

Vision therapy improves binocular visual dysfunction in patients with mild traumatic brain injury

Peter Smaakjær



Lone Grønnegaard Wachner



&

Rune Skovgaard Rasmussen



Received 01 Jul 2021, Accepted 27 Oct 2021, Published online: 15 Nov 2021

<https://doi.org/10.1080/01616412.2021.2000825>

A Journal of Progress in Neurosurgery, Neurology and Neurosciences

ABSTRACT

Objective

To evaluate benefits of binocular vision and ocular motility training in patients with long-term sequelae after mild traumatic brain injury (mTBI).

Methods

Twenty-eight mTBI (concussion) patients from 25 to 61 years of age with oculomotor dysfunction were selected by optometric examination. The vision therapy was designed to improve convergence, pursuit and saccades as well as to increase fusional reserves. The vision therapy was conducted by a neurooptometrist and a speech therapist, and took place weekly for 1 hour during 10 continuous weeks. Between vision training sessions, patients trained at home for 15–20 minutes daily. Before and after vision therapy, patients completed a test battery including the Groffman Visual Tracing Test, King-Devick test (K-D), a reading speed test, Multidimensional Fatigue Inventory (MFI-20) and patient interviews based on a modified version of the Canadian Occupational Performance Measure (COPM).

Results

Twenty-seven patients completed the vision therapy. After the therapy, improvements were measured on all test parameters, e.g. Groffman Visual Tracing Test ($p < 0.05$), K-D-Test ($p = 0.01$), Reading Speed Test ($p < 0.01$) and MFI-20 total ($p < 0.05$). The results for the modified COPM were significantly improved for both performance and satisfaction ($0.0001 < p < 0.01$).

Conclusion

Vision therapy improved fixation stability and endurance. Reading speed measured by the numbers of saccades and regressions time consumption per read word increased. There was also an improvement in visual attention, possibly making patients safer in traffic and outdoor activities.