

# Issue At A Glance:

## Increasing Rates of Pediatric Myopia: Screen Use, Outdoor Play, and Prevention

*As children return to classrooms, homework, and screen-based learning, this brief reviews rising pediatric myopia, how outdoor play may reduce risk, and why early prevention matters for long-term eye health.*

### Introduction

As children return to school, they spend more time on school-related screen usage, completing homework and using digital learning devices. Myopia, or nearsightedness, often begins in childhood and can worsen as the eye grows.<sup>1</sup> Genetics affect susceptibility, but prolonged near work, screen exposure, and limited outdoor time are also associated with increased risk.

Myopia rates have risen especially rapidly in some populations. Among 12-year-olds in Taiwan, for example, myopia increased from 30.7% in 1983 to 76.7% in 2017.<sup>2</sup> Globally, about 36% of children and adolescents were estimated to have myopia in 2023, with more than 740 million projected to be affected by 2050.<sup>3</sup>

Earlier onset leaves more time for progression, and greater severity is linked to retinal detachment, open-angle glaucoma, cataract, and myopic macular degeneration.<sup>4</sup> School-based studies suggest that increased outdoor time can reduce the onset of myopia, although the benefit for slowing myopia that has already developed is less certain.<sup>5,6</sup> Outdoor play does not replace screening, glasses, or treatment, but schools and families can make outdoor time part of daily routines.

### Recommendations for Eye Health

|                          |                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Prior to School</b>   | Arrange an eye exam for squinting, blurry vision, close viewing, or family history of myopia. <sup>1,7</sup>        |
| <b>During School Day</b> | Encourage outdoor recess, physical education, and outdoor learning whenever possible. <sup>5,8</sup>                |
| <b>After School</b>      | Break up homework and recreational screens with outdoor time and breaks to look off to the distance. <sup>8,9</sup> |
| <b>Year Round</b>        | Monitor prescription changes and seek follow-up care if vision worsens. <sup>1,7</sup>                              |

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# Indoor Time, Screen Use, and Pediatric Myopia

Myopia develops when the eye grows too long or focuses light too strongly, causing distant images to focus in front of the retina.<sup>1</sup> It often begins during the school years and may worsen as the eye continues to grow. Earlier onset leaves more time for progression and increases the likelihood of high myopia, which carries greater long-term eye risks.<sup>4</sup>

School routines can combine long periods indoors with sustained reading, homework, and screen use. A 2025 systematic review of 45 studies found that each additional daily hour of digital screen time was associated with 21% higher odds of myopia, with the steepest rise between one and four hours. Of note, the evidence was rated low certainty because most studies were cross-sectional and differed substantially in how screen exposure and myopia were measured. The findings, therefore, show an association, not a causal relationship between screen use and myopia.<sup>10</sup>

Randomized school trials provide stronger evidence for outdoor time. In a cluster-randomized trial of 6,295 children, children at schools assigned 40 additional outdoor minutes per day had a 16% lower adjusted two-year incidence of myopia than children at control schools.<sup>5</sup> A 2024 Cochrane review similarly found that programs increasing outdoor time may reduce new-onset myopia, although evidence for slowing progression after myopia develops was less certain.<sup>6</sup> During COVID-19 home confinement, studies documented less outdoor time, more screen use, and myopic shifts. These natural experiments support concern about changes in children's daily routines but cannot isolate the effect of any single behavior.<sup>11,12</sup>

## Emerging School Policies for Screen Time

Various screen-time policies for schools exist currently. For example, Iowa caps K–5 digital instruction at 60 minutes daily.<sup>14</sup> Utah requires age-based model policies, including largely screen-free K–3 classrooms.<sup>15</sup> In California, Los Angeles Unified School District approved developmentally appropriate guardrails on instructional technology for all grade levels, and San Diego Unified School District approved targeted streaming, gaming, and device restrictions.<sup>16,17</sup>



# Keeping Children's Eyes Healthy During the School Year

## Outdoor Time as Prevention

Outdoor time is best supported as a way to delay myopia onset. The International Myopia Institute recommends at least two hours outdoors daily, while acknowledging uncertainty about the best light intensity and timing.<sup>8</sup> The benefit appears to be related to brighter outdoor light rather than vigorous exercise. Recess, physical education, walking, and outdoor lessons can all add to a child's daily total outdoor light exposure. It is important to note that it does not treat myopia that is already present.

## Managing Screen Time and Near Work

Digital learning is part of school in the current educational landscape. The goal is to use screens when they add instructional value. Schools and families can reduce very close viewing, interrupt long periods of reading or device use, and encourage children to shift focus to farther distances between tasks.<sup>9,10</sup> Research has not established a single break schedule that prevents myopia. Policies should focus on avoiding prolonged, unnecessary use rather than promising that one routine will remove the risk.

## Vision Screening and Referral

Children who squint, move close to a screen, complain of blurry distance vision, or struggle to see the board should be evaluated.<sup>1</sup> An abnormal screening result should be followed by a complete eye examination.<sup>7</sup> If myopia is confirmed, an eye care professional can prescribe correction, monitor progression, and discuss treatment options as appropriate.

## Equity and Access

Children do not have equal access to safe outdoor spaces or eye care. Traffic, neighborhood safety, park access, school facilities, transportation, and parent work schedules can shape how much time a child spends outdoors.<sup>13</sup> Cost, insurance, language, and appointment availability may also affect follow-up after a failed screening. School-based outdoor time and referral tracking may be especially important where families have fewer alternatives. Equitable policies that improve access—especially for vulnerable populations—is important to ensure that children receive sufficient and timely care for their eye health.

## School and Policy Opportunities

Schools can protect recess and physical education, offer outdoor learning periods, and limit passive video or non-instructional gaming. Screen-time policies should preserve assistive technology, disability accommodations, required assessments, and instruction that benefits from digital tools.<sup>14,15</sup> Iowa and Utah have adopted statewide approaches, while in California both Los Angeles and San Diego have taken school district level approaches, each offering different models for reducing nonessential screen exposure (even if these policies were not enacted specifically to prevent myopia).<sup>14–17</sup> School districts can connect these policies with back-to-school eye health information, school-based screening, referral tracking, and practical guidance for families. Increasing awareness regarding children's vision and eye health and promoting preventive measures are important approaches.

## Conclusion

Pediatric myopia prevention should be part of routine back-to-school planning. The strongest intervention evidence supports more outdoor time to help delay myopia onset.<sup>5,6,8</sup> As such, schools should protect recess and outdoor learning, limit nonessential screen use, and help families recognize symptoms such as squinting, distance blur, or difficulty seeing the board. These measures should complement, not replace, vision screening, comprehensive eye examinations, corrective lenses, and clinician-directed myopia management.

Because earlier onset leaves more years for progression, delaying onset may reduce the chance that a child develops high myopia and its associated long-term eye risks.<sup>1,4</sup> Outdoor time is not a complete solution, but it is one practical step that schools and families can take during the school year.

## References

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## Did you know?

Children should spend at least two hours outdoors each day to help delay the onset of myopia.<sup>8</sup>

People with high myopia have an estimated five to six times greater risk of retinal detachment than people with low myopia.<sup>18</sup>



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