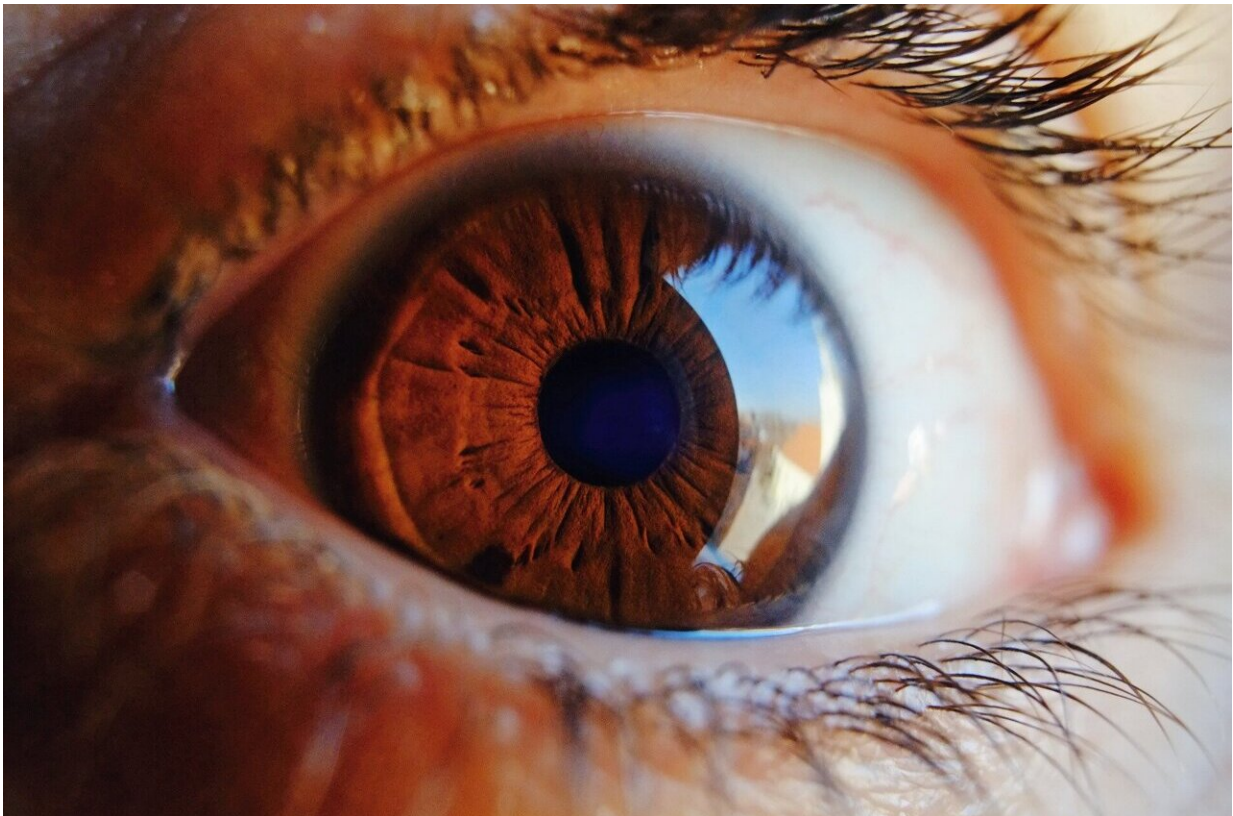


Optometry expert warns red light myopia therapy can injure retina

January 29 2024, by Laurie Fickman



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A University of Houston optometry researcher is warning against the use of low-level red light (LLRL) therapy as a method to control myopia, or nearsightedness, especially in children.

Over the last few years, LLRL has emerged as a viable [myopia treatment](#) after studies reported the treatment as effective and responsible for significant reduction in myopia progression. The company behind one of the devices reports that it is already being used to address myopia in over 100,000 pediatric patients.

But the excitement over its results as a myopia treatment may have come too soon, ahead of its proven safety.

"Based on measurements in our laboratory, it is recommended that clinicians strongly reconsider the use of LLRL [therapy](#) for myopia in children until [safety standards](#) can be confirmed," report Lisa Ostrin, associate professor at the UH College of Optometry in The College of Optometrists journal.

Ostrin reports the therapy can put the retina at risk of photochemical and thermal damage. "The safety profiles of red-light laser devices for myopia have not been fully investigated," she said.

For LLRL therapy, children are instructed to look into a red light-emitting instrument for three minutes, twice a day, five days a week, for the duration of the treatment period, which could last years.

"We found that the [red-light](#) instruments for myopia exceed safety limits," said Ostrin, whose research characterizes the [laser output](#) and determines the thermal and photochemical maximum permissible exposure (MPE) of LLRL devices. "For both LLRL devices evaluated here, three minutes of continuous viewing approached or surpassed the luminance dose MPE, putting the retina at risk of photochemical damage."

Ostrin examined two different LLRL devices, and while both instruments were confirmed to be Class-1 laser products, as defined by

International Electrotechnical Commission standards, according to Ostrin they are unsafe to view continuously for the required treatment duration of three minutes.

Class-1 lasers are low-powered devices that are considered safe from all potential hazards when viewed accidentally and briefly. Examples of Class-1 lasers are [laser printers](#), CD players and digital video disk (DVD) devices. Class-1 lasers are not meant to be viewed directly for extended periods.

"Thermal ocular injury from a laser can occur with exposures at any wavelength when the temperature change of the retina is greater than 10°C, resulting in the denaturation of proteins. With thermal damage, the lesion size is typically less than the size of the beam diameter, and the resultant scotomas are permanent," said Ostrin.

The paper is [published](#) in the journal *Ophthalmic and Physiological Optics*.

More information: Lisa A. Ostrin et al, Red light instruments for myopia exceed safety limits, *Ophthalmic and Physiological Optics* (2024). [DOI: 10.1111/opo.13272](https://doi.org/10.1111/opo.13272)

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