

VISION DEVELOPMENT CENTER

Welcome!

Thank you for your interest in the field of vision therapy. Drs. Eckroth and Hansen, along with the Eyecare Specialties staff, look forward to the opportunity of working with you and your family.

Please take a few minutes to review the enclosed reference materials regarding vision therapy. There is also a list of additional resources included for those seeking supplementary information.

If you have any further questions and/or would like additional information please contact our office. You may also visit our website at <http://eyecare-specialties.com/our-services/vision-therapy> for added information.

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Sincerely,

Dr. Craig Eckroth and Dr. Natalie Hansen

ANSWERS TO COMMON QUESTIONS ABOUT VISION THERAPY

What is the difference between eyesight and vision?

Eyesight is the physical process of detecting patterns of light and contrast with the eyes. It is the ability to see small objects at a given distance clearly. The accepted measurement is 20/20 visual acuity.

Vision is the learned process that allows the brain to efficiently gather and use the information that is seen through the eyes. Vision provides the brain with an efficient channel for monitoring our attempts to move through, or change the environment. Vision includes skills such as eye tracking, eye teaming, focusing and perceptual relationships.

What is Vision Therapy?

Vision therapy is an individualized treatment program designed to correct visual system deficiencies caused by stress, inadequate sensorimotor development, or trauma to the nervous system, all of which interfere with the ability to efficiently use the visual system.

Vision therapy teaches the brain how to use the eyes effectively to gather information, understand it quickly and react to it appropriately. A vision therapy program typically includes the use of special lenses, prisms or filters, in association with procedures designed to enhance the brain's ability to control eye alignment, eye movements, focusing ability and eye teamwork. High levels of visual-motor efficiency and endurance are developed during carefully monitored therapy sessions. The new skills are brought together and become automatic by repetition and integration with motor and cognitive skills.

Can vision therapy help people with learning problems?

Yes! Vision therapy can be an important part of the overall treatment of a person's learning problem.

Vision and sensorimotor deficits can cause eyestrain, headaches, blurred or double vision, reading problems, and attention difficulties. Even intelligent, highly motivated people can be severely handicapped by these problems in the academic or work environment. Correcting these deficits allows affected people to benefit from academic remediation and to achieve their full potential in the classroom and workplace.

What are some symptoms of learning related vision disorders?

- Dislike or avoidance of reading and other close work
- Loss of place while reading or copying
- Trouble finishing assignments in the allotted time
- Omitting or misreading words or letters
- Slow, inaccurate copying
- Distractible, loses attention quickly
- Blurred, double or unstable vision
- Headaches, eye strain or visual fatigue associated with reading or other close work

How many people are affected by learning related vision disorders?

Approximately 25% to 40% of the general population is affected by some degree of learning related vision disorder. This percentage increases dramatically in learning disabled and remedial reading populations, where as many as 90% of the people have a significant visual disorder component to their learning problems.

What if eyesight is 20/20 and the eyes are healthy. Do I need to worry?

Possibly. Being able to read the letters on a chart at 20 feet does not guarantee efficient learning related vision skills. In fact, the people most handicapped by vision or sensorimotor deficits often have 20/20 distance eyesight and healthy eyes. The problems with eye alignment, focusing and visual endurance, which are likely to affect schoolwork, are easily missed in school screenings or a conventional eye exam.

How can I find a qualified doctor to examine and treat this problem?

Doctors who offer special services in the areas of learning related vision disorders and vision therapy usually have advanced post-doctoral certification. Membership in the College of Optometrists in Vision Development is the accepted professional standard at this time. This is your assurance that you have obtained the finest care available.

What other problems can be helped with Vision Therapy?

Turned or crossed eyes (strabismus) can be effectively treated with vision therapy. In fact, vision therapy is often the only alternative to surgical intervention.

Lazy eye (amblyopia) can also be successfully treated with vision therapy at any age.

Visual consequences of traumatic brain injury can also be effectively treated using vision therapy.

Is there more than one type of vision therapy?

Yes! Not all vision therapy is the same! Differences in the approach to vision therapy are as diverse as the doctors who provide it. Make sure that you understand what you should expect from the program and how it will be achieved. Check your doctor's qualifications. Involvement in the COVD and years of clinical experience in the field of vision therapy are excellent indicators of the quality of a vision therapy program.

Are computers used in Vision Therapy?

Yes! The computer has been a major advancement in the administration of vision therapy. The computer's unique properties have allowed us to add a number of interesting variations to the process of building visual skills. We use state of the art technology and software to sharpen visual recognition, memory skills, mental analysis, and manipulation abilities and to develop efficient eye-hand coordination.

Can vision problem affect self-esteem?

Yes! People with vision problems often have a history of underachievement and frustration. They often conclude that the reason for their low achievement is that they are not as "smart" as other people. Low self-esteem and lack of confidence are often the result of this conclusion. Correcting the vision problems that interfere with normal performance can have dramatic effects on both performance and self-esteem.

How long do the results of vision therapy last?

Most healthy vision therapy patients enjoy long-term resolution of their visual problems. Using the newly acquired visual abilities in the activities of daily life allows these skills to become self-reinforcing. Efficient vision becomes a habit, as hard to break as any other habit. Patients with strabismus, amblyopia, or traumatic brain injury may need to perform a minimum level of maintenance therapy to sustain the high levels of visual performance attained during in-office therapy.

Learning Related Visual Problems

What is vision?

Vision is a cognitive act which enables us to look at an object and not only identify it but to determine where it is, its size, its distance from the observer, its rate of movement, its texture, and everything else that can be determined by visual inspection. Eyesight, which involves the sensory ability of the eye to distinguish small details, is only one component of vision. It has been estimated that 75 to 90% of all classroom learning comes to the student via the visual pathways. If there is any interference with these pathways, the student will probably experience difficulty with learning tasks.

What visual skills are needed for school achievement?

Eye Movement Skills (Ocular Motility). To obtain the greatest amount of information in the shortest time and with the least effort, the eyes must be able to scan with speed and control. If eye movements are slow, clumsy, or uncoordinated e.g. if the eyes jump, miss, 'stutter', or lose their place on instructional material - the amount of information obtained will be reduced.

Eye Teaming (Binocularity). The human visual system is designed so that the paired eyes and all of their reciprocating muscles work as a team. All judgments of spatial orientation, relationships, depth perception and more important the immediacy and accuracy of clear, single vision for almost every object or symbol, depends on the paired action of the eyes.

Eye-Hand Coordination Skills. This ability and any proficiency a child may attain in this area is dependent upon the use, practice, and integration of the eyes and the hands as paired learning tools. Out of this practice emerges the ability to make visual discriminations of size, shape, texture, and location of objects. This skill is developmentally essential and preparatory to both reading and writing.

Visual Form Perception (Visual Comparison, Visual Imagery, Visualization). The child's first symbols are images and pictures which allow him to mentally hold fleeting reality. This skill of visual imagery allows the child to relate primary experiences to the pictures and words seen on the printed page. Skillful action in the previous three areas provides perceptual information that permits the translation of object size, shape, texture, location, distance and solidity into understood pictures and words. Visual form perception is a derived skill, not a separate and independent ability. Its ultimate purpose is the immediate and accurate discrimination of visible likenesses and differences, so comprehension can be immediately followed by appropriate actions.

How are visual problems evaluated?

A comprehensive analysis of a person's visual functioning should include an eye health evaluation, measurement of visual acuity and refractive status (nearsightedness, farsightedness, and astigmatism). Of equal importance, the analysis must determine how both eyes work together as a team, how the eyes aim and focus together, and how well and clear, single vision can be sustained, especially at a near point reading task. With the underlying philosophy that vision is a process involving an input, a computing, an output, and then a feedback mechanism, the goal of the analysis should be to determine whether the visual system is effectively processing information. As vision is used to guide, steer, and appraise what we do in our everyday life, the analysis should be done under natural conditions, without the use of any cycloplegic (paralyzing) eye drops.

How are visual problems treated?

Optometric treatment for a vision dysfunction may include the use of lenses, prisms, visual training programs, and developmental vision guidance. In addition, specific recommendations may also be made concerning general health and nutrition.

What are the clues to look for when a vision problem is suspected?

The following clues to classroom visual problems were compiled by the Optometric Extension Program Foundation, Inc. Children observed to exhibit these signs should be referred for a developmental vision evaluation.

1. Appearance of Eyes

- One eye turns in or out at any time.
- Reddened eyes or lids
- Eyes tear excessively
- Encrusted eyelids
- Frequent sties on lids

2. Complaints When Using Eyes at Dark

- Headaches in forehead or temples.
- Burning or itching after reading or desk work
- Nausea or dizziness
- Print blurs after reading a short time.

Behavioral Signs of Visual Problems

3A. Eye Movement Abilities (Ocular Motility)

- Head turns as reads across page.
- Loses place often during reading
- Needs finger or marker to keep place
- Displays short attention span in reading or copying
- Too frequently omits words.
- Writes up or down hill on paper
- Rereads or skips lines unknowingly
- Orients drawings poorly on page

3B. Eye Teaming Abilities (Binocularity)

- Complains of double (diplopia)
- Repeats letters within words
- Omits letters, numbers or phrases
- Misaligns digits in number columns
- Squints, closes, or covers one eye
- Tilts head extremely while working at desk
- Consistently shows gross postural deviations at desk activities

3C. Eye-Hand Coordination Abilities

- Must feel things to assist in any interpretation required
- Eyes not used to "steer" hand movements (extreme lack of orientation, placement of words or drawings on a page)
- Writes crookedly, poorly, spaced cannot stay on ruled lines
- Misaligns both horizontal and vertical series of numbers

- Uses his hand or fingers to keep place on the page
- Uses other hand as "spacer" to control spacing and alignment on page
- Repeatedly confuses left-right direction

3D. Visual Form Perception (Visual Comparison, Visual Imagery, Visualization)

- Mistakes words with the same or similar beginnings
- Fails to recognize same word in next sentence
- Repeatedly confuses similar beginnings and endings or words
- Fails to visualize what is read either silently or orally
- Whispers to self for reinforcement while reading silently
- Returns to "drawing with fingers" to decide likes and differences

3E. Refractive Status (Nearsightedness, Farsightedness, Focus Problems, etc.)

- Comprehension reduces as reading continued; loses interest too quickly
- Mispronounces similar words as continues reading
- Blinks excessively at desk tasks and/or reading; not elsewhere
- Holds book too closely; face too close to desk surface
- Avoids all possible near-centered tasks
- Complains of discomfort in tasks that demand visual interpretation
- Closes or covers one eye when reading or doing desk work
- Makes errors in copying from chalkboard to paper on desk
- Makes errors in copying from reference book to notebook
- Squints to see chalkboard, or requests to move nearer
- Rubs eyes during or after short periods of visual activity
- Fatigues easily; blinks to make chalkboard clear up after desk task

I Hate Reading!

Vision is much more than what you see

by Laura O'Hear

For years, school work was a struggle for 12-year-old Becca*. Taking notes in class made her head hurt. Math homework, especially word problems, took hours and ended with tears. And worst of all, she dreaded reading.

"She would tell us how much she hated to read, and I just came to accept that as part of her personality," says Becca's mom Kathleen*.

"I remember in fifth grade, she had a lot of reading assignments in class," continues Kathleen. "Any student who didn't get the entire reading done would have to finish at home. Becca was never able to complete the assignment, and she felt like she was being punished even though she was working very hard to finish. And then, she had extra reading homework on top of the normal homework."



It was during a chance meeting with optometrist JoAnn Bailey of Delran that Kathleen learned Becca's struggle with reading might have a cause - and that cause could be corrected.

"Dr. Bailey kept telling me kids who say they hate to read often need vision therapy," says Kathleen. "She said she has treated lots of kids who went from hating reading to loving reading. At that time, I had no idea what vision therapy was, but if there was a chance it would help Becca, I wanted to give it a shot."

In simple terms, vision therapy trains the eyes to perform better physically. Optometrists who specialize in vision therapy use unique tests and tools to screen for vision difficulties not normally found through standard vision exams. In fact, vision therapy won't be found in the average eye care practice.

Vision therapy corrects or improves vision conditions such as eye teaming and tracking disorders, crossed eyes, lazy eye, visual processing (perception) problems and focusing, among others. One common diagnosis is convergence insufficiency (CI), which is associated with headaches, sleepiness when reading and loss of comprehension after brief reading. With CI, the eyes do not properly converge when looking at something. Instead the eyes drift inward or outward in an attempt to focus. Sometimes sufferers will find themselves closing one eye, then the other. Often, they have to re-read the same material.

Kids in vision therapy have weekly in-office sessions with home activities performed between visits

"One of the tests Dr. Bailey performed was to ask Becca to follow her finger as she moved it in front of Becca's face," says Kathleen. "When Dr. Bailey moved her finger, Becca's head moved all around as she followed the finger. She couldn't keep her head straight while her eyes moved.

I had never noticed that before, but clearly, that wasn't right."

"People often start to reveal symptoms when they are in about third grade," says Dr. Bailey, "when a child changes from learning how to read, to reading to learn. Until a person has to sustain that type of task (like working on a computer or reading), many of these problems aren't

going to bother them. Tutoring and special education cannot help. Treating the vision problem can.

"These children are very bright, but often test way below their intellect. They avoid reading, and thus learning. In a few years, they often turn off to learning, not because of their lack of interest, but their lack of ability to visually focus on the materials they are using to learn in schools. Sometimes, children are labeled as ADD or ADHD when they just have vision issues. They may have additional problems, but when we treat the vision issues, it is easier to cope with those other problems. Each child study team evaluation should include a developmental vision evaluation."

Schools in Medford participated in a study by the National Institutes of Health which found vision therapy to be effective, concluding that "after 12 weeks of treatment, nearly 75 percent of children who were given the office-based therapy along with at-home reinforcement achieved normal vision or had significantly fewer symptoms of CI..."

Marlton optometrist Michael Gallaway was a principal investigator in the study. He works with school districts to train staff to recognize signs of CI among students.

"20/20 vision is the tip of the iceberg in terms of the skills we need to learn effectively," says Dr. Gallaway. "Two-thirds of the day - about four hours - kids are looking down at their desk. If those kids can't focus, or they can't track, they will struggle."

"If ADHD symptoms show up after the child is already well into school, vision problems are probably the reason," continues Dr. Gallaway. "Real ADHD can be detected before vision issues show up."

For 13-year-old Joseph Hughes, vision therapy came just in time.

All through elementary school, Joseph struggled with homework and suffered with migraine headaches. He complained he couldn't see the board in school. If he had any reading to do for homework, his parents would read it to him and then discuss the reading, since that seemed to be the only way he could comprehend the material. Because he was getting As, his teachers didn't know about the family's difficulties.

Joseph's parents hired a Child Study Team and four tutors. Mom Janice took him to four different eye doctors who kept strengthening his eyeglass prescription. "You just want to make your child better, and you can't understand why you can't help him," she said.

After about a month of vision therapy, Joseph stopped getting migraines. "We saw the changes almost right away. I can't even begin to tell you. Even the teachers noticed a difference, especially his English teacher." Today, Joseph takes four AP classes in high school and is on the honor roll.

For Becca and her mom Kathleen, vision therapy has also changed their lives. "Becca has been practicing the computer games at home for about two months now, and she has therapy visits at Dr. Bailey's office about once a week," says Kathleen.

"Last night she asked me if we could stop at Barnes and Noble to buy a book to read on a bus trip she was taking with school. When we were leaving the store, she said, 'this is the first book I've ever bought just because I wanted to read.' She is 12, and that was the first time she ever wanted to buy a book. I can't begin to tell you how happy - and grateful - that made me feel."

*names have been changed



Retained Primitive Reflexes

Many people who have cared for an infant are familiar with primitive reflexes: Turn an infant's head to one side and both arms turn to that side (Asymmetric Tonic Neck Reflex). Stroke an infant's low back on one side and their side muscles instantly contract (Spinal Galant Reflex). Surprised by a sound, the infant instantly spreads their hands wide, throws their head back, and opens their eyes widely (Moro Reflex). Doctors often gauge the development of the child by the orderly progression of these reflexes.

Under optimal circumstances all reflexes "initiate" during the appropriate stage of the child's development, "integrate" themselves as a fully functioning reflex, and then "inhibit" or fall away when it's time to move on to the next developmental stage. It is vital that this occurs. If various reflexes fail to initiate, integrate and inhibit, the system is locked into a developmental holding pattern that prevents natural maturation of neural systems, inevitably leading to mild through severe learning and performance challenges.

Retained Reflexes Lead to Learning Challenges

For children, these challenges show up clearly in the classroom, where it is hard for them to keep up with grade level expectations for academics and behavior. Those children most able to cope develop techniques for compensation. They just get by or succeed with great effort. Those children who are least able to cope often end up in specialized classrooms or alternative schools. They are at high risk for behavior and attitude problems, most often due to years of sheer frustration.

Children and teens with reflex challenges grow into adults with reflex challenges. They may end up with limited career choices, or may simply have to work extremely hard for each success. In any case, the common denominator is the need for struggle and effort against the invisible pull of these reflexes.

Compensation Takes Great Effort

Throughout our lives we strive to compensate for any of these reflexes that may still be present. This compensation takes a tremendous amount of energy. Under stress, those with retention of these reflexes, simply run out of energy to compensate and are less able to cope.

As a person ages, the energy to continue these automatic compensations becomes less and less available and the reflexes themselves begin to reappear in reverse order. As this happens, abilities fade and frustration emerges because of the tremendous effort required to do familiar tasks.

Why Test for Primitive Reflexes in a Behavioral Optometric Examination?

Because the symptoms of retained primitive reflexes are so similar to the symptoms of a learning-related visual problem, it is very important that we test for them as well. If any primitive reflexes are present or retained they can limit the amount of improvement that is gained from a vision therapy program unless certain modifications are made to its implementation.

Symptoms of the Primitive Reflexes that relate to Behavioral Optometry

Moro Reflex:

- Vestibular problems: motion sickness, poor balance and coordination.
- Physical timidity.
- Eye movement and visual perceptual problems.
- Stimulus bound effect – cannot ignore irrelevant visual material within a given visual field; the eyes tend to be drawn to the perimeter of a shape to the detriment of perception if there are internal features to the shape.
- Light sensitivity, difficulty with black print on white paper, tires easily under fluorescent lighting.
- Possible auditory confusion resulting from hypersensitivity to specific sounds (the child may have poor auditory discrimination skills and have difficulty shutting out background noise).
- Allergies and lowered immunity; i.e. asthma, eczema, or a history of frequent ear, nose, and throat infections.
- Adverse reaction to drugs.
- Poor stamina.
- Dislike of change or surprise; poor adaptability.

Asymmetrical Tonic Neck Reflex (ATNR):

- Balance may be affected as a result of head movements to either side.
- Homolateral instead of normal cross-pattern movements (i.e. when walking, marching, skipping)
- Difficulty crossing the midline.
- Poor ocular “pursuit” movements, especially at the midline.
- Mixed laterality (child may use left foot, right hand, left ear, or he/she may use left or right hand interchangeably for the same task).
- Poor handwriting and poor expression of ideas on paper.
- Visual-perceptual problems, particularly in symmetrical representation of figures.

Symmetrical Tonic Neck Reflex (STNR):

- Poor posture.
- Tendency to slump when sitting, particularly at a desk or table.
- Simian (ape-like) walk.
- Poor eye-hand coordination, messy eater, clumsy child syndrome.
- Difficulties with readjustment of binocular vision (child cannot change focus easily from blackboard to desk).
- Slowness at copying tasks.
- Poor swimming skills.

Spinal Galant Reflex:

- Fidgeting.
- Bedwetting.
- Poor concentration.
- Poor short-term memory.
- Hip rotation to one side when walking.

Tonic Labyrinthine Reflex:

- Poor posture and/or stooping.
- Hypotonus (weak muscle tone).
- Vestibular-related problems (i.e. poor sense of balance, carsickness).
- Dislike of sporting activities, physical education classes, running, etc.
- Eye movement, visual perceptual, and spatial problems.
- Poor sequencing skills.
- Poor sense of time.
- Poor organization skills.

ADDITIONAL INFORMATION & RESOURCES

WEBSITES

College of Optometrists in Vision Development (COVD) Parent Resource Center
www.covd.org

Optometric Extension Program Foundation (OEPF)
http://www.oepf.org/references_articles

American Optometric Association Patients and Public section
www.aoa.org

Parents Active for Vision Education (PAVE)
www.pavevision.org

Vision and Learning Forum (VLF)
www.vision-learning.org

Vision Therapy Success Stories
www.visiontherapystories.org

PUBLISHED ARTICLES

- Cooper, J. Summary of Research on the Efficacy of Vision Therapy for Specific Visual Dysfunctions. *The Journal of Behavioral Optometry* 1998; 9(5):155-119
- Convergence Insufficiency Treatment Trial Study Group. Randomized Clinical Trial of Treatments for Symptomatic Convergence Insufficiency in Children. *Arch Ophthalmol.* 2008 Oct; 126(10):1336-49
- Ciuffreda, KJ. The Scientific Basis for and Efficacy of Optometric Vision Therapy in Nonstrabismic Accommodative and Vergence Disorders. *Optometry.* 2002 Dec;73(12):735-62

BOOKS

- "Fixing My Gaze" by Susan R. Barry (Basic Books, 2010)
- "Jillian's Story: How Vision Therapy Changed My Daughter's Life" by Robin and Jillian Benoit (The Small Press, 2012)
- "20/20 is Not Enough" by Dr. Arthur Seiderman and Dr. Steven Marcus (Fawcett, 1991)
- "When Your Child Struggles" by Dr. David Cook (Invision Press, 1992)