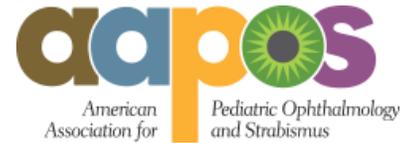


# Treatment of Increasing Myopia in Children



During childhood, myopia (nearsightedness) is typically treated with glasses or contact lenses. Refractive surgery, such as LASIK or PRK, is typically used in adults once the glasses prescription is no longer changing. In progressive myopia, the near-sightedness often begins in early childhood, and worsens as the child grows. Many patients and families inquire about why myopia increases and want to know if there are ways to slow it down.

There is a strong genetic component to myopia, so if either parent is near-sighted, the child is more likely to become near-sighted. Some large studies have noted that children who spend more time outdoors are less likely to develop myopia. The exact reason is unclear, but it is thought that exposure to sunlight may be beneficial. Other studies have suggested that a lot of near work at a young age may be harmful.

Many treatment options have been explored to try to slow the rate of increasing myopia. Current suggestions include:

## **LOW DOSE ATROPINE EYE DROPS:**

Multiple studies worldwide have shown that low doses of atropine eye drops can slow the increase in myopia, though it is unclear how. Atropine eye drops are dilating eye drops usually used after eye surgery, eye injury, or eye inflammation and is also used in amblyopia treatment in children. For these purposes, the commercially available dose is 1% atropine, but this dose usually results in significant dilation of the pupil, light sensitivity, and blurred vision at near. More recent research has been focused on using lower doses of atropine eye drops to decrease the side effects caused by this medication. The lower dose of 0.01% atropine has consistently been shown to be effective at decreasing the rate of increasing myopia, with fewer side effects compared to the higher doses of atropine (i.e., less to no light sensitivity and blurred near vision). While previous studies have shown that stopping the higher (1%) dose of atropine can result in a rebound effect (significant worsening or increase in myopia after the eye drop was stopped), this effect was noted to be less after stopping the lower dose of atropine.

This use of atropine eye drops requires the use of eye drops every day, likely for at least 1-2 years. Because this is a lower than normal dose of atropine, it requires a special pharmacy to make the eye drops.

There are currently several ongoing clinical studies investigating low doses of atropine to determine the best dose of atropine to use to slow the increase in myopia. So, the dose of atropine that you may be recommended to use may be between 0.01% and 1%.

## **CONTACT LENSES:**

Multifocal contact lenses have also been evaluated for slowing down an increase in myopia. Different types of multifocal contact lenses may be prescribed to try to slow down an increase in myopia. In 2019, MiSight contact lenses became the first FDA-approved treatment for myopia control in the United States. These are a daily disposable contact lens that must be fit by a specialty-trained optometrist or ophthalmologist.

Another less widely recommended use of contact lenses for slowing down an increase in myopia is called orthokeratology (also known as Ortho-K). Ortho-K involves using rigid gas permeable contact lenses every night to reshape the clear, front part of the eye (known as the cornea). A rebound effect (where the myopia increases after stopping Ortho-K treatment) has been noted.

Risks associated with any contact lens wear include [corneal abrasions](#), ulcers or infections, and scarring that can lead to permanent vision loss.

### **INCREASED TIME OUTDOORS AND AWAY FROM ELECTRONIC DEVICES:**

There has been increasing concern during the COVID-19 pandemic of increased use of electronic devices due to remote learning which may lead to an increase in myopia. Studies have shown that exposure to natural light outside can decrease the risk of developing myopia and an increase in myopia. **It is currently recommended that children try to spend at least 2 hours outside per day.**

As always, discuss the risks and benefits of these treatment options with your pediatric ophthalmologist.

#### **References:**

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