



The Association for Research in Vision and Ophthalmology
1801 Rockville Pike, Suite 400 ■ Rockville, Maryland 20852-5622
arvo@arvo.org ■ +1.240.221.2900 (Tel) ■ +1.240.221.0370 (Fax)
www.arvo.org

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Media contact: Katrina Norfleet

+1.240.221.2924

knorfleet@arvo.org

New glasses may help minimize peripheral vision loss

Study could help reduce collisions

Rockville, Md. — Vision scientists may have discovered how to reduce pedestrian collisions in crowded and chaotic open space environments like bus terminals, shopping malls and city plazas involving individuals with partial blindness. Researchers have determined from which direction collisions with partially blind pedestrians are most likely to originate. This understanding will guide the development of new glasses that expand the sight of a person with limited peripheral vision.

The paper, titled "[The risk of pedestrian collisions with peripheral visual field loss](#)" was recently published in the *Journal of Vision*. The authors created a mathematical model to determine collision risk and compared that risk to the limited vision of 42 patients with retinitis pigmentosa.

"We found that the risk of collision is highest from pedestrians at an angle of 45 degrees from the patient's walking path," says lead author Eli Peli, OD, professor of ophthalmology at the Schepens Eye Research Institute, Massachusetts Eye and Ear, Harvard Medical School. "This means that any visual-field expanding device will be most effective if it can cover that angle."

Peli and his colleagues are developing new devices based on prism-containing eyewear they previously designed. Prisms are primarily prescribed to correct visual defects by bending light. To minimize the loss of peripheral vision, new prism-containing glasses would bend light to hit areas of the eye that still function, expanding what a patient could see.

Patients with blindness in the left or right half of one of their eyes (hemianopia) caused by a stroke, brain tumor or trauma, or patients with limited peripheral vision from retinitis pigmentosa, Usher syndrome, choroideremia and advanced glaucoma may one day benefit from the vision-expanding devices currently under development.

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The *Journal of Vision* (JOV) is an online, open-access, peer-reviewed scientific journal devoted to all aspects of visual function in humans and other organisms. The journal is published exclusively in digital form: full-text articles may be accessed for at jov.arvojournals.org. The journal encourages the effective use of color, multimedia, hyperlinks, program code, and other digital enhancements.

JOV is published by the [Association for Research in Vision and Ophthalmology \(ARVO\)](#), an organization of nearly 12,000 researchers from over 75 countries that advances research worldwide into understanding the visual system and preventing, treating and curing its disorders. In addition to JOV, ARVO publishes *Investigative Ophthalmology & Visual Science* and *Translational Vision Science & Technology*.