



16th Annual Brain Injury Conference

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Poster #: 1

Abstract Title: Rehabilitation interventions for oculomotor deficits in adults with mild traumatic brain injury: A systematic review and meta-analysis

Author(s): Melissa Biscardi¹, Zane Grossinger¹, Dr. Angela Colantonio¹, Dr. Mark Bayley², Dr. Tatyana Mollayeva³

Organization/Affiliation: ¹Rehabilitation Sciences Institute, University of Toronto; ²Division of Physical Medicine and Rehabilitation, University of Toronto; ³Department of Epidemiology at the Dalla Lana School of Public Health, University of Toronto

ABSTRACT:

Abstract Theme: Mild TBI / Concussion

Topic(s) of Interest: Best Practices, Other - Knowledge Synthesis

Purpose of Project: Mild traumatic brain injury can cause persistent symptoms suggestive of oculomotor deficits. Rehabilitation-based interventions for addressing these symptoms have been reported on in several studies, however, their efficacy is not known. The objective of this systematic review was to 1) evaluate the evidence and 2) identify future directions rehabilitation of oculomotor deficits following mTBI.

Methods, Procedure, Results/Outcome, Conclusion: Methods: Medline, EMBASE, PsychInfo, CINAHL, Scopus, clinical trials registries and Google Scholar were searched from inception and updated March 15, 2023. Included studies were experimental studies of oculomotor rehabilitation in adults with mTBI. Mixed TBI severity was excluded. Risk of bias (RoB) was assessed using the National Institute of Health tool for before-after studies with no control group and the Cochrane RoB 2. Citation review, study selection and RoB was completed by two study authors independently (MBi and ZG) with consensus. Meta-analyses using random effects were performed for outcomes reported on in two or more studies when possible, fixed effects was used when high variability precluded use of random effects.

Results: Twelve studies of low quality (seven case series and five crossover design) with N=418 adults; 43% male were included. Interventions ranged from 3 to over 13 weeks in duration with a mean 9.3 sessions (standard deviation: ± 4.3 ; range: 3-19). A meta-analysis using random effects showed improvement in near point of convergence (NPC), effect size -2.38 (CI: -2.89 -1.89), reading rate, effect size of 1.26 (CI: -6.04, 8.57) and amplitude of accommodation, effect size 2.03 (CI: -4.40 -8.46). Due to high variability, fixed effects was used for visual search and attention task, effect size 2.37 (CI: 1.52 - 1.89).

Discussion: There is benefit of oculomotor-based rehabilitation for NPC, reading rate, amplitude of accommodation and visual search and attention in mTBI, however, these results must be taken with caution as there remains a low certainty in the evidence overall, due to inconsistency and reporting bias. Future research should include a published protocol and comparison group.