

Eye on Research:

Improvement in Academic Behaviors After Successful Treatment of Convergence Insufficiency

Remember the CITT study? That was the definitive study published in Archives of Ophthalmology in 2008 that demonstrated the efficacy of vision therapy in treating convergence insufficiency (CI), a common eye muscle coordination problem. One result was an easy-to-use symptom survey to screen for CI—printed on the reverse of this newsletter. Surely, anyone reading this list of 15 symptoms would suspect interference with reading and learning. We would expect, then, that children who undergo optometric vision therapy for CI should show improvement in schoolwork and that their parents should have fewer concerns. To test this, the CITT research group developed the Academic Behavior Survey (ABS), a parent survey that quantifies the frequency of adverse school behaviors and parental concern about school performance. Just published this month, the study showed that successful treatment of CI was associated with a reduction in the frequency of adverse academic behaviors and parental concern associated with reading and schoolwork.

		Never	Infrequently	Sometimes	Fairly often	Always
1.	How often does your child have difficulty completing assignments at school?					
2.	How often does your child have difficulty completing homework?					
3.	How often does your child avoid or say he/she does not want to do tasks that require reading or close work?					
4.	How often does your child fail to give attention to details or make careless mistakes in schoolwork or homework?					
5.	How often does your child appear inattentive or easily distracted during reading or close work?					
6.	How often do you worry about your child's school performance?					

Academic Behavior Survey: Borsting E et al and the CITT Study Group. Improvement in Academic Behaviors After Successful Treatment of Convergence Insufficiency. Optom Vis Sci. 2012 Jan;89(1):12-18.

Success Story



"(Austin) would have meltdowns because he was having a hard time reading. He would start to read, and he would start fidgeting and moving around...We would always have to tell him to sit and focus while he was reading. He would start to read and then after two or three words he would start to move around...Eventually we would start taking pennies to block off where he was so he could concentrate on one word at a time versus trying to look at the whole page because he couldn't hold his place in line. We took him down to Dr. Orren at the Eye Center. Dr. Orren said that things were starting to blur before they were supposed to, so he sent us up here to Dr. Marcus Myers.

Over the course of his vision therapy...he did so much better. He is a very fluent reader now and he doesn't fidget anymore. Homework is a breeze. It's not screaming. It's not yelling. It's just sitting down, reading through it, and his love for reading has really come back...He reads more fluently and without using his finger to hold his spot. He will get books from his book case and read for fun."

--Amber Koch, Watsontown, PA

Austin was referred for a vision therapy evaluation by Dr. William Orren of the Eye Center of Central PA in Lewisburg. Although the ABS (above) had not yet been published when Austin began treatment, we suspect the scores would have been high. Unlike most children with eye muscle coordination problems, Austin described how words became blurry with extended reading. Although experts estimate that 5% of school-age children have CI, children rarely report visual problems—possibly because there is no reference point. Doesn't everyone see that way? At the completion of vision therapy, Austin and his mother report improved reading, less loss of place while reading, improved concentration, and reading for pleasure.

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News and Events

Contact:

National Eye Institute
(301) 496-5248
neinews@nei.nih.gov

More Effective Treatment Identified for Common Childhood Vision Disorder

NEI Press Release

National Institutes of Health
National Eye Institute

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Scientists have found a more effective treatment for a common childhood eye muscle coordination problem called convergence insufficiency (CI). For words on a page to appear in focus a child's eyes must turn inward, or converge. In CI, the eyes do not converge easily, and as a result, additional muscular effort must be used to make the eyes turn in.

While the majority of eye care professionals treat children diagnosed with CI using some form of home-based therapy, a new study concludes that office-based treatment by a trained therapist along with at-home reinforcement is more effective. The research, reported in the Oct.13 issue of Archives of Ophthalmology, was funded by the National Eye Institute (NEI), part of the National Institutes of Health.

The 12-week study, known as the Convergence Insufficiency Treatment Trial (CITT), found that approximately 75 percent of those who received in-office therapy by a trained therapist plus at-home treatment reported fewer and less severe symptoms related to reading and other near work. Symptoms of CI include loss of place, loss of concentration, reading slowly, eyestrain, headaches, blurry vision, and double vision.

"This NEI-funded study compared the effectiveness of treatment options for convergence insufficiency," said Paul A. Sieving, M.D., Ph.D., director of the NEI. "The CITT will provide eye care professionals with the research they need to assist children with this condition."

The CITT, which included 221 children age 9 to 17, is the first to compare three forms of vision therapy and a placebo therapy option. The first therapy was the current treatment standard known as home-based pencil push-up therapy, an exercise in which patients visually followed a small letter on a pencil as they moved the pencil closer to the bridge of their nose. The goal was to keep the letter clear and single, and to stop if it appeared double. The second group used home-based pencil push-ups with additional computer vision therapy. The third attended weekly hour-long sessions of office-based vision therapy with a trained therapist and performed at-home reinforcement exercises. The last group was given placebo vision activities designed to simulate office-based therapy.

After 12 weeks of treatment, nearly 75 percent of children who were given the office-based vision therapy along with at-home reinforcement achieved normal vision or had significantly fewer symptoms of CI. Only 43 percent of patients who completed home-based therapy alone showed similar results, as did 33 percent of patients who used home-based pencil push-ups plus computer therapy and 35 percent of patients given a placebo office-based therapy.

"There are no visible signs of this condition; it can only be detected and diagnosed during an eye examination," said principal investigator Mitchell Scheiman, O.D., of Pennsylvania College of Optometry at Salus University near Philadelphia, Pa. "However, as this study shows, once diagnosed, CI can be successfully treated with office-based vision therapy by a trained therapist along with at-home reinforcement. This is very encouraging news for parents, educators, and anyone who may know a child diagnosed with CI."

A 12-month follow-up study is being conducted to examine the long-term effects of these CI treatments. Further information about the reported trial, NCT 00338611, can be found at www.clinicaltrials.gov.

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The National Eye Institute (NEI) a component of the National Institutes of Health is the federal government's lead agency for vision research that leads to sight-saving treatments and plays a key role in reducing visual impairment and blindness. For more information, visit the NEI Web site at www.nei.nih.gov/.

The National Institutes of Health (NIH)—The Nation's Medical Research Agency—includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical, and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit <http://www.nih.gov>.

