

manufacture wheelchair backs, however a competitor's back was used in this study. Heather did not work for Stealth when she was involved in this.

Key Words: Wheelchair Back Supports, Seating, Wheelchair

Original Research Poster 1025974

Wheelchair Interface Usage Assessment Tasks and Performance Measures for Assistive Robots



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Objective: To establish interface usage tasks and performance measures designed as an assessment tool for common powered wheelchairs. To quantitatively compare usage characteristics across three common powered wheelchair interfaces, by persons with and without spinal cord injury.

Design: This was a cross-sectional study. 2x3 mixed ANOVA design was used, where the interface was a within-group factor and whether or not the participant was uninjured or had spinal-cord injury was a between-groups factor. Novelty and expertise was also a factor for the SCI group since they were experts with the interface they use when controlling their personal wheelchair.

Setting: The research was conducted at the Shirley Ryan AbilityLab.

Participants (or Animals, Specimens, Cadavers): The study consisted of 23 participants: 9 SCI full-time wheelchair users with ASIA complete and incomplete between C3-C6 and 14 uninjured participants.

Interventions: All participants performed a trajectory following and command following task with three commonly used interfaces (joystick, headarray, and sip/puff). Each subject performed both tasks with a single interface per study session for a total of three sessions. The subject performed a standardized training phase at the start of each session to become accustomed to the use of that session's interface. The order or interfaces was randomly balanced across all subjects.

Main Outcome Measure(s): Trajectory following performance measures:

- the number of times breaking path barrier
- percent of the time out of path bounds

Command following performance measures:

- average response times
- successful response percent
- average settling time
- successful settling percent
- the average difference between settling and response times

Results: The outcomes revealed that the type of interface, injury level, and expertise have a significant effect on interface usage performance measures. These performance measures correlate and can further predict usage characteristics.

Conclusions: The established tasks and measures can be used as an assessment and training tool for common interfaces used to control an assistive wheelchair. These tools facilitate training in a safe and controlled setting, without the need to drive the wheelchair. The quantitative performance measures can be used by seating clinicians to make an assessment of the user's ability to safely and skillfully control a wheelchair.

Author(s) Disclosures: The authors declare no conflicts of interest.

Key Words: Powered Wheelchairs, Spinal Cord Injuries, Reference Standards

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Who Moves and Who Stays? An Exploration of Geographic Mobility after Spinal Cord Injury



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Objective: This study investigates: 1) the frequency of changing residences after spinal cord injury (SCI) and 2) differences in the

demographic, health status, and neighborhood characteristics between movers and non-movers.

Design: Secondary analysis of existing longitudinal survey collected for the national Spinal Cord Injury Model Systems (SCIMS) database between the years 2006 and 2018. The survey data was linked to Census-tract level data from the 2005, 2010, and 2015 American Community Survey (ACS), 5-year estimates to create measures of neighborhood SES.

Setting: General community.

Participants (or Animals, Specimens, Cadavers): Participants included people with chronic SCI living in the community, ages 17 or older, with two follow-up interviews completed between 2006 and 2018, and valid geographic identifiers (N=5,538).

Interventions: Not applicable.

Main Outcome Measure(s): Residential relocation or moving was defined as changes in Census tracts between two waves of data collection.

Results: The probability of moving was 29%. Moving was more likely among females, racial and ethnic minorities, young adults, unmarried individuals, and people with more severe injuries. There was no difference between movers and non-movers in the SES of the originating neighborhood. However, movers were more likely to reside in low SES neighborhoods after relocating when compared to non-movers (OR = 1.34, p = 0.007, 95% CI: 1.08-1.66).

Conclusions: Geographic mobility after spinal cord injury is more likely among people from disadvantaged backgrounds. Furthermore, people with SCI who move are more likely to relocate to disadvantaged areas, potentially increasing the risk for poor outcomes over time.

Author(s) Disclosures: Nothing to disclose.

Key Words: Spinal Cord Injury, Outcomes, Geographic Mobility, Socio-economic Disadvantage

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Yoga Improves Functional Mobility in a Pilot Sample of Adults with Chronic Brain Injury



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Objective: To evaluate the benefits of a yoga intervention in a pilot sample of adults with chronic brain injury and functional mobility impairments.

Design: This was a pilot non-randomized crossover trial. Participants served as their own controls and data were collected 3 times: 1) Baseline, 2) Pre-Yoga (after an 8-week no-contact period, 3) Post-Yoga (after the 8-week yoga intervention).

Setting: Data collection and the 8-week yoga intervention were conducted at a university-based research laboratory.

Participants (or Animals, Specimens, Cadavers): A volunteer sample of 9 participants with chronic (i.e. ≥ 6 months post-injury) brain injury was recruited from the local community, and 7 (4 female) of 9 participants completed all 3 time-points. No participants withdrew due to adverse effects from yoga.

Interventions: Intervention was 8-weeks of group yoga. Yoga sessions lasted 1 hour and occurred twice a week; sessions were led by a yoga instructor who is also an occupational therapist.

Main Outcome Measure(s): Given yoga's emphasis on balance and functional movements, primary outcome measures included: balance, balance confidence, lower extremity strength, and mobility. Secondary outcome measures included: emotional regulation, pain, and occupational performance and satisfaction.

Results: As expected, there were no significant differences in any outcome measure between Baseline and Pre-Yoga, all p values $> .05$. Significant differences were observed between Baseline and Post-Yoga in balance, p = .01, lower extremity strength, p = .04, and mobility, p = .04. No significant differences were observed in balance confidence or any secondary outcome measure, all p values $> .05$.

Conclusions: Yoga improved functional mobility in a pilot cohort of adults with chronic brain injury. Replication studies with larger sample sizes should continue to examine the benefit of yoga in post-acute settings.

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Key Words: Brain Injuries, Yoga, Complementary Therapies