

New technique shows promise in restoring near vision without glasses

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By middle age, most people have age-related declines in near vision (presbyopia) requiring bifocals or reading glasses. An emerging technique called hyperopic orthokeratology (OK) may provide a new alternative for restoring near vision without the need for glasses, according to a study, "Refractive Changes from Hyperopic Orthokeratology Monovision in Presbyopes", appearing in the April issue of *Optometry and Vision Science*, official journal of the American Academy of Optometry.

For middle-aged patients with [presbyopia](#), wearing OK [contact lenses](#) overnight can restore up-close [vision](#) in one eye, according to the study by Paul Gifford, PhD, FAAO, and Helen A Swarbrick, PhD, FAAO, of University of [New South Wales](#), Sydney. "The authors have shown the feasibility of correcting one eye for near vision through OK, in which overnight contact lens wear shapes the cornea of one eye to allow in-focus near vision for reading," comments Anthony Adams, OD, PhD, Editor-in-Chief of *Optometry* and [Vision Science](#).

Overnight OK Lens Wear Restores Near Vision in One Eye

The study included 16 middle-aged patients (43 to 59 years) with age-related loss of near vision, or presbyopia. Presbyopia is caused by age-related loss of flexibility in the cornea—the transparent front part that lets light into the eye.

Orthokeratology is a clinical technique to correct vision using specially designed rigid contact lenses to manipulate the shape of the cornea. Dr Adams likens OK therapy to [orthodontic treatment](#) using braces to change the alignment of the teeth.

Drs Gifford and Swarbrick evaluated a "monocular" technique, with patients wearing a custom-made OK lens in one eye overnight for one week. To preserve normal distance vision, the other eye was left untreated.

In all patients, the monocular OK technique was successful in restoring near vision in the treated eye. The improvement was apparent on the first day after overnight OK lens wear, and increased further during the treatment week. [Eye examination](#) confirmed that the OK lenses altered the shape of the cornea, as they were designed to do.

Nightly Lens Wear Needed to Retain Correction

Vision in the untreated eye was unaffected, and all patients retained normal distance vision with that eye; essentially this gives the patient the dequivalent of 'monovision' that is usually done with contact lenses or surgery. To retain the correction in near vision, patients had to continue wearing their OK lenses every night. Dr Adams likens this ongoing treatment to the "retainer" that orthodontic patients have to wear nightly. As expected, when patients stopped wearing their OK lens after the treatment week, presbyopia rapidly returned.

By about age 45 to 50, most people need [bifocals](#) or some other form of vision correction to restore vision for reading and other up-close tasks. Alternatives for presbyopia have been introduced, including fitting a contact lens for distance vision in one eye and a lens for near vision in the other eye. This is the so called monovision, now the authors show it can be achieved without the need to wear a contact lens during the day. "However, the chief problem with monovision for many people is that their stereoscopic 3D vision is degraded and many find that hard to tolerate," according to Dr Adams.

Although overnight OK is not a new technique, it has been mainly used to reduce nearsightedness (myopia) in younger patients. The new study shows that OK is similarly effective in changing corneal shape, and achieving desired correction in near vision, in older [patients](#) with presbyopia.

The new study suggests that overnight OK lenses are a feasible alternative for correction of

presbyopia, "sufficient to provide functional near vision correction while retaining good distance visual acuity," Drs Gifford and Swarbick write. The technique is safe, with the cornea returning to its previous shape about a week after the patient stops wearing the lenses.

"This study demonstrates that OK is quite viable as a nonsurgical option for monovision that does not require wearing contact lenses during the day, although it does require 'retainer' orthokeratology contact lenses to be worn overnight," Dr Adams adds. "This possibility will certainly appeal to many people, especially since the changes in the corneal curvature of the treated [eye](#) are fully reversible."

More information: To read the article, "Refractive Changes from Hyperopic Orthokeratology Monovision in Presbyopes", please visit journals.lww.com/optvissci/FullText.aspx?thokeratology.3.aspx

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