Poster #: 11

Abstract Title: Assessment of a Flicker-Free Screen for Treatment of Computer Screen Intolerance in Patients with Persisting Concussion Symptoms.

Author(s): Chloé Buso[1]**,** Dr. Charles Tator[1]

Organization/Affiliation: Toronto Western Hospital – UHN[1]

ABSTRACT:

Abstract Theme: Mild TBI / Concussion

Topic(s) of Interest: Clinical Interventions, Clinical Research

Purpose of Project: To determine if concussed patients with persisting concussion symptoms (C+PCS) suffering from computer screen intolerance (CSI) experience a lower total number and severity of symptoms after reading a passage and viewing a video on a Flicker-Free screen compared to a conventional Flicker screen. Symptoms were assessed with the Sports Concussion Assessment Tool 3 (SCAT 3).

Methods, Procedure, Results/Outcome, Conclusion:
Methods: Included patients sustained their concussion between one month and five years from the date of their first visit, had C+PCS, suffered CSI, spoke English well enough to provide consent and comprehend intake questionnaires and study tasks, and were between the ages of 18 and 65 years.

Procedure: A cross-over randomized protocol was used. Patients were placed into one of two groups: Group 1 used the Flicker screen during Visit 1 and the Flicker-Free screen for Visit 2, and Group 2 used the two screens in reverse order. SCAT 3 was administered at three time points: baseline, after reading a 20min passage, and after viewing a 10min video.

Results: The 47 patients suffering from C+PCS, included 34 (73%) females and 13 (27%) males. The median age was 39 (IQR=21) years old and the median number of previous concussions was 2.5 (IQR=3.5). We found that reading a passage on the Flicker screen triggered a greater number and severity of SCAT symptoms than the Flicker-Free screen, but these differences were not statistically significant (number p=0.501; severity p=0.053). However, when we modified the SCAT test to include only the symptoms experienced by more than 50% of the patients, symptom severity was significantly lower (p=0.0420) after reading on the Flicker-Free screen.

Conclusion: This is the first study to evaluate a Flicker-Free screen as a potential treatment for CSI in patients with C+PCS. Although the initial analysis with the standard SCAT did not yield a significant difference this was likely due to the limitations of SCAT. SCAT is a standardized and validated tool created to assess acute symptoms in athletes and not persisting symptoms related to vision. Indeed, SCAT includes some symptoms that are irrelevant for the study of CSI. We recommend that future studies of CSI in patients with C+PCS should use a more vision specific assessment tool such as the Brain Injury Vision Symptom Survey (BIVSS). Although the modified SCAT showed that reading on the Flicker-Free Screen was significantly better than reading on the Flicker Screen on the basis of reduced symptom severity, more research is required to validate this finding with a vision specific tool, such as the BIVSS.