 1 millimeter (mm), encompassing near-infrared (750 nm to 1400 nm) and far-infrared (1400 nm to 1 mm) wavelengths. Near-infrared is commonly used in therapeutic applications for deeper tissue penetration and pain relief.



History: Light therapy research began in the 1920s, with infrared therapy being used for pain relief and healing in soldiers during the 1940s. In the 1960s, advancements in laser technology showed promising results for wound healing and hair growth. Over the following decades, research expanded to include bone regeneration, ATP production, and collagen synthesis. Today, infrared therapy is widely used by medical practitioners and therapists for pain management, wound healing, bone repair, skin rejuvenation, and musculoskeletal disorders, benefiting a broad range of patients.

How Does Red Light Work:

The powerhouse of our cells is the mitochondria. This is where energy is produced in a form called ATP. You can think of it like gasoline to a car. Red light therapy helps our cells work better by making mitochondria more active. And a key part of this process is an enzyme called cytochrome c oxidase, which helps turn oxygen into energy. When the red and near-infrared light shines on this part, it essentially helps the mitochondria use oxygen more effectively.

When someone has too much nitric oxide in their cells, it can block oxygen from reaching the mitochondria, making it harder for them to produce energy. But light therapy helps remove the nitric oxide, letting oxygen back in. This makes the mitochondria work better, giving us more energy which keeps our whole body healthy and gassed up!

A second process it functions in is hormesis - simply put when we exercise our muscles experience a tiny bit of stress which helps them grow stronger, light therapy does the same for our cells. It helps mitochondria send messages to grow stronger and fight off problems like inflammation. So, using red and near-infrared light is like a superhero boost for our cells, making them more powerful and ready to tackle challenges!

Red light and infrared light therapy promote bone growth through several mechanisms. They enhance mitochondrial function in osteoblasts, boosting ATP production and cellular metabolism, which supports the growth of these bone-forming cells. The therapy also stimulates collagen production, essential for the structure and strength of bone tissue. Additionally, it improves blood flow, delivering more oxygen and nutrients to the bones, while reducing inflammation to create a better healing environment. Finally, the therapy encourages the release of growth factors like BMPs, which stimulate stem cell production and IGF-1, which tell your bones and muscle to grow.

Benefits of Red and Infrared Light Therapy:

Thanks to its well-documented mechanism of action on the cellular system, red and infrared light therapy has shown ability to **increase circulation, boost mitochondrial activity** (which generates energy for cells), **reduce inflammation**, and **accelerate tissue repair** in **over 3,000 peer reviewed studies**. Therefore red and infrared therapy benefits the following:

- **Bone Regeneration**
- **Thyroid Function**
- **Respiratory Health**
- **Anti-Aging**
- **Fat Loss:** Enhances fat loss, potentially doubling the effect of diet and exercise alone.
- **Reduce Inflammation**
- **Eye Health:** Helps with conditions like macular degeneration, natural aging eye conditions
- **Gut Health**
- **Oxidative Stress**
- **Strength & Endurance**
- **Pain Relief**
- **Hair Growth**
- **Stress Resistance**
- **Wound Healing**
- **Autoimmune & Hormonal Health**
- **Brain Function & Mood:** Optimizes brain function, mood, and cognitive performance. Noted benefits for Alzheimer's, concussion, etc.
- **Energy Boost**
- **Improved Sleep:** Promotes better sleep by regulating circadian rhythms and encouraging deeper, more restful sleep.
- **Enhanced Recovery**
- **Joint and Muscle Pain Relief:** Helps relieve pain associated with conditions like arthritis, tendonitis, and muscle strains.
- **Collagen Production:** Stimulates collagen production, improving skin tone and elasticity, and promoting overall skin health.
- **Increased Flexibility and Mobility**
- **Cellular Detox**
- **Reduces Scarring**

Excellent Resource: <https://theenergyblueprint.com/red-light-therapy-ultimate-guide/>