

# Center distance multifocal contacts may slow, halt myopia

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Practitioners should consider using multifocal contact lens designs that slow the progression of myopia in children, according to researchers.

The retrospective case series included 32 patients between 6 and 19 years old who were at least -0.50 D with current corrections. The subjects were fit with an extended depth of focus (center distance) multifocal soft contact lens, NaturalVue Multifocal 1 Day Contact Lenses by Visioneering Technologies Inc.

At the initial visit, 44% of patients wore spectacles, 37.5% wore spherical soft contact lenses, 15.6% wore a different soft multifocal contact lens, and 3% wore orthokeratology lenses.

Researchers found reductions in the annualized rate of myopic progression from -0.85 D per year to -0.04 D per year in the right eye and -0.90 D per year to -0.03 D per year in the left eye.

Approximately 98.4% of the children showed reduction of annualized myopic progression, and 91% showed a decrease of 70% or greater, researchers wrote. More than 80% showed complete halting of myopic progression, including 6.25% demonstrating myopic regression.

Researchers believe that the significant reduction of myopic progression was due to the higher amount of plus in the periphery associated with the extended depth of focus optics in the lens design.

“Given the high risk of ocular complications with increased levels of myopia, practitioners should consider using multifocal contact lens designs that slow the progression of myopia in children as a proactive part of their clinical practice,” Cooper and colleagues concluded. – *by Abigail Sutton*

**Disclosures:** Cooper is a consultant to VTI, Treehouse Eyes and Magic Leap. Please see the full study for all remaining authors' financial disclosures.



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Myopia has been increasing in prevalence throughout the world over the last 30 years, with incidence at younger and younger ages, leading to increased levels of high myopia. It is generally agreed, and well supported in the literature, that myopia progression can be effectively slowed with multifocal contact lenses, orthokeratology and anti-muscarinic agents such as

atropine.

With respect to multifocal contact lens control of myopia, based on the available published research, lenses that reduce peripheral hyperopic defocus are expected to be the most effective designs. The FDA has not approved any lenses for myopia control in children, but if and when they do, they will likely insist that the lenses be daily disposable. It is generally accepted that the higher the plus power, the more effective the myopia control, and the closer the plus is to the center, or perhaps the more of the retina over which the plus power is imposed, the more myopia control would be achieved.

Until recently, there have been no daily disposable center distance multifocal lenses on the U.S. market. This pilot study is the first report of the use of a novel extended depth of focus daily disposable lens for the control of myopia progression. The NaturalVue lens is a center distance lens with rapidly increasing plus power starting near the center and increasing to a reported 8 D to 11 D of relative plus power at the edge of the pupil and up to 20 D power at the edge of the optic zone. This lens design incorporates all of the features expected to increase myopia control effectiveness: daily disposable, distance center, plus power close to center and very high plus power at the edge of the optic zone.

This study reports the early experiences with this lens from 10 practices. They followed the myopia progression before and after prescribing the NaturalVue lens in 32 patients. Patients were primarily wearing single vision spectacles or contact lenses (81%), but one patient was wearing orthokeratology lenses, and five were wearing multifocal contact lenses.

What they found was that 81% of the children either halted or slightly reversed their previous myopia progression. The average progression rate in the pre-treatment phase was  $-0.85 \text{ D/y} \pm 0.43 \text{ D}$  in the right eyes, and this reduced to  $-0.04 \text{ D/y}$  after being fitted with the NaturalVue lens. The children wore this lens for an average of 11 months, with a range of 6 to 25 months.

As a retrospective study, with multiple clinicians, unmasked in any way, with only subjective refraction data reported, there are significant limitations that would prevent this study from being the definitive word on the capabilities of this novel contact lens design. The reported outcomes, however, offer some intriguing early indications that this lens may be unusually effective for the control of myopia.

Other similar studies are ongoing, including with this author, which will include objective axial length data, but only large scale, multisite, multiyear, randomized controlled clinical trials can provide the necessary evidence of its true potential to control myopia.

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**Disclosures:** Aller is a consultant to VTI and is conducting a pilot study of the NaturalVue lens. He owns or shares multiple patents in the field of myopia control with the Brien Holden Vision Institute and is a scientific and clinical advisor to TreeHouse Eyes, a dedicated myopia control practice for children. He recently released Myappia, a myopia progression and control app for Android devices.