

# Peripheral visual function with DOT spectacle lenses for myopia control

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## Purpose

Optical myopia management spectacle lens designs typically employ a central clear aperture surrounded by treatment zones, which may impact visual performance. The treatment zone in Diffusion Optics Technology (DOT) spectacle lenses is designed to softly scatter light into the eye and therefore, slightly reduce retinal contrast. In this study, long-term changes in peripheral visual acuity (VA) were evaluated after 3 years of DOT spectacle lens wear.

## Methods

One hundred and eighty-one myopic children aged 6-10 years were enrolled in a 3-year clinical trial (CYPRESS, NCT03623074) to evaluate DOT 0.2 spectacle lenses (n=88) and standard single vision control lenses (n=93).

Peripheral VA was assessed with a validated bespoke electronic system (M&S Technologies Inc, IL) at baseline, 1, 2 and 3-years. The test eye fixated on a numerical target while HOTV optotypes were presented at 25 degrees eccentricity in 4 quadrants: Superior Temporal (ST), Superior Nasal (SN), Inferior Temporal (IT) and Inferior Nasal (IN). Differences in logMAR acuity of <1.0 were not considered clinically significant.

## Results

At baseline, mean peripheral VA ( $\pm$  SD) in logMAR was similar between quadrants and treatment groups (DOT 0.2: ST  $1.01 \pm 0.34$ , SN  $0.97 \pm 0.35$ , IT  $1.08 \pm 0.33$ , IN  $1.09 \pm 0.33$ ; Control: ST  $1.06 \pm 0.32$ , SN  $1.04 \pm 0.33$ , IT  $1.09 \pm 0.32$ , IN  $1.17 \pm 0.29$ ). Throughout the study, peripheral VA improved or remained stable, with no significant differences between groups (change from baseline after 3 years – DOT 0.2: ST  $-0.16 \pm 0.35$ , SN  $-0.09 \pm 0.35$ , IT  $-0.21 \pm 0.34$ , IN  $-0.13 \pm 0.42$ ; Control: ST  $-0.08 \pm 0.38$ , SN  $-0.15 \pm 0.35$ , IT  $-0.15 \pm 0.37$ , IN  $-0.17 \pm 0.31$ ).

## Conclusion

This study shows that DOT spectacle lenses with contrast modulation mechanism for myopia control has no adverse effects on peripheral visual function in young children after 3 years of lens wear.