

## Late Breaking Research Papers + Posters 1473319

## Virtual Care and Home-Based LED Treatment for TBI During COVID-19 Pandemic



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**Research Objectives:** To evaluate feasibility and clinical utility of Virtual Care, contactless, home-based neurorehabilitation LED program for Veterans with TBI during COVID-19 pandemic.

**Design:** Case Series, Virtual Program Evaluation.

**Setting:** Virtual clinical program.

**Participants:** Veterans with documented mild-to-moderate TBI, referred to TBI/Polytrauma service, with chronic post-TBI symptoms including cognitive (attention, concentration, memory) and neuropsychiatric (PTSD, depression, sleep) problems.

**Interventions:** To accommodate patients' needs during pandemic, VA/Polytrauma service evaluated Virtual Care, contactless program utilizing tele-health and home-based LED (light-emitting diodes) treatment that promotes healing of injured brain cells. Red/NIR photons increase ATP production and improve cellular function. All patients referred to the LED TBI Program following COVID-19 restrictions, received virtual care: 12Wk home-based LED treatment using NIR headset and Red/NIR intranasal applicators (3xWk) and weekly tele-health treatment monitoring.

**Main Outcome Measures:** All participants received virtual evaluation using standardized neuropsychological (attention, executive function, memory) and neuropsychiatric measures (mood, sleep, PTSD) and daily functioning questionnaires, right before the home treatment, mid-treatment, and post-treatment.

**Results:** Virtual Care participants showed higher treatment adherence and lower dropout rates, as compared to the standard In-office LED Treatment. Participants showed significant improvement in cognitive and neuro-behavioral (depression, PTSD, sleep) symptoms and daily functioning, after 12Wks of Home Treatment.

**Conclusions:** The results of the Virtual Care, home-based clinical program showed that 12Wk LED Home Treatment improves cognitive function and reduces neuropsychiatric symptoms (depression, PTSD, sleep disturbance) in chronic TBI. No adverse events were reported in Virtual Care or standard In-office LED Treatment programs. These results suggest that Virtual Care home-based treatment program for chronic TBI, using transcranial LEDs is safe and effective for clinical use. These findings support the use of Virtual Care and Home-based LED Treatments for chronic mild-moderate TBI and associated neuropsychiatric symptoms.

**Author(s) Disclosures:** No Disclosures.

**Keywords:** Virtual Care, TBI, Light-Emitting Diodes (LED), COVID-19, Cognitive Function

## Late Breaking Research Papers + Posters 1473318

## Visual-Vestibular Deficits Contribute to Poorer Functional Mobility and Higher Symptom Severity in Adults with Persistent Symptoms After a Mild Traumatic Brain Injury



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**Research Objectives:** To examine whether visual-vestibular deficits correlate with functional mobility and post-concussion symptoms in adults with persistent symptoms after a mild traumatic brain injury (mTBI).

**Design:** Prospective, cross-sectional comparison study

**Setting:** Academic university setting.

**Participants:** Twenty-three adults with mTBI (mean age:  $55.68 \pm 2.0$  years) with persistent symptoms (between 3 months to 2 years post-injury) and 23 sex-matched controls (mean age:  $55.13 \pm 1.9$  years).

**Interventions:** NA

**Main Outcome Measures:** (1). Visual outcomes: Depth perception, near-point convergence, baseline visual acuity, and processing speed; (2). Vestibular outcomes: Head thrust test, and dynamic visual acuity in the pitch and yaw planes in logMAR; (3). Smooth pursuit, and saccades; (4). Functional mobility measured by the Functional Gait Assessment (FGA); (5). Symptoms measured by the Dizziness Handicap Inventory (DHI) and Post-concussion symptoms scale (PCSS).

**Results:** Significant differences between participants with mTBI and controls were seen in visual system assessments including depth perception ( $p=0.04$ ) and near point convergence ( $p=0.003$ ). A significantly larger proportion of participants with mTBI had abnormalities with saccade testing ( $p=0.011$ ) and the head thrust test ( $p=0.001$ ) compared to controls. Participants with mTBI had poorer performance on the FGA ( $p < 0.001$ ), higher DHI scores ( $p < 0.001$ ), and higher severity of symptoms on the PCSS ( $p < 0.001$ ) and compared to controls. Determinants of poorer performance on the FGA were smooth pursuit abnormalities ( $\beta = -0.42$ ,  $p < 0.001$ ), positive head thrust test ( $\beta = -0.35$ ,  $p=0.001$ ), and baseline visual acuity ( $\beta = -0.33$ ,  $p=0.003$ ) which explained 54.8% of the relationship between visual-vestibular outcomes and mobility. Visual and vestibular deficits were predictors of symptom severity where 57.2% of the PCSS was predicted by a positive head thrust test ( $\beta = 0.44$ ,  $p < 0.001$ ), smooth pursuit deficit ( $\beta = 0.47$ ,  $p < 0.001$ ), and loss of DVA in the upward direction ( $\beta = 0.27$ ,  $p=0.012$ ). Impaired saccades and positive head thrust predicted 44% of symptoms on the DHI.

**Conclusions:** Visual-vestibular deficits affect mobility and increase the severity of symptoms experienced by adults after mTBI for months to years after injury. Treatment of these deficits by rehabilitation specialists may improve mobility and reduce symptoms.

**Author(s) Disclosures:** The authors have no conflict of interest.

**Keywords:** Visual-Vestibular Deficits, Persistent Symptoms, Functional Mobility, Dizziness

## Late Breaking Research Papers + Posters 1473328

## Walking Aid Training as a Clinical Competence in Canadian Academic Entry-To-Practice Programs



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**Research Objectives:** To investigate curricula on walking aid (WA) skills training and fitting in professional programs and determine how Covid-19 influenced curriculum delivery.

**Design:** A cross-sectional survey administered to curriculum leads (CLs). Questions on the pandemic's impact were added after the survey launched, when Covid-19 emerged locally.

**Setting:** Internet.

**Participants:** Accredited Canadian Nursing ( $n=136$ ), Occupational Therapy (OT,  $n=15$ ), Physiatry (PM&R,  $n=13$ ), and Physical Therapy (PT,  $n=24$ ) programs.

**Interventions:** The CL was contacted via email and then by phone 2 days later. At 2, 4, and 6 weeks, reminder emails were sent.

**Main Outcome Measures:** The primary outcome was whether a formal skills training program was consulted. Secondary outcomes included amount of time spent on skills training and fitting. The influence of Covid-19 was an exploratory outcome.

**Results:** There were 94 respondents, 35 of which completed the Covid-19 questions. Although most programs reported WA education was extremely (78%) or somewhat (21%) important, only 25% consulted a skills training program for curriculum development. Most Nursing programs spent less