

VISUAL CONSEQUENCES OF MILD TRAUMATIC BRAIN INJURY



Too many concussions left this patient visually challenged, but appropriate lens prescribing, syntonix phototherapy, and neuro-optometric rehabilitation helped her regain control of her vision.

BY ROBIN SAPOSSNEK, OD, FCOVD, FNORA

A 21-year-old college student was referred to me by her neuro-ophthalmologist for vision rehabilitation to help with concussion-related visual symptoms. The patient had a history of several concussions, the most recent of which occurred in March 2020, when she was hit on the left side of her head with a door.

In the past, she had been prescribed glasses with 2 base in (BI) prism OU, which was initially successful, but they were no longer helpful. The patient's neuro-ophthalmologist prescribed OD +0.25 = -1.25 x 90 4 BI and OS +0.25 =

-1.25 x 95 4 BI OU, but she now felt worse wearing them.

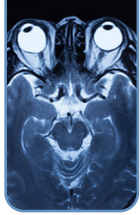
CHIEF COMPLAINTS

The patient reported being very bothered visually. She was sensitive to light both indoors and outdoors, and she frequently misjudged where things were when she reached for them. As a result, she thought of herself as clumsy. She had a tendency to drift to one side while walking, found busy visual environments to be uncomfortable, and had double vision intermittently at distance and at near. The patient also noted

that she had to reduce her college schedule to only two classes because reading and concentrating were extremely difficult and exhausting.

Significant Clinical Findings

The patient preferred her glasses without prisms and came in wearing OD PI = -0.75 x 90 OD and OS PI = -1.25 x 93. Her visual acuities through them were 20/20 OD and 20/20-1 at distance and J1+ OD and J1 OS at near. Dynamic visual acuity testing to probe her vestibular ocular reflex, which is often affected by concussion, was conducted by having her view



WHAT IS SYNTONIC PHOTOTHERAPY?

Syntonics phototherapy is the selective application of light frequencies through the eyes and can be used as the primary treatment or in support of other therapies to aid in the remediation of strabismus, amblyopia, accommodative/convergence problems, asthenopia, ametropia, visual attention deficit, vision-related learning and behavior problems, and visual field constrictions associated with visual stress, brain injury, degeneration ocular disorders, and emotional trauma. Syntonics phototherapy has been used in the field of optometry for more than 70 years to treat visual dysfunctions, and research has shown that treatment with syntonics is associated with improvements in visual skills, peripheral vision, memory, behavior, mood, general performance, and academic achievement.

Source: What is syntonics? College of Syntonics Optometry. <https://csovision.org/what-is-syntonics/>. Accessed May 6, 2022.

the eye chart while rotating her head from side to side. The patient immediately became nauseous, and the letters that she easily saw with her head still were now blurry and jumping.

Subjective refraction was OD PI = -1.00×95 , OS PI = -1.00×85 . The patient was able to see the 20/20 line with either eye and with both eyes together. Through the phoropter, she measured 3 exophoria at distance and 19 exophoria at near. She saw double at near through the phoropter and required 3 BI prism to fuse the targets.

The patient saw double out to 5 feet with convergence nearpoint testing; however, she was able to fuse for stereoacuity testing. She judged the depth of all nine Wirt circles correctly.

Observations

Visual spatial localization was assessed with a “blind touch test,” which was achieved by showing the patient a target, such as a cap on a pen, within arm’s length first on her right side, and having her close her eyes and touch where she thought

it was. This test was then repeated on her left side and confirmed by repetition. The patient consistently judged the target off laterally on both sides. I made a trial frame OD PI = -0.50×90 0.5 BI and OS PI = -0.50×90 0.5 BI, and she was able to consistently hit the targets. Prescribing significantly less prism gave the desired effect I was looking for.

It appeared that the patient was overstimulated visually. The prescription I wrote for her was less than what she measured and less than what she came in wearing, yet it gave her enough improvement that she was able to wear these prescription glasses with no blur or disorientation with head movement.

Follow-Up Visits

The patient returned 1 month later for follow-up. She said that the new glasses were a big help and that she no longer had double vision. However, she was still experiencing eye strain while studying. At this visit, we tested her functional visual field (Figures 1 and 2). A screening field was also obtained with a

computerized test. The results showed that the patient had very restricted functional visual fields. Her convergence nearpoint, though still quite receded, improved to 16” break and 24” recovery without her glasses, and 3”/5” with her glasses.

A course of neuro-optometric rehabilitation therapy with *syntonics phototherapy* was recommended (see *What Is Syntonics Phototherapy?*). After 2 months of weekly in-office vision rehabilitation, the patient said she was no longer excessively light sensitive and felt that her vision was 100% better. Her convergence nearpoint was then to her nose and she had good fusional vergence ranges at near (convergence ranges were 13/24/18 and divergence ranges were 24/32/18, despite her 17 exophoria at near). It was recommended that she continue in-office vision rehabilitation until her visual skills and symptoms stabilized.

The patient was discharged from vision rehabilitation after 5 months (16 visits). At that time, she found that she did not need to use her glasses as often. Additionally, her convergence ranges remained good (she still measured 17 exophoria at near and her functional visual fields were somewhat reduced, but not enough that it affected her visual comfort).

DISCUSSION

The patient in this case had signs and symptoms of post trauma vision syndrome. My philosophy is to help calm and stabilize a person’s visual system using lenses, prisms, and/or filters, and when indicated, add syntonics phototherapy and in-office neuro-optometric rehabilitation. The patient found relief immediately with a change in her spectacle lenses. By reducing the astigmatic correction and prism, she was better able to focus her eyes with some flexibility in her system, rather than focus through the stronger lens that she felt was too much for her.

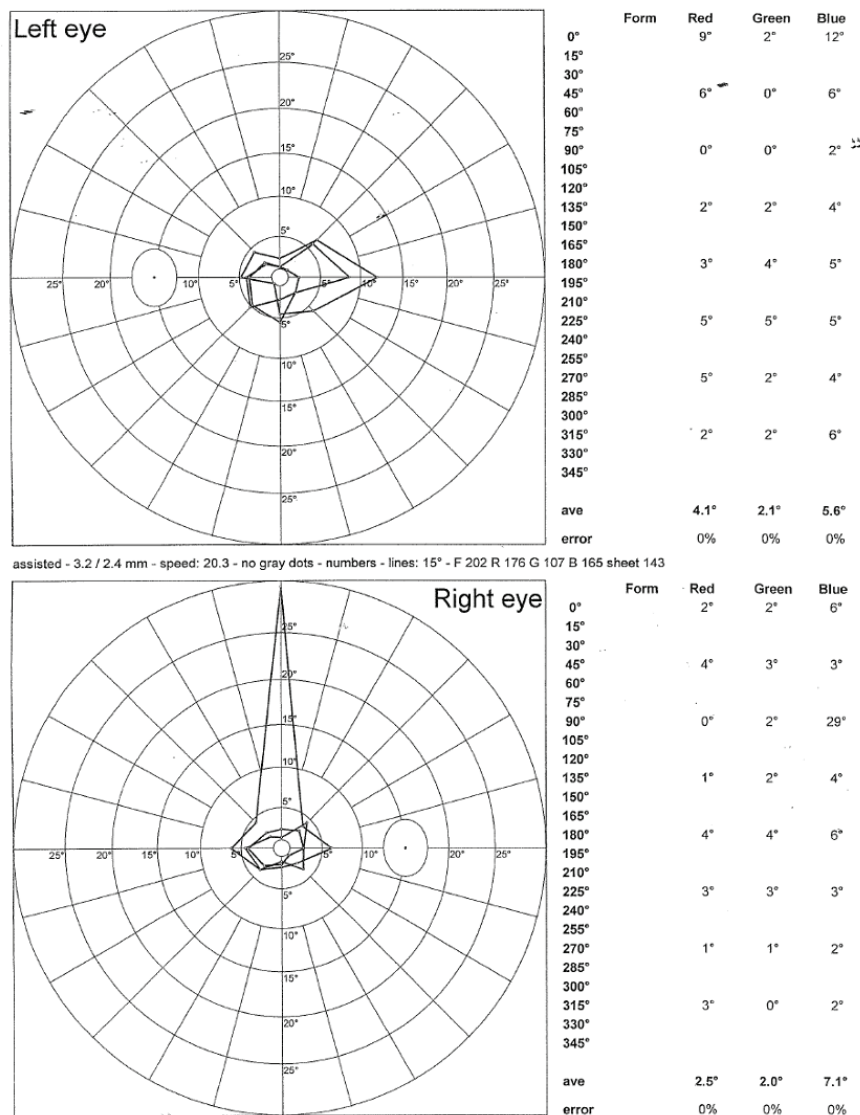
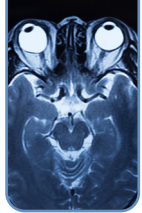


Figure 1. Very small functional visual field shown here. Note: the 12:00 clock position in the right eye was an error.

Glasses alone, however, did not adequately treat her symptoms due to her extremely small field of awareness. Syntonic phototherapy, coupled with vision rehabilitation designed to expand her range of comfort of her visual system, was successful in a relatively short period of time.

The patient was also light sensitive when we started her therapy, making it impossible to conduct exercises on a computer screen. The therapy consisted of exercises that were done

in free space, including procedures to improve accommodation, fusion ranges, gross motor bilateral integration, peripheral awareness, and relaxation exercises.

TREAT CONCUSSION PROPERLY

Concussion is considered a mild traumatic brain injury, yet the symptoms it can provoke are often not mild. Concussion symptoms can persist for months and even years with some patients, but visual therapies, including

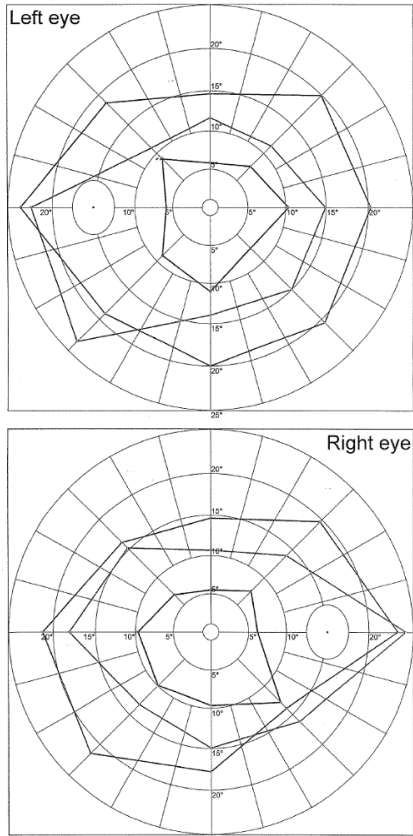


Figure 2. Wide open normal visual fields.

the judicious use of lenses and prisms, syntonic phototherapy, and neuro-optometric rehabilitation, can be of tremendous benefit.

The patient in the case presented here has expressed to me many times how grateful she is to be under my care. I am grateful to be able to provide such services, and I encourage my colleagues to refer patients to doctors trained by the Neuro Optometric Vision Association, College of Syntonic Optometry, and the College of Optometrists in Vision Development. Or, better yet, get trained yourself! ■

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- Financial disclosure: None