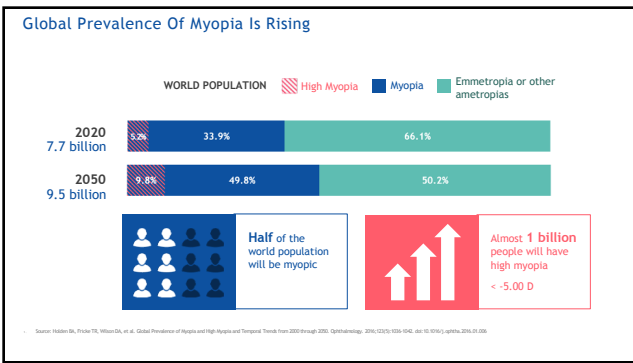
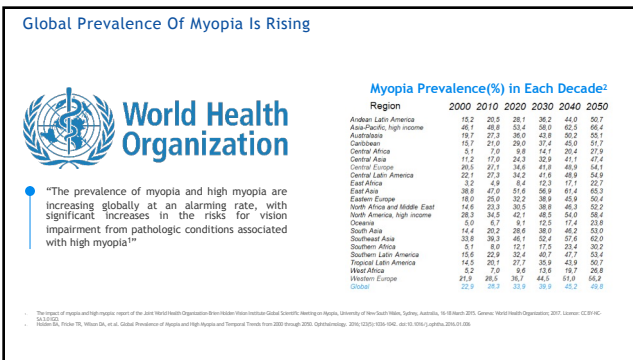




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3

Global Children's Myopia Landscape Shows Low Myopia Control Uptake

- 90% of the corrected myopic children wear single vision lenses
- Only 1-3% use myopia control solutions

~90% SV LENS
~1-3% MYOPIA CONTROL
~6% CONTACT LENS

IMI Myopia Control solutions include Essilor® (Clear) and Essilor® (Mylo). © International Myopia Institute (IMI). This report is based on data from the IMI Myopia Prevalence and Progression Survey (IMIPPP) 2021, based on their representative of children from year 2021 to year 2022, 11 to 18 years of age globally. Myopia control uptake below 6 years and stability by 6th year around 10 years. Data includes IMIPPP data for 2021 and 2022. IMIPPP data is based on a representative sample of children from 100 countries in 2021 and 2022. IMIPPP data is based on data collected from 2021 and 2022. IMIPPP data is based on data collected from 2021 and 2022. IMIPPP data is based on data collected from 2021 and 2022. IMIPPP data is based on data collected from 2021 and 2022.

4

Strategic Partnerships To Address The Myopia Epidemic In Education And Awareness

INTERNATIONAL MYOPIA INSTITUTE

Myopia Profile

Global Myopia Awareness Coalition

Advancing scientific research on myopia management

Enabling education and knowledge-sharing among eye care professionals

Strengthening awareness on childhood myopia among the public

5

Setting The Standards For Global Myopia Research And Management

Essilor is a platinum sponsor of two series of landmark white papers on myopia, published in 2021 and 2019

- 2021 Papers
 - IMI 2021 Reports and Digest - Reflections on the Implications for Clinical Practice (Chair James Wolffsohn, Aston University)
 - IMI Impact of Myopia (Chair Padmaja Sankaridurg, BWH)
 - IMI Environmental Risk Factors in Myopia (Chair Ian Morgan, Australian National University)
 - IMI Accommodation and Binocular Vision In Myopia Development and Progression (Chair Nicola Logan, Aston University)
- 2019 Papers
 - IMI Pathologic Myopia (Chair Kiyoko Ohno-Matsui, Tokyo Medical and Dental University)
 - IMI Prevention of Myopia and its Progression (Chair Jost B. Jonas, Heidelberg University)
 - IMI Yearly Digest 2019 (Chairs Monica Jong, University of Canberra, and Earl Smith, University of Houston)

Extract of 2019 Papers - Essilor co-authored: Industry Guidelines and Ethical Considerations for Myopia Control, chaired by Lyndon Jones; Co-author: Jones L, Brobe B, González-Mejome JM, et al.

Available at myopiainstitute.org

IMI chair, Professor Serge Resnikoff

"IMI creates the unique opportunity to bring together the whole spectrum of stakeholders from different professions and from around the world - which is essential not only to advance research, but also to foster the delivery of existing interventions"

6

Educating Eye Care Professionals In Partnership With Myopia Profile

- Myopia Profile and Essilor join forces to tackle childhood myopia through education and awareness

World's largest and most popular multi-platform digital suite for myopia management.

Partnership to educate and boost knowledge-sharing among eye care professionals, educational content housed on MyopiaProfile.com






7

Promoting Public Awareness Of Childhood Myopia With Global Myopia Awareness Coalition

- Essilor is a founding member of Global Myopia Awareness Coalition, an industry-wide collaborative effort on myopia

Committed to raising public awareness of childhood myopia and awareness with governments, NGOs and other health care associations

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Myopia Onset and Progression: Causes

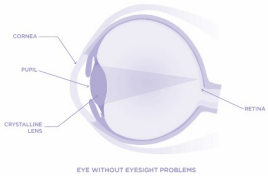
What exactly is Myopia?

Nearsightedness or Myopia
 Vision condition in which people can see close objects clearly, but objects farther away appear blurred¹.

Occurs if the eyeball is too long or if the optical power of the eye is not adapted to its length. Thus, light rays entering the eye are not focused correctly, and distant objects appear blurred.

Condition in which the spherical equivalent refractive error is ≤ -0.50 diopter (-0.50 D) in the eye when ocular accommodation is relaxed².

High Myopia
 Condition in which the spherical equivalent refractive error is ≤ -6.00 D in the eye when ocular accommodation is relaxed. A threshold of ≤ -5.00 D is also found in literature³.



¹ American Ophthalmic Association.
² Global and Local Myopia Prevalence Study Group. Global Myopia Prevalence Study. JAMA. 2019;321(12):1189-1197.
³ International Myopia Conference. International Myopia Conference. 2017. Available at: <http://www.internationalmyopiaconference.org/>.
⁴ International Myopia Conference. International Myopia Conference. 2017. Available at: <http://www.internationalmyopiaconference.org/>.
⁵ International Myopia Conference. International Myopia Conference. 2017. Available at: <http://www.internationalmyopiaconference.org/>.


9

Myopia Onset and Progression


What Factors May Contribute To Myopia?

Genetic And Parental History*


Optical And Environmental Influences*




Parental Myopia




Ethnicity



Optical factors



Time spent outdoors



Near work activities

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Myopia Onset and Progression

Refractive Status

Refractive status

- Young children are expected to be slightly hyperopic
- Lower hyperopia than expected for age can indicate risk of myopia development
- Risk factor for future myopia is if a child is +0.50D or less at age 6-7*

Age (Years)	Refraction
6	+0.75D or less
7 to 8	+0.50D or less
9 to 10	+0.25D or less
11	emmetropia

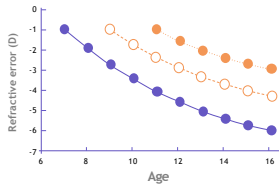
Age normal cut-offs based on an ethnically diverse U.S. study of more than 4,500 children.

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Myopia Onset and Progression

Myopia Onset: Age

- The younger a child becomes myopic, the faster they will progress, leading to higher risk of developing high myopia. Intervening at the earliest possible time significantly reduces the burden.
- Myopia onset at 7 years of age, progression rate is 0.9D/year*
- Myopia onset at 12 years of age, progression rate is 0.30D/year*



*Sankaralingam P. A meta-analysis of myopia: what are the progressors? Clin Exp Optom. 2015; 93: 494-498.

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Myopia Onset and Progression

Myopia Onset: Family History

Family history can be a risk factor for children to develop myopia


ONE MYOPIC PARENT

2-3x

TWO MYOPIC PARENTS

5-6x

Odds ratio (95% CI)



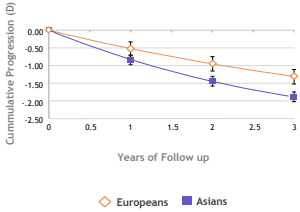
1. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 2. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 3. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 4. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier.

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Myopia Onset and Progression

Myopia Progression: Ethnicity

- High prevalence of myopia and faster progression in myopia is seen among Asian children, compared to European children.
- For Asians, rate of myopia progression was 0.87D/year*
- For Caucasians, rate of myopia progression was lower, at 0.55D/year*



Years of Follow up	Europeans (D)	Asians (D)
0	0.00	0.00
1	-0.55	-0.87
2	-1.10	-1.74
3	-1.65	-2.61

*Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier.

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Myopia Onset and Progression


Optical Factors¹

Binocular Vision

- Pre-myopes with high acc LAG²
- High AC/A ratio³
- Reduced accommodative responses

Central and Peripheral Hyperopic Defocus⁴

- Stimulates eye elongation⁵



1. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 2. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 3. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 4. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier. 5. Brown, S. et al. (2018). Myopia. In: S. Brown, S. et al. (Eds.). Myopia. London: Elsevier.

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Myopia Onset and Progression
Near Work

Myopia Onset:
Increased educational demand and near work is associated with a higher incidence of myopia^{2,4}.

Children who spent 2.2 hours in near work have higher myopia prevalence than those who spent 1.6 hours reading per day.
Children (5-6 yo) who became myopic performed significantly more near work (19.4 hr/wk vs 17.6 hr/wk).

Myopia Progression:
Greater near work may influence the development and progression of myopia.

Risk of myopia development has been associated with reading at close distances (<20cm) for continuous periods of time (>45 in) rather than total time on near activities.³



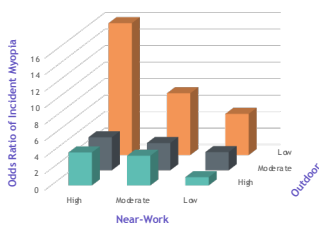
1. WHO. (2019). Myopia. In: World Health Organization. Global Action Plan for the Prevention and Control of Myopia. Geneva: World Health Organization. 2. Li, X., et al. (2015). Association between near work and myopia: a meta-analysis. PLoS One, 10(12), e0144108. 3. Li, X., et al. (2016). Association between near work and myopia: a meta-analysis. PLoS One, 11(12), e0166666. 4. Li, X., et al. (2017). Association between near work and myopia: a meta-analysis. PLoS One, 12(12), e0187777.

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Myopia Onset and Progression
Myopia Onset and Progression: Outdoor Time

Increased outdoor time is effective in preventing myopia onset. But it is not effective in slowing progression in eyes that were already myopic.

Children who became myopic spent less time outdoors compared with children who remained non myopic.
Outdoor time is recommended for all children.



1. Young, A.L., et al. (2018). Time outdoors and the prevention of myopia. Experimental Eye Research, 171, 101-109.

17



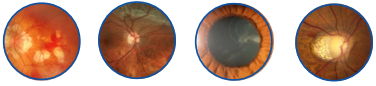
Risks associated with Myopia

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Risks associated with Myopia

Myopia Can Lead To Serious Long-term Risks, Which May even Cause Vision Impairment

Any level of myopia increases the risks of the below mentioned ocular conditions, compared to emmetropes, but the risk increases exponentially once reaching high myopia⁵.



PRESCRIPTION	MYOPIC MACULAR DEGENERATION ¹	RETINAL DETACHMENT ²	CATARACT PSC ³	GLAUCOMA ⁴
-6.00 to -9.00	40.6 x risk	21.5	5.5	2.46
-3.00 to -6.00	9.7	9.0	3.1	2.46
-1.00 to -3.00	2.2	3.1	2.1	1.65


1. Mitchell P, Mitchell S, Wang J. Prevalence and management of myopic maculopathy: a review. Optometry 2019; 90: 38-51.
 2. Ohno S, Tsubota M. The epidemiology of myopia and myopia-related ocular diseases. Optometry 2010; 81: 24-31.
 3. Ohno S, Tsubota M. Myopia and myopia-related ocular diseases. The Japanese Experience. 2006. 198-202. ISBN: 978-4-431-521-20-5.
 4. Mitchell P, Wang J, Wang J, Wang J. Prevalence and management of myopia-related ocular diseases: a systematic review and meta-analysis. Optometry 2019; 90: 38-51.
 5. Hoopes M. Myopia and myopia-related ocular diseases. The Japanese Experience. 2006. 198-202. ISBN: 978-4-431-521-20-5.

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Risks associated with Myopia

Myopic Macular Degeneration: One Of The Leading Causes Of Visual Impairment

- Myopic Macular Degeneration is one of the leading causes of visual impairment in patients with myopia¹
- Most frequent cause of visual impairment in elderly Chinese in Taiwan, Hong Kong and Japan²
- Third most common cause of blindness³



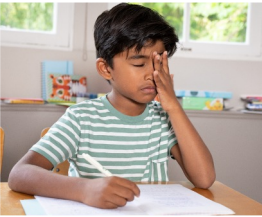
1. Mitchell P, Wang J, Wang J, Wang J. Prevalence and management of myopia-related ocular diseases: a systematic review and meta-analysis. Optometry 2019; 90: 38-51.
 2. Ohno S, Tsubota M. Myopia and myopia-related ocular diseases. The Japanese Experience. 2006. 198-202. ISBN: 978-4-431-521-20-5.
 3. Hoopes M. Myopia and myopia-related ocular diseases. The Japanese Experience. 2006. 198-202. ISBN: 978-4-431-521-20-5.

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Why Myopia Management Is Important

Level of Risks Linked to Myopia progression

- Reducing myopia by 1 D, has the potential to reduce the risk of myopic maculopathy by 40%*.
- Reducing myopia by 1 D, has the potential to reduce the risk of retinal detachment by 25%*.
- Reducing myopia by 1 D, has the potential to reduce the risk of open angle glaucoma by 20%*.
- Reducing myopia by 1 D, has the potential to reduce the risk of visual impairment by 20%*.



*Balderson M, Brennan N. Myopia Control: Why Don't I See Better? Optom Vis Sci 2019; 96: 615.

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Myopia Management and Solutions
Myopia Correction Vs. Myopia Management


Undercorrection ¹	Myopia Correction	Myopia Management
<ul style="list-style-type: none"> May lead to more rapid myopia progression^{1,2}. Undercorrection of myopia by ~0.75 D compared with full correction, shown to worsen myopia progression¹. May be due to peripheral and central blur, stimulating axial length growth. Not encouraged as it has not shown to be successful in slowing down myopia progression. ⇒ Refractive correction of progressing myopes should be updated regularly 	<ul style="list-style-type: none"> Provides good central vision. Process of correcting the refractive error with single vision spectacle lenses or single vision contact lenses. Does not delay the development or slow the progression of myopia. 	<ul style="list-style-type: none"> Provides good central vision and slows down myopia progression. Aimed to delay development or slow myopia progression to avoid or reduce the risk of potential pathologies in later life³. Includes multiple options over the long term as myopia develops May be modified depending on the result of the myopia progression

¹ Chung Y, Mitchell P, Young G. Undercorrection of the refractive error slows myopia progression. *Vis Res*. 2002;42:2703-9.
² Hoopes, J. et al. (2019) The impact of myopia management on axial length progression, under-correction and the development of pathologies in myopia. *Optometry*, 90(10), 38-45.
³ The impact of myopia management on axial length progression, under-correction and the development of pathologies in myopia. *Optometry*, 90(10), 38-45. 16 March 2019.


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Myopia Management and Solutions
Interventions For Myopia Management


The progression of myopia may be slowed down with myopia management solutions, reducing the number of sight-threatening eye diseases in the years to come



Spectacle Lenses
Progressive Lenses/Bifocals
Peripheral Defocus lenses
Dual Focus lenses
Spectacle lenses with aspherical lenslets



Contact Lenses
Multifocal CL
Extended Depth of Focus CL
Dual Focus CL
Orthokeratology




Pharmaceuticals
Atropine

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Myopia Management and Solutions

Management Solutions: Advantages And Disadvantages




Spectacle Lens

Advantages

- Simple
- Non-invasive
- No adverse effects
- Skills already established

Disadvantages

- Aesthetics issue in bifocals




Contact Lens

Advantages

- Wider field of vision
- Excellent in cosmetics
- Sports
- Stable on the eye

Disadvantages

- Lower quality vision (ghosting)
- Risk of infection
- Not suitable for dry eyes
- Difficulties in insertion
- Parental supervision




Orthokeratology

Advantages

- No need to wear correction during day
- Wider field of view
- Sports

Disadvantages

- Higher risk of microbial keratitis than daily wear CL
- Lower quality of vision with large pupil
- Limited prescription range than multifocal CL
- Skills update by practitioner
- Parental supervision



Atropine

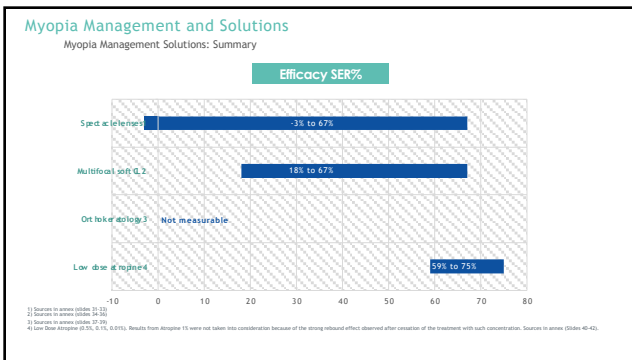
Advantages

- Likely to have good VA when used with SV correction

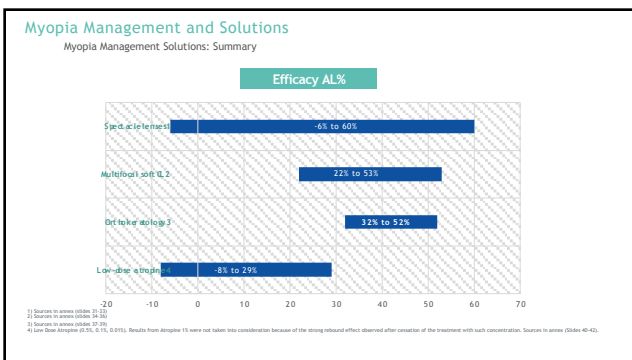
Disadvantages

- Duration of treatment
- Dosage and long-term effects are still not known
- Can dilate pupil and reduce accommodation with higher concentrations
- Limited availability
- Rebound effects with high dosage

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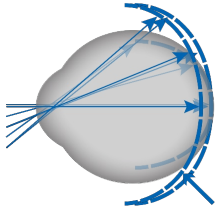


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CORRECT MYOPIA WITHOUT CONTROLLING PROGRESSION

One theory of myopic progression suggests peripheral hyperopic blur signals eye growth.²⁴

Traditional SV (ophthalmic and contact) lenses eliminate foveal blur- but induce peripheral hyperopic blur.²⁵



Traditional Myopic Correction (peripheral hyperopic blur)

24 Carl L. Smith Jr. OD, The Charles F. Prentice Award Lecture 2010: A Case for Peripheral Optical Treatment Strategies for Myopia. Optom Vis Sci. 2011 September; 88(9):1029-1044.
25 Walker JJ, et al. A randomized trial of the effect of soft contact lenses on myopia progression in children. Invest Ophthalmol Vis Sci. 2008 Nov;49(11):4702-6.

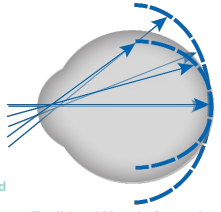
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CORRECT MYOPIA WITHOUT CONTROLLING PROGRESSION

SV LENSES: Some studies suggest traditional SV lenses accelerate the progression of myopia vs. leaving the child uncorrected.²⁶

	Uncorrected	Fully Corrected
Progression @ one year	-0.39D	-0.58D
Progression @ two years	-0.75D	-1.04D

(AOU = -1.31D)*



Traditional Myopic Correction (peripheral hyperopic blur)

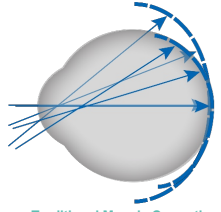
26 Yun-Yun Sun, et al. Effect of uncorrected versus full correction on myopia progression in 12-year-old children. Arch Clin Exp Ophthalmol. Published on-line 28 October 2010. DOI 10.1007/s10617-010-0028-1

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ENHANCED SV LENSES

Enhanced SV lenses feature a “boost” of plus power in the bottom of lens- reducing hyperopic blur (and in some cases creating myopic blur) in the superior periphery.

Do They Work? **NO**



Traditional Myopic Correction (reduced hyperopic blur)

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Axial length is where it is at
 % issues: Myopia faster=younger
 Myopia rates vary based on ethnicity

.1mm equals .25D
 DIMS .55D .32mm 2 year
 HALT .80D .35mm 2 year, 1.0D 3 year
 SGV .77D .27mm 2 year
 Ortho K .25mm/ia .32mm
 Atropine 0.02% .32D .16mm
 Atropine 0.01% .23D .09mm
 Atropine .01% avg .07mm AVG
 MiSight .67D and .28mm 3 year

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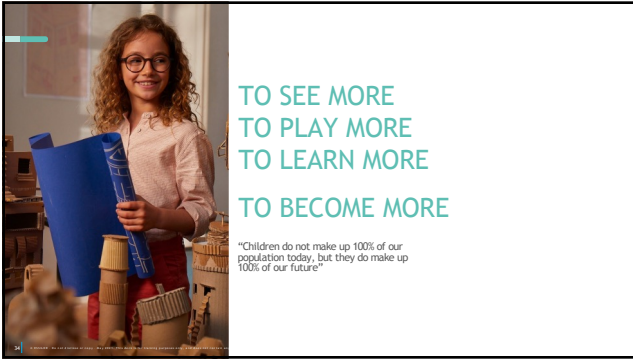
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Myopia Management and Solutions

Spectacle Lens

<p>Advantages</p> <ul style="list-style-type: none"> Simple Non-invasive No adverse effects Skills already established <p>Disadvantages</p> <ul style="list-style-type: none"> Aesthetics issue in bifocals 	<ul style="list-style-type: none"> 9 mm Central distance Magic is in the rings Follow Up Accuracy 	<ul style="list-style-type: none"> Monocular PD OC VS. RX and Axial Length -1.37 and 26.45 mm New ways/historic skill Your skills are key
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