GRASSP Longitudinal Study

Dr. Sukhvinder Kalsi-Ryan, BScPT MSc PhD
Postdoctoral Fellow, University Health Network/Toronto Rehab
University of Toronto, Department of Physical Therapy
What is the GRASSP? - Clinical Impairment Measure Specific to the Upper Limb for Tetraplegia

- Sensation
  - Dorsal n=3
  - Palmar n=3
  - Dorsal Sensation/12
  - Palmar Sensation/12

- Strength
  - Arm n=4
  - Hand n=6
  - Strength/50

- Prehension Ability
  - Prehension Ability n=3
  - Cylindrical
  - Lateral Key
  - Tip to Tip
  - Prehension Ability/12

- Prehension Performance
  - Prehension Performance n=6
  - Cylindrical - Pour Water
  - Spherical - Open Jars
  - Lateral Key - Pick up/Turn Key
  - Tip to Tip - Coins
  - Tripod - Pegs
  - Tip to Tip, Tripod - Screw Nuts
  - Prehension Performance/30
Objectives of the Study

1. Develop a sensitive upper limb impairment measure specific to Tetraplegia
2. Establish the responsiveness of the GRASSP
3. Establish a recovery profile of the upper limb
4. MCID and meaningfulness of the change to individuals with tetraplegia
Results – Cross Sectional and Longitudinal Studies

• Established a sensitive clinical upper limb impairment measure specific for Tetraplegia
  • Inter Rater reliability 0.84* - 0.96* (ICC), Test Retest reliability 0.93* - 0.98* (ICC)
  • Construct Validity Sensation and Strength more Sensitive than ISNCSCI
  • Concurrent Validity SCIM, SCIM-SS, CUE 0.57* - 0.83* (Pearson CC)

• Establishing Responsiveness, Recovery Profile and MCID
  • Being conducted as a longitudinal observational study in Canada and Europe-121 patients enrolled
  • Sub analyses showing responsiveness, sensitivity and relationships of impairment and function
Knowledge Mobilization

• Multi-national study provides a venue for uptake in clinical settings:
  • Provide training to sites and engage the rehabilitation/frontline staff
  • Dissemination through manuscripts and meetings
  • Website where information regarding GRASSP and purchase is available
  • Incorporating GRASSP into as many appropriate projects as possible
  • Results of the current study will provide greater opportunity to recommend the tool
Graded Redefined Assessment of Strength Sensibility and Prehension (GRASSP Version 1.0)

International GRASSP Research and Design Team: Dr. S Kalsi-Ryan Dr M Fehlings Professor M Verrier - University of Toronto; Dr. A Curt C Rudhe – University Hospital Balgrist; Dr. S Duff – Thomas Jefferson University

Collaborators: Dr. D Beaton, Dr. M Popovic, Inge Marie Velstra

Funding: Christopher and Dana Reeve Foundation, Rick Hansen Foundation, Ontario Neurotrauma Foundation, Physiotherapy Foundation of Canada, Toronto Rehabilitation Institute Student Scholarship Fund, EMSCI, CIHR