

Blue light may fight fatigue around the clock

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Credit: xiaphias/Wikipedia

Researchers from Brigham and Women's Hospital (BWH) have found that exposure to short wavelength, or blue light, during the biological day directly and immediately improves alertness and performance. These findings are published in the February issue of *Sleep*.

"Our previous research has shown that [blue light](#) is able to improve alertness during the night, but our new data demonstrates that these effects also extend to daytime light exposure," said Shadab Rahman,

PhD, a researcher in BWH's Division of Sleep Medicine and lead author of this study. "These findings demonstrate that prolonged blue light exposure during the day has an alerting effect."

In order to determine which wavelengths of light were most effective in warding off fatigue, the BWH researchers teamed with George Brainard, PhD, a professor of neurology at Thomas Jefferson University, who developed the specialized light equipment used in the study.

Researchers compared the effects of blue light with exposure to an equal amount of [green light](#) on alertness and performance in 16 study participants for 6.5 hours over a day. Participants then rated how sleepy they felt, had their reaction times measured and wore electrodes to assess changes in brain activity patterns during the [light exposure](#).

The researchers found that participants exposed to blue light consistently rated themselves as less sleepy, had quicker [reaction times](#) and fewer lapses of attention during the performance tests compared to those who were exposed to green light. They also showed changes in brain activity patterns that indicated a more alert state.

"These results contribute to our understanding of how light impacts the brain and open up a new range of possibilities for using light to improve human alertness, productivity and safety," explained Steven Lockley, PhD, neuroscientist at BWH and senior investigator of the study. "While helping to improve [alertness](#) in night workers has obvious safety benefits, day shift workers may also benefit from better quality lighting that would not only help them see better but also make them more alert."

Researchers note that the next big challenge is to figure out how to deliver better lighting. While natural light is ideal, many people do not have access to daylight in their schools, homes or work places. In addition to improvements in daylight access, the advent of new, more

controllable lighting technologies may help enable researchers to develop 'smart' lighting systems designed to maximize the beneficial effects of [light](#) for human health, productivity and safety.

Provided by Brigham and Women's Hospital

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