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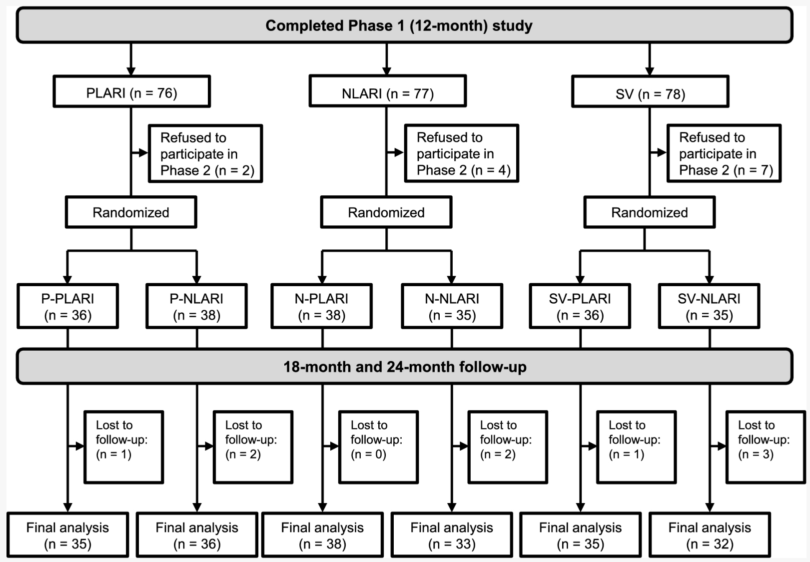
Two years, one insight: How lens design changes shape myopia control

GA, UNITED STATES, February 15, 2026 /EINPresswire.com/ -- Myopia progression in children is commonly managed using optical interventions, yet their effectiveness often declines over time. A two-year clinical study evaluated a novel spectacle lens design that integrates arrays of microscopic lenslets to control eye growth. The findings show that wearing these lenses consistently over two years significantly slowed myopia progression and axial elongation compared with standard single-vision correction. Importantly, the study reveals that switching between different lenslet designs after the first year further reduced eye elongation during the second year, even though refractive error progression remained similar. These results suggest that varying optical signals over time may help sustain the structural benefits of myopia control strategies.



Phase 2 study design and participants at each visit.

Myopia has become a major global public health concern, with rising prevalence and earlier onset among children worldwide. Excessive eye elongation during childhood increases the risk of irreversible vision-threatening complications later in life. Optical interventions—such as specialized contact lenses and spectacle lenses—have shown promise in slowing myopia progression, yet their long-term effectiveness often diminishes after the first year of use. One possible explanation is neural adaptation of the retina to persistent optical signals. Understanding whether altering these signals can maintain or enhance treatment effects remains an open question. Based on these challenges, there is a clear need to explore whether changing optical designs over time can improve long-term myopia control.

Researchers from Wenzhou Medical University and collaborating institutions reported the results of a two-year randomized clinical trial in Eye and Vision, published in 2025. The study followed 218 myopic children aged 6–12 who wore Lenslet-ARray-Integrated (LARI) spectacle lenses designed with either positive or negative power lenslets. By comparing children who continued with the same lens design to those who switched designs after one year, the researchers investigated whether altering optical cues could enhance long-term myopia control, particularly in slowing axial elongation of the eye.

Over the two-year period, children wearing LARI lenses showed significantly less myopia progression and eye elongation than those estimated to have worn conventional single-vision lenses. Average axial elongation in the LARI groups ranged from 0.33 to 0.44 mm, markedly lower than the extrapolated control group. While the protective effect on refractive error weakened during the second year, the reduction in eye elongation persisted.

A key innovation of the study was its investigation of lens switching. Children who changed from one lenslet design to the other after the first year exhibited smaller axial elongation during the second year than expected with continued single-vision correction. However, refractive error changes remained similar regardless of whether children switched designs or stayed with the same lenses.

The findings suggest that myopia control mechanisms may extend beyond traditional optical defocus theories. Despite opposite lenslet powers, both designs produced comparable retinal image modulation, potentially explaining their similar overall effects. Importantly, the results indicate that alternating optical signals may partially counteract the decline in treatment efficacy often observed with prolonged use of a single intervention.

"This study highlights an important shift in how we think about long-term myopia control," said one of the senior investigators. "Rather than relying on a single optical strategy year after year, adjusting the visual signals delivered to the eye may help sustain structural benefits, particularly in slowing eye growth. While switching lens designs did not further reduce refractive error progression, the continued suppression of axial elongation is clinically meaningful, as eye length is closely linked to future risks of pathological myopia."

The findings provide practical insights for clinicians managing childhood myopia. For children who show reduced responsiveness to a single optical intervention over time, switching lens designs may offer an additional strategy to slow eye elongation without increasing treatment burden. Although lens switching alone may not fully prevent refractive progression, it could be combined with other approaches, such as low-dose atropine or orthokeratology, for enhanced control. More broadly, the study supports a dynamic, adaptive approach to myopia management—one that acknowledges biological adaptation and emphasizes long-term structural outcomes critical for preserving lifelong eye health.

References
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