

Myopia Management: New Strategies to Prevent Nearsighted Progression

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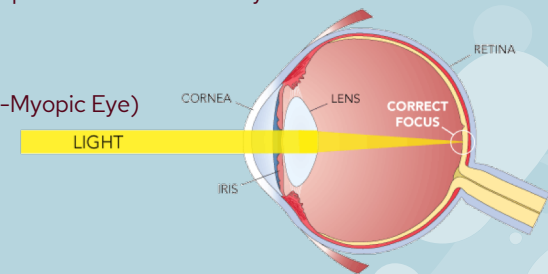
What is Myopia?

Myopia is also known as nearsightedness

What is Myopia (Nearsightedness)?

- The inability to see clearly at distance
- Typically develops in childhood as the eye is growing

Emmetropia (Non-Myopic Eye)

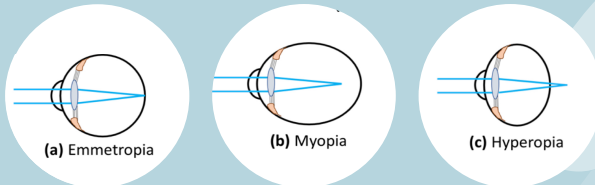


<http://www.eyesspectrometry.com/education/refractive-errors.html#undefined2/>

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What is Myopia (Nearsightedness)?

- The result of an eyeball that is too long or a cornea that is too curved
- Blurred vision results from light rays focusing in front of the retina (light-sensitive cells) rather than directly on the surface



<https://webvision.med.utah.edu/book/part-xiv-refractive-errors/the-science-behind-myopia-by-brithany-j-carr-and-william-k-delf/>

What is Myopia (Nearsightedness)?



<https://www.allaboutvision.com/parents/myopia-facts-infographic.htm>

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Causes of Myopia?

What Causes Myopia?

- Myopia can be attributed to GENETIC and/or LIFESTYLE factors

GENETIC FACTORS:



1 in 2

BOTH parents
are myopic



1 in 3

ONE parent
is myopic



1 in 4

NEITHER parent
is myopic

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What Causes Myopia?

- Myopia can be attributed to GENETIC and/or LIFESTYLE factors

LIFESTYLE FACTORS:



Insufficient time outdoors



Increased time spent reading & working/playing on digital devices



Time spent in poor lighting conditions

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Insufficient Time Outdoors



- The average American child **spends 4-7 minutes/day** in unstructured *play outdoors* and **over 7 hours/day** on a screen

Benefits of Outdoor Play:

- It promotes creativity and imagination
- It teaches responsibility
- It provides different stimulation
- It gets children moving - improves fitness and gross motor skills
- It build confidence
- It reduces stress and fatigue - reduces depression

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Screen Time Statistics



- On average, preschool children spend 32 hours a week with screen media.
- Screen time for children under 3 is linked to irregular sleep patterns and delayed language acquisition.
- Direct exposure to TV and overall household viewing are associated with increased early childhood aggression.
- More time preschool children spend with screens = less time spent engaged in creative play - the foundation of learning, constructive problem solving, and creativity.**

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Screen Time Statistics



- Time spent with screens is associated with **childhood obesity, sleep disturbances and attention span issues.**
- Children with **2 or more hours of daily screen time are more likely to have increased psychological difficulties**, including hyperactivity, emotional and conduct problems, as well as difficulties with peers.
- Adolescents who watch 3 or more hours of television daily are at especially high risk for poor homework completion, negative attitudes toward school, poor grades, and long-term academic failure.

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What Can We Do?



- Turn off screens **1-2 hours before bed** time
- **20/20/20 Rule** (American Optometric Association)
- Designate **media-free times** together, such as dinner or driving, as well as **media-free locations** at home, such as bedrooms. (American Academy Pediatrics, 2016)

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What Can We Do?



- **Children 18-24 months:** If parents want to introduce digital media, choose high-quality programming, and watch it with the children to help them understand what they're seeing.
- **Children 2 – 5 years:** Limit screen use to 1 hour per day of high-quality programs. Parents should co-view media with children to help them understand what they are seeing and apply it to the world around them.
- **Children 6+ years:** Place consistent limits on the time spent using media, and the types of media, and make sure media does not take the place of adequate sleep, physical activity and other behaviors essential to health.

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Is the Prevalence of Myopia Increasing?

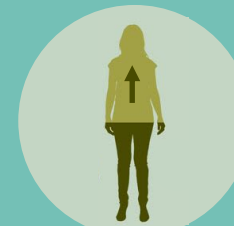
Myopia is impacting more of the population

1970s



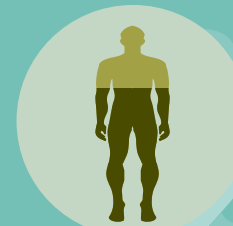
25%

2000s



42%

By 2050



58%

<https://www.allaboutvision.com/parents/myopia-facts-infographic.htm>

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Who is at Risk?

How do you know if your child needs a myopia management program?

Myopia Risk Assessment

LOW

> +0.75D at age 6 or younger

Recommendations:

- Limit hours spent on close work outside of school
- Encourage at least 2 hours of outdoor play per day

MEDIUM

≤ +0.75D at age 6 or younger

Recommendations:

- Monitor for shifts in prescription, especially in a short period of time
- Limit hours spent on close work outside of school
- Encourage at least 2 hours of outdoor play per day

HIGH

confirmed myopia at school age

Recommendations:

- Consider enrolling in a myopia management program
- Limit hours spent on close work outside of school
- Encourage at least 2 hours of outdoor play per day

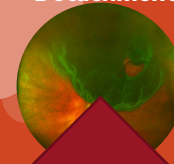
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Implications of Myopia

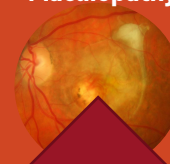
Long-term Implications of Myopia

Retinal Detachment



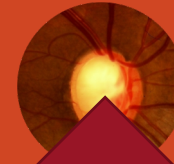
Each diopter = 30% increased risk

Myopic Maculopathy



Each diopter = 67% increased risk

Glaucoma



Each diopter = 20% increased risk*

*open-angle glaucoma

Cataracts



Each diopter = 20% increased risk*

*posterior subcapsular cataract

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4444444/>
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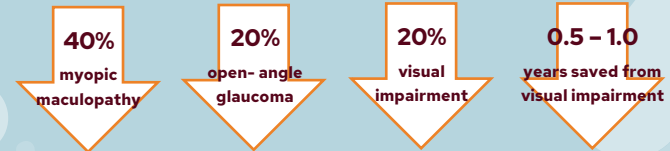
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Benefits of Myopia Management

Visual Impairment & Myopia

- Each diopter less of myopia **reduces visual impairment by 20%**

- **Slowing myopia progression by 1 diopter:**



Myopia Management Program Benefits

- Minimize the long-term impact of myopia

SLOWING
the worsening of
nearsightedness

IMPACT
on eyeball
development
and elongation

**RISK
REDUCTION**
in myopic health
complications

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Myopia Management Programs

Programs at Hellerstein & Brenner Vision
Center, PC

Multi-Focal/Anti-Fatigue Design Spectacles in Myopia Control

Treatment: Continued wear of spectacles with near/computer add.



- Great for child who are too young to wear contact lenses
- Flexibility with higher myopic and astigmatism corrections



- Reduced efficacy compared to other options (about 20% reduction in progression with wearing bifocal)

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***On the Horizon

- Many groups/organizations are collaborating resulting in:
 - More research
 - More technology
- *SightGlass' Diffusion Optics Technology*
 - New lens designed to lower contrast in a focus-independent manner while still providing excellent visual acuity
 - Different from traditional bifocal or progressive lenses

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Atropine in Myopia Control

Treatment: One drop 0.01% atropine in each eye at bedtime. Wear typical vision correction during the day.



- Does not require use of contact lenses (maybe better suited for younger patients or those not wanting to wear contacts)
- Not limited by prescription amount
- Can be used in combination



- Compounded medication may have higher cost
- Nightly use of eye drops
- Some light sensitivity and reduction in focusing flexibility (has improved with lower concentrations)
- Requires motivation

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Orthokeratology Lenses in Myopia Control

Treatment: Wear custom hard lenses overnight for corneal reshaping, at least 8 hours.



- Free of glasses and contacts during waking hours
- Great for sports including water sports



- Limited by prescription (up to -6.00D nearsightedness and -1.75D astigmatism)
- May have fluctuation in visual clarity (particularly end of day)
- Requires adequate wear time overnight, consistent schedule

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Soft Multi-Focal Contact Lenses in Myopia Control

Treatment: Wear soft contact lenses throughout the day for vision correction.



- Freedom from glasses*
- More effective control than single vision contact lens correction
- Better for sports and athletics

* All contact lens wearers should have a back-up pair of glasses.



- Increased expense compared to single vision distance contacts
- Limited treatment for astigmatism (up to -0.75 D)
- Previously best options were monthly disposable lenses higher risk of keratitis or infection

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Brilliant Futures™ Myopia Management Program

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Brilliant Futures™ Myopia Management Program

- Comprehensive approach focused around **MiSight® 1 day contact lenses** (daily wear, single use contact lenses)
- Only FDA-approved contact lens for slowing the progression of myopia in children who initiated wear between the ages of 8 to 12.

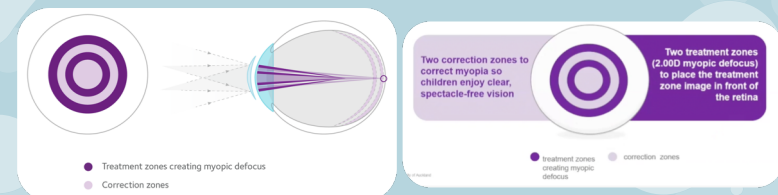


<https://coopervision.com/practitioner/our-products/misight-1-day/misight-1-day>

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MiSight® 1 Day Technology

- MiSight® 1 day with **ActivControl™ Technology** helps slow the elongation of the eye and myopia progression, while fully correcting refractive error



<https://coopervision.com/practitioner/our-products/misight-1-day/misight-1-day>

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Prime Candidates for MiSight® 1 Day

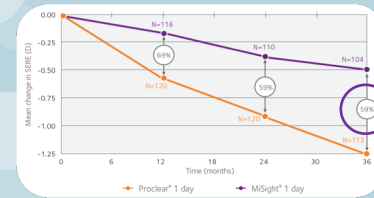
- Indicated for Treatment:
 - Initiation of treatment for children between the ages of 8-12
 - Refractive error (prescription): Between -0.75D to -4.00D of nearsightedness with ≤ -0.75 D of astigmatism

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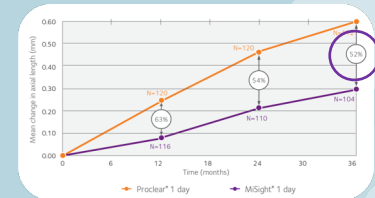
Effectiveness of MiSight® 1 Day

- Results of three-year clinical study:

Reduced myopic prescription progression by **59%**



Reduced axial length by **52%**



<https://cornevision.com/products/our-products/mi-sight-1-day/mi-sight-1-day>

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of MiSight® 1 Day

Easy for Children to Handle

90%

- Of children preferred compared to glasses
- Of children could insert & remove on their own
- Of parents noted their children were happy (noted benefits such as comfort, vision, ease of use, & freedom from glasses)

Able to Focus on What Matters

9 out of 10

- Report seeing well while doing school work
- Report seeing really well while playing outdoors
- Report seeing well while looking at computer/playing video games



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Should you be Considering a Myopia Management Program for your Child?


- How old is your child?
- Is your child already myopic (nearsighted)?
- How old was your child when they were first diagnosed with nearsightedness?
- Has your child's prescription been changing at the past few check-ups?
- How many of your child's parents are nearsighted?
- How many hours per day does your child spend outdoors?
- How many hours per day does your child spend on close work (reading, tablet use, computer use, writing/coloring/drawing, etc)?

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THANK YOU FOR ATTENDING!

www.hbvision.net/about/events
 [hellerstein.and.brenner.vision](https://www.instagram.com/hellerstein.and.brenner.vision)
 [HellersteinBrennerVision](https://www.facebook.com/HellersteinBrennerVision)

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Join us for future talks

CONCUSSION: HOW VISION IS IMPACTED
 March 16, 2021



SPORTS VISION TRAINING: IMPROVE YOUR SPORTS GAME
 April 2021



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Resources

- All About Vision - <https://www.allaboutvision.com/parents/myopia-facts-infographic.htm>
- American Academy of Pediatrics - www.aap.org/en-us/Documents/digital_media_symposium_proceedings.pdf
- American Optometry Association - <https://www.aoa.org/patients-and-public/caring-for-your-vision/protecting-your-vision/computer-vision-syndrome>
- Brilliant Futures™ Myopia Management Program - <https://coopervision.com/our-company/news-center/press-release/misight-1-day-fda-approval>, <https://coopervision.com/myopia-management>, https://coopervision.com/sites/coopervision.com/files/pi01082_misight_pi_us_rev_c.pdf
- Childmind.org - <https://childmind.org/article/why-kids-need-to-spend-time-in-nature/>
- Johnson & Johnson Vision - Managing Myopia: A Clinical Response to the Growing Epidemic
- Review of Optometry - <https://www.reviewofoptometry.com/article/slowing-myopia-progression-in-children>
- Screenfree.org - www.screenfree.org

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