

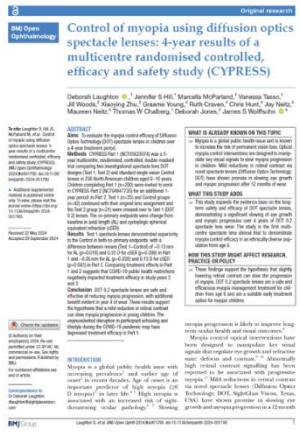


Three New Peer Reviewed Papers Expand Myopia Management Evidence for SightGlass Vision Diffusion Optics Technology™

Works in *BMJ Open Ophthalmology*, *Ophthalmic and Physiological Optics*, and *Translational Vision Science & Technology* Focus on Efficacy, Vision, and Contrast Theory

DALLAS, December 9, 2024—Three newly published peer reviewed papers are further expanding the extensive scientific evidence base of [SightGlass Vision's Diffusion Optics Technology™ \(DOT 0.2\)](#) use for myopia management with children.

“Independently, these Open Access papers each deepen knowledge of our innovative technology among the global ophthalmology and optometry communities. Collectively, they are providing eye care professionals with even more confidence in our approach and the impact that DOT lenses can have on children’s lives today and in the future,” said Marcella McParland, BSc, MCOptom, FAAO, FIACLE, FBCLA, vice president of Clinical, Medical & Professional Affairs for SightGlass Vision.



Original Research

Visual impact of diffusion optic technology lenses for myopia control

James S. Wolffsohn¹ | Jennifer S. Hill² | Chris Hunt³ | Graeme Young⁴

Abstract

To assess the visual impact of Diffusion Optics Technology™ 0.2 DOT spectacle lenses versus standard single vision lenses on primary gaze. DOT spectacle lenses contain light scattering elements that scatter light as it passes through the lens to reduce contrast.

Methods

If 54 one children (22.1 ± 1.1 years), 50% female were recruited from three sites in North America. Baseline light and low contrast distant visual acuity were measured at baseline and after 1 year of wear. Children completed four 0.2 DOT and four standard single vision lenses per group (Fig. 1). Test (0.2) and Control groups wore each lens for 1 month. At baseline and after 1 year, children completed a visual acuity test (0.2) and a reading speed test (0.2) in a random order. Children completed four 0.2 DOT and four standard single vision lenses per group (Fig. 1). Test (0.2) and Control groups wore each lens for 1 month. At baseline and after 1 year, children completed a visual acuity test (0.2) and a reading speed test (0.2) in a random order.

Results

Mean baseline distance high contrast 0.2 DOT vs. 0.08–0.02 DOD single vision lenses was 0.00 ± 0.03 logMAR (95% CI −0.06–0.12 logMAR) ($p = 0.001$). Mean baseline distance low contrast 0.2 DOT vs. 0.08–0.02 DOD single vision lenses was 0.00 ± 0.03 logMAR ($p = 0.02$). There was no significant difference between children wearing 0.2 DOT or single vision lenses across all of the 16 visual acuity tests (mean difference 0.00 ± 0.03 logMAR; $p = 0.99$) and no significant difference between children wearing 0.2 DOT lenses (12.5 ± 1.2%) and single vision lenses (10.1 ± 1.2%). Estimated reading speed (0.2) during reading $p < 0.05$. The mean saccade was 0.50 ± 0.17 with the DOT lenses and 0.48 ± 0.16 with the standard lenses ($p = 0.82$). There was no statistically significant difference in the non-inferiority bound of 0.4°. Children reported a clinically equivalent visual experience and equal visual experience to a standard single vision lens.

Keywords

myopia control, contrast sensitivity, diffusion optics technology, myopia control, myopia management, reading speed, saccade

INTRODUCTION

Myopia is a significant public health issue that affects an increasing number of people worldwide. Myopia control interventions have been developed to manage the progression of myopia. The prevalence is expected to increase to 50% by 2050.¹ Myopia control interventions include orthokeratology, high retinal contrast signalling, and lenses with negative spherical aberration (D myopia) in later life.² High retinal contrast signalling has been shown to reduce the rate of myopia progression.³ Mild reduction in retinal contrast signalling has been shown to reduce the rate of myopia. High retinal contrast signalling has been shown to reduce the rate of myopia and an increased risk of visual impairment, including amblyopia.⁴

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Diffusion Optics Technology (DOT): A Myopia Control Spectacle Lens Based on Contrast Theory

Jay Netz¹ and Maureen Netz²

Abstract

Diffusion optics technology (DOT) myopia control spectacle lenses are based on contrast theory. This innovative theory represents a radical departure from the classical approach of myopia control lenses that attempt to reduce the rate of eye growth by creating optically similar solutions for myopia control in the DOT lenses. Nevertheless, to evaluate the DOT lenses, we must understand the science behind contrast theory and compare it to current myopia control lenses. In this paper, we describe the DOT lenses and the different theories for the rational design of myopia control solutions.

Introduction

The contrast theory of myopia led to the development of diffusion optics technology (DOT). The goal is to reconcile these seemingly conflicting theories. The DOT lenses have been shown to be effective in clinical trials.¹ These lenses incorporate a light scattering element (lens) or multiple segments (DMS) spectacle lenses.² Whereas the lens or lenses are designed to increase and reduce the contrast of images across the retina. Remarkably, rather than stimulate a density conflict with the visual system, the lenses are designed to stimulate the visual system to minimize visual fatigue.³ In addition, the lenses have been thought to stimulate visual adaptation, forming an image that is reflected by the lens and focused on the retina. This is achieved by the lens (DOT) or diffusely reflected by the lens (DMS).⁴ In addition, the lenses are designed to reduce the amount of accommodation to minimize blur.⁵ Here, we will discuss the "blue" theory of myopia to emphasize how it is the mechanism of action of the DOT lenses. We will also show that the activity of contrast signalling pathways in the retina is the sole driver of eye growth in the retina during refractive development.

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Conclusion: DOT lenses are a clinically equivalent visual experience to standard single vision lenses across key measures.

Keywords:

myopia control, contrast sensitivity, diffusion optics technology, myopia control, myopia management, reading speed, saccade

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"Control of Myopia Using Diffusion Optics Spectacle Lenses: 4-Year Results of a Multicentre Randomised Controlled, Efficacy and Safety Study (CYPRESS)" (Laughton D, et al) appears in *BMJ Open Ophthalmology*.^[1] The study demonstrates that DOT 0.2 spectacle lenses are safe and effective at reducing myopia progression, significantly slowing eye growth, with additional benefit evident in the fourth year of wear.

In addition to supporting the hypothesis that a slight lowering of retinal contrast can slow the progression of myopia, the clinical trial is first multicenter study to demonstrate myopia control in an ethnically diverse population with children as young as age six. This outcome in younger patients is noteworthy, due to their fast physiological and myopic eye growth.

Published in *Ophthalmic & Physiological Optics*, the journal of The College of Optometrists, "**Visual Impact of Diffusion Optic Technology Lenses for Myopia Control**" affirms that the SightGlass Vision mechanism provides a clinically equivalent visual experience to standard single vision lenses across key measures.^[2] The study at six U.S. sites was led by Professor James S. Wolffsohn, chief scientific officer for the International Myopia Institute and head of the Aston University School of Optometry.

Wolffsohn and his co-authors emphasized that DOT lenses provided a clinically equivalent visual experience to standard single vision lenses and did not compromise reading speed, critical print

size, and near visual acuity; maintained normal head posture and contrast sensitivities; and demonstrated excellent high- and low-contrast visual acuities and stereopsis.

Written by noted vision scientists and researchers Drs. Jay Neitz and Maureen Neitz, [“Diffusion Optics Technology \(DOT\): A Myopia Control Spectacle Lens Based on Contrast Theory”](#) presents an in-depth review of the science behind DOT’s innovative methodology.^[3] Appearing in *Translational Vision Science & Technology*, the paper explores the fundamentals of contrast theory, how it compares to blur and defocus approaches, and the resulting implications for the design of optical interventions.

SightGlass Vision’s patent-protected technology has made its commercial debut in several markets, including China, the Netherlands, Israel, and Canada, as well as through preliminary market trials in other countries. The company operates as a joint venture of CooperCompanies and EssilorLuxottica. For more information, visit [SightGlassVision.com](#).

About SightGlass Vision

SightGlass Vision develops innovative technologies and science-based treatments to address the global myopia epidemic, backed by novel and comprehensive research. Its unique Diffusion Optics Technology™ is based on ground-breaking discoveries surrounding myopia progression. Spectacle lenses using its patent-protected approach incorporate thousands of light-scattering elements designed to mimic more natural contrast on the retina—a method intended to reduce myopia progression in children. The treatment has completed the three years pivotal multisite clinical study. Founded in 2016, the company now operates as a joint venture of CooperCompanies and EssilorLuxottica to accelerate commercialization opportunities and expand the myopia management category worldwide.

SightGlass Vision™ Diffusion Optics Technology™ spectacle lenses are not available for sale in the United States.

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^[1] Laughton D, et al. Control of myopia using diffusion optics spectacle lenses: 4-year results of a multicentre randomised controlled, efficacy and safety study (CYPRESS). BMJ Open Ophthalmology 2024;9:e001790.

^[2] Wolffsohn JS, Hill JS, Hunt C, Young G. Visual impact of diffusion optic technology lenses for myopia control. Ophthalmic Physiol Opt. 2024; 44: 1398–1406.

^[3] Neitz J, Neitz M. Diffusion Optics Technology (DOT): A Myopia Control Spectacle Lens Based on Contrast Theory. Trans. Vis. Sci. Tech. 2024;13(10):42.





