

As a behavioral optometrist, I have seen that the fastest growing segment of the population benefiting from vision therapy are patients with traumatic brain injury (TBI). In many instances, these patients are being referred to us very late in the treatment cycle, mostly by their physical and occupational therapists.

Behavioral optometry, although long in heritage (dating back to the early 1930's), has only recently begun to get involved in the treatment of TBI. Since 1985, the College of Optometrists in Vision Development (COVD), the national board certifying organization within optometry, has had a TBI/Closed Head Injury Committee and within the past 7-8 years the organization Neuro Optometric Rehabilitation Association (NORA) was formed.

WHAT IS VISION?

The behavioral optometric definition of vision is the following: Vision is the deriving of meaning and direction of action as triggered by light. When most people think of vision they think of sight, which is the ability to see small details clearly. Vision is the total ability to organize the space world we live in and to derive meaning from that space world in order to direct ones actions within our lighted world. Vision therapy is the systematic treatment that provides patients with the necessary meaningful opportunities to develop or redevelop their visual abilities. In cases of TBI, these rehabilitative services can go on for from 8 to as long as 24 months in the most severe cases.

IMPORTANCE OF EARLY INTERVENTION

Many TBI victims are left with double vision, binocular vision difficulties and severe accommodative (focusing) problems. Many of the patients I have seen have had only perfunctory examinations of the eye and surrounding tissues. The behavioral optometric approach looks beyond just the physical soundness of the structures used for sight. It looks at how the person uses these structures to understand what they see, to investigate

the lighted world for more meaning and finally to use this information to do something. Neurological research shows that vision and direct affects on vision are so pervasive throughout the brain that electrical stimulation anywhere in the brain will elicit an eye movement. Educational sources say that 85% of all that we learn and understand is processed visually. Cognitive neuroscience has identified over 32 separate cortical brain centers associated with vision. With this much of the brain involved with vision, it is no wonder that TBI victims have so many visual problems that are not directly related to eye ball or optic nerve problems. Current research into the treatment of these conditions shows that the earlier the intervention and the more stimulation the affected systems get early on, the better the chance for recovery of the damaged systems or the better the chance for the reorganization of the neural networks in the brain to compensate for an affected area.

I have seen several patients as long as 18 months after their accident or stroke who were merely given a patch to stop their double vision. Once the patch was removed, I found two normal eyes which were pointing in different directions, with the person seeing double. Instead of patching to get rid of the symptom, had aggressive use of compensating prisms been used along with vision therapy, my job would have been 10 times easier!

USE OF VISUALIZATION

In working with OTs and PTs, we have found that when a person can more fully utilize their visual process their recovery can be accelerated. This occurs through several mechanisms. First, if we can get the patient to see where they are to move something to, then they are better able to execute the new (really re-learned) movement. Secondly, study after study has shown that use of visualization, visual imagery and guided visual imagery can be extremely useful in learning and practicing new movement patterns. We work extensively with patients in terms of first learning how to control and use their power of visualization and then how to turn this towards helping them through the healing process. It is important that the person be

able to see themselves as a person who can get better. Can they see themselves performing the activity the OT, PT, or any other health care provider wants them to do? Too often, these patients are asked to picture these things, but no one works directly with improving their internal picturing abilities.

SPECIAL LENSES

Many of the OTs I have worked with have worked for months with their clients at near point tasks, only to find out, after referral to us, that the patient had not had a comprehensive near point visual analysis and had required special lenses, many times incorporating prisms, to help them see well. As an example, in the case of a young man hit in the back of the head in a car accident, retesting after getting lenses, even before beginning vision therapy treatment, showed as much as a 5 year improvement in standardized tests scores with the lenses alone. The OT was very upset and felt that months had been wasted by training the patient without these lenses.

BLIND SIGHT

An exciting new area of understanding has been the work into the phenomena called blind sight. In cases of stroke, a patient may lose conscious awareness of sight in a part of their visual field. Blind sight is the phenomenon that occurs in these people where they can learn to 'know' what is in their blind field without consciously being aware. The neurological mechanism involving the other 9 branches of the optic nerve and re-entrant neurological pathways is now being revealed, which makes training this phenomenon possible.

Behavioral optometry is not magic. It takes time, just like every other developmental treatment program. However, consultation by a behavioral optometrist in cases of TBI and stroke is becoming more and more medically necessary and helpful in improving the impact of all other treatment modalities that are being called in earlier and earlier in the care of this population.