

Health Benefits of Full Spectrum Lighting

Full spectrum lights display the entire wavelength of light, from infrared to near-ultraviolet. This type of lighting seeks to duplicate the light from the sun, which is considered full spectrum. All living organisms need the benefits that natural sunlight gives, but it may not always be practical or possible to be exposed to the sun's rays. These indoor lights dependably give off the full spectrum of light, regardless of the weather, time of day or atmospheric conditions. Many health benefits are associated with these lights.

1. Seasonal Affective Disorder - This condition is caused by a lack of exposure to sunlight. Symptoms include fatigue, depression, inability to concentrate and sleep problems.
2. Visual Clarity and Color Perception - Full spectrum lights imitate the sun's rays at noon. This clear, brilliant light decreases eye strain and fatigue.
3. Vitamin D Absorption - Vitamin D deficiency usually happens due to lack of exposure to the sun's beneficial rays.
4. Stimulates the Pineal Gland - This gland produces melatonin, which regulates normal sleep patterns.
5. Mental Alertness - This is a result of establishing a regular sleep pattern by the stimulation of the pineal gland.
6. Improves Mood - Generally, full spectrum lights give people a feeling of well-being.

In moderation, sunlight improves your immunity, prevents disease, increases intelligence, stimulates your metabolism, and boosts your energy level.

Specifically, the full spectrum of the sun's light rays has been shown in medical and scientific studies to:

- Positively influence your risk of getting sick (there is a preponderance of evidence suggesting that decreased sun exposure is closely related to your risk of acquiring the flu, a common occurrence particularly during the colder months).
- Lower your blood pressure (in fact, the farther from the equator you live, the higher your blood pressure).
- Even help babies sleep better at night (this is great news for you parents out there).

The problem is that getting adequate sunlight isn't easy these days. Most of us suffer from "**sunlight starvation.**" We all need about one hour of **unfiltered** sunshine each day. Unfortunately, the majority of us don't even come close to receiving that amount.

Using full spectrum lighting may provide benefits like:

- **Improved mood**

- **Enhanced mental awareness, concentration and productivity ...**
- **Superior visual clarity and color perception ...**
- **Better sleep ...**
- **Super-charged immune system ...**
- **More energy ...**
- **Reduced eye strain and fatigue with a glare-free and comfortable reading environment ...**
- **Greater learning ability and intelligence ...**

To begin with, when light enters your eyes, it not only goes to your visual centers enabling you to see; it also goes to your brain's hypothalamus.

The hypothalamus is so important to the body's functioning that it is known as **the brain's brain**. This means that it controls the part of the nervous system regulating automatic and metabolic processes in the body. The hypothalamus controls body temperature, hunger and thirst, water balance and blood pressure. It links the nervous system to the endocrine system.

Additionally, it controls the body's master gland, the pituitary, which secretes many essential hormones. The hypothalamus initiates the body's stress response, affects our emotions and controls immune functions.

Significantly, our "**body clock**" is also housed in tiny centers located in the hypothalamus. Our body clock-controlled circadian rhythms are the 24 hour cycles of light and darkness.

These light-sensitive rhythms are not an invention of modern society. They are biological constructs imposed upon us by Mother Nature.

Consequently, anything that disrupts these rhythms (like inadequate sunlight) has a far-reaching impact on our body's ability to function.

This explains why, since sunlight has been shown to be the most effective regulator of the body clock, it is also the quickest method of recovering from jet lag. (Or you can supplement sunlight with full spectrum lighting indoors.)

But it gets even more interesting. In 1998, scientists found that they could reset the body clocks of study subjects by shining bright lights onto the back of their **knees**. This demonstrates that areas of the skin are significantly affected by light, just like the retinas of our eyes. This led researchers to conclude that the body may have more than one body clock, although the eyes still seem to be the main route by which the circadian system senses light.

So why the anatomy lesson?

Well, the body clock control centers in the hypothalamus are also connected to the **pineal gland, which is considered the body's light meter**. The pineal gland secretes the important hormone melatonin.

Melatonin, the "hibernation hormone", increases with decreased light, which explains that tired feeling that comes on when it begins to get dark outside -- even if it is only 4 o'clock in the afternoon. And it also explains why decreased melatonin is found in those with insomnia (and why full spectrum light is beneficial for healthy sleep).

Conversely, **serotonin, the brain hormone associated with mood elevation, rises with exposure to bright light, and falls with decreased sun exposure**. This has been proven by many scientific studies, including one reported in the well-respected medical journal *Lancet* in 2002. This study measured blood levels of serotonin, finding that production of serotonin by the brain was directly related to the duration of bright sunlight.

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What's more, full spectrum lighting has even more benefits...

Studies have shown that poor lighting in the workplace triggers headaches, stress, fatigue and strained watery eyes, not to mention inferior work production.

Conversely, companies that have switched to **full spectrum lights** report improved employee morale, greater productivity, reduced errors and decreased absenteeism.

Why Use Full Spectrum Lighting?

No life can exist without the presence of natural sunshine. Each spring we feel the joy and energy that longer sunfilled days bring. All of nature wakes up to the added benefit of more and more natural light.

When daylight enters our eyes, it reaches the pineal gland (also known as the seat of the soul or the third eye) and activates our Endocrine system which is connected to our immune and nervous systems. The pineal gland reduces the production of the light sensitive hormone, melatonin from 100% in the night to 10% during the day. The balance of melatonin has been proven to be a crucial element in many health related studies and has been linked to estrogen production, and many cancer related diseases. Stimulating proper production of melatonin from the pineal gland is paramount to good health.

The question is how do you do this?

The answer to that has been addressed by many photobiologists as of late. "They state that exposure to Full-Spectrum light has an important influence on the endocrine system and can reduce the risks of many diseases, including cancer. These studies have shown that the retina can, when stimulated by the proper wave lengths of light, synthesize melatonin directly to the pineal gland. Malillumination can prohibit proper secretion of melatonin. So light of a proper type and intensity can be considered a nutrient.

At the beginning of the 20th century over 70% of north Americans worked outdoors thus benefiting from exposure to essential natural outdoor light. The result of this change has been severe in many cases due to spending more and more time under the type of lights which are missing that portion of the sun's spectrum which is important in triggering proper melatonin secretion.

It is estimated that over 38 million north Americans feel the effects of malillumination causing poor work conditions which can result in less energy and productiveness.

There is convincing research that poor lighting environments can produce increased depression and even result in more severe cases called S.A.D. or "Seasonal Affective Disorder." This problem increases more and more as the winter months bring shorter and shorter days. "Sunlight Starvation" also affects millions more in the form of a milder version called the "Winter Blues".

Since 1978 researchers and scientists world wide have documented the successful use of bright light therapy as a significant antidepressant. According to the Dec 8th, 1993 issue of The Journal of the American Medical Association, for many patients with S.A.D., light therapy should be regarded as first-line treatment. Light therapy is endorsed by the American Psychiatric Assoc. and the National Institute of Mental Health. Your insurance carrier may reimburse the cost of this purchase if prescribed by your therapist.

Full Spectrum lighting Helps Relieve Stress in the Workplace

For at least eight hours a day each week, most of us work under lights we would never consider putting in our homes. Headaches, eyestrain, and foggy thinking - symptoms most commonly attributed to stress or fatigue are actually the result of the antiquated fluorescent lighting still being used in 99% of offices nearly 75 years after its invention, despite overwhelming scientific evidence that it is harmful to people's health.

A recent Steelcase Workplace Survey illustrated the need for change with over half of the workers surveyed stating that poor lighting in the workplace triggers tired or watery eyes, and another third of office workers stating they suffer headaches from poor lighting.

Years of research has led to the realization that people depend on full spectrum light- the full range of rays from ultraviolet to infrared, with rainbow colors violet, indigo, blue, green, yellow, orange and red in between - for optimal health. While full spectrum light is available in abundance in the form of sunlight, the fact that the majority of the world's population now work indoors has created a need for a new source of healthy lighting.

Learning Ability

In 1973, Dr. John Ott studied the effects of natural full-spectrum lighting and regular florescent lighting on students in the first grade in Florida. Students in the natural lighting had marked improvement in attention, retention, energy and mood. Students in the florescent lighting were lethargic, moody and didn't get nearly as good grades. Replacing overhead florescent lights with natural full-spectrum light bulbs has a positive effect within a few hours of insertion.

