

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

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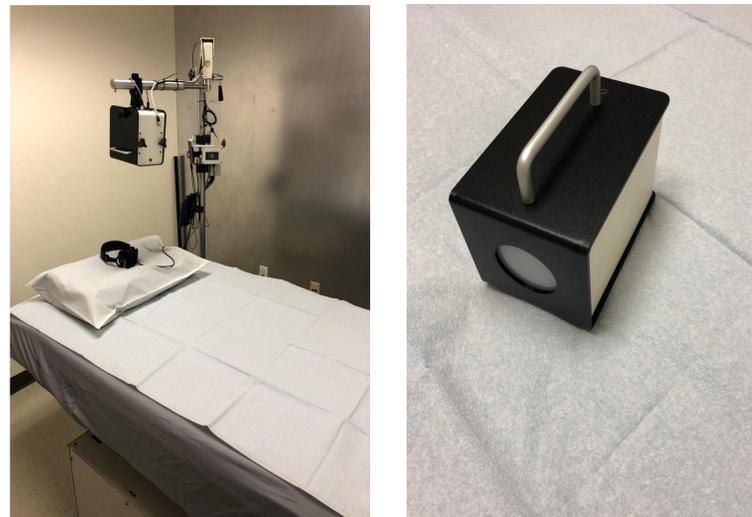
Background

AW is a 35-year-old Caucasian female who experienced moderate traumatic brain injury following electrocution while working as a NICU nurse in 2017. Chief complaints were migraine, photosensitivity, abnormal motion sensitivity, speech, and general auditory processing difficulties, and overall slowed cognitive processing. AW has difficulties with depth perception, reading comprehension, and attentional deficits. Before therapy, AW used a voice transcription mobile app for communication and relied on a guide for walking.

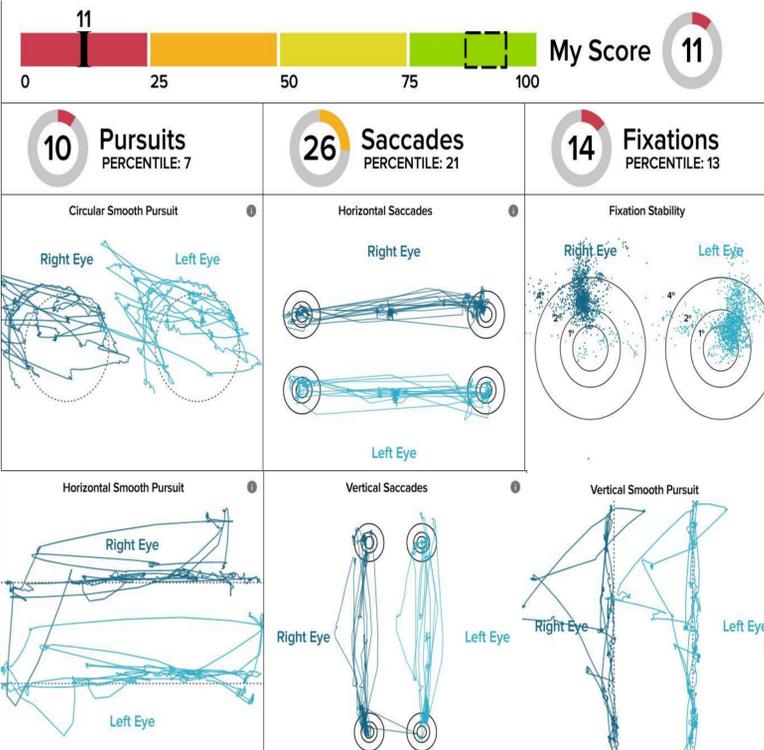
Case Summary

- AW received 12 days of 1-hour in-clinic Optometric Multisensory Table (OMST) training sessions on weekdays and on weekends AW performed 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 in-clinic and at-home therapy, an additional 18 days of at-home lightbox color therapy for a total of 720 minutes was performed. AW's 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 DIOPSYSTM 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.

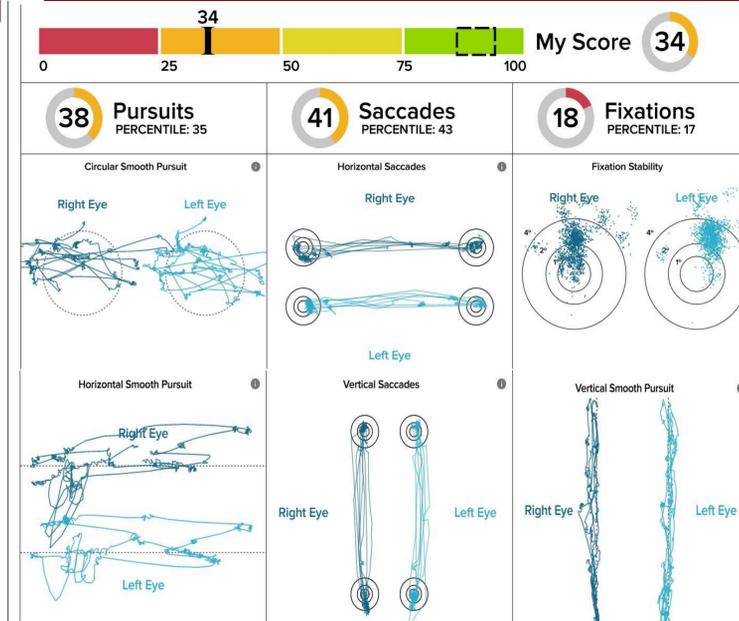
Optometric Multisensory Table (OMST) & At-Home Lightbox



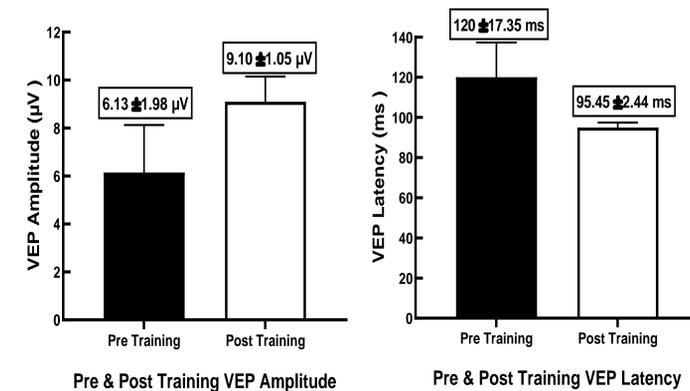
Pre-OMST RightEye™ Findings



Post-OMST 30 Days RightEye™ Findings



Pre & Post OMST VEP Amplitude & Latency



- VEP amplitude significantly increased by ~3 µV and latency value significantly decreased by ~25 ms pre-versus-post OMST training.
- Furthermore, there was also a significant reduction in VEP variability pre-versus-post OMST training.

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 AW reported significant improvement, with marked improvement in speech, auditory processing, migraine, light, visual motion, and sound sensitivity.
- AW also reported improvement in depth perception, reading comprehension, and attention.
- AW's quality of life improved so she was sleeping better, communicating without the voice transcription mobile app, and was able to walk independently.
- Improvement in her subjective responses is correlated with the objective findings.

Bibliography

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Acknowledgement

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