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**Eye Health Consultants of Texas, PLLC**

**Julio Arroyo OD, FIAOMC, CFMP, MBA**  
Leaders in Non-Surgical Vision Correction,  
also known as Orthokeratology or Corneal Molding.

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leaders in Non-Surgical Vision Correction,  
AKA Ortho-K and Corneal Molding
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Welcome to Our Office



Dr. Julio C. Arroyo is a native from Spain where he completed college studies with concentration in Optics and Optometry. Then he decided to come to Houston where he received a Doctor of Optometry in 1999.

Dr. Arroyo is certified for the treatment of eye disease and as an optometric glaucoma specialist. He is one of the few Ortho-k expert practitioners in the Houston Area and the first one to obtain the elite Wave Corneal Molding certification. Dr. Arroyo has done extensive studying and training in Non-surgical refractive correction of Myopia and Astigmatism, as well as Hyperopia (farsightedness). He also has considerable experience in anterior segment disease, glaucoma management, macular degeneration (M-Sharp protocol), pediatric eye care and binocular disorders. He has been also an adjunct Professor of Optometry of the University Eye Institute, University of Houston.

**Julio C. Arroyo OD, FIAOMC, CFMP**  
Orthokeratologist



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# WHO ARE WE?



## Dr. Arroyo in the News

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Dr. Julio Arroyo, a native Spaniard, graduated from University of Houston, College of Optometry in 1999 with 3 letters of excellence in clinical care. He is the founder of Texas Eye Consultants, Eye Health Consultants and m-SHARP.

Dr. Arroyo is a progressive optometrist with an interest in non-surgical vision correction (Corneal Molding), anterior segment disease, macular degeneration and functional medicine. He is one of the busiest and most successful ortho-k docs in the country, averaging 25-30 new ortho-k patients any given month. Patients travel from all over the country and neighboring countries seeking his help to improve their vision.

Dr. Arroyo was one of the first to perform hyperopic ortho-k consistently and successfully with Wave technology. Also one of the first to use Corneal-Scleral (Translimbal designs) Corneal Molding consistently and successfully. Dr. Arroyo Trained American doctors and international professionals in the art has hyperopic Ortho-k. He has treated more than 2,200 patients and his vast experience makes him one of the top experts in the field. In addition, Dr. Arroyo has successfully incorporated a health and wellness model through epigenetics and bioenergetic science allowing a wider spectrum of services offered to his patients.

His MigrainesNoMore® Protocol is just an example of how epigenetic science, bioenergetics and nutrigenomics can change the lives of many that no longer suffer from the crippling effects of migraines. Dr. Arroyo has been featured many times on several local and national TV stations including FoxNews, Channel 13, Univision, TV Azteca and others. He lives in The Woodlands, TX with his wife and two daughters. When not seeing patients, watching movies with the little ones, playing guitar, boiling crawfish, playing soccer... are some of his many hobbies.

*"Thanks to Dr. Arroyo  
& His fabulous staff!  
The corneal shapers  
have worked  
WONDERFULLY  
for me!  
No more reading  
glasses!*

*No more searching for  
my reading glasses!  
No more cleaning my  
dirty reading glasses!*

*This whole process  
has been such a suc-  
cess story with the  
support of Dr. Arroyo  
& his team!*

*And with my improved  
vision, I feel more  
confident & at ease  
selling my Mary Kay  
Cosmetics!*

*Thank you!!!!"*

*Mary Ann*







# WHAT IS ORTHO-K?

## CORNEAL MOLDING

### VISION

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### VISION

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### VISION

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Corneal Molding is an FDA approved, state of the art vision-correction modality, able to provide 20/20 vision to individuals with a wide range of refractive errors. Our program truly represents a safe, non-surgical, effective and predictable modality of vision correction for those willing to see with their naked eyes, without surgery.

People with different refractive errors may benefit from this technology but it is within the younger population where Corneal Molding becomes a truly remarkable solution.

It is well documented that myopia (nearsightedness) is becoming increasingly predominant and more severe in our children. We are quite familiar with these young individuals visiting the eye doctor year after year, only to leave with a stronger prescription and thicker lenses. The sad reality is that neither glasses nor contacts prevent nearsightedness from getting worse. It is unfortunate, almost tragic that, to the date of this print, a very small percentage of doctors are addressing the calamity of myopia progression in our children.

The good news is that we now have the capability to slow-down, even stop, the progression of myopia. Corneal Molding (Ortho-K) is the gold standard treatment.

Young people implementing Corneal Molding (Ortho-K) no longer require spectacles or day-time contact lenses to see 20/20, but most importantly, by being in this program, they are much better equipped to prevent myopia from getting worse. Corneal Molding provides a remarkable means to slow down or even stop myopia progression; this becomes particularly important in students during school years, as it is during this period that myopia (nearsightedness) grows more severe. Until recently, this population had no choice but to wear progressively thicker lenses to be able to see.

*"I've worn glasses since first grade. When I started Junior High I was ready for a change.*

*It was hard to wear my glasses when I played tennis and impossible when I went swimming.*

*So even contacts weren't a good option. My mom took me to see Dr. Arroyo. He told us about Night-time Corneal Molding.*

*I knew that was a great option for me. I put them in my eyes at bedtime and I correct my vision while I sleep.*

*I now go all day without glasses or contacts.*

*It makes doing the things I love so much easier!"*

*Leah*



# Consider These Facts If Your Child Has Myopia

- ✓ In Americans aged 12 to 54 years, the prevalence of myopia has almost doubled to over 40% in the past 30 years (Vitale et al, 2009).
- ✓ High myopia is strongly linked to a higher risk of cataracts, retinal detachment, and myopic maculopathy (Flitcroft, 2012). Increasing rates of vision impairment and blindness due to the latter are already evident in Asian countries (Iwase et al, 2006; Wu et al, 2011).
- ✓ Even 1.00D of myopia doubles the risk of myopic maculopathy (MM) and posterior subcapsular cataract (PSCC) and triples the risk of retinal detachment (RD) compared to emmetropes (not requiring correction).
- ✓ At 3.00D of myopia, the risk of PSCC triples, and the risk of RD and MM is nine times that of an emmetrope. Once children reach 5.00D of myopia, they hold a five times greater risk of PSCC, a 21 times greater risk of RD, and a 40 times greater risk of MM; higher levels bring more eye-watering risks. These ratio risks demonstrate that there is no physiological level of myopia that could be considered "safe" in comparison to emmetropia (Flitcroft, 2012)
- ✓ However, myopia control is not just applicable to myopes; exhibiting less than 0.50D of manifest hyperopia at age 6 to 7 years is the most significant risk factor for future myopia, independent of family history and visual environment (Zadnik et al, 2015).
- ✓ The fastest rate of refractive change in myopic children occurs in the year prior to onset (Mutti et al, 2007), so children who are less hyperopic than age normal should be closely monitored, especially if concurrent risk factors of family history or binocular vision status are evident.
- ✓ Children who have one myopic parent have a three-fold risk of myopia development compared to their peers who do not have this family history; two myopic parents double this risk again (Jones et al, 2007).
- ✓ On the positive side, a strong family history of myopia has resulted in stronger treatment effects in studies investigating efficacy of progressive and novel spectacle lens designs for myopia control (Kurtz et al, 2007; Sankaridurg et al, 2010)
- ✓ Initiating a myopia management strategy for pediatric patients should ideally commence before they become myopic, in view of the risk factors described above.







# QUESTIONS & ANSWERS

## ABOUT CORNEAL MOLDING ORTHO-K







## Frequently Asked Questions

*"I just cannot say enough about this AMAZING procedure known as Corneal Molding. My 12 year old boy is nearsighted and very active.*

*Glasses are not optimal and contacts were NOT going well.*

*Jack now wears "molds" at night while he sleeps. After his very first night he told me he could clearly see the board at school.*

*After one week, Jack has consistent 20/15 vision all day long.*

*With summer and swimming season and basketball camps coming up, we could not be more excited to have found an alternative to glasses and contacts."*

*Jack's mom*

*"I have tried glasses, contacts, progressives, and at one point I even wore two pairs of readers simultaneously!*

*Nothing really worked until Dr. Arroyo helped me with Non-Surgical Corneal Molding. Now,*

*I wake up every morning seeing 20/20! Thank you so much Dr. Arroyo!"*

*Mary Ann*

It is our mission to inform and educate our community about the benefits of this technology. Young people and their parents deserve to know their options, and Corneal Molding may very well be the best that ophthalmic science has come up with in a long time.

Even though children benefit the most from Corneal Molding for the reasons exposed, it is also true that any of our patients are 'grown-ups' willing to liberate themselves from glasses/contacts during waking hours by embracing a safe alternative to surgery.

### How do I know if I am a good candidate for Ortho-K?

In general, myopes are better candidates than hyperopes. Low refractive errors usually get faster results, low astigmatism is better than a high astigmatism and overall good ocular surface health is very important to increase the chances of success. There are additional factors to take into account that we evaluate before making a prognosis.

### How long will it take to achieve good vision after I start Ortho-K treatment?

Vision improvement starts immediately. You may notice it within a few minutes. It is very significant within two hours. Some patients see clearly in as little as one night of wearing Ortho-K lenses. Vision is normally good during all waking hours within the first week. In some patients with higher prescriptions, it can take two to four weeks to achieve good vision.

Because children's eyes are more easily molded, vision improvement generally takes effect more rapidly than it does for adults. We strive for optimal results, if any adjustments to your corneal molds are needed, we will address it immediately.

### My son is perfectly used to wearing glasses. Why would Ortho-K be a better alternative?

Ortho-K is not just about 20/20 vision. Generally speaking, myopia or nearsightedness continues to worsen at a faster rate during childhood and teenage years and glasses/contacts will not do anything to stop the ongoing 'myopiaization' of your child's eyes.

Ortho-K, on the other hand, has demonstrated very impressive results in that direction.

The bottom line is that Ortho-K is the best chance for your child's eyes not to be more myopic in the future.

More myopia means thicker lenses and potential eye health issues in the future such as cataracts, glaucoma, retinal degeneration and retinal detachments.

### **I have a 9 year old little girl that wears glasses to play soccer; is Ortho-K an option for her?**

Yes, absolutely. Ortho-K or Corneal Molding works best on nearsighted (myopic) individuals with or without astigmatism. Children, for the most part, have excellent tear quality and overall ocular surface health, which provides an optimal prognosis and make them the best candidates. Also, children have much more plasticity than adults, which allows them to adapt quickly

### **Is Ortho-K safe?**

Very safe. Millions of people around the world wear contact lenses, being contact lenses are considered a safe option. Corneal Molding lenses have a 2 or 3 fold higher oxygen transmissibility than any soft regular contact lenses; in addition, Corneal Molds are only worn for a fraction of the time as compared to daily contact lenses.

These two factors make Ortho-K a very safe option. Most common complications include eye irritation and glare upon removal. More serious complications such as acute red eyes and bacterial keratitis are extremely rare but they have been reported in the literature.

### **Is there any pain with corneal molding?**

None. The same way contact lenses do not involve any pain, Corneal Molds do not hurt; besides, they are worn while sleeping which diminishes the lens sensation as compared when the eyes are open.

However, improper handling, debris, a damaged mold, etc. may all cause different degrees of discomfort.

### **My eyes are always dry and I can't wear contacts.**

#### **How about Ortho-K?**

Since the eyes are closed for most of the Ortho-K wearing time, comfort is not an issue. However, your doctor will try to improve your tear quality before embarking into the Corneal Molding process. This way, there is a much better chance for success.

*"I At first, this treatment was too good to be true, but trust me it's true! Everyone knows glasses are a hassle and contacts aren't that much of a difference. I struggled with my eyesight from the first grade up until last December, and since then, my life's changed. I mean, just imagine, waking up in the morning and seeing 20/20 after taking off the molds! How awesome is that?!"*

*This is a decision I won't ever regret; it was definitely worth every cent! Dr. Arroyo will not fail you! See for yourself, literally!!!"*

*Dalia B.*

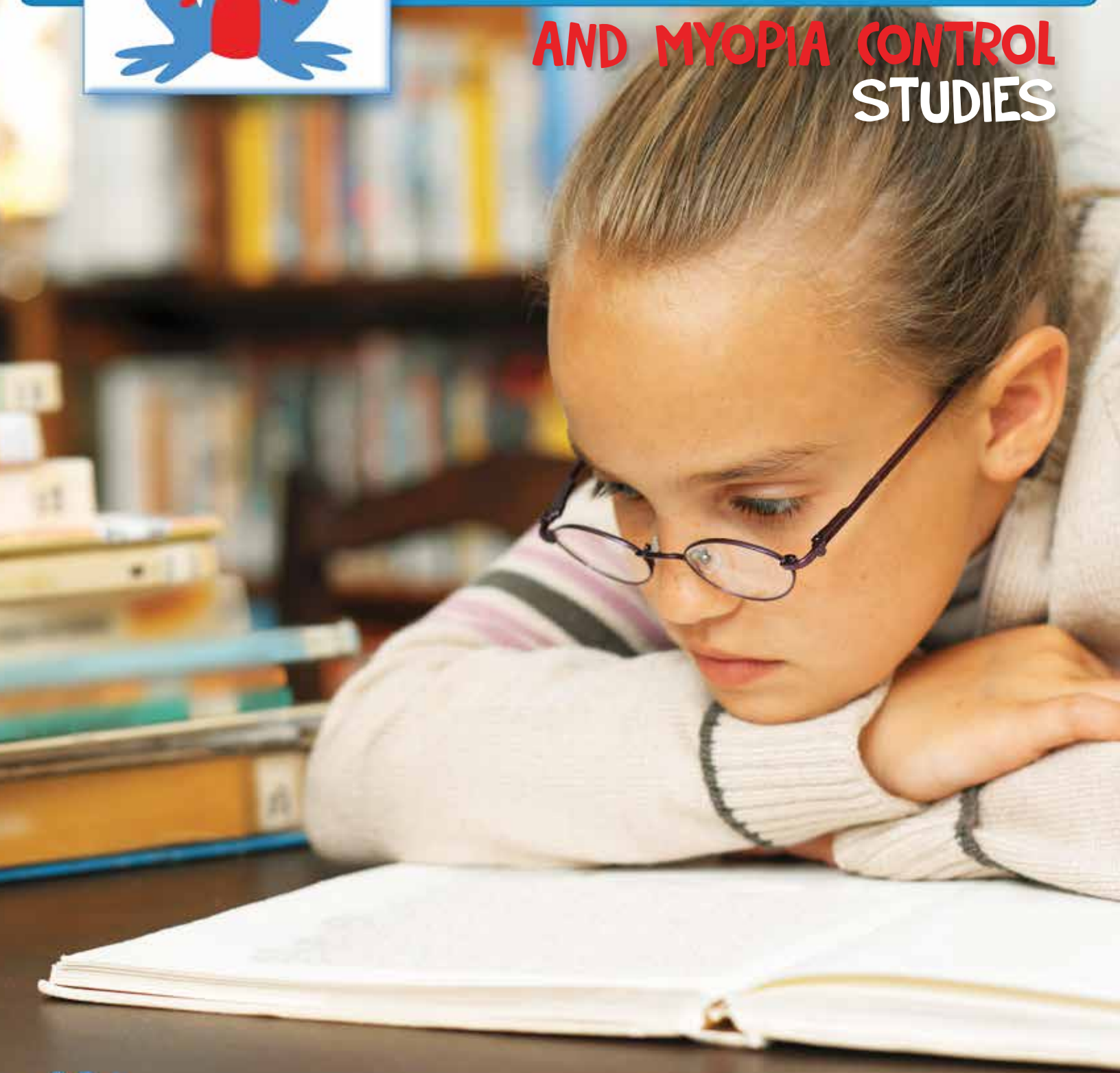
*"At first, this treatment seemed too good to be true, but trust me IT IS TRUE! I struggled with my eyesight since I was in first grade. But my life is now changed. Just imagine, waking up and seeing 20/20, how awesome is that?! I know Dr. Arroyo will not fail you! See for yourself, literally!!!"*

*Linda M.*



**ARTICLES OF INTEREST**

**AND MYOPIA CONTROL  
STUDIES**



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*"I have done Corneal Molding for over a year and it has changed my life!*

*I no longer need to pull out my glasses every time I have to read small print.*

*Corneal Molding is a life saver!"*

*Oscar H.*

*"I'm really thankful for finding this solution... I no longer need glasses, and my progression of myopia has stopped thanks to the corneal molds!!!*

*I wear them at night, go to sleep, wake up, remove them, and my vision is clear!*

*I thought it was too good to be true.*

*Thank you, Dr. Arroyo and Eye Health Consultants.."*

*Rogelio B.*

Myopia development appears to be controlled by the focus of the peripheral retina. Earl Smith, O.D. of the College of Optometry in Houston, Texas, has done a great deal of research with monkeys. He found that the eye as a process called emmetropization that continually tries to zero-out refractive errors. This process is mediated primarily by the peripheral retina and not so much the central retina.

The eyeball grows longer (axially) during maturation, which causes the myopia, and stops growing when the peripheral retina comes into focus.

Dr. Smith calls this process hyperopic peripheral defocus. If you have good central acuity, you still might have a peripheral defocus. If your peripheral retina is hyperopic, in effect that image is behind the peripheral retina, then the signal within the retina is to keep growing, and the central retina moves further out (grows) from zero error (plano) to myopic if measured centrally, which is the way doctors calculate it. If your peripheral retina is not hyperopic, in effect the peripheral image is on retina and the retinal signal is to stop or slow growth. The key to control the growth (axial eye elongation) of myopia, is about keeping the peripheral retinal focus where it needs to be, by creating a refractive 'shell', or curving the peripheral focus inward.

This effect can be successfully accomplished by Ortho-K (Corneal Molding). Ortho-K molded corneas do actually move the image in the direction that discourages axial growth. This is a summary of all the studies one to date on Ortho-K and Myopia progression. LORIC (Long Term Ortho-K Research In Children) Pauline Cho showed that axial length increase was 50% in Ortho-K patients compared to the control group in glasses.

Although Ortho-K slowed myopia, the effect couldn't be predicted for individuals.

*"My mom bought me the molds to help me see better and enjoy playing sports and swimming.*

*Now I can enjoy these activities without using glasses.*

*Making it a brighter day."*

*Eznan A.*

*"Being an athlete, I need great vision. I have always worn contacts while playing football.*

*A lot of the time though, my contacts would fall out or get messed up when I got tackled.*

*Now I don't have to worry about any of that thanks to corneal molding. I see great, and I play great.*

*Another bonus is that I can be in the water swimming as much as I want without worrying about my contacts falling out.."*

*Randy C.*



**CLAMP (Contact Lens And Myopia Progression)** Jeff Walline studied 59 RGP eyes versus 57 soft lens eyes. There was no difference in axial length growth. RGPs flattened the cornea .5D, while soft lenses steepened it .5D. GPs slowed progression but only a small amount.

Walline JJ, Jones LA, Mutti DO, and Zank K: A Randomized Trial of the Effect of Rigid Contact Lenses on Myopia Progression. Arch Ophthalmol 122: 1760-1766, 2004 <http://www.nei.nih.gov/neitrials/viewStudyWeb.aspx?id=81>

**COMET (Correction of Myopia Evaluation Trial)** Progressive Addition Lenses slowed myopic progression by .13D over five years, an effect considered negligible. Gwiazda J, Hyman L, Hussein M, Everett D, Norton TT, Kurtz D, Leske MC, Manny R, Marsh-Tootle W, Scheiman M, and the COMET Group: A randomized clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children.

IOVS 44: 1492-1500, 2003. <http://www.nei.nih.gov/neitrials/viewStudyWeb.aspx?id=9>

**CRAYON (Corneal Reshaping and Yearly Observation of Nearsightedness)** An update to the LORIC study. Jeff Walline. CR slows axial growth over the study length of two years.

Not yet published. Walline, Jeffrey J., Slowing Myopia Progression Spectrum, June 2007.

**COOKI (Children's Overnight Orthokeratology Investigation)** essentially proved that CR works overnight for children in the 8-11 year old group. Invest Ophthalmol Vis Sci 2003;44:

[http://www.dreamlens.at/The\\_Childrens\\_Overnight.pdf](http://www.dreamlens.at/The_Childrens_Overnight.pdf)

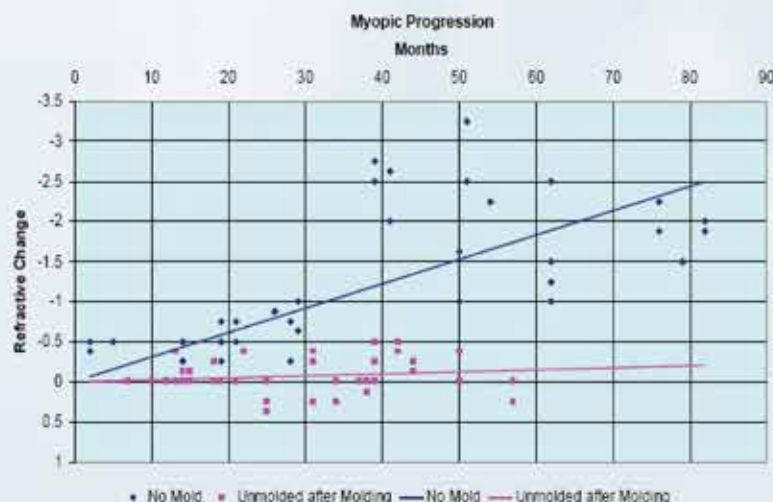
**SMART (Stabilization of Myopia through Accelerated Reshaping Technologies)** A five year study where after each year of wear the patient is allowed to normalize without wearing their molding lenses after which they start wearing their lenses again. Preliminary results show stability after one year. The EyeVis Eye and Vision Research Institute.

**CANDY (Controlling Astigmatism and Nearsightedness in Developing Youth)** showed myopic progression of -.37D per year in normally corrected myopes and -.03D per year in CR patients. Patients were allowed to normalize at various times during their CR wear.

The study graph below summarizes the data.

David Bartels, Peter Wilcox

<http://www.wavecontactlenses.com/download/candy.pdf>



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- 14 **[www.orthokdoctors.com](http://www.orthokdoctors.com)**
- 15 **[www.myopiaprevention.org](http://www.myopiaprevention.org)**







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