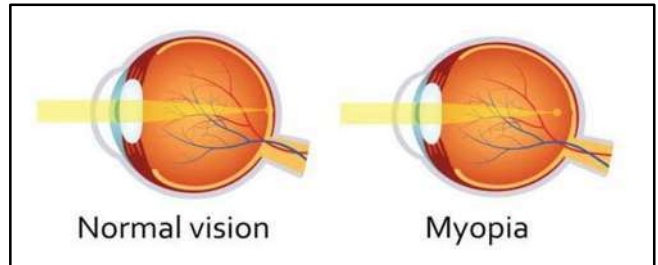




**MYOPIA MANAGEMENT**

**What is Myopia?**

Myopia (nearsightedness) is the most common refractive error and occurs when light entering the eye is focused in front of the retina so that distant objects are blurred. Myopia is most commonly caused by the eyeball growing too long due to both environmental and genetic factors. Myopia often begins to develop in childhood and may continue to increase until the late teens or early twenties.



**What do we know about the causes of myopia?**

- Genetic factors include family history and ethnicity:
  - **one parent with myopia = 3x greater risk; both parents with myopia = 6x greater risk**
  - **there is a higher worldwide prevalence and often faster progression in those with Asian heritage**
- Studies have shown that myopia is more common in children who spend less time outdoors.
- Although the amount of time spent reading or other close work has not been proven to be directly related to the development of myopia, some research has shown that closer working distances and longer duration of near work may be risk factors.

**Why are we concerned about myopia?**

Besides the inconvenience of being reliant on glasses and contacts, myopia carries a higher risk of eye disease including cataracts, retinal detachment, glaucoma, and myopic macular degeneration. A normal eye length (axial length) is 22 to 24mm. When the eye grows longer than 26mm, the risk of your child suffering vision impairment in their lifetime is 25%. If the eye grows to more than 30mm, which can occur in very high myopia, the risk increases to 90%.

LEVEL OF MYOPIA	CATARACTS	GLAUCOMA	RETINAL DETACHMENT	MYOPIC MACULAR DEGENERATION
-1.00 to -3.00 D	2x	4x	3x	2x
-3.00 to -6.00 D	3x	4x	9x	10x
Over -6.00 D	5x	14x	22x	41x

**What can be done to slow the progression of myopia and reduce my child’s risk of disease?**

- Routine eye exams for your child to assess risk factors and detect myopia as early as possible; often, the earlier the intervention the better.
- The amount of time spent outdoors is influential: findings indicate that daily outdoor activity of at least 90 minutes per day is likely to help prevent the onset of myopia, and possibly slow the condition naturally.
- Develop good habits when performing near tasks (reading, computer, tablets, phones etc.): take visual breaks (20/20 rule: every 20 minutes of near work take a rest by looking far off in the distance for 20 seconds), ensure that the working distance for near activities is not too close, and to try to limit near tasks outside of school to 2 hours per day.
- Partner with your Optometrist in a myopia management program. This is an area of children’s eye care dedicated to slowing down childhood myopia progression. Although most treatments are still considered “off label”, there is sound clinical research to demonstrate that various treatments are helpful with good safety profiles, and their use is becoming common. It is important to note that the current treatment options **are meant to slow down the progression** so that the final myopia prescription as an adult will be less than what it may have been without treatment.

## **MYOPIA MANAGEMENT – TREATMENT OPTIONS**

The research on the management of myopia is continuously developing, and at Maple Ridge Eye Care we are committed to remaining on the forefront of this research to help optimize your child's vision. The following is a summary of the current methods being used to try to reduce myopic progression. Once we have completed a myopia management assessment, we can recommend the best options for your child. Costs for myopia management exam visits MAY BE partially covered by MSP insurance, but additional fees apply. **These are billed as an annual fee to cover 12 months of care and may be covered by extended benefit plans.**

### **1) Peripheral Defocus Spectacle Lenses**

- Single vision lenses that have traditionally been prescribed for myopia do not slow the progression. Peripheral zone defocus lens designs do show some efficacy with myopia management, demonstrating up to 52% reduction of progression in a 2-year clinical trial.
- **Some adaptation time is typically required** to adjust to the different areas of peripheral defocus or blurring in the various lenses.
- There is a wide range of pricing for these lenses, depending on the material, coatings and level of technology, with the prices typically ranging from approximately \$400–\$600.

### **2) Soft Multifocal and Dual Focus Contact Lenses**

- Specific soft multifocal monthly disposable contact lenses slow myopia progression by approximately 30%. The MiSight daily disposable contact lens demonstrated 59% less myopia progression over a three-year period in clinical trials. Both of these lenses require daily wear to be effective.
- Due to the unique lens optics, your child's vision may be slightly less clear with these contact lenses, but adaptation quickly occurs. As with all soft contact lenses, there is a very low risk of inflammation or infection. The risk is increased from not cleaning lenses properly or replacing them on schedule.
- Regular daily disposable contact lenses supply costs range from \$550-\$800/year with regular monthly disposables ranging from \$200-\$300/year. The only FDA approved contact lenses for myopia control, MiSight disposable lenses (\$960/year), offer all the same benefits of daily disposable soft contact lenses with the added benefit of slowing myopia progression. The multifocal monthly lenses that slow progression are approximately \$380 per year but require more cleaning and care to maintain proper hygiene.

### **3) Low Dose Atropine Drops**

- Atropine eye drops are normally used to relax the focusing and iris muscles in the eye. This enlarges the pupil and relaxes the muscles in the eyes that help to focus for near tasks. The concentrations used for myopia management range from 0.01% to 0.1% which result in minimal side effects in scientific studies. Clinical trials have demonstrated up to 60% reduction of myopia progression. The longest studies have been 5 years in duration.
- The most common side effects include enlarged pupils upon awakening, increased light sensitivity (which may be treated with tinted lenses) and mildly blurred near vision (which may be treated with multifocal glasses).
- Treatment involves putting one drop of medication into each eye nightly before bedtime. These drops must be obtained from a specific eye drop **compounding** pharmacy, and the approximate cost is between \$40 - \$60 per bottle (each bottle lasts 28 days after opening before expiry).

### **4) Orthokeratology (Ortho-K)**

- Ortho-K is the fitting of specially designed gas permeable hard contact lenses that are worn overnight and removed in the morning. They temporarily reshape the corneas while your child sleeps. Clinical research has demonstrated myopia control rates approximately 45-50%.
- Some adaptation is required during the first two weeks of lens wear. There is a slightly higher chance of infection with overnight wear of Ortho-K lenses. However, with good hygiene, lens care and regular exams, the risk is still very low.
- Due to its complexity and time commitments, fees range from \$1,500-\$3,000 annually.