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Device may help alleviate tunnel vision

(Reuters)

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NEW YORK - A new approach that permits wider visual perception in patients with severely restricted peripheral field allows quicker and more accurate ability to detect objects outside their field of vision, suggest results of a pilot study.

People who suffer from tunnel vision can only see what is directly ahead of them. The condition, which is caused by such diseases as glaucoma, impairs a person's ability to perform daily activities.

Reversed telescopes, divergent lenses and other devices have been used to bring peripheral objects into view in the restricted visual field, but these devices have limited usefulness in practice.

The new approach uses a miniature camera mounted on the earpiece of a person's eyeglasses, which projects a minified outline version of a wider visual field. The extended field of view is superimposed onto the transparent spectacle lens of patients' dominant eyes.

Dr. Gang Luo and Dr. Eli Peli at Schepens Eye Research Institute at Harvard Medical School in Boston tested the device, which was designed in collaboration with MicroOptical Corporation of Westwood, Massachusetts, in 12 patients with severe tunnel vision.

After a short training session, patients sat in front of a screen, onto which visual targets were projected outside of each patient's normal field of vision. Patients started from the central point on the screen, and were allowed to move their eyes and heads to find and identify targets.

Results were "surprisingly good," Luo told Reuters Health. "Patients gave us positive feedback, saying that they could immediately see a difference compared with their own

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natural visual field."

The researchers have quite a ways to go before their device can be used clinically. "Our next step is to see if people can estimate their distance from an obstacle," Luo said. That way, they can determine if an impediment in their path is far away, or so close that they need to avoid it.

The researchers plan to test their device in a "real world" setting, by having the patients use it at home for a month, followed by further testing of speed and accuracy.

Luo added, "We have simulation videos to show the concept of augmented vision at <http://www.eri.harvard.edu/faculty/peli/lab/videos/augmented/augmented.htm>

"You can get a sense of what it would be like if you were using the device," he said.

SOURCE: Investigative Ophthalmology and Visual Science, September 2006.

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