

# Optometry experts prove the effectiveness of orthokeratology in myopic control

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After a lengthy study spanning over four years, Professor Pauline Cho from the School of Optometry at The Hong Kong Polytechnic University (PolyU) and her research team concluded that orthokeratology not only can correct refractive error, but also effective in slowing the progression of myopia.

Myopia (or shortsightedness) is the most prevalent [eye problem](#) in Hong Kong population and especially for school children. Local Chinese students have a higher prevalence of [myopia](#) regardless of whether they attend in local or international schools when compared with other ethnic groups. Myopia will bring inconvenience in everyday life and serious myopia is associated with [retinal degeneration](#), peripheral retinal breaks and glaucoma which may lead to permanent vision loss and blindness.

Orthokeratology is a non-surgical means of vision correction which must be administered by registered optometrists. Myopia is a refractive defect of the eye in which collimated light produces image focus in front of the retina. The longer the eyeball length, the higher degree of myopia.

Patients who wish to receive orthokeratology must have a thorough eye examination to see if he or she is suitable for the treatment. Optometrist will dispense a pair of specially designed rigid contact lens made from high oxygen permeable material for wearing during [sleep time](#). The lens will modify the corneal shape as well as to correct the focus of the eye in order to correct the wearer's vision. If successful, wearer can have clear vision without using any vision aids for the rest of the day.

In 1997, PolyU's School of Optometry established The Centre for Myopia Research to conduct clinical, genomic and proteomic research using a multi-disciplinary approach, pulling in expertise from all areas of clinical and basic science. Professor Pauline Cho is a pioneer in research on myopic control and has published her findings in *Current Eye Research Journal* in 2005. She and her team found evidence that orthokeratology may have a potential for controlling the progression of myopia in children, apart from vision correction. To further confirm the potential of orthokeratology, Professor Cho and her team commenced two clinical trials named ROMIO (Retardation Of Myopia In Orthokeratology) and TO-SEE (Toric Orthokeratology-Slowing Eyeball Elongation) in 2008.

The ROMIO study is the first randomized, single masked study in the world to investigate the effectiveness of orthokeratology for myopic control in children. Participants were 77 children aged 7 to 10 years old with myopia not more than 4.00D and were randomly assigned to orthokeratology or spectacle group. At the end of 24 months of the research, the increase in eyeball length in the orthokeratology group is 0.36mm and in whereas that of the spectacle group which is 0.63mm. The results prove that the increase of eyeball length in children wearing orthokeratology lenses was about 43% slower than those wearing spectacles.

In the TO-SEE study, 37 children aged 6 to 12 years old were recruited and to study the potential of orthokeratology in reduction of astigmatism. Myopia of the participants was not more than 4.50D and astigmatism between 1.25D and 3.50D. Professor Cho and her team found that toric design orthokeratology effectively reduced the astigmatism by 79% after one month of lens wear. At the end of 24 months, the eyeball length of the participants was 0.31mm which also showed significance proof on myopic control.

Professor Cho says due to advancement in science and technology, the design and materials of orthokeratology lens were greatly improved. The high oxygen permeable lens with enhanced corneal reshaping potential brings convenience to wearers in daily life. If wearers strictly follow the instructions of the optometrist and have regular check-up, over 60% of their myopia could be reduced after one overnight lens wear and the rest over two to four weeks.

Orthokeratology is a reversible treatment and can be stopped anytime. With the clinically proved results in [refractive error](#) correction, myopic control and astigmatism reduction, it represents a safe and effective solution for people with myopia.

Provided by The Hong Kong Polytechnic University

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