



# What to know about red light therapy



Medically reviewed by [Cynthia Cobb, DNP, APRN, WHNP-BC, FAANP](#) —  
Written by [Jon Johnson](#) on July 29, 2019

[How it works](#) [Skin health](#) [Acne](#) [Wounds](#) [Hair growth](#)

[Reducing pain](#) [Bone recovery](#) [Anti-inflammatory](#) [Side effects](#)

[Costs and insurance](#) [Summary](#)

Red light therapy (RLT) aims to solve skin issues by using low wavelength red light. Many experts believe that it can help with issues such as skin conditions, scarring, and signs of aging — including wrinkles and age spots.

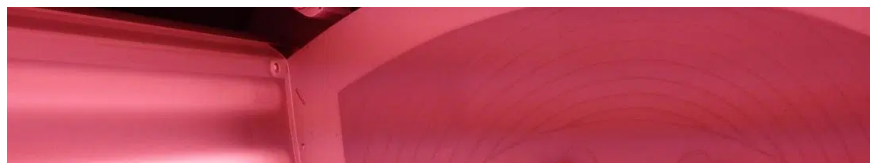
There is some evidence to back up many of these claims, but RLT is no miracle cure.

Anyone considering the treatment should also take other steps to promote skin health. Improper use of RLT may also cause some side effects.

Anyone who is uncertain about whether or not RLT is right for them should talk to their doctor.

ADVERTISEMENT

## How it works



ADVERTISEMENT





RLT exposes the body to low wavelength red light.

Image credit: osseous, 2015

RLT is a straightforward procedure involving exposing the body to low wavelength red light. Low-level laser light therapy is another name for the process, though RLT may be more common.

This red light is natural and can penetrate deep into the skin, where the cells can absorb and use it.

As a study in the journal *Seminars in Cutaneous Medicine and Surgery*<sup>✓</sup> notes, mitochondria in the skin cells can absorb these light particles. This can help the cells produce more adenosine triphosphate, which is the energy source for all cells.

Many experts attribute the potential positive benefits of RLT to this function. With this extra energy, the cells may be able to respond better to damage and rejuvenate themselves.

Although there is early research surrounding RLT, there is still no conclusive evidence that it is a beneficial treatment. Many studies show that the treatment has promise, but more extensive clinical studies in humans will help determine the potential applications of RLT.

With that said, there are several potential benefits of RLT, which we will cover in the sections below.

## Improving skin health

Most people show interest in RLT as a possible way to improve skin health.

The potential for using RLT as a way to rejuvenate the skin has led to a large number of studies. As the review in the journal *Seminars in Cutaneous Medicine and Surgery*<sup>✓</sup> notes, RLT may help rejuvenate the skin by:

• increasing collagen production in the skin, which gives the skin its

ADVERTISEMENT



- increasing fibroblast production, which helps produce collagen and other tissue fibers
- increasing circulation between blood and tissue cells
- protecting cells from damage
- increasing mRNA in the cells, which helps stimulate the cell
- improving facial texture
- reducing fine lines
- reducing wrinkle severity

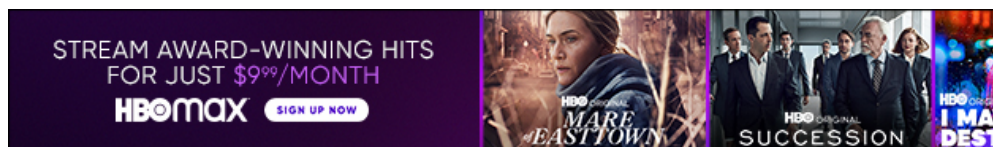
A clinical trial in the journal *Photomedicine and Laser Surgery* explored light treatment for some basic skin issues in a small group of 136 people. The researchers found that these light therapies could:

- rejuvenate the skin
- improve the complexion
- improve the feeling of the skin

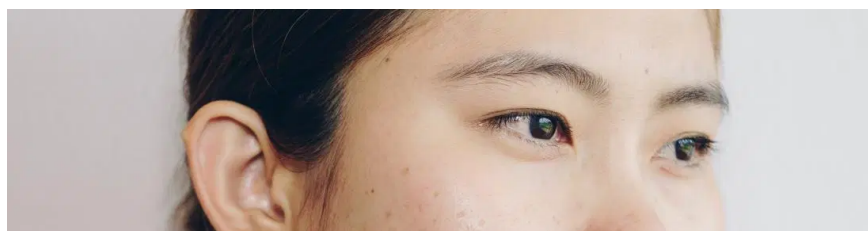
It is important to remember that many of the results regarding RLT come from animal or test tube studies, which explore the function of RLT. Many of the human studies used very small sample sizes, as is evident in the clinical trial above.

These results show the potential for the therapy but are not conclusive evidence that it will work in every case.

ADVERTISEMENT

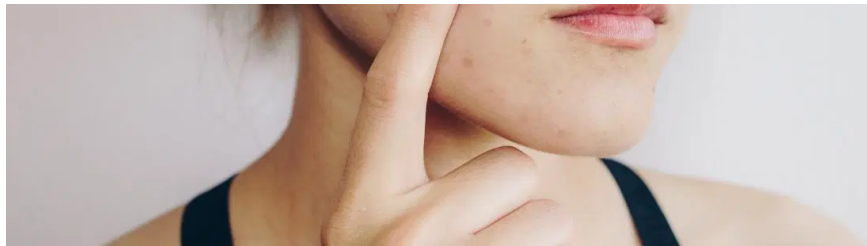


## Improving acne



ADVERTISEMENT





RLT might be an effective treatment for acne vulgaris.

As the review in *Seminars in Cutaneous Medicine and Surgery* also notes, forms of light therapy are potential alternatives for the treatment of acne vulgaris.

Sunlight can alter the way the sebaceous glands behave. The sebaceous glands produce sebum, which may clog the pores and cause acne. Sunlight may help calm overactive glands.

The issue that many people have with sunlight exposure is that it comes with exposure to ultraviolet (UV) A and UVB rays, which may cause other skin issues over time. These can be severe and may include developing skin cancer.

RLT, either alone or in combination with other treatments such as blue light therapy, is a potentially effective treatment for acne vulgaris. The light appears to penetrate deep into the skin and affect sebum production while also reducing inflammation and irritation in the area.

## Wound healing

Red light may also be helpful in speeding up wound healing.

Research in the journal *Anais Brasileiros de Dermatologia* highlights the fact that light therapy may help wound healing in a few ways, such as by:

- reducing inflammation in the cells
- stimulating new blood vessels to form, which doctors call angiogenesis
- increasing helpful fibroblasts in the skin
- increasing collagen production in the skin

More studies in humans can help confirm these results.

ADVERTISEMENT

ADVERTISEMENT



## Hair growth

A small study in the *Journal of Cosmetic and Laser Therapy* explored the effect of low-level light on people with alopecia.

The study revealed that people who received RLT had improved hair density, compared with those in a control group.

The authors note that the effect was beneficial when people applied light in wavelengths of both 665 nanometres (nm) and 808 nm.

However, this was a smaller study, and more extensive clinical studies will help give backing to these claims.

## Reducing pain


RLT may also be an effective treatment for pain in people with certain conditions.

A review in the *European Journal of Physical and Rehabilitation Medicine* compiled the results of many studies surrounding RLT and musculoskeletal disorders.

The research indicated that RLT could effectively reduce pain in adults with different musculoskeletal disorders. The researchers note that practitioners who stick to the specific dosage recommendations seem to increase the effectiveness of the therapy.

ADVERTISEMENT

## Enhancing bone recovery

A review in the *Journal of Photochemistry and Photobiology*  examines the potential for RLT in treating facial bone defects.

ADVERTISEMENT



The researchers' results indicate that RLT may help accelerate healing after treatment for facial bone defects. The review also notes that the therapy helped reduce inflammation and pain during the process.

However, the researchers did call for a more standardized approach to determine whether or not the therapy is effective.

## Anti-inflammatory benefits

As research in the journal *AIMS Biophysics*<sup>®</sup> notes, many of the conditions that RLT treats have their roots in inflammation.

Although the exact reason is not yet clear, RLT has significant anti-inflammatory effects in the body. These effects are both local, where practitioners apply the light, and systemic, in other tissues and organs in the body.

The researchers explain that the helpful anti-inflammatory effects of RLT, and the potential uses for this therapy, are abundant.

Further research may help us understand if it may help with chronic inflammatory issues such as:

- [Alzheimer's disease](#)
- [obesity](#)
- [type 2 diabetes](#)
- [alopecia areata](#)
- autoimmune thyroiditis, or inflammation of the thyroid
- [psoriasis](#)
- [arthritis](#)
- [tendinitis](#), or inflammation of the tendons

Again, the research is still preliminary. However, the anti-inflammatory effect of RLT is very promising.

Past studies have stressed the importance of the specific wavelengths that people use to target their skin.

However, as the review in *Seminars in Cutaneous Medicine and Surgery*<sup>®</sup> explains, the collected research found that in many cases, the very specific wavelengths made relatively little difference during treatment.

With that said, the frequency for most RLT sessions will typically vary within a range, similar to the wavelengths in the *Journal of Photochemistry and Photobiology*<sup>®</sup> paper.

ADVERTISEMENT



## Potential side effects

RLT is a completely natural process. It exposes the skin to levels of light that are not harmful — unlike UV light coming from the sun.

Because of this, there is virtually no risk of side effects from undergoing RLT. However, a practitioner with little experience or someone who exposes themselves to too much of the treatment may cause tissue and cell damage.

Products for use at home may also lead to misuse, causing damage to the skin, burns, or damage to unprotected eyes.

## Costs and insurance coverage



RLT is available in a number of gyms, day spas, and tanning salons.

RLT has a relatively low operating cost. It is also not a medicine in the traditional sense, so it is widely available. Many establishments may offer RLT rooms or lamps, including:

- gyms

ADVERTISEMENT



- wellness centers
- saunas
- dermatology offices

Many companies also offer products that use targeted red light lamps as a spot healing tool. Anyone purchasing such devices for use at home should check to be sure that the device delivers red light within the effective wavelengths before completing the purchase.

There is no insurance coverage for the general practice of RLT. However, some dermatologists may offer targeted RLT applications. Anyone who has concerns regarding a skin issue that RLT may help should see their doctor for a referral.

## Summary

RLT is generally safe and may be a very effective treatment option for people seeking smaller changes in their skin or to keep the skin healthy and reduce inflammation.

Other applications of RLT have promising early evidence, but there is not enough reliable evidence in humans to call it effective in every case.

RLT is only one part of a complete skin care routine, and it should not be the only way a person takes care of their skin. It may take several treatments of RLT for a person to begin noticing the changes in their skin.

Anyone uncertain if the practice is suitable for them should talk to a doctor to discuss the potential benefits.

ADVERTISEMENT



Last medically reviewed on July 29, 2019

Dermatology    Complementary Medicine / Alternative Medicine

ADVERTISEMENT







# Is photodynamic therapy good for acne?



Medically reviewed by [Yamini Ranchod, Ph.D., M.S.](#) — Written by [Jayne Leonard](#) on September 5, 2017

[How does photodynamic therapy work?](#) [Cost and insurance](#)

[Advantages of PDT for acne](#) [What to expect before PDT treatment](#)

[What to expect during PDT treatment](#) [What to expect after PDT treatment](#)

[Adverse effects of photodynamic therapy](#)

Photodynamic therapy uses medications called photosensitizers to boost the activity of a light-based skin treatment.

It is a form of phototherapy or light therapy and is becoming more popular as an [acne](#) treatment, particularly for severe cases that do not respond to other treatments.

Photodynamic therapy (PDT) may also be effective for other skin conditions, such as sun-damaged skin, precancerous cells, and skin infection.

## Fast facts on photodynamic therapy

- A [review](#) of more than 70 studies suggests that, generally, PDT for acne produces favorable results, especially for people who do not respond well to topical or oral treatments.
- It may take several sessions to see the benefits of photodynamic therapy for acne.
- People with more severe forms of acne [may experience](#) the most significant improvements. Results tend to be semi-permanent, lasting for several months or longer.
- Because photodynamic therapy is a relatively new treatment for acne and other skin conditions, any long-term effects are not known.

ADVERTISEMENT

ADVERTISEMENT



## How does photodynamic therapy work?



PDT attempts to treat acne with intense pulsed light.

Photodynamic therapy requires three components:

1. a photosensitizer
2. a light source
3. oxygen

Photosensitizers are topically applied solutions that cause certain types of abnormal cells to produce light-absorbing molecules called porphyrins. This change allows the light treatment to target the abnormal cells that are contributing to the acne.

The use of photosensitizers distinguishes PDT from other forms of phototherapy.

After applying a topical photosensitizer, a medical light source is focused on the skin to activate it. This light source may provide blue light, red light, or intense pulsed light (IPL). A doctor will decide what light source is best for the individual. Combined with the photosensitizer and the presence of oxygen, the light helps to **destroy** acne cells and bacteria.


ADVERTISEMENT





Overactivity and [inflammation](#) of these glands contribute to acne development.

## Is photodynamic therapy effective for acne?

PDT tends to be more effective for inflammatory, rather than non-inflammatory, acne.

For example, some [research](#)  found that participants experienced a 68 percent decrease in inflammatory lesions 12 weeks after PDT treatment, when compared with a control group, but no reduction in the number of non-inflammatory lesions.

Other [research](#)  shows inflamed lesions were reduced by more than 70 percent 16 weeks after the beginning of photodynamic therapy.

However, a variety of photosensitizers, light sources, and other treatment variables are used in the studies. For this reason, a [2016 research review](#)  suggests that standard guidelines should be developed and tested for PDT therapy in the treatment of acne.

ADVERTISEMENT

## Cost and insurance

Photodynamic therapy costs vary widely depending on several factors, including the severity of the acne and the part of the country where treatment is received.

PDT can cost anywhere between \$100 and \$400 or more per session. Up to five sessions may be required at a time. Results are not permanent, so follow-up sessions will be necessary to control acne symptoms long-term. Post-treatment skincare products may also be required and may cost extra.

There is no insurance coverage for PDT.

ADVERTISEMENT



PDT reduces the activity of the acne-causing sebaceous glands beneath the skin.

Photodynamic therapy may offer benefits over other therapies. Its positives include:

- killing acne-causing bacteria on the skin
- affecting only targeted cells, helping to maintain skin integrity
- reducing the size and activity of sebaceous glands
- helping fade old acne scars
- not causing scarring
- treating other skin conditions that may co-occur alongside acne, such as age spots and [rosacea](#)
- can be used along with medication if needed, except isotretinoin (Accutane)

Another important benefit of photodynamic therapy is that it does not involve the use of [antibiotics](#) or oral retinoids, such as Accutane. This makes PDT a viable treatment for people who cannot take those medications.

PDT may be especially beneficial for people with severe acne or those whose acne has not responded well to other treatments.

ADVERTISEMENT

## What to expect before PDT treatment

ADVERTISEMENT



PDT uses topical photosensitization medicine to prime the skin for phototherapy.

Photosensitizers are prescription medications. Therefore, PDT treatment must be carried out by a dermatologist or other doctor.

Prior to treatment, the skin will be cleansed and treated with microdermabrasion or a scrub. This helps reduce [blackheads](#) and acne pustules.

The photosensitizing agent is applied to the skin for between 15 minutes and several hours, depending on the location and severity of the acne and the person's skin type. This provides adequate time for the agent to absorb into the skin cells and the sebaceous glands.

Some people may experience a stinging sensation during this portion of the treatment, which should gradually subside.

[MEDICAL NEWS TODAY NEWSLETTER](#)

### **Knowledge is power. Get our free daily newsletter.**

Dig deeper into the health topics you care about most. Subscribe to our facts-first newsletter today.

[SIGN UP NOW](#)

Your [privacy](#) is important to us

## **What to expect during PDT treatment**

Next, a medical light source is shone on the skin for 8-20 minutes. The light activates the photosensitizing agent.

At this stage of the procedure, some people may experience a stinging or burning sensation, the intensity of which varies.

ADVERTISEMENT

ADVERTISEMENT



## What to expect after PDT treatment

After treatment, the skin is extremely sensitive. People must stay indoors, out of sunlight, for 48 hours following treatment. This is because the photosensitizing agent makes skin sensitive to sunlight, so there is a risk of severe burns from sun exposure.

Sunscreen does not provide adequate protection during the period just after treatment.

People should discuss using topical acne lotions, makeup, and other skin products with a doctor following PDT. In particular, people may need to avoid products that contain oils or waxes for a period.

## Follow-up sessions

The number of treatments required depends on the person's skin type, the number of lesions they have, and how severe those lesions are.

Anywhere between two and five sessions are necessary, at 2-4 week intervals, for optimal results. Some people may notice results after a single session.

## Adverse effects of photodynamic therapy

Several adverse effects may arise following PDT, including:

- mild to moderate pain
- peeling skin
- skin redness
- crusting of the skin
- tightness
- swelling
- itching
- acne flare-up

These effects are most intense in the 48 hours following treatment and usually subside after a week.

## Long-term effects and risks

ADVERTISEMENT



more active sebaceous glands, and reducing their activity may reduce acne, the long-term effects of reducing sebum production are not known.

People with [lupus](#), porphyrin allergies, or a rare blood disorder called porphyria that causes heightened sensitivity to light, should avoid PDT.

In rare cases, some people may experience an allergic reaction to the photosensitizing solution.

Discuss the benefits, effects, and risks of PDT with a doctor before commencing therapy.

#### ADVERTISEMENT

### Tired of dealing with acne?

Zap your zits with CBDMedic. CBDMedic's Acne Treatment Medicated Cream contains acne-fighting salicylic acid to help clear up blemishes. Use code "health15" for 15% off!

SHOP NOW

Last medically reviewed on September 5, 2017

Dermatology



FEEDBACK:

#### RELATED COVERAGE

## What to know about collagen supplements

Medically reviewed by [Alan Carter, PharmD](#)

Collagen supplements can help improve skin health. Collagen is a protein that promotes skin elasticity. Most people can take collagen...

READ MORE

**Hair growth: 6 home remedies**

ADVERTISEMENT



Though common to experience some hair loss with age, home remedies and treatments can help. In this article, learn about a range of home...

READ MORE



## Get our newsletter

Keep up with the ever-changing world of medical science with new and emerging developments in health.

Enter your email

SUBSCRIBE

Your [privacy](#) is important to us

- About Us

Contact Us

Terms of Use

Privacy Policy

Privacy Settings

Advertising Policy
- Health Topics

Health Hubs

Medical Affairs

Content Integrity

Newsletters

Do Not Sell My Info

© 2004-2021 Healthline Media UK Ltd, Brighton, UK, a Red Ventures Company. All rights reserved. MNT is the registered trade mark of Healthline Media. Any medical information published on this website is not intended as a substitute for informed medical advice and you should not take any action before consulting with a healthcare professional. [See additional information.](#)





ADVERTISEMENT

