

HUMAN CENTRIC LIGHTING

PUTTING HEALTH AND WELLBEING IN A WHOLE NEW LIGHT

The human body is hardwired for light. This was true when our earliest ancestors scanned the sky for information about the time of day, and remains true today. Whether we're aware of it or not, short wavelength light plays a key role in setting our biologic clock, and fine-tuning our circadian rhythm. For those of us who spend most of our time indoors this raises important questions: Are we getting the light we need in today's office environments? And what role does light have on our sleep, performance, and overall health? Research is only beginning to flesh out answers to these vital questions.

Let's begin with a clear understanding of circadian rhythm, or our "body's clock." Circadian rhythm is defined as the internal system that regulates the times when we're most alert, and most in need of sleep. The rhythm

BLUE-EMITTING FLUORESCENT LIGHTING HAS BEEN SHOWN TO DISRUPT CIRCADIAN RHYTHMS

varies among individuals; however, adults tend to have the strongest need for sleep between 2 and 4 am and 1 and 3 pm. Knowing the impact of light (both natural and artificial) on our circadian rhythm can unlock a number of important health benefits.

One place to begin is our innate longing for natural light. This is the idea behind "Human Centric Lighting" and the perception that LED lighting most resembles the natural spectrum. Though the research is in the early stages, LED's have been found to increase motivation and commitment, raise concentration levels, minimize the effects of jetlag, and even enhance the efficacy of antidepressants. Some even believe it can combat the effects of Alzheimer's.

With the increasing data connecting natural light to the body's circadian rhythm, manufacturers are finding innovative ways to use LED's to replicate outdoor light conditions, particularly in work environments. One approach lets workers shift their color temperature throughout the day. With a range of cool, bright and warm colors, these lights mimic the natural fluctuation in daylight in order to create less disruption to a person's sleep cycle. This is a welcome shift from blue-emitting fluorescent lighting, which has been shown to disrupt circadian rhythms.

In contrast to traditional light sources, which provide constant levels of intensity, studies have begun to investigate the effect of dynamic light exposure patterns on cognitive functioning. One test compared a variable lighting regime with gradual changes in intensity (500-1,800 lx at 6,000 K) to constant office lighting at 500 lx with a lower CCT (4,000 K) during daytime. While no significant impact on performance or physiological arousal was observed, improvements in subjective vitality and fatigue were documented.

Light intensity is another area of research. Spaces with higher intensity levels can be perceived as livelier and more pleasant. In these settings, workers report feeling a boost in vitality and alertness; some are better able to sustain attention and focus. Differences arise among workers, however. Some find brighter light to be too much of a good thing. Factors such as the time of day and the work being performed also plays a role. The net takeaway? Up to a certain level, increasing intensity of illumination brings a desired level of vitality to the workplace. But there is a point of no return where workers begin to view higher light intensity as unpleasant.

For those willing to innovate, this is a time of profound change for the lighting industry. The ties between natural light and our overall health are hard to ignore. Almost every day we're finding evidence that LED's are impacting the human body for the better. How far can we continue to go? What breakthroughs are just around the corner? The answers will impact everyone—in more ways than we may have imagined.