**Red Light Therapy: Benefits For Skin, Hair & Side Effects**

[Contributing Health & Nutrition Editor](https://www.mindbodygreen.com/wc/stephanie-eckelkamp) [By Stephanie Eckelkamp](https://www.mindbodygreen.com/wc/stephanie-eckelkamp)

Medical review by [Keira Barr, M.D.](https://www.mindbodygreen.com/wc/keira-barr-m-d)

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Some experts are saying that the answer to our skin woes doesn't lie in a jar or bottle, but rather a light bulb. We're talking about red light therapy: a treatment that's becoming increasingly common in dermatology offices and spas around the country, thought to help eliminate wrinkles, rosacea, and acne. Even more promising, some research suggests it can treat joint pain, hair loss, and nasty side effects of certain cancer treatments.

But how does it do all this? Here's the scoop on red light therapy's benefits, side effects, and how to try it out yourself.

## What is red light therapy?

Red light therapy—also known as red LED light therapy, low-level light therapy (LLLT), photobiomodulation, and cold laser therapy—involves exposing bodily tissues to red and near-infrared light between the wavelengths of 660 nm and 890 nm with either low-level lasers or red LED lights. The light from these devices is used to treat a [variety of conditions,](https://www.ncbi.nlm.nih.gov/pubmed/24049929) from wrinkles to wounds. Some red light therapy units are small and handheld while others can be positioned above your face (like a dentist's lamp), and others look more like tanning beds.

"Near-infrared levels are best for wound healing and increased immune function," [explains Amy Myers, M.D.](https://www.mindbodygreen.com/0-12265/6-benefits-of-infrared-sauna-therapy.html), compared to middle-infrared levels which are good for increasing circulation and promoting muscle relaxation, and far-infrared levels for detoxing.

"I've been using red LED light therapy for years, and I love it," adds Susana Salazar, holistic esthetician at [Studio Britta](https://studiobritta.com/) in New York City. "It activates collagen production and has many other skin benefits such as accelerating the healing process, helping with inflammation and facial redness, minimizing dark spots, and improving overall circulation."

These red and near-infrared wavelengths do not burn or damage the skin (unlike the dangerous UVA rays in tanning beds), but they're thought to be absorbed by skin up to 10 millimeters—a lot deeper than any serum or cream can penetrate.

## Where did this technology come from?

Surprisingly, red light therapy can be traced back to NASA. In the 1990s, scientists developed technology featuring red LEDs [to help promote growth and photosynthesis in plants](https://www.ncbi.nlm.nih.gov/pubmed/11776448) during space shuttle missions. This, in turn, prompted research into whether red light therapy might have [benefits for humans](https://www.ncbi.nlm.nih.gov/pubmed/11776448), particularly for astronauts, who experience problems such as poor wound healing due to weightlessness.

The mechanism by which red light therapy delivers its benefits is still [poorly understood](https://link.springer.com/article/10.1007%2Fs10439-011-0454-7), which makes it a bit controversial, but it's thought to work by [stimulating the mitochondria](https://www.ncbi.nlm.nih.gov/pubmed/24049929) in our skin cells. Mitochondria are the power plants of our cells that turn food and oxygen into energy in the form of adenosine triphosphate (ATP). Stimulated mitochondria are thought to produce more ATP, and thus, help cells function, regenerate, and repair themselves more efficiently. [Stem cells](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4126803/) may also be activated by red light therapy, which promotes increased tissue repair and healing.

## What are the benefits?

As mentioned above, there are [still some questions](https://link.springer.com/article/10.1007%2Fs10439-011-0454-7) about how exactly red light therapy works, but here are some of its most promising benefits that have been found to date:

### 1. It heals scars and wounds.

If you still have scars from your acne-riddled teenage years, if you've recently experienced burns, or if your wounds tend to heal slowly for any reason, then red light therapy may be an option. It's thought to help skin cells function more efficiently and repair damage by stimulating mitochondria and stem cells.

"I think it's great from an increasing mitochondrial function standpoint," says functional medicine practitioner and mbg Collective member [Will Cole, D.C., IFMCP](https://www.mindbodygreen.com/wc/william-cole-dc), who recommends it to his patients.

Research seems to suggest that skin issues like these respond better to the lower end of the red light spectrum. In one study, patients with mild to moderate acne received red light therapy in two different wavelengths on either side of their face—630 nm on the right, 890 nm on the left—and only the [lower wavelength significantly reduced acne lesions](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3352636/). In another study, patients with diabetes experienced a [significant reduction in the size and pain](https://www.ncbi.nlm.nih.gov/pubmed/26735058) of their diabetic foot ulcers with 12 sessions of red light therapy at 632.8 nm.

### 2. It promotes collagen production.

In addition to its beautifying benefits, red light therapy may also help counter common skin issues that occur with age, like reduced collagen production (which begins declining around age 30), which can increase the appearance of fine lines. One study found that patients receiving red light therapy on their face twice a week for 30 total sessions experienced [improved skin complexion](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3926176/), skin tone, skin smoothness, and collagen density (as measured with an ultrasonographic test). In fact, the study included some [before and after pictures](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3926176/), which are pretty impressive.

### 3. It promotes hair growth.

The most common type of hair loss, androgenetic alopecia, affects 50 percent of men over age 40 and 75 percent of women over 65, and there are only two medications approved to help counter it. But research reveals that red light therapy may be a powerful, drug-free solution. One research review found that red light therapy was safe and effective for [promoting hair growth](https://www.ncbi.nlm.nih.gov/pubmed/23970445) in both men and women. It seems to work by stimulating stem cells in the hair follicle and shifting follicles into the anagen phase (the active growth phase). More research is needed to determine the optimal wavelength for promoting hair growth, but one study found that women who received red light therapy at 650 nm every other day for 17 weeks experienced a 51 percent [increase in hair density](https://www.ncbi.nlm.nih.gov/pubmed/28328705).

### 4. It eases pain joint, muscle, and tendon pain.

Since red and near-infrared light penetrates deeper than other wavelengths, it has the unique ability to treat issues below the skin's surface as well, like joint pain and muscle and tendon injuries. One of the original uses of red light therapy was in the treatment of carpal tunnel syndrome, and research shows it can [reduce pain and improve grip strength](https://www.ncbi.nlm.nih.gov/pubmed/17334675) among carpal tunnel patients. A research review also reveals that red light therapy is an excellent resource in the treatment of skeletal muscle injuries due to the fact that it [reduces the inflammation and increases angiogenesis](https://www.ncbi.nlm.nih.gov/pubmed/25122099) (the development of new blood vessels). Additionally, painful conditions like rheumatoid arthritis, osteoarthritis, tendinitis, plantar fasciitis, and back pain all [respond positively to red light therapy](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4743666/).

### 5. It speeds recovery and boosts endurance.

Red light therapy has perks for male and female athletes, too. One study found that men who participated in intense exercise and also received red light therapy experienced [improved performance](https://www.ncbi.nlm.nih.gov/pubmed/24942380) and less exercise-induced muscle soreness. While another study on female basketball players found that red light therapy [improved endurance](https://www.ncbi.nlm.nih.gov/pubmed/23182016) as well as sleep. It's thought that red light therapy helps mitochondria produce energy more efficiently, making muscles less likely to experience fatigue.

### 6. Reduces side effects of cancer treatment.

Research [conducted by NASA](https://www.nasa.gov/topics/nasalife/features/heals.html) has found that red light therapy helps counter a side effect of chemotherapy called oral mucositis, characterized by extremely painful sores, redness, dryness, and burning sensations in the mouth and throat. A two-year trial in which cancer patients were given a far red and near-infrared LED treatment determined that 96 percent of patients [experienced reduced pain](https://www.nasa.gov/topics/nasalife/features/heals.html) as a result of this treatment. This is great news since it could help increase food intake, reduce use of painkillers, and boost morale among cancer patients.

## What are the side effects of red light therapy?

There don't appear to be many side effects. In fact, some research papers [have stated](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4126803/) that there is "an almost complete absence of side effects" associated with red light therapy treatment. Salazar agrees, adding that it's "generally safe for all skin types, even for women who are pregnant." Anecdotal accounts reveal that some people find red light therapy to be irritating or bothersome to the eyes, but this can be remedied by wearing tanning bed goggles.

Certain red light therapy devices are even approved by the FDA to treat [hair loss](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3944668/), [carpal tunnel syndrome](https://pdfs.semanticscholar.org/400d/2677f26d8a1bcd1d4ac7cae5ac43bbbcca07.pdf), [muscle and joint pain](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4743666/), and slow-healing wounds. However, different health conditions have different [optimal wavelength doses](https://link.springer.com/article/10.1007%2Fs10439-011-0454-7), and research suggests that lower doses can often be [more effective](https://link.springer.com/article/10.1007%2Fs10439-011-0454-7). So it's important that you find a qualified practitioner to administer red light therapy appropriately for the specific condition you're trying to treat or that you find an FDA-approved device and follow the manufacturer's instructions carefully. This will minimize any potential side effects that may occur due to incorrect usage.

## Where can you try red light therapy?

Red light therapy is available at some spas, as well as dermatology, rheumatology, and physical therapy practices. As mentioned above, it's important that you seek out a practitioner who's knowledgeable in using red light therapy for the condition you want to treat. Your doctor may be able to refer you to a qualified practitioner, but because this therapy isn't exactly mainstream yet, you may have to do your own research—and keep in mind, your health insurance may not cover it.

Also keep in mind, red light therapy isn't a one-and-done treatment. "In order to see noticeable results, it's recommended to be consistent with consecutive sessions," says Salazar. "This allows the light to penetrate the skin and exert its regenerative effect. Though I do still see benefits for calming the skin after one treatment."

You can also try red light therapy at home for skin conditions, but you definitely get what you pay for, warns Salazar. A couple of options that have received positive user reviews and have been cleared by the FDA for safety include the [SpectraLite Facewear Pro](https://www.sephora.com/product/spectralite-faceware-pro-P435378) mask, which claims to minimize fine lines, boost collagen, and heal blemishes, and larger options from [Joovv](https://joovv.com/blogs/joovv-blog/does-red-light-therapy-really-work) that provide more of a full-body treatment. The good devices do tend to be quite expensive, though, and they may not be realistic for all conditions, especially for joint pain or injuries, which would likely benefit from treatment by a qualified medical professional.

## The bottom line:

Red light therapy has significant research to back its many benefits, even if its mechanisms aren't fully understood. If you have skin conditions, hair loss, or joint, muscle, and bone pain, consider speaking to your practiioner.

[Stephanie Eckelkamp](https://www.mindbodygreen.com/wc/stephanie-eckelkamp) [Contributing Health & Nutrition Editor](https://www.mindbodygreen.com/wc/stephanie-eckelkamp)

Stephanie Eckelkamp is a writer and editor who has been working for leading health publications for the past 10 years. She received her B.S. in journalism from Syracuse University with...