

physical therapy. For mental health, the main symptoms reported were anger, anxiety, and post-traumatic stress disorder. Fewer SMVs with severe TBI (44%) reported receiving mental health services than SMVs with mild/moderate TBI (70%). The main cognitive health symptom may memory issues, with SMVs describing being cognitively unable to participate in rehabilitation. For social health, the majority of SMVs relied on their social network of family and friends as well as clinical providers for support. Their social network helped advocate on their behalf, helped with activities of daily living, memory, and transportation.

**Conclusions:** Study findings identified the main symptoms experienced by SMVs with TBI and the facilitators and barriers to meeting their needs. This work can help inform rehabilitation care post-injury for SMVs with TBI.

**Author(s) Disclosures:** None.

**Keywords:** Brain Injury, Clinical Practice, Rehabilitation

#### Late Breaking Research Poster 1432863

##### Relationship Between Language Performance and High and Low Levels of Neurobehavioral Symptoms in Adults with Mild Traumatic Brain Injury



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**Research Objectives:** To compare the language performance of adults with mild traumatic brain injury (mTBI) and high neurobehavioral (NB) symptoms to the performance of adults with mTBI and low (NB) symptoms.

**Design:** Prospective experimental design.

**Setting:** Academic medical center.

**Participants:** Thirty-three community-dwelling adults with mTBI were stratified into two groups: low NB (n=19; Female=11), and high NB (n=14; Female=12) symptoms. Mean age (low NBI=28.6 years, high NBI=28.29 years).

**Interventions:** N/A.

**Main Outcome Measures:** Adapted Whadtunit task in speeded/unspeeded condition, Neurobehavioral Symptom Inventory (NSI) and LaTrobe Communication Questionnaire (LCQ).

**Results:** Independent sample t-tests indicated participants with high NB symptoms had significantly greater unspeeded mean RT ( $M = 515.44$ ,  $SD = 564.92$ ;  $M = 1175.02$   $SD = 1137.19$  ms),  $t(17) = -1.996$ ,  $P = 0.031$ , mean motor RT ( $M = 910.85$   $SD = 191.77$ ;  $M = 735.25$   $SD = 111.95$  ms),  $t(19) = -3.063$ ,  $P = .003$ , subject relative sentence errors in the unspeeded condition ( $M = 1.29$ ,  $SD = 1.13$ ;  $M = 0.58$   $SD = 0.961$ ),  $t(31) = -1.931$ ,  $P = .031$ . Participants with high NB subjectively reported more problems with communication on the LCQ ( $M = 67$ ,  $SD = 9$ ;  $M = 55$ ,  $SD = 8$ ),  $t(31) = -3.639$ ,  $P = .000$  than participants with low NB symptoms.

**Conclusions:** Adults with mTBI and high NB symptoms demonstrated greater RTs on language tasks than those with low NB symptoms, suggesting that secondary symptoms influence performance. The current study highlights the importance of NB symptoms to communication and clinical treatment. Specifically, the study suggests the need for customized strategies for those with high NB symptoms as well as the need for additional research in the area.

**Author(s) Disclosures:** The authors have no disclosures to report.

**Keywords:** Concussion, Traumatic Brain Injury, Communication, Cognition, Language

#### Late Breaking Research Poster 1432804

##### Reliability of Parameters Derived from Multiple Inertial Sensors During Activities of Daily Living in Parkinson's Disease



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**Research Objectives:** To study reliability of inertial measurement units (IMUs) and derived parameters crucial for assessment of Activities of Daily Living (ADL) to support Parkinson's Disease (PD) diagnosis and treatment.

**Design:** Movement data of six common ADL performed on one session during on medication state were recorded. Four IMUs were used to collect. IMUs were located on foot, thigh, pelvis, and wrist. Study was approved by institutional ethics committee.

**Setting:** Free-living environment conditions were simulated at the Hospital.

**Participants:** Five PD subjects participated in the study (mean age:  $63.5 \pm 2.6$  years, mean Hoehn-Yahr score: 2).

**Interventions:** Movement data of six common ADL tasks were recorded in random order.

**Main Outcome Measures:** Reliability of statistics for IMU data was calculated using Intraclass correlation coefficient (ICC). Eight time-domain parameters and three frequency-domain parameters derived from IMU data and commonly used to evaluate quality of movement were calculated by time windows of 6.4 seconds. Time-domain and frequency domain parameters were calculated by each axis component of IMU data as well as for 3D magnitude. In total 3168 ICC's were calculated.

**Results:** Different ICCs were found depending on activities, IMU location, derived parameters and analyzed measures. Mean acceleration data is the highest reliable parameter for all activities and all IMU locations ( $ICC = 0.96 \pm 0.05$ ). Our results show that most reliable sensors were those located on pelvis ( $ICC = 0.79 \pm 0.23$ ), thigh ( $ICC = 0.75 \pm 0.24$ ), and hand ( $ICC = 0.74 \pm 0.25$ ). Sensors located on foot were least reliable ( $ICC = 0.59 \pm 0.28$ ). Most reliable measures were related to accelerometer signals ( $ICC > 0.96 \pm 0.05$ ) across all axis components and 3D magnitude. Gyroscope measures mediolateral and anteroposterior were highly reliable ( $ICC > 0.83 \pm 0.12$ ). Magnetometer measures on cephalocaudal and anteroposterior axes ( $ICC > 0.94 \pm 0.07$ ) showed also high reliability.

**Conclusions:** Despite some methods had been proposed to detect physical activities among healthy and PD subjects, reliability of IMU data has not been investigated. For all activities it is possible to find a combination of IMU location, derived parameters and analyzed measures which results in highly reliable data but not all combinations provided reliable information.

**Author(s) Disclosures:** All authors declare no conflicts.

**Keywords:** Reliability, IMU, validation study, acceleration, Parkinson's Disease

#### Late Breaking Research Poster 1432828

##### Remote Pedagogy: Teaching Social Determinants of Health Using Case Study Simulation



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**Research Objectives:** To investigate learner knowledge on impact of social determinants of health applying collaborative competencies<sup>1</sup> using an interprofessional education (IPE) complex medical case study simulation. The research questions are:

1. What content knowledge does students enrolled in health care programs reveal about social determinants of health?

2. How does participation in IPE focused on integrated community, economic, and health care needs impact:

a. knowledge on social determinants of health of students in health care professions?

b. knowledge and empathy to professional practices by students in health care professions?

**Design:** A mixed method study was designed with direct student response and survey. McNemar was used for analysis of survey-based data and rank order of responses. Cohen's kappa was used for qualitative thematic analysis.

**Setting:** Remote instruction was provided to subjects that focused on use of IPE competencies to application of social determinants of health within a case study simulation at a university setting.