

Evidence supports use of 'retainer' contact lenses for nearsightedness in children

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A technique called orthokeratology ("Ortho-K")—using custom-made contact lenses to shape the growing eye—has a significant effect in slowing the progression of myopia (nearsightedness) in children, according to a research review in the March issue of *Optometry and Vision Science*, official journal of the American Academy of Optometry.

Led by Xing-Rong Wang, MD, of the Affiliated Eye Hospital of Shangdong University of Traditional Chinese Medicine in Jinan, China, the researchers analyzed pooled data from previous studies of Ortho-K. "They conclude, with even greater confidence, that orthokeratology does certainly slow [myopia](#) progression and retard the axial length growth of the eye," comments Anthony Adams, OD, PhD, Editor-in-Chief of *Optometry and Vision Science*.

'Ortho-K' for Myopia in Children—Pooled Research Review

Dr Wang and colleagues analyzed seven previous studies of orthokeratology to treat myopia (nearsightedness) in children. Myopia is one of the most common eye disorders worldwide, with a reported prevalence of 20 to 50 percent in the United States and Europe, and 70 percent or higher in East Asia. Of the seven studies, five were performed in East Asia.

Ortho-K is a relatively new treatment approach, in which the child wears customized [contact lenses](#) overnight. Over time, the Ortho-K lenses act to guide eye growth—similar to the use of a dental "retainer" to straighten the teeth. Previous studies have reported encouraging results with Ortho-K in slowing myopia progression.

The seven studies included data on 435 children with mild to moderate myopia, aged six to 16 years. All studies assessed axial length, or the length of the eye from front to back. This is a key

measure of eye growth, specifically of interest related to myopia development. The researchers used a method called meta-analysis to pool the study results from the publications they reviewed.

Results Support Ortho-K's Effect in Slowing Eye Growth

As expected, with or without orthokeratology, axial length increased as the children grew. However, after two years, the increase in axial length was significantly slower in children treated with Ortho-K. The average (weighted mean) difference between groups was about one-fourth of a millimeter.

That small but significant change was consistent with the reported effects of Ortho-K in slowing myopia progression. An alternative measure of eye growth (vitreous chamber depth) showed a similar difference between groups.

For reasons that are not yet entirely clear, childhood myopia has increased to epidemic proportions in recent years, especially in Asia. Myopia persists into adulthood and, in the more severe cases, is a risk factor for eye diseases such as cataracts, glaucoma, and retinal detachments.

Eye and vision researchers have been working on new optical treatment approaches to slow myopia progression. Ortho-K is one promising approach; others include [contact lens designs that modify the focus on the peripheral retina](#).

The new review and meta-analysis supports the effectiveness of Ortho-K in producing at least some reduction in the rate of progressive myopia. "Most critically for myopia progression is the impact in retarding the growth of the eye, not just reshaping the cornea" says Dr Adams.

That's an important piece of information, because questions remain as to the mechanism by which Ortho-K works to control myopic [eye](#) growth. Dr

Wang and coauthors emphasize the need for additional studies to address this issue, as well as large-scale randomized trials to assess its long-term benefits.

More information: [DOI: 10.1097/OPX.0000000000000505](https://doi.org/10.1097/OPX.0000000000000505)

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