Effect of Optometric Multisensory Table (OMST) Training on the Eye Movements, VEPs, and Pupillary Responses on a Patient with mild TBI

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Background

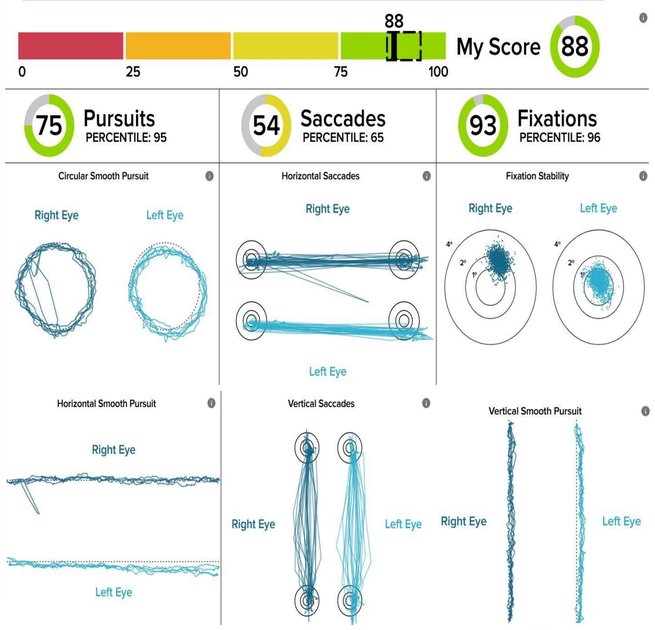
DH is a 33-year-old Caucasian male medical student who was diagnosed with a mild traumatic brain injury due to a motor vehicle accident in 2018. Chief complaints were photosensitivity, abnormal visual motion, and sound sensitivity, difficulties with visual patterns, depth perception, reading comprehension, and attentional deficit. These issues presented difficulties in his academic success.

Case Summary

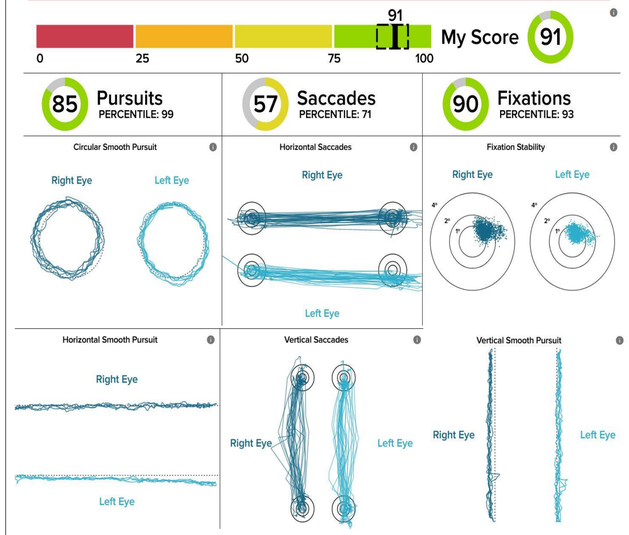
- DH received 12 days of 1-hour in-clinic Optometric Multisensory Table (OMST) training sessions on weekdays and on weekends and received two 20-minute sessions of at-home lightbox color therapy for a total of 160 minutes.
- The clinical OMST includes Syntonic Optometric Phototherapy (colored light frequencies) together with vestibular, auditory, and somatosensory stimulations (Curtis, 2016, 2017, & 2019).
- After 12 days of in-clinic and at-home therapy, an additional 18 days of at-home lightbox color therapy for a total of 720 minutes was performed. The whole treatment was completed in 30 days.
- No other therapeutic intervention was given during OMST and post-OMST treatment.
- Pre-OMST clinical measurements were performed which included eye movement measurements using the RightEye™ system, visual-evoked potentials measurements using the DIOPSYS™ VEP system (standard VEP stimulus parameters), and pupillary responses using NeuroOptic™ Pupillometer.
- To assess the efficacy of this treatment clinical measurements were re-tested post-30 days of therapy.

Optometric Multisensory Table (OMST) & At-Home Lightbox

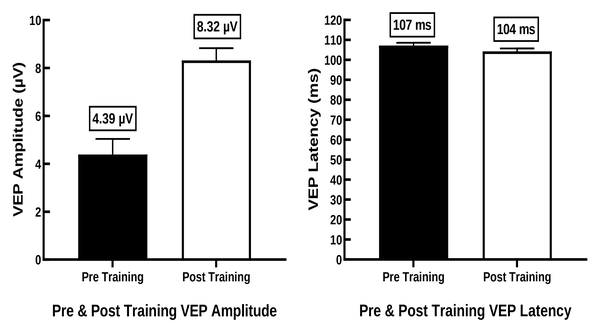
Pre-OMST RightEye™ Findings



Post-OMST 30 Days RightEye™ Findings



Pre & Post OMST VEP Amplitude & Latency



- *VEP amplitude significantly increased by ~4 μV and VEP latency value significantly decreased by ~3 ms pre-versus-post OMST.*

Pre & Post OMST NeuroOptic™ Pupillometer

- *There was no significant change in the pupillary responses pre-versus-post OMST training.*

Conclusions

- Post 30 days of treatment DH reported significant improvement in light sensitivity, visual motion, and sound sensitivity, processing visual patterns, depth perception, reading comprehension, and improved attention.
- Improvements following this treatment are correlated with DH's academic success.
- DH's quality of life improved so he was feeling more relaxed, sleeping better, and having better socialization skills.
- Improvement in subjective responses is correlated with objective findings.

Bibliography

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