

Treating Inflammation and Pain with Red and Near Infrared Light Therapy

What is inflammation? Inflammation isn't just a symptom, it's a complex process that takes place in every living thing. You can think of inflammation as your body's programmed response to danger. It's one of your immune system's first actions against infection, germs, irritation, and cell damage.

Causes: There are clear physical causes of inflammation like injuries & wounds, bruises, burns, and splinters. Inflammation also occurs in response to biological factors like infection from germs and stress. Chemical irritants, toxins, and alcohol can also trigger inflammation. Your body can become inflamed in response to environmental conditions as well—like poor sleep, poor nutrition, dehydration, and excessive exposure to blue light & radiation. These environmental factors likely play a role in the development of chronic inflammation.

Signs & symptoms: The five classic signs of inflammation are heat, redness, swelling, pain, and loss of function. Pain is caused by chemicals like bradykinin & histamine that your body releases to stimulate your nerve endings as a warning of danger. [1] There is also clinical evidence for a link between depression and inflammation, both for depression-triggering inflammation and for inflammation leading to depression. [2]

Acute or chronic? Not all inflammation is bad. Acute inflammation is actually our body helping itself recover from a problem. In a healthy response, inflammation occurs within a few hours, works to clear the pathogen, starts the repair process, then goes away. Chronic inflammation is often caused by frequent and persistent acute inflammation, as well as viral infections, autoimmune reactions, and foreign bodies that aren't removed. This can be very painful and lead to other conditions, like gum disease, hay fever, arthritis, and some cancers. [3]

Inflammation Drugs, Health Risks, & Side Effects

Inflammation is usually treated with NSAIDs, or nonsteroidal anti-inflammatory drugs. These include lower-risk, over-the-counter varieties like aspirin and ibuprofen that can treat acute pain. To treat more serious chronic inflammation, people often take prescription NSAIDs. Prescription NSAIDs are also known as "Cox-2 Inhibitors." Unfortunately, prescription NSAIDs have a troubling history and a long list of associated side effects and health risks.

The risks of NSAIDs are usually greater for people over age 60. Given all of this, it's no surprise many doctors and patients are looking for more natural inflammation and pain treatments that don't rely on potentially dangerous pharmaceuticals.

Treating Inflammation with LED Light Therapy

Natural red and near infrared light therapy is showing immense potential to be just that: a natural inflammation treatment without the pharma risks of traditional NSAIDs.

The short version is this: light therapy delivers safe, concentrated wavelengths of natural light to your skin and cells. These red and near infrared wavelengths of light stimulate those cells and reduce oxidative stress, so your body is able to make more usable energy to power itself. This increases function, speeds healing, and lowers inflammation & pain, as demonstrated in numerous peer-reviewed studies. [8]

Natural light therapy & inflammation treatment: Red light therapy alleviates chronic inflammation by increasing blood flow to the damaged tissues, and it's been found in numerous clinical trials to increase the body's antioxidant defenses. [9]

Dr. Michael Hamblin of Harvard Medical School and Massachusetts General Hospital is one of the world's leading photomedicine researchers, and we're fortunate to have his expert input on Contour Light's Scientific Advisory Board. He's studied light therapy at length and concluded that one of its most reproducible effects is *“an overall reduction in inflammation, which is particularly important for disorders of joints, traumatic injuries, lung disorders and in the brain.”* [9]

Dr. Hamblin explains that wavelengths of natural red and near infrared light are *“a very mild form of stress that activates protective mechanisms in the cells...for instance, when longer wavelengths or visibly red light hits the skin, it nudges mitochondria to make energy more efficiently and boost production of healing anti-inflammatories or disease-fighting antioxidants.”* [9]

Clinical research from around the world has found light therapy to be an effective treatment for reducing inflammation in specific surgical contexts as well:

Post-surgery inflammation & pain relief: A randomized, triple-blind, placebo-controlled trial published in *Lasers in Medical Science* in 2018 assessed the acute inflammation and pain of patients recovering from hip arthroplasty surgery. Researchers found that patients treated with natural light therapy saw a greater reduction in post-op pain and swelling, concluding that natural light therapy *“is effective in decreasing pain intensity and post-surgery inflammation.”* [10]

Reduced oral inflammation: Another recent trial assessed light therapy's ability to reduce inflammation in periodontal cells (in the mouth) in a highly inflammatory environment, which is common with orthodontic and dental surgeries and treatments. Researchers concluded that the study *“demonstrated that [light therapy] inhibits inflammation, induced by endotoxins from E. coli and P. gingivalis.”* [11]

Muscles, exercise, & soreness: Numerous other trials have analyzed light therapy's ability to treat muscle soreness and exercise-related inflammation and pain. A 2008 study found natural light had a beneficial effect on the symptoms of delayed onset muscle soreness. [12] A 2010

Brazilian study found that people who used light therapy before strenuous exercise eventually experienced less pain and inflammation after workouts. [13]

Laboratory research on mammals: The research mentioned above aligns with previous studies of inflammatory markers in lab rats, which have consistently found that light therapy treatments improve muscle soreness and decrease inflammation. [14]

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