

USE RED LIGHT THERAPY FOR OPTIMAL OCULAR HEALTH

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Is red light bad for your eyes? It may come as unverified common sense to most, that projecting any source of light may not be wise but there are always exceptions.

Red light therapy for eyes is a safe, natural, and effective treatment for a surprisingly wide variety of conditions and disorders, including--you guessed it--your eyes. Unlike other powerful light sources, such as the sun, red light specifically promote proper function without any negative side effects. In fact, studies have shown that red light may protect vision and even support a reversal of age-related ocular (eye) disorders such as macular degeneration and glaucoma, as well as eye injuries.

This doesn't mean you should stare at a bright red light for an extended period, however. While doing so won't cause permanent damage, it may cause irritation. Further, your eyes don't even need to be open to reap the benefits of red light application for declining eyesight.

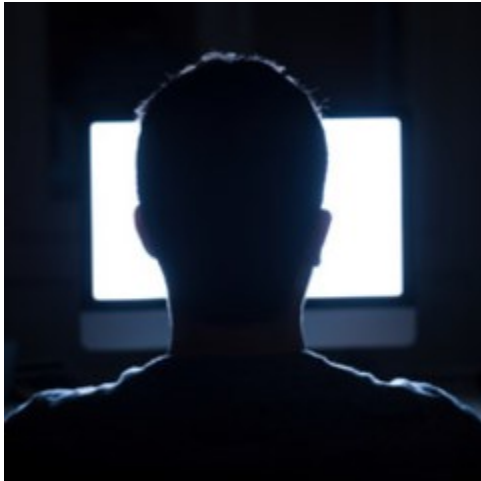
Let's discover how red light works with your eyes, and what precautions you should take when engaging in this therapy at home. But first, a bit of background on how your eyes react to light in general:

Light and Eyes

Natural sunlight appears to be colorless, but it is a virtual rainbow of colors: red, orange, yellow, green, blue, and violet. These colors combine to form a visible spectrum of light, or “white light,” which is measured in units called wavelengths. There are also invisible wavelengths of light: ultraviolet and infrared light.

The human body is powerfully affected by light. For example, the blue wavelengths of natural sunlight (the wavelengths that make the sky look blue) influence the hypothalamus, which is a small region of the brain that plays a major role in hormone production. One essential function of the hypothalamus is regulating the sleep-wake cycle—and its ability to do that is adversely affected in the digital age.

Red Light Therapy Eye Protection



Scientists also believe that continued exposure to blue light could contribute to macular degeneration, an age-related eye disease caused by damage to the light-sensitive cells in the retina. Before the digital age, people only received natural levels of any color light. Today, however, with the pervasive use of electronic gadgets, people spend hours staring at a screen, and exposure has risen dramatically. This has led to an increase in vision problems, including macular degeneration. That's why the display screens of electronic devices such as computers, laptops, TVs, tablets, and smartphones can affect your body's function. During the daytime, blue light can increase alertness and cognitive functioning, and boost mood. But at night, it can be disruptive, interrupting sleep patterns and causing insomnia.

Red light is known for its beneficial properties for the body, including the eyes. Red light (630-660nm) and near-infrared light (NIR) (810-850nm) are considered the most therapeutic wavelengths with wide-reaching applications. Light treatment uses light-emitting diode (LED) devices that shine red or NIR light into the eye: a painless and safe way to administer the therapeutic benefits of red light.

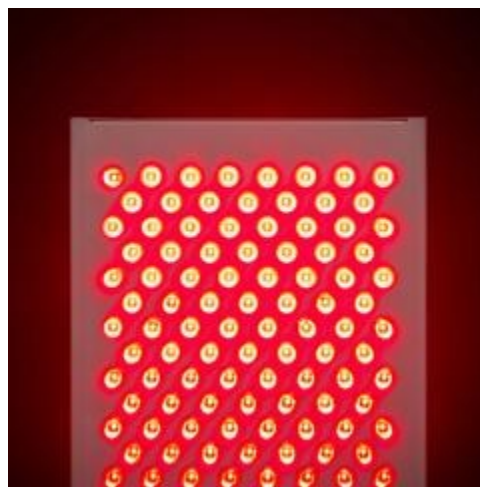
Red light is absorbed in the outermost areas of the body which makes it ideal for treating eye conditions and skin surface conditions such as chronic skin disorders and hair loss. It can still penetrate the eyelids, which are relatively thin, but won't go through large masses of bone or muscle.

On the other hand, NIR has a deeper absorption rate. It is able to penetrate bone (including the skull) where it stimulates stem cell production, reduces inflammation, and promotes healing from stroke, wounds, and diseases. Together, these two types of light work together to stimulate every part of your eyes, even if they're closed.

Like blue light, red and NIR light also absorb into the retina, but with no known adverse effects. Red and NIR photons stimulate the mitochondria (energy centers in cells) to produce more adenosine triphosphate (ATP), or cellular energy. The more energy your cells have, the better they function, repair themselves, and regenerate.

Another beneficial effect of red-light therapy is its ability to reduce inflammation, including eye inflammation. This can occur after eye injury, or even complications brought on by chronic stress, and it can destroy eye tissue. When eye tissue is damaged or destroyed, it can lead to vision deterioration or even blindness.

Can LED Lights Damage Your Eyes?



It is a recurring thought for many to ask, "is red light therapy safe for eyes" and this is a very legit concern, as it is common knowledge that most light projection on our eyes are damaging our ocular health.

According to research, red light therapy is safe for eyes, but precautionary measures must be taken. It should only be administered by a doctor and not self-administered at home.

Unlike ultraviolet (UVA and UVB) light, red light will not burn your eyes, although you may feel a gentle warmth during treatment. But because eyes are extremely photosensitive, damage could occur from too much exposure. Most research on the ocular use of red-light therapy involved two minutes of exposure daily or every other day, so this is a solid starting.

Is it Safe to Use Red Light Therapy Every Day?

Red light has no adverse effects when used as directed; however, daily use is often too much. Studies on using red light therapy to treat eye conditions point to no more than two minutes per session every other day.

Eye Conditions That Can Be Treated with Red Light

Research suggests that red light therapy is a safe, painless, and effective option for treating age-related vision loss and a variety of eye disorders. Because of that, this promising treatment method has recently caught the attention of ophthalmologists as a safe approach for treating various eye conditions.

REDUCED INFLAMMATION

As previously stated, macular degeneration is an age-related eye disease caused by damage to the light-sensitive cells in the retina. Often referred to as age-related macular degeneration (AMD), it is the leading cause of vision loss for people over 65, and one of the main causes of blindness worldwide. AMD

destroys the sharp, central vision needed to see objects clearly and do tasks such as reading text in a book or on a smartphone, or driving, especially at night.

In one long-term study of patients with AMD, researchers from Bulgaria found that red light therapy significantly improved the patients' vision. After treatment with , the patients showed dramatic improvements in visual acuity as measured by their ability to read distant text. They also showed a significant decrease in AMD-related edema and hemorrhage, which resulted in fewer broken blood vessels and less distorted vision, and they suffered no side effects. From these findings the researchers concluded that red light therapy was a highly effective and safe method for treating eye conditions associated with age.

While many factors can contribute to AMD, one contributor offers an important clue for its treatment: a decrease in production of adenosine triphosphate (ATP), which is the primary fuel of all cells in the body. ATP production declines with age and this decline is associated with increased inflammation, which spurs a decline in vision.

In a 2015 study with mice, researchers from the UK found that NIR treatment corrected low ATP levels. The researchers determined that there is a mitochondrial basis (low cellular energy) for AMD, and that low-level NIR light therapy can be an effective treatment by correcting mitochondrial function.

AMBLYOPIA

Red light therapy has shown great promise in treating the ocular condition known as amblyopia, often called lazy eye. A vision development disorder, amblyopia typically begins during infancy or early childhood and often affects just one eye. The disorder is thought to be untreatable after the "critical period," which refers to the first decade of life.

But in a 2012 clinical trial, red light successfully treated amblyopia in a group of adolescents and adults. Across the board, patients treated with red light therapy experienced a significant improvement in "visual acuity," or sharpness of vision. The study found that younger patients under the age of 18 showed the most significant gains from the treatment. But the study shows promise in using this method to treat amblyopia long past the critical period.

CORNEAL INJURY

Corneal injuries include scratches; burns; or embedded foreign bodies such as wood splinters, shards of glass or metal, or sand, and they are often excruciatingly painful and difficult to heal. During a 2016 study with rabbits,

researchers from Iran discovered that low-level NIR light (810nm) reduced corneal inflammation.

An earlier study by researchers from Bulgaria involved patients with corpus alienum corneae (foreign bodies in the eye). The study found that after the foreign objects had been removed from the participants' eyes, red light therapy shortened the time it took them to heal by 42%.

DIABETIC RETINOPATHY

Diabetic retinopathy results from abnormal levels of glucose in the retina of the eye. This can lead to the death of retinal ganglion cells, which are critical for vision. Animal studies have shown that red light therapy results in significant reduction of ganglion cell death, and reversal of diabetes-induced inflammation.

GLAUCOMA

Glaucoma refers to several age-related eye diseases that damage the optic nerve, causing vision loss over time. Currently, there is no cure for glaucoma, so the main focus of treatment is managing symptoms and preserving vision as much as possible.

Recent clinical trials have shown red light therapy to be an effective treatment for glaucoma. It's natural, safe, and doesn't come with side effects that are common with some eye drops or prescription medication, or the risks associated with surgery.

One of the main complications of glaucoma is a buildup of pressure in the eye. This can lead to ocular cell death and damage to the optic nerve, which, in turn, results in loss of vision. Research suggests that red light is particularly effective at neuroprotection, meaning it reduces the damage that pressure causes to the cornea and to the retinal ganglion cells.

Low level laser therapy is also effective at promoting ocular cell growth and enhancing ocular cells' energy production which supports the cells in successfully repairing and replicating themselves.

LEBER'S OPTIC NEUROPATHY

Leber hereditary optic neuropathy (LHON) is an inherited form of vision loss that is responsible for about 2% of all blindness. Although no study has conclusively shown that red light therapy is an effective treatment for this condition, it is known that increasing mitochondrial biogenesis (or, synthesis) may be an effective method for protecting retinal ganglion cells in patients with LHON. Several studies are currently in progress about the potential of red light to counteract the immediate consequences of mitochondrial failure.

OCULAR IMPLANTS

Ocular implants, which are prostheses for the eye, are used in cases that involve loss of an eye due to injury or disease. In a clinical trial, ocular prosthesis patients who were treated with low-level laser therapy healed up to 10 days faster than patients whose post-operative treatment only included drugs.

OPTIC NERVE INJURY

Pressure on the optic nerve, which is the nerve that connects the eye to the brain, can result in damage or death of ocular cells. In a 2010 study, researchers from Australia found that red light therapy was effective in preventing cell death, and also aided in restoring vision after optic nerve injury. Another promising finding was that red light protected cells in the vicinity of an optic nerve injury because of the cells' proximity to the injured area.

RETINITIS PIGMENTOSA

A degenerative genetic disorder that breaks down cells in the retina, retinitis pigmentosa can lead to night blindness and loss of peripheral vision. Like other degenerative conditions, mitochondrial dysfunction, and oxidative stress play an important role in the development of this debilitating disease.

In a 2012 study with rodents, researchers used red (670nm) and NIR (830nm) light to treat the creatures' eyes. The study revealed that red light treatments stimulated mitochondrial functioning, reduced oxidative stress, and prevented cell death, and this helped to preserve normal retinal function. From these promising results, the researchers determined that red light therapy can be an effective solution for the prevention and treatment of retinal diseases.

RETINOPATHY OF PREMATURITY

Premature infants with respiratory distress often receive supplemental oxygen, and this sometimes leads to retinal damage, loss of vision, and even blindness. Because red light slows down photoreceptor cell loss, it shows potential for treating this type of condition.

Red Light Eye Therapy for Vision Improvement

Research clearly shows that red light therapy has great potential for helping protect retinal cells from damage, reducing vision loss, reducing inflammation, and healing eye injuries. Red light appears to be especially effective in treating age-related ocular disorders such as macular degeneration and glaucoma. [Learn more here](#) about the many ways that red light can help to regain declining cornea function and talk to your ophthalmologist about possibly using red light to improve your vision.

FREQUENTLY ASKED QUESTIONS

Q. Do you need eye protection for red light therapy?

Ans: Although wearing eye protection is not essential but the lights are quite bright and may be uncomfortable for anyone with light sensitivity. Thus, one can wear transparent goggles to be on the safer side.

Q. Should I keep my eyes open or closed while having red light therapy?

Ans: It is not necessary to stare at the red light to reap the benefits of red-light application for declining eyesight.