



# THE LITTLE GUIDE TO ORTHO-K

Correct Your Child's Vision Whilst They Sleep!

Prepared by: **eyecarekids** Optometrists  
vision & learning



Dear Parents and Teachers,

Thank you for taking time to learn about Orthokeratology, or Ortho-K.

If your child has myopia (short-sightedness) which has been steadily progressing year after year or if your child has expressed wanting to see better without spectacles or contact lenses, we're pleased to tell you more about Ortho-K. The good news—it's not only safe but recommended for children!

Ortho-K uses specially designed contact lenses that your child wears whilst they sleep, which gently reshapes their cornea (the front surface of the eye). In the morning, they remove the lenses and experience vision that's clearer than ever!

Ortho-K overnight lenses work in a similar way to braces and dental retainers for the teeth. Unlike laser corrective surgery, Ortho-k lenses are non-invasive—your child's cornea will return to its original shape when they stop wearing the lenses. Because the corneal reshaping effect is temporary, little risk is involved, and your child can discontinue wearing the lenses at any time (provided they are willing to start wearing spectacles or contacts again when their myopia returns).

As your optometrist, our number 1 goal is to help find a solution that's best suited to you and your child's personal circumstances—whether it may be spectacles, contact lenses or a more specialised solution such as Ortho-K.

Read on to find out how Ortho-K can not only improve your child's current vision and give them freedom from spectacles and soft contact lenses, but also prevent their vision from getting worse year by year!

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# CONTENTS

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About Ortho-K?	1
Benefits of Ortho-K	2
How does Ortho-K work?	3
Does Ortho-K have any advantages over laser surgery?	4
More on Slowing Down the Progression of Myopia	5
How does Ortho-K slow or stop myopia from getting worse?	6
Who is suitable for Ortho-K?	7
What is the success rate of Ortho-K?	8
What's the procedure?	9
References	10





## About Ortho-K

Orthokeratology, also known as Ortho-K, is the use of a rigid contact lens to mould the shape of the cornea to correct myopia (short-sightedness).

Ortho-K lenses are worn overnight and once they are removed, the result is clear comfortable vision throughout the day without the need of glasses or contact lenses. Ortho-K is a non-surgical procedure, and unlike laser surgery, the effects are reversible and non-permanent. This unique contact lens is only fitted by accredited optometrists.



## Benefits of Ortho-K

- Freedom from both contact lenses and spectacles during waking hours.
- Freedom for swimmers/athletes, those who work in dusty or dirty environments, allergy sufferers who find soft contact lenses uncomfortable and anyone who struggles with daily contact lenses and spectacles
- Comfort issues as rare as the lenses are worn only at night, when there is minimal blinking and movement of the lenses
- Slows down the progression of myopia.

### HOW ABOUT RISKS?

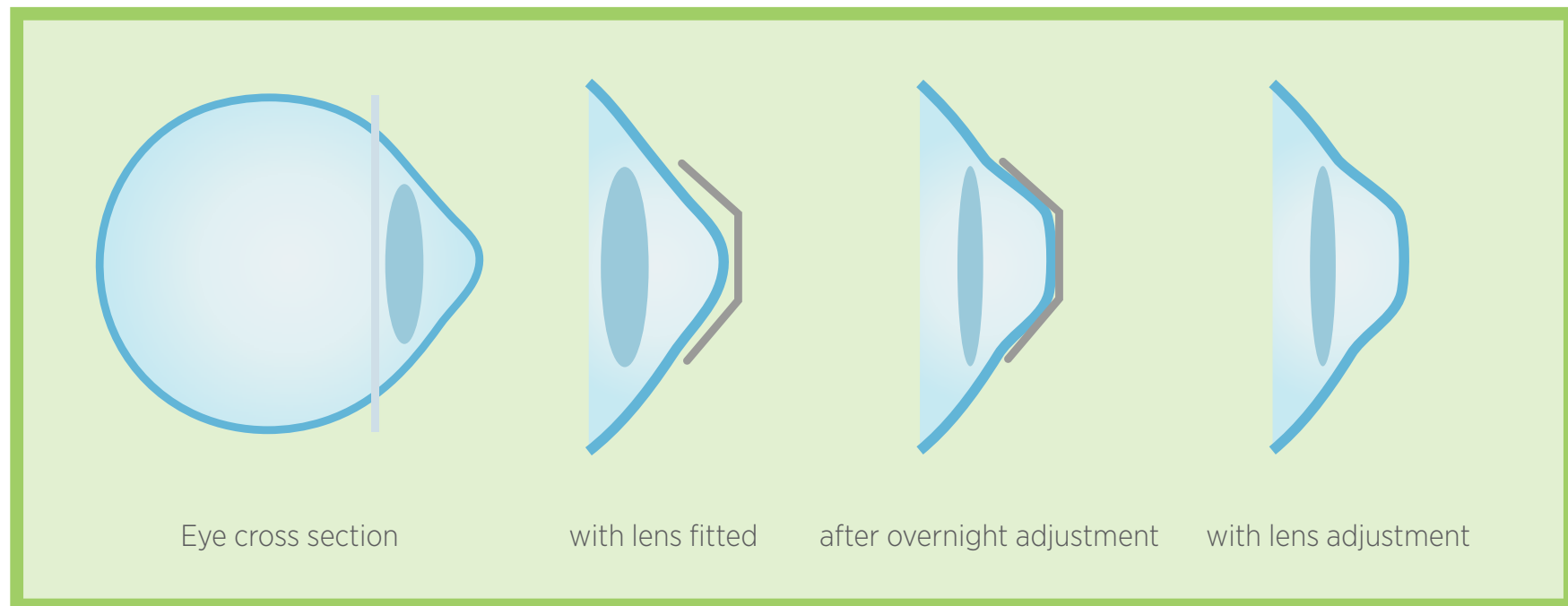
Like all contact-lens wear, Ortho-k also involves some degree of risk such as eye irritation, discomfort and infection (this is rare, usually follows ill-fitting or poorly maintained contact lenses). Good hygiene is essential, so for kids wearing Ortho-k lenses, cleaning must be supervised by an adult.

Otherwise, many eyecare professionals agree that the benefits of Ortho-k far outweigh the risks and continue to recommend them as a desired treatment option for myopia control in kids.



## How does Ortho-K work?

Ortho-K lenses gently shape the cornea through hydrostatic pressures in the tear film between the contact lens and the cornea. The central part of the cornea flattens as epithelial cells from the surface of the eye move out peripherally. This flattening of the frontmost part of the cornea (the front 50 $\mu$ m of the cornea) consequently changes the refracting or focussing power of the eye, hence creating clear and comfortable vision. When the therapy is discontinued, the corneal cells return to their normal distribution within days. As orthokeratology is a non-permanent procedure, the integrity and structure of the cornea is unaffected.



## Does Ortho-K have any advantages over laser surgery?

Laser eye surgery can also cause significant dry eye or irritation due to the structural changes in the front of the eye. In a study done in 2012, 60% of patients who have had LASIK reported dry eye symptoms after 1 month and identified 30% of patients who had to seek specialist care for their moderate-to-severe dryness.

Some patients also report increased glare sensitivity with LASIK, this is not as common with OrthoK wearers.



## More on Slowing Down the Progression of Myopia

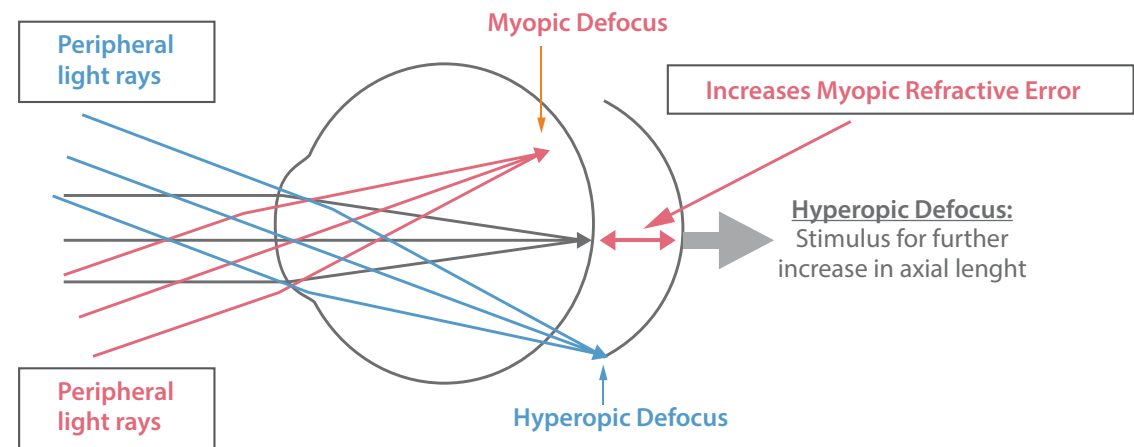
<b>What is Myopia?</b>	<ul style="list-style-type: none"> <li>• Vision is blurry for far away but clear for reading</li> <li>• The eyeball is often too big that light is not accurately focussed onto the retina (the back of the eyeball)</li> <li>• Usually progresses the most during childhood and adolescence</li> </ul>
<b>Causes</b>	<ul style="list-style-type: none"> <li>• Family history</li> <li>• Inaccurate eye teaming or focussing</li> <li>• Environment               <ul style="list-style-type: none"> <li>- More time spent indoors</li> <li>- Less time spent outdoors</li> </ul> </li> <li>• Peripheral blur</li> </ul>
<b>Why prevent myopia early?</b>	<ul style="list-style-type: none"> <li>• Once myopia develops the changes are permanent</li> <li>• The higher the myopia the higher the risk of ocular complications such as retinal detachment, glaucoma, cataract and maculopathy</li> </ul>
<b>Treatment and percent of slowing down myopia progression</b>	<ul style="list-style-type: none"> <li>• 0.025% Compounded Atropine eye drops (60-70%)</li> <li>• Ortho-K contact lenses (30-50%)</li> <li>• Multifocal or peripheral refraction contact lens (Misight) (30%)</li> <li>• Multifocal spectacles (20-25%)</li> <li>• Normal spectacles and contact lens (0%)</li> </ul>



## How does Ortho-K slow or stop myopia from getting worse?

Research indicates that peripheral retinal blur is one of the main causes for the progression of myopia. Ortho-K works to slow down myopia progression by reducing peripheral retinal blur.

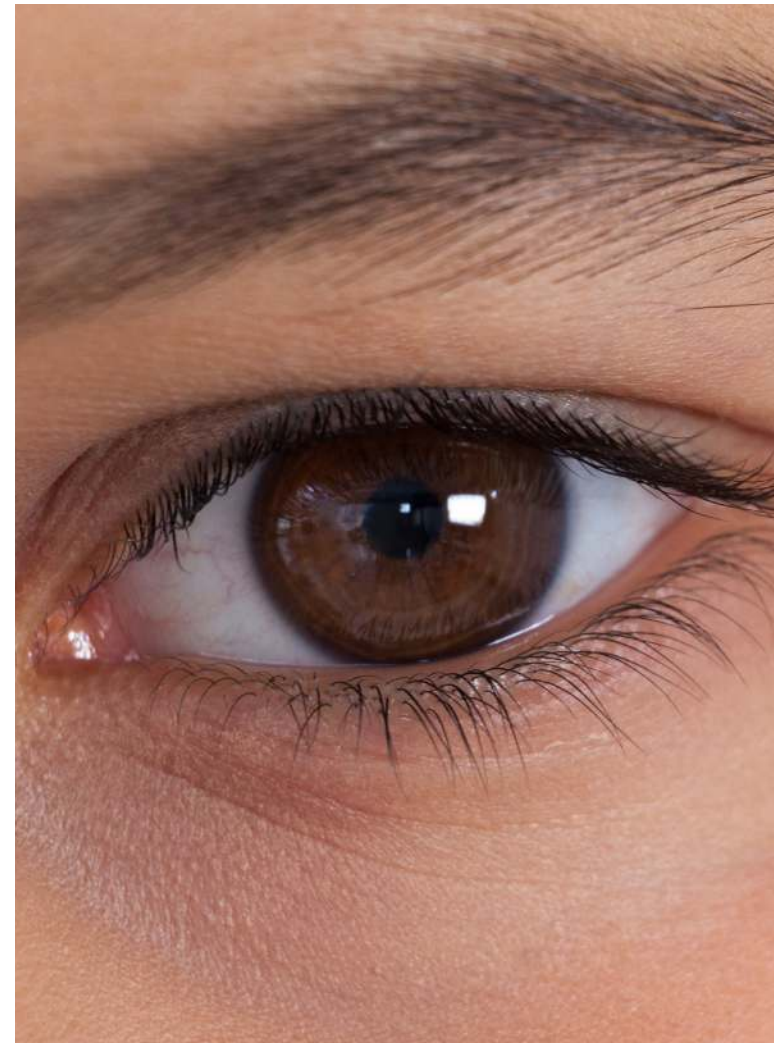
*What is peripheral blur?* In a perfect world, one would expect the eye to be completely spherical like a sphere, however this is generally not the case. The curvature of the back of the eye can actually change the further you get from the macula. Sometimes when someone sees clearly centrally (at the macula) with or without correction, the light focused on the “peripheral retina” (away from the macula) may be focused behind the retina. This mismatch has been shown to drive the growth of the eyeball to help see better at the periphery. Consequently, the eye becomes more short-sighted.<sup>37</sup>



Ortho-K lenses change the shape of the cornea and allow the eye to see clearly in both the central and the peripheral retina. Studies have shown that children using Ortho-K lenses display a slowing down in the progression of myopia compared to those wearing normal glasses and contact lenses.

## Who is suitable for Ortho-K?

- Children and adults with low to moderate levels of myopia and astigmatism
- Children whose myopia continually worsens
- Those who don't like wearing glasses or continually break or lose their glasses
- Allergy and dry eye sufferers who find soft lenses uncomfortable
- Short-sighted adults who feels uncomfortable in their contact lenses, particularly those who work in front of computers, in air-conditioned environments or in smokey and dusty environments (e.g., tradesman, plumbers, chefs)
- Short-sighted children and adults who actively participate in sports
- Short-sighted children and adults who would like to be glasses free but cannot afford or are worried about the risks of refractive surgery
- Short-sighted children whose eyes are still developing and therefore not candidates for laser corrective surgery



## What is the success rate of Ortho-K?

At present, lower levels of myopia (up to 6 dioptries) have a higher chance of success with Ortho-K. Higher levels of myopia can be corrected quite well, however success is more variable. Individual corneal shapes and rigidity will determine the results achieved. The cornea is flattened during Ortho-K treatment, so consequently a cornea that is very flat to begin with will most likely not allow for further flattening, leading to a less than ideal outcome.

While the success rate is very high, success cannot be guaranteed. Our optometrist will examine your child's eyes and then discuss their personal suitability for this treatment.



## What's the procedure?

- Book a comprehensive eye examination to speak to one of our highly trained optometrists who will guide you through the process and have your child's corneal topographies measured.
- Once we have determined the appropriate lenses for your child's eyes, we will order the lenses
- When the lenses arrive, we will contact you to make an appointment for a fitting and to teach insertion and removal techniques and appropriate care procedures for the contact lenses.
- Return with your child wearing their lenses on the first morning they wake up within two hours of waking.
- Return after one week of sleeping with their lenses. Lenses do not need to be worn at this visit. At this appointment, your optometrist may tweak the fitting to improve vision.
- If progress is well, you will be required to come in at one month, three months, six months and every six month intervals after that.
- At all appointments, your child must bring your lenses or wear them as instructed by your optometrist.





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