THE LIGHT SIDE OF HEALTH

TAKING YOUR HEALTH LIGHTLY ISN'T RECOMMENDED. PUTTING SOME LIGHT INTO YOUR HEALTH, HOWEVER...

Unless you have vampire heritage, you'd be hard pressed to argue with the fact that natural light makes us feel pretty good.

All you have to do is open the window to sunlight and your mood positively changes (yes, except for you, Mr Dracula).

Besides improving your mood and warding off stress and anxiety, natural light has several health benefits, from boosting Vitamin D in your body to improving your sleep at night.

But what about artificial illumination? People are exposed to artificial light daily — so, when is artificial light good for our health?

Experts say it depends on the quality of lighting that you are exposed to and at what time of the day. Poor quality lighting can negatively impact your health, like giving you eyestrain when you're trying to read in high-intensity lighting. Or, it can enhance your health, such as when you get enough light to ward off depression and sadness.

THE HEALTHY SIDE OF LIGHTING

Light therapy is one of the most prominent uses of artificial light for human health. Also known as phototherapy, the treatment involves exposure to a light box or lamp of 2500 to 10000 lux for 30 minutes every morning to compensate for less light during winter and in low light seasons, which can contribute to depression in some people – also known as Seasonal Affective Disorder (SAD).

Light aligns your biological clock to the circadian rhythm of your body – your internal sleep-wake cycle in a 24-hour period – which regulates sleep, digestion, hormonal activity, and other biological functions.

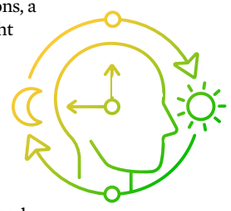
But when your circadian cycle is out of whack because of seasonal changes in daylight, it can affect your mood and can cause anxiety, sleepiness, and depression, which can escalate to other health issues.

Incredibly, recent scientific discoveries have found that in addition to setting your circadian clock, light affects other parts of the brain involved in mood regulation and cognition.

Light has been found to boost chemicals like serotonin, which regulates anxiety, making light therapy an effective treatment for seasonal depression, as well as for non-seasonal depression, like perinatal depression.

The hormone melatonin is a key component of the human circadian system. Light suppresses melatonin, keeping you alert during the day, while low light increases melatonin, causing drowsiness at night. But for night shift workers, this can be a problem. They not only experience loss of sleep but also a misalignment of their circadian cycle, which can lead to other health problems, including depression. It also impacts their alertness and performance at work.

Several studies show that exposure to intermittent bright light can help workers adjust to night shift work by adapting their circadian rhythms. This is where modern lighting technology with human-centric design is incredibly valuable. These systems – particularly those with LEDs – are flexible, and the lighting can be adjusted to meet the circadian cycles of workers.



For these same reasons, a combination of daylight and artificial lighting sources is effectively used in healthcare settings too. Studies have shown that good lighting reduces recovery time, improves sleep and mood, and reduces pain in patients.

Unlike other types of light, LEDs do not contain ultraviolet rays and are considered safe for light therapy for the skin. Using varying wavelengths and visible colours, including red and blue light, LED lights are used to treat skin concerns including acne, sun damage, hyperpigmentation, and wrinkles. It is also a safe way to speed up healing for burns, wounds, scars, and surgical incisions.

The effects of LED light therapy have been studied and essentially, it comes down to this: LED lights stimulate cellular activity, including collagen production and other factors that positively impact the skin. Emerging research also suggests that green LED light can help alleviate migraines and headaches – however, further investigation is needed to determine if green light therapy is, indeed, a viable option.

Never underestimate the power of light! ■

LIGHTING OUR FUTURE

THE LIGHT OUR KIDS ARE EXPOSED TO CAN HAVE A HUGE IMPACT IN THE LONG TERM.

The effect of lighting on the physical and emotional health of children is even more profound, especially in their critical developmental years. Children's eyes are not fully developed until their teenage years, and their pupils are larger than that of an adult. As a result, they absorb more light and are at a higher risk of circadian rhythm disruption. Anyone who's had to put an energetic child to bed has experienced this first-hand!

Unfortunately, bad lighting, incorrect colour temperature, flickering and glare can damage vision, and have a serious impact on physiology and psychology.

For young children, kindergarten is where they learn to explore the world outside of their home, a place where they seek comfort and security. Lighting, therefore, plays an important role in these spaces and optimised lighting should be an important consideration for their health

and wellbeing. Studies show that adequate illumination not only prevents the risk of developing nearsightedness but also helps prevent other health problems and disorders relating to circadian rhythm disruption. Good lighting is also beneficial for brain development and may foster the formation of new brain pathways, which can ultimately enhance learning. Studies demonstrate young children learn better in kindergarten when the lighting is adequate and incorporates natural light. This kind of dynamic lighting positively impacts their mood, emotions, and health, while brightly lit classrooms have proven to improve behaviour and reduce stress and anxiety in children of all ages.

Correct lighting, in terms of colour temperature, intensity and dynamism in classrooms, has been shown in studies to increase reading speed by 35 per cent, while reducing comprehension errors by 45 per cent. The right lighting – indirect illumination, the use of daylight, and friendly, warm white light colours – is important as it helps create a natural light environment where children, feel safe and comfortable.

Clearly, lighting is a vital element in a child's educational experience, whether they are in daycare centres or in schools. Today, lighting technology allows us the opportunity to use both variable lighting systems and dynamic lighting in school and childcare settings. Both of these options can benefit the circadian and emotional rhythms of children and improve their outcomes at school.

HOW LIGHTS HELP US SLEEP – AND WAKE UP, TOO!

When we are exposed to light in the morning, it activates the hypothalamus, a key part of the brain, to secrete cortisol, which wakes us up, keeps us alert, and suppresses melatonin.

The photoreceptors in the retinal cells of our eyes are the pathway of light to our brain and are especially sensitive to short wavelengths of light, mainly blue and green.

Natural light in the morning contains a high amount of blue light, which reduces in the late evening. Consequently, the photosensitive retinal cells signal the brain to release melatonin into our bloodstream, causing drowsiness and helping us sleep

This is how a normal sleep-wake cycle works. However, with artificial lighting and increased use of digital devices, sleep is being disrupted in most people, as natural melatonin production is suppressed by blue and green light emitted from screens and bright artificial lighting.

There are few studies that suggest red light may stimulate melatonin production in people and can improve sleep quality. A 2012 study also found that red light at an intensity of 10 lux or higher had the potential to induce sleep in mice. However, anything less than 10 lux had no effect.

Red light has longer wavelengths than blue light and can be less disruptive to sleep. Red light also has a lower colour temperature than sunlight, which means it is a "warm" colour – on the lower end of the light spectrum – and can help make the transition from daylight to nighttime easier, without disrupting sleep.

Other colours close to red on the colour spectrum, such as yellow, orange, and amber, may also promote a good night's sleep. Yellow and orange lights have little effect on the circadian rhythm and amber lights mimic the amber spectrum of candlelight and firelight, which can be soothing for sleep.

There has been some suggestion to use soft pink light for sleep, since it is a combination of red and purple light waves, but there is no research as yet to back its effectiveness.

Naturally, blue, green, and white lights are the worst for sleep as they stimulate alertness and suppress melatonin.

Even though they seem to be the better option, red and amber lights still emit a tiny amount of blue and green light. While it's not visible to the naked eye, it can still disrupt your sleep, especially if you are using these lights in your bedroom as night lights or mood lights.

Fortunately, new innovations in lighting are leading to energy-efficient LEDs that sync with your biological rhythm. You can now get your hands on specially designed lights that only emit specific wavelengths without emitting blue or green light. Since the current research on red light is limited, it's too early to conclude that it can be used to promote good sleep.