

Visual Impact of Diffusion Optics Technology Lenses for Myopia Control

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Aim: The SightGlass Vision Diffusion Optics Technology (DOT) spectacle lenses contain light scattering centers that diffuse light as it passes through the lens which, in turn, reduces retinal image contrast. The aim of this study was to assess the visual impact of DOT 0.2 lenses designed for myopia control.

Method: Children (12.2±1.3 years old, range 10-14, 51% female) were randomly assigned to wear DOT 0.2 spectacle (n=27) or single vision lenses (n=24) for 3.5 years across six investigational sites in North America. Binocular high and low contrast distance visual acuities, near visual acuity, reading speed, contrast sensitivity, stereoacuity and glare were assessed with the study powered to detect significant differences between the groups.

Results: Mean logMAR binocular distance high contrast (-0.09±0.02 vs -0.08±0.02, p=0.81), low contrast (0.05±0.02 vs 0.07±0.02, p=0.52) and near visual acuity with glare sources (-0.06±0.03 vs -0.09±0.03, p=0.32) were similar for DOT lenses and single vision lenses wearers (respectively). No significant differences were shown in contrast sensitivity between groups at any spatial frequency (p>0.05) and the area under the function was similar (4.68±0.66 vs 4.42±1.07, p=0.30). Mean stereopsis was similar (p=0.30) with the DOT lenses (33.2±12.5") and single vision lenses (38.1±14.2"). Functional reading speed metrics were similar in both study groups as was objectively measured head tilt during reading (p>0.05). The mean halo (glare scotoma) radius was 0.56±0.17° with the DOT lenses compared with 0.50±0.12° with single vision lenses (p=0.02), but the difference was smaller than the non-inferiority bound of 0.4°.

Conclusion: The DOT 0.2 lens is statistically non-inferior to a standard single vision lens in adapted wearers. These results indicate the DOT 0.2 lens provides an equivalent visual experience to a standard single vision lens.