Sollerman Hand Function Test

- Designed to measure grips that are needed for certain ADLs such as eating, driving, personal hygiene, and writing.

- Includes subtests that represent common handgrips (volar, transverse volar, spherical volar and pinch positions - pulp, lateral, tripod, and the five finger) and activities (using a key; picking up coins from a flat surface; writing with a pen; using a phone; and pouring water from a jug).

ICF Domain:

Activity – Subcategory: Mobility.

Number of Items:

20

Instructions for Administration and Scoring:

Administration:

- Clinician-administered standardized performance test.

- A test box is placed in front of the patients who are required to start each subtask in a seated position (but they may stand to complete a task). Three subtasks are completed using the hands bilaterally while the rest are completed with each hand separately. The subtests are timed and the performance is observed.
  - Ex. Pick up key, put into Yale-lock and turn 90°.

- Administration time is usually **20-25 minutes**.

Equipment:

- Yale-lock with bolts mounted on a vertical wall 30 cm above bottom level.
- Yale-key
- 4 coins of different size
- Two purses mounted on a wall (20 cm above bottom level) w/ zips of different size
- 2 wooden blocks (size 7.5 and 10 cm)
- Box (5cm edges)
- Iron weight (3 kg)
- 2 screws with nuts (1 with spring resistance, the other without resistance)
- Screwdriver with handle (2.5 cm diameter)
- 4 bolts of different size
- 4 nuts
- 2 jars (lid size 7.5 and 10cm diameter)
- 4 buttons with different button-hole sizes on pieces of cloth mounted on a plate.
- Plate
• Knife
• Fork
• lump of Play-doh
• 2 TubiGrip stockings of different sizes
• Paper
• Pen
• Paper (A4 size)
• Envelope (C6 size)
• 2 paper clips of different size
• telephone
• empty water jug (1 litre) with handle

**Scoring:**

• Scoring takes into account the time taken, level of difficulty displayed, and the quality of performance using the correct pinch or grip position.

• Patients are then scored on a 5-point scale from 0 (task cannot be performed at all) to 4 (task is completed without any difficulty within the time frame (20 seconds) and with the prescribed hand-grip of normal quality).

• Scoring the test can be challenging as the assessor must be aware of multiple factors occurring simultaneously (passage of time, difficulty, correct positioning and quality of performance).

• Definitions for interpreting the scoring scheme are not inherently obvious.

• A total sum score (0-80) is created by adding up the scores from the different subtests.

**Interpretability:**

**MCID:** not established

**SEM:** not established for the SCI population, but for a sample of patients with burned hands (N=12 (21 hands), mean (SD) age: 45.1 (13.3) yrs, 7M/5F, mean (SD) time since injury: 13.3 (6.9) months):

SEM=2.6


**MDC:** not established for the SCI population, but for a sample of patients with burned hands (N=12 (21 hands), mean (SD) age: 45.1 (13.3) yrs, 7M/5F, mean (SD) time since injury: 13.3 (6.9) months):

MDC =6.7-6.9

- Higher scores reflect a better performance.
- Subjects with no hand function impairment typically score 80 with the dominant hand and 77-79 for the non-dominant hand.
- No meaningful cut points or norms have been established for the SCI population
- Published data for the SCI population is available for comparison (see Interpretability section of the Study Details sheet).

Languages:
N/A

Training Required:
It can be used by clinicians who have little experience, though knowledge of hand function is an asset when scoring.

Availability:

Clinical Considerations:
- The Sollerman (unlike the Jebsen Hand Function Test) considers the quality and level of difficulty with the performance which are important components with respect to hand function.
- The test was designed with tetraplegic patients in mind and therefore reflects the needs of this group.

Measurement Property Summary:
# of studies reporting psychometric properties: 2

Reliability:
- Inter-rater reliability is excellent \( r=0.98 \).
  [Sollerman & Ejeskar 1995, Fattal 2004]

Validity:
- Correlation of the Sollerman Hand Function test is excellent with:
  - the International Classification for Surgery of the Hand in Tetraplegia (Pearson’s \( r=0.88 \))
  - the Motor Capacities Scale (Spearman’s \( \rho=0.959 \)).
  [Sollerman & Ejeskar 1995, Fattal 2004]

Responsiveness:
No values have been reported at this time for the responsiveness of the Sollerman hand Function Test.
Floor/ceiling effect:  
No values were reported for the presence of floor/ceiling effects in the Sollerman Hand Function Test for the SCI population.

Reviewer:
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