

## The Grasp and Release Test (GRT)

### Assessment Overview

#### Assessment Area

**ICF Domain:**

Activity

**Subcategory:**

Mobility

#### You Will Need

**Length:**

20 minutes, 6 items

**Equipment:**

Peg, paperweight, fork, block, can, videotape

**Scoring:**

Clinician-administered. Subjects are scored on their ability to successfully move each of the objects; the number of times the subject is able to move each object in 30 seconds is recorded. Each hand is tested and scored separately.

#### Summary

The Grasp and Release Test (GRT) is designed to assess hand neuroprosthesis in individuals with C5-C6 SCIs, but has also been used to assess hand function prior to and following tendon transfers in people with C6-7 level injuries. It assesses the ability to pick up, move, and release six objects of varying sizes, weights and textures using a palmar or lateral grasp. Each object was chosen to represent one or more objects routinely manipulated for activities of daily living (ADL) that represented a range of difficulties.

#### Availability

[http://www.scireproject.com/sites/default/files/worksheet\\_grt.docx](http://www.scireproject.com/sites/default/files/worksheet_grt.docx)

### Assessment Interpretability

#### Minimal Clinically Important Difference

Not established in SCI

#### Statistical Error

Not established in SCI

#### Typical Values

Not established in SCI

## Measurement Properties

### Validity – **Moderate** to **High**

#### **Moderate** to **High** correlation between 12 month Functional Independence Measure (FIM) Scores and:

Fork = 0.624

Can = 0.700

Videotape = 0.503

Correlation between 12-month FIM and the peg, block, paperweight and total number of objects successfully manipulated were non-significant.

(Mulchahey et al. 2004; n=19, tetraplegia, no information on chronicity)

#### **High** correlation between GRT and Van Lieshout Test:

Left hand = 0.87

Right hand = 0.90

(Post et al. 2006; n=55, 46 males, tetraplegia, mean time since injury (SD) = 11 (8.5) years)

**Number of studies reporting validity data: 3**

### Reliability – **High**

#### **High** Test-retest Reliability for all 6 items:

Fork: ICC = 1.00

Paperweight: ICC = 1.00

Videotape: ICC = 1.00

Block: ICC = 0.87

Peg: ICC = 0.93

Can: ICC = 0.99

(Mulchahey et al. 2004; n=19, tetraplegia, no information on chronicity)

**Number of studies reporting reliability data: 2**

## Responsiveness

### Floor/Ceiling Effect:

Not established in SCI

### Change between baseline and post-rehabilitation GRT scores:

Fork:  $z=3.05$  ( $P<.01$ )

Paperweight:  $z=2.83$  ( $P<.01$ )

Can:  $z=2.66$  ( $P<.01$ )

Total GRT objects manipulated:

$z=3.40$  ( $P<.05$ )

*z = Wilcoxin matched pairs signed-rank test*

(Mulchahey et al. 2004; n=19, tetraplegia, no information on chronicity)

### Number of studies reporting responsiveness data: 1