

New Optical Innovation for Retarding Myopic Progression in Children – the Defocus Incorporated Soft Contact Lens

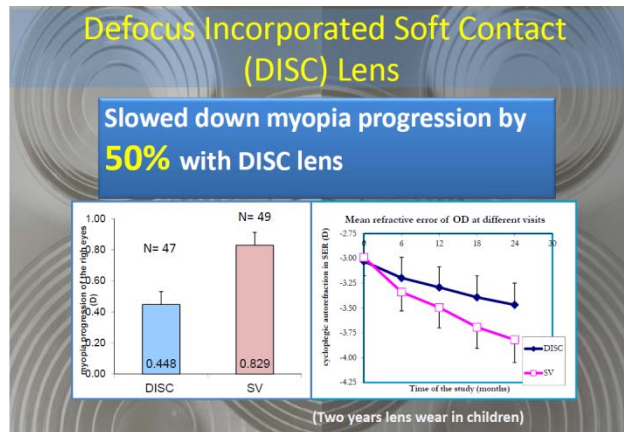
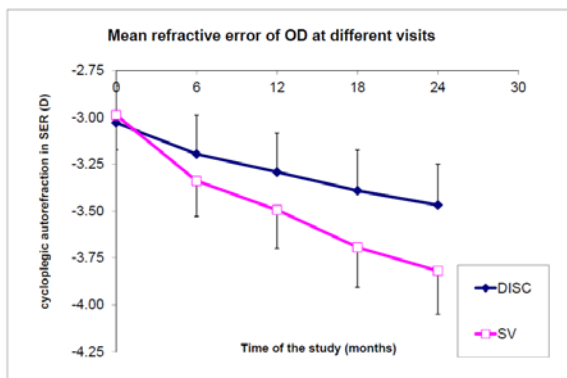
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Optometry &
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- As an Optical Aid to Provide Clear Vision & Retard Myopia Progression in Children .
- Treatment of other Refractive Errors such as Hyperopia .

Myopia (short-sightedness) is a very common eye problem and the prevalence is especially high in Asian countries. Myopic eyes are prone to a number of ocular pathologies, such as retinal degeneration and glaucoma, which can lead to severe visual impairment. The research team of our school (School of Optometry) has invented a novel contact lens, 'DISC lens', for slowing progression of myopia in children. The DISC lens is a bifocal soft contact lens with concentric rings design and comprises of a series of alternating optical zones of correcting myopia and incorporating myopic defocus ("STOP" signal to myopia). The lens can provide clear vision and constant myopic defocus simultaneously at all viewing distances. Our recent clinical trial has shown the DISC lens slowed down myopia progression by about 50% in Hong Kong schoolchildren aged from 8 to 13 years. This invention utilizes a natural homeostatic mechanism of the eye, known as "emmetropization", by which the size of the eyes is regulated by optical inputs from the environment. It is less invasive than those by pharmacological treatments, and has great potential for slowing myopia progression in children. The optimum amount of myopic defocus to arrive at stopping myopia progression is yet to be worked out.

Mean refractive error of OD for both groups at each visit (WT/day>5hrs)



Representative Publications

1. Lam CS, Tang WC, Tse DY, Tang YY, To CH. Defocus Incorporated Soft Contact (DISC) lens slows myopia progression in Hong Kong Chinese schoolchildren: a 2-year randomised clinical trial. *Br J Ophthalmol.* 2014 Jan;98(1):40-5.
2. McFadden SA, Tse DY, Bowrey HE, Leotta AJ, Lam CS, Wildsoet CF, To CH. Integration of defocus by dual power fresnel lenses inhibits myopia in the Mammalian eye. *Invest Ophthalmol Vis Sci.* 2014 Feb 14;55(2):908-17.
3. Tse DY, To CH. Graded competing regional myopic and hyperopic defocus produce summated emmetropization set points in chick. *Invest Ophthalmol Vis Sci.* 2011 Oct 17;52(11):8056-62.
4. Tse DY, Lam CS, Guggenheim JA, Lam C, Li KK, Liu Q, To CH. Simultaneous defocus integration during refractive development. *Invest Ophthalmol Vis Sci.* 2007 Dec;48(12):5352-9.



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