Myopia Management

CAMERON
OPTOMETRY
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About Myopia

What is myopia?

Myopia is the medical term for short-sightedness, when the eyeball is too long or too powerful. The result is that light coming into the eye does not focus directly on the retina (the light sensitive layer at the back of the eye), but instead falls in front of it, causing objects in the distance to look blurred. myopia is traditionally corrected by wearing spectacles or contact lenses. As the eye grows, a person typically becomes more myopic and the power of their spectacle or contact lens prescription increases.

Is myopia becoming more common?

Yes. myopia is expected to affect 50% of the world population by 2050. In the UK, the amount of myopia has increased from affecting 10% to 23% of children in the past 50 years.

Why do people develop myopia?

Research suggests that a person's ethnicity, lifestyle and their day-to-day environment all play a part.
People who spend more time doing tasks at a close distance such as working on computers and reading, and those who spend less time outdoors seem more likely to develop myopia.

If both parents have myopia then there is a 46% chance that a child will develop it, 31% with one parent and 22% if no parents are myopic. Females have a greater gender tendency for myopia than males.

Does myopia get worse during childhood?

Yes. Generally, once you have myopia, your spectacle prescription gets greater over time, in particular during childhood as the eye grows. The key years of change in myopia are between 6 and 17 years old with the largest change in prescription typically happening at around age 7 to 8 years and changes getting less as you get older.
Generally, myopic children wearing traditional glasses or contact lenses will continue to increase in myopia by approximately 0.50 to 1.00 DS (units of measurement) per year.

This varies by ethnicity with Asian children typically progressing more quickly than other ethnicities. We can use these figures to calculate what we expect a child's prescription level to be by the time they are in their late teens when change generally starts to slow or stop. Many people develop myopia later in life, however if a child develops myopia, they are at risk of their vision deteriorating much more quickly and for many more years, leading to a higher eventual prescription.

Why are higher levels of myopia a problem?

A higher prescription is not only an inconvenience causing poorer vision without glasses or contact lenses but all myopia and especially higher prescriptions (over -6.00DS) are linked to an increased risk of developing eye diseases such as glaucoma, retinal detachment, myopic macular degeneration and cataract in later life.

Each dioptre increase in myopia results in 67% increased risk of myopic macular degeneration. Another method of assessing risk of future eye disease is to measure the length of the eye. The longer the eye, the more risk. This can now be done in practice.

You can use this simulator to get an idea of what your close and distance vision would look like without spectacles or contact lenses as your prescription gets higher.

https://coopervision.co.uk/myopia-simulator

What is myopia management?

Myopia management aims to slow down the progression of myopia in children and young adults through lifestyle changes, the use of specialised lenses eye drops (not currently available in the UK) and specially designed spectacle lenses. It is unlikely that myopia management will stop the progression of myopia completely and the "average" child will still have some progression of myopia even with myopia management.

At Cameron Optometry our expertise in contact lenses and spectacle lenses allows us to provide the most advanced options available based on up-to-date research. We have now been fitting children with contact lenses for myopia management since 2015. Research has found the results of myopia management using specialised lenses to be effective, with recent studies showing that a 59% reduction in the progression of myopia is achievable and that contact lenses and specialised spectacles are tolerated very well by children. An example of this would be a child who comes for an eye examination with a prescription of -2.00DS. If we calculate that they are likely to reach -6.00DS by the time they are 17 then by using myopia management contact lenses we would hope that their final prescription would end up as nearer - 4.00 DS. Some children may get an even better result than this and some may find the lenses to be less effective.

The results of a large trial on soft contact lenses for myopia management (MiSight) has found that over a three year period half of the eyes that were studied had no change in prescription and over six years a quarter of eyes had no change.*

**The children in this study were aged between 8 to 12 years with a starting prescription of between 0.50 and 4.00DS with astigmatism of <0.75DC.*

Treatment Options

Contact Lenses

Spectacle Lenses

Eye Drops

Contact Lenses

Myopia management contact lenses are designed firstly to correct, your child's vision so they can see well and secondly, to slow the process of eyeball growth, with the aim of reducing how short-sighted they eventually become.

The aim of treatment is to slow the rate of decline by around 50%. myopia management contact lenses cannot reduce your child's prescription from the point at which they start with the contact lenses.

There are two contact lens options either soft daily disposable multi focal contact lenses that are worn during the day or specially designed gas permeable night lenses, which are worn when asleep (also known as ortho-k lenses).

Soft lenses have multiple powers in them and slow the progression of myopia in children by focusing light at the centre of the retina for good vision while creating defocus on the surrounding parts of the retina to slow the eye's desire to grow.

Night lenses temporarily and reversibly reshape the cornea (front surface of the eye) while you sleep. These contact lenses are taken out in the morning so that the wearer can have clear vision all day without having to wear spectacles or contact lenses and are great for people who swim or have an active lifestyle. These slow the progression of myopia in the same way as the soft contact lenses. Patients get used to them very quickly and their sleep is rarely affected by them.

Spectacle Lenses

In early 2021, the first spectacle lens for myopia management became available in the UK. The MyoLens works in a similar way to the contact lenses in giving clear vision through the centre of the lens and a variation in the power of the lens away from the centre to create defocus on the peripheral retina helping reduce the eye's desire to grow.

The results of a two year study suggest that these spectacles are as effective as the contact lenses in slowing the progression of myopia. Although the initial vision through these spectacles will be different to previous spectacles your child might have worn, this is expected to settle within two weeks.

Eye Drops

Atropine is a prescription eye drop used to temporarily open the pupil and limit the ability to focus. If it is used at a very low concentration it does not cause any visual difficulties with focusing but has been found to slow the progression of myopia.

It is thought to do this by interaction with some of the receptors in the eye that control eye growth. Atropine is not currently available for this use in the UK however a clinical trial is underway which may lead to availability in the future.

What is the best age to start myopia management?

The earlier the better. Myopia gets worse most quickly in younger eyes levelling off by adulthood. To get the best overall reduction in myopia children should start myopia management with spectacle lenses as soon as they become myopic and with contact lenses as soon as the parents, child and optometrist think they are ready.

Research shows that myopia management still slows the rate of change of prescription in older children so it is worth using myopia management at any age while the eye is still growing.

Is myopia management a treatment for life?

The eye does not continue to change shape for your whole life and so by late teens or early adulthood most people will find the myopia naturally stops progressing.

At this stage spectacles or traditional contact lenses will become appropriate for your child's visual correction.

Treatment Benefits

Good vision

- As with non-myopia management contact lenses, soft daily disposable contact lenses offer clear vision without having to wear spectacles during the day.
- MyoLens spectacles offer good vision for those who would rather not wear contact lenses or for times where you are resting your eyes from your contact lenses.
- Night lenses offer clear vision without having to wear spectacles or contact lenses during the day. Some parents also like that they can oversee contact lens wear since lenses are only worn at night and not during the school day.

Reduced prescription power

- As part of the eye examination we will use current evidence to predict how short sighted your child might become. The aim of myopia management is to reduce this final prescription by an average of about 50%. We appreciate the effect for each individual person could be higher or lower than this and the long-term effectiveness is not fully understood but is now being researched.
- A reduced prescription means your child will have better vision without their contact lenses or spectacles on and will need thinner and lighter lenses in their spectacles.

Eye health

- We have new technology called the MYAH, which measures the length of the eyeball between appointments. Slower growth, and consequently a shorter eyeball, reduces the risk of eye complications such as retinal detachment, myopic macular disease, cataracts and glaucoma in later life.
  Each dioptre less myopia is associated with reduced risks of eye disease in later life. So if someone has a prescription of -5.00DS they are 80% less likely to develop problems with the retina than someone who is -8.00DS.
- Conclusive evidence of reduced rates of eye disease will unfortunately not be around for decades until today's myopic children reach later life.

FAQS

Q. Are there any disadvantages to wearing myopia management contact lenses?

Like all lens wear there are potential risks of infection but these are hugely reduced by good compliance with the lens care advice you and your child are given. The risks of wearing myopia control contact lenses are the same as wearing ordinary contact lenses.

The most significant risk associated with contact lenses is microbial keratitis, a bacterial infection of the clear front of the eye (the cornea). In a small percentage of cases this can result in the vision becoming permanently worse in the eye.

Each year 13-15 people out of 10,000 contact lens wearers will develop this type of eye infection. The rate of microbial keratitis for children 8 to 12 years of age wearing soft contact lenses appears to be less than that of adults or teenagers, and we think this is because they have adults supporting them in caring for their contact lenses.

Other risks associated with the use of contact lenses include other types of less serious eye infections or inflammation (swelling) or scratches of the eye. Most of these complications do not result in any long-term damage to the eye.
Symptoms of dry eyes can be made worse in response to contact lenses but your optometrist will monitor the eye surface and give appropriate advice on lens wear or additional lubrication if required.

Q. Will the myopia come back if I stop using contact lenses or MyoLens spectacles?

Again we do not have strong evidence for this as this has not been tested in trials, however because the contact lenses work to restrict the growth of the eye, there should not be a rebound effect once wear of the lenses has stopped, particularly if they are worn until the late teenage years when the eyes typically stop growing. It may however be possible that myopia continues to progress from the point at which it stopped, once lens wear ceases.
Research trials to look into the effects of stopping the lenses after years of lens wear have now started.

Q. How often will my child visit the optometrists?

If wearing contact lenses, there may be a number of appointments required to establish the best lenses, for your child and to assess their suitability for lens wear. After the initial appointment, they will have a lens collection appointment at which they will see the optometrist and also a clinical assistant who is available to answer any contact lens questions you or your child have. They take all the time they need to ensure your child can handle the lenses safely and confidently. Your child will return to the practice for a review appointment with your optometrist two weeks later.

Your child will be expected to attend for a contact lens or MiyoLens spectacle check at least every 6 months to monitor their progress.

Like all new skills, learning to insert remove and care for contact lenses can take time to master. We find that success with contact lenses often hinges on the confidence of the person wearing them and with that in mind, we do not like to issue the contact lenses to take home until we are all happy that you can manage them. It is not uncommon for this to take a few appointments so do not be disheartened if you do not take the lenses home on the first day.

Q. What are the costs of myopia management?

Due to the complexity of the lenses and the importance of closely monitoring your child at regular intervals, we only supply myopia control spectacle and contact lenses as part of our comprehensive Vision+ membership programme.

The monthly Vision+ payment covers all appointments, examinations, tests, scans and gives you a host of other benefits as well.

Daily disposable contact lenses

For myopia management with daily disposable soft lenses the price includes Vision+ membership and all contact lenses required. No cleaning solutions are required. If you wish to have MyoSmart spectacle lenses in addition to soft contact lenses, there will be an additional charge per month.

MyoLens spectacle lenses

Myopia management with our spectacle lenses includes Vision+ membership, a new set of lenses when there is an increase in prescription, and a new set of spectacle lenses every 12 months, whether or not the prescription has changed, to keep you seeing your best.

Night lenses

Myopia management with night lenses are the same price as the daily disposables. The monthly fee includes Vision+ membership, replacement contact lenses every six months, replacement lenses for any lost or broken lenses and contact lens cleaning solutions. There is an initial fee for night lenses to cover the cost of ordering these bespoke lenses and the increased amount of initial appointments required.

Whichever option you choose, you will receive a 10% discount on these costs if you have another family with Vision+ membership.

We hope this answers some of your questions we also recommend www.mykidsvision.org for further information on myopia management. Any further questions please get in touch.

If you decide to go ahead with myopia management, after consultation with your optometrist we will ask you to complete the consent form attached.

We base our myopia management scheme on guidance by the International Myopia Institute. In 2019 the institute gathered togetherthe leading figures in research into and trawled through all the research on myopia to produce seven papers. These papers were reviewed in 2021.


Eye
Care

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