ORAL PRESENTATIONS

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Enhancing Mobility: Revealing Balance and High-Level Mobility in Traumatic Brain Injury Survivors

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ABSTRACT

Background and Objectives: Disruption of various brain structures and systems involved in balance control after a traumatic brain injury (TBI) can affect one's ability to safely participate in higher levels of activity such as sports and employment. Though balance and mobility in TBI have been studied extensively, very little has been reported on the sensory organization test (SOT) and limits of stability (LOS) test to interpret static and dynamic balance. Therefore, this study explored the relationship between balance performances and high-level mobility among TBI survivors. **Methods**: This cross-sectional study was conducted in Hospital Rehabilitasi Cheras, Kuala Lumpur which involved 86 moderate to severe TBI survivors aged between 25 to 60. A total 73 male and 13 female participants were assessed on sensory organization test and limits of stability test generated from the NeuroCom SMART Balance Master (Natus Medical Inc., Seattle, WA). Then, the participants were evaluated with High-Level Mobility Assessment Tool (HiMAT) to determine their high-level mobility limitations and performance. **Results:** Pearson correlations test revealed significant relationships between three sensory organization test measurements (visual, vestibular, and composite) with high-level mobility assessment tool scores ($r=0.25$ to 0.50, $p<0.05$) whereas all measurements of limits of stability test (reaction time, movement velocity, directional control, end-point excursion, and maximum excursion) showed significant relationships with high-level mobility assessment tool ($r=-0.25$ to 0.60, $p<0.05$). **Conclusion:** The limits of stability have a stronger correlation with high-level mobility, suggesting that survivors with TBI may still experience difficulties doing activities requiring high-level mobility due to impaired dynamic balance, even when they are functioning and do not fall.

Keywords: Traumatic brain injury; High-level mobility; Balance

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