

Contact Lens Update

CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

Busting myths about kids and contact lenses

March 27, 2013



Jeffrey J. Walline, OD PhD is an Associate Professor at The Ohio State University College of Optometry. He has conducted several pediatric contact lens studies, with topics ranging from myopia control to the effects of contact lens wear on children's self-perceptions.

There is an increased interest from the clinical community about fitting children in contact lenses, primarily due to advances in contact lens materials and daily disposable contact lenses.¹ However, only about 3% of new contact lens fits in the United States are performed on children between the ages of six and 12 years.² One reason for this disconnect may be that eye care practitioners still believe many of the myths that have been propagated through the years. Hopefully, some of these myths can be debunked, so that more young children can experience the benefits of contact lens wear.

Myth: Children who lose or break their glasses are poor candidates for contact lens wear

Children rarely lose or break their glasses while wearing them. They are typically lost or broken while in a backpack, on a bench or on the ground. However, children don't remove their glasses because they dislike seeing clearly. They like to see clearly, but not enough to subject themselves to the discomfort, limitations or ridicule that may accompany spectacle wear. They can see clearly with contact lenses while avoiding indentations on the nose, poor peripheral vision or the moniker "Four Eyes." Therefore, children who are incapable of spectacle care often make excellent contact lens wearers because they are exceptionally motivated to see clearly without the need for frames on the face.

Myth: Children take significantly longer to fit with contact lenses

The time required to fit, teach insertion and removal and conduct two follow-up visits was compared between 7 to 12 year old children and 13 to 17 year old teenagers.³ The children required approximately 15 minutes more time, including all of the visits. The greatest difference was during the insertion and removal training. Children require approximately 11 minutes more time than teens, but insertion and removal training is typically conducted by staff, so fitting children with contact lenses shouldn't alter the productivity of a busy practice.

Myth: The risk-to-benefit ratio is much greater for teens than children

According to results from a pediatric vision-specific quality of life survey, both teens and children experience the greatest benefit of contact lens wear when it comes to appearance and recreational activities, and there is no significant difference in contact lens benefits between children and teens.⁴ The short-term ocular health consequences are also similar between children and teens,³ and children experience fewer adverse events that disrupt contact lens wear than college-age contact lens wearers.⁵ Patients who had worn soft contact lenses for at least ten years and who were fit with contact lenses before age 12 years were more myopic than patients who were fit at age 13 years or older, but they had no more ocular health complications, reported adverse events or

unsafe contact lens care practices. Children appear to benefit as much from contact lens wear as teens, and they suffer no more short-term or long-term ocular health consequences. The risk-to-benefit ratio must be considered every time a treatment is initiated, and it appears to be similar for teens who are routinely fit with contact lenses and children who are not, so contact lens fitting should be considered more commonly for children.

Myth: Fitting children with soft contact lenses will make them more myopic.

There is some evidence that soft contact lenses lead to increased myopia progression, especially for younger patients and patients who wear low-Dk contact lenses.⁶⁻¹⁰ However, two long-term, randomized clinical trials comparing low-Dk soft contact lens wearers and spectacle wearers have found no meaningful differences in myopia progression,¹¹⁻¹² and no difference in axial elongation.¹² Over a long period of time, soft contact lenses do not increase eye growth or myopia progression in children.

Myth: Gas permeable contact lenses slow myopia progression

For years, gas permeable contact lenses were reported to slow myopia progression in children.¹³⁻¹⁵ However, two randomized clinical trials reported no effect of gas permeable contact lens wear on axial elongation.¹⁶⁻¹⁷ Although the gas permeable contact lens wearers progressed approximately 0.75 D less than the soft contact lens wearers, approximately half of the effect was due to corneal flattening. Corneal flattening due to gas permeable contact lens wear is not permanent, so much of the difference in myopia progression would diminish after removing treatment. However, soft bifocal¹⁸⁻¹⁹ and corneal reshaping²⁰⁻²³ contact lenses have been shown to slow axial elongation by approximately 40% to 50% in several investigations, including one randomized clinical trial of corneal reshaping contact lenses.²⁰ Although alignment fit gas permeable contact lenses do not slow eye growth, both corneal reshaping and soft bifocal contact lenses have been shown to be effective for myopia control.

Myth: Contact lens wear improves children's overall perception of themselves

While research indicates that contact lenses do improve how children feel about themselves in the areas of appearance, athletics and peer interactions, they do not improve children's global self-perception, which is a multidimensional assessment of one's value in society and difficult to change without specific intervention.²⁴ Children even feel that they perform better academically when fit with contact lenses, if they initially didn't like wearing glasses. Presumably, children who don't like wearing glasses take them off at school, so they have difficulty reading the board. When fit with contact lenses, they wear their vision correction all day so they can read the board and feel that they perform better academically.

Parents frequently report that their eye care practitioner will not fit their child with contact lenses until age 12 or 13 years, despite the fact that many studies have shown that younger children can handle the responsibilities of contact lens care and they experience a variety of benefits. Hopefully, with the advent of new materials, daily disposable contact lenses and published research on pediatric contact lens wear, eye care practitioners will begin to embrace pediatric contact lens fitting.

REFERENCES

1. Sindt CW, Riley CM. Practitioner attitudes on children and contact lenses. *Optometry* 2011;82: 44-5.
2. Efron N, Morgan PB, Woods CA. Survey of contact lens prescribing to infants, children, and teenagers. *Optom Vis Sci* 2011;88: 461-8.
3. Walline JJ, Jones LA, Rah MJ, et al.. Contact lenses in pediatrics (CLIP) study: chair time and ocular health. *Optom Vis Sci* 2007;84: 896-902.
4. Walline JJ, Gaume A, Jones LA, et al.. Benefits of contact lens wear for children and teens. *Eye Contact Lens* 2007;33: 317-21.
5. Wagner H, Chalmers RL, Mitchell GL, et al.. Risk factors for interruption to soft contact lens wear in children and young adults. *Optom Vis Sci* 2011;88: 973-80.
6. Bergenske P, Long B, Dillehay S, et al.. Long-term clinical results: 3 years of up to 30-night continuous wear of lotrafilcon A silicone hydrogel and daily wear of low-Dk/t hydrogel lenses. *Eye Contact Lens* 2007;33: 74-80.
7. Blacker A, Mitchell GL, Bullimore MA, et al.. Myopia progression during three years of soft contact lens wear. *Optom Vis Sci* 2009;86:1150-3.
8. Fulk GW, Cyert LA, Parker DE, et al.. The effect of changing from glasses to soft contact lenses on myopia progression in adolescents. *Ophthalmic Physiol Opt* 2003;23: 71-7.
9. Marsh-Tootle WL, Dong LM, Hyman L, et al.. Myopia progression in children wearing spectacles vs. switching to contact lenses. *Optom Vis Sci* 2009;86(6): 741-747.
10. Bullimore MA, Jones LA, Moeschberger ML, et al.. A retrospective study of myopia progression in adult contact lens wearers. *Invest Ophthalmol Vis Sci* 2002;43: 2110-3.
11. Horner DG, Soni PS, Salmon TO, et al.. Myopia progression in adolescent wearers of soft contact lenses and spectacles. *Optom Vis Sci* 1999;76: 474-9.
12. Walline JJ, Jones LA, Sinnott L, et al.. A randomized trial of the effect of soft contact lenses on myopia progression in children. *Invest Ophthalmol Vis Sci* 2008;49: 4702-6.
13. Khoo CY, Chong J, Rajan U. A 3-year study on the effect of RGP contact lenses on myopic children. *Singapore Med J* 1999;40: 230-7.
14. Perrigin J, Perrigin D, Quintero S, et al.. Silicone-acrylate contact lenses for myopia control: 3-year results. *Optom Vis Sci* 1990;67: 764-9.
15. Stone J. The possible influence of contact lenses on myopia. *British Journal of Physiological Optics* 1976;31: 89-114.
16. Katz J, Schein OD, Levy B, et al.. A randomized trial of rigid gas permeable contact lenses to reduce progression of children's myopia. *Am J Ophthalmol* 2003;136: 82-90.
17. Walline JJ, Jones LA, Mutti DO, et al.. A randomized trial of the effects of rigid contact lenses on myopia progression. *Arch Ophthalmol* 2004;122: 1760-6.
18. Anstice NS, Phillips JR. Effect of dual-focus soft contact lens wear on axial myopia progression in children. *Ophthalmology* 2011;118: 1152-61.
19. Sankaridurg P, Holden B, Smith E, 3rd, et al.. Decrease in rate of myopia progression with a contact lens designed to reduce relative peripheral hyperopia: one-year results. *Invest Ophthalmol Vis Sci* 2011;52: 9362-7.
20. Cho P, Cheung SW. Retardation of myopia in orthokeratology (ROMIO) study: A 2-year randomized clinical trial. *Invest Ophthalmol Vis Sci* 2012;53: 7077-85.
21. Kakita T, Hiraoka T, Oshika T. Influence of overnight orthokeratology on axial elongation in childhood myopia. *Invest Ophthalmol Vis Sci* 2011;52: 2170-4.
22. Santodomingo-Rubido J, Villa-Collar C, Gilmartin B, et al.. Myopia control with orthokeratology contact lenses in Spain (MCOS): Refractive and biometric changes. *Invest Ophthalmol Vis Sci* 2013;39(2): 153–157.
23. Walline JJ, Jones LA, Sinnott LT. Corneal reshaping and myopia progression. *Br J Ophthalmol* 2009;93: 1181-5.
24. Walline JJ, Jones LA, Sinnott L, et al.. Randomized trial of the effect of contact lens wear on self-perception in children. *Optom Vis Sci* 2009;86: 222-32.