



# Myopia Causes - Is Your Child At Risk?

By Gary Heiting, OD

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Parents — especially those who are nearsighted and had to wear glasses throughout childhood — are often concerned about the causes of myopia and whether their children are doomed to being nearsighted, too.

If this sounds like you, try not to worry too much.

Myopia is a common refractive error, it's easily treatable with contact lenses as well as eyeglasses, and it's not strictly hereditary.

Also, nearsightedness typically does not affect a child's academic performance or hold them back in any way. In fact, there's evidence that nearsighted children tend to perform better in school than their counterparts with normal eyesight, farsightedness or astigmatism.

## What Causes Myopia In Children?

Although the exact reason why some children become nearsighted and others do not is not fully understood, it appears heredity is a factor, but not the only one.

In other words, if both parents are nearsighted, there is a greater risk their children will be nearsighted, too. But you can't predict who will become nearsighted by simply looking at their family tree.

In my case, my parents and both my older brothers had perfect vision. I'm the only one in the family who is nearsighted. Go figure.

I loved to read when I was a kid (still do); my brothers, not so much. Some researchers think focusing fatigue from excessive reading or holding a book too close to your eyes for extended periods can increase the risk for myopia in children. But nobody knows for sure.

The cause (or causes) of myopia may remain a mystery, but researchers recently have discovered something about the progression of nearsightedness that is very interesting: conventional glasses and contact lenses that have been prescribed for years to correct myopia may actually increase the risk of myopia worsening throughout childhood!

Many of these same researchers are investigating new lens designs to see if they can develop contact lenses or eyeglasses that can control myopia and halt or slow the progression of nearsightedness in children.

**SEE ALSO: [Should Your Teen Wear Contacts? Click here to learn more >](#)**

## How To Reduce Your Child's Risk Of Myopia

This might sound glib, but perhaps one of the best things to tell your child to reduce his or her risk of myopia is, "Go outside and play!"

A number of recent studies have found that spending more time outdoors may help prevent or reduce the progression of nearsightedness in children. Among them:

- In August 2008, researchers in Australia published the results of the large Sydney Myopia Study of the effect of time spent outdoors on the development and progression of myopia among 1,765 6-year-olds and 2,367 12-year-olds randomly selected from 51 Sydney schools.

The 12-year-old children who spent more time outdoors had less myopia at the end of the two-year study period than others in the study — even after adjusting for the amount of reading performed, parental myopia and ethnicity.

Children who performed the most amount of near work and spent the least amount of time outdoors had the highest mean amount of nearsightedness.

- In May 2013, researchers in Taiwan published the results of a study of the effect of outdoor activity during class recess on myopia risk and progression among elementary school students.

Children participating in the one-year study ranged from 7 to 11 years of age and were recruited from two nearby schools located in a suburban area of southern Taiwan.

A total of 333 children from one school were encouraged to go outside for outdoor activities during recess, whereas 238 children from the other school did not participate in a special "recess outside the classroom" (ROC) program.

At the beginning of the study, there were no significant differences between the two groups of children with regard to age, gender, and myopia prevalence (48 percent vs. 49 percent). But after one year, the children from the school that spent time outside during recess had a significantly lower onset of new myopia than the children from the school that did not encourage outside activity during recess (8.4 percent vs. 17.6 percent).

There also was significantly lower average progression of myopia among already nearsighted children in the ROC group compared with the group that spent more recess time indoors (-0.25 diopter [D] per year vs. -0.38 D per year).

The study authors concluded that outdoor activities during recess in elementary school have a significant protective effect on myopia risk among children that are not yet nearsighted and reduce the progression of myopia among nearsighted schoolchildren.

- Also in May 2013, researchers in Denmark published a study of the seasonal effect of available daylight on myopia development among Danish schoolchildren.

Myopia risk was determined by measurement of the axial (front-to-back) elongation of the children's eyes in different seasons. Increasing axial length of the eye is associated with increasing nearsightedness.

The amount of daylight changes significantly with the seasons in Denmark, ranging from nearly 18 hours per day in summertime to only seven hours per day in winter months.

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## CAN LIFESTYLE AFFECT MYOPIA?

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### Children Who Spend More Time Outdoors Have Less Risk Of Nearsightedness, Study Finds

August 2014 — If you want to reduce your children's risk of becoming nearsighted, it might be a good idea to have them spend more time outdoors under the sun.



Sidebar continued >>

Researchers in Australia recently conducted a study to determine if a relationship exists between exposure to sunlight during childhood and **myopia** in young adults. A total of 1,344 mostly white subjects (ages 19 to 22) living in western Australia were evaluated.

Childhood sunlight exposure was estimated by means of a lifestyle questionnaire and a special type of eye photography called conjunctival ultraviolet autofluorescence, which is an objective measure of **UV exposure**. The amount of myopia was determined by a **cycloplegic** refraction.

Results showed the presence of myopia in young adults is inversely related to the amount of time they spent in sunlight during childhood and to objectively measured ocular sun exposure. This association remained significant after adjustment for potential confounders, such as age, gender, parental history of myopia and the subjects' level of education.

This outcome further supports the inverse association between outdoor activity and myopia found by other researchers, according to the study authors.

A full report of the study appears in the November issue of *American Journal of Ophthalmology*.

In winter (when the children had access to the fewest hours of daylight), average growth in the axial length of their eyes was significantly greater than it was in summer, when their outdoor sunlight exposure was greatest (0.19 mm vs. 0.12 mm).

- And at the 2011 annual meeting of the American Academy of Ophthalmology, researchers from the UK presented a meta-analysis of pooled data from eight well-designed studies of the effect of time spent outdoors on the development and progression of myopia among 10,400 children and adolescents.



The researchers calculated a 2 percent drop in the risk of developing myopia for each additional hour children spend outdoors per week. "This is equivalent to an 18 percent reduction for every additional hour of exposure per day," they said.

Compared with children with normal eyesight or farsightedness, children with myopia spent an average of 3.7 fewer hours per week outside, they added. No particular outdoor activity was linked to the reduced chance of myopia — it was just the state of being outdoors rather than indoors. Also no correlation was found between myopia occurrence and a tendency to do more near work such as studying.

The researchers said more study is needed to determine which outdoor-related factors are most important, such as more distance vision use, less near vision use, physical activity and exposure to natural ultraviolet light.

## Take-Home Message

Given the research above, it's a great idea to encourage your children to spend more time outdoors (and leave the cell phone and other electronic devices at home or in their pockets!).

Doing so just might decrease their risk of becoming nearsighted — or slow the progression of their current level of myopia.

Better yet, join them for some quality time outdoors together! [AAV](#)

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References & Notes >>

Myopia in young adults is inversely related to an objective marker of ocular sun exposure: the Western Australian Raine Cohort Study. *American Journal of Ophthalmology*. November 2014.

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