Testing functionality of the arm: A comparison between the ARAT and Wolf Motor Functioning Test

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Introduction

- **Action Reseach ArmTest (ARAT)** – (Lyle 1981 ; Yozbatiran 2008)
  - ✓ 19 tasks (4 subtests: gross movement, grasping, gripping and pinching) arranged hierarchical
  - ✓ 4-point scale indicating completeness task and speed
- **Wolf Motor Functioning Test (WMFT)** - (Wolf 1989)
  - ✓ 15 tasks arranged in order of complexity, progress from distal to proximal joint, test total extremity movement
  - ✓ Measuring performance time and functional ability (5-point scale)

⇨ **To measure and evaluate the progress in arm functioning**

Purpose

- Do both assessments **measure the same**?
- What **range of functional problems** do they cover?
- Are both instruments **useful at the same moment** during revalidation?

Methods

- **Review literature:** 10 Trials (1981-2009)
  - ✓ 3 Trials ARAT
  - ✓ 5 Trials WMFT
  - ✓ 2 Trials comparison assessments Upper Extremity Functions after stroke
- **Pilot study:** 'Does the sensibility and the functionality of the upper limb of persons with sensory impairment (Stroke patients) improves through use of intermittent pressure as additional therapy?'

(September 2010 – May 2011 ; several hospitals in Belgium and one hospital in Switzerland)

ARAT, WMFT: 4-6 w post-stroke, 4w post, 6w post

Results from Review literature

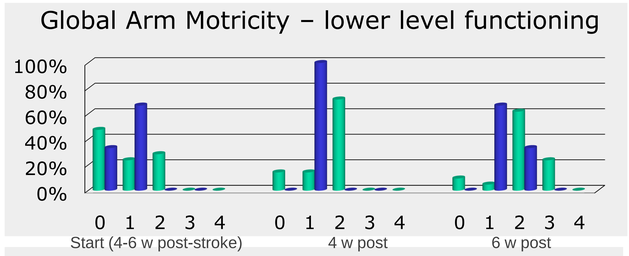
Item	ARAT	WMFT
Population - patients	Functional disability of arm due to neurological diseases • eg. hemiplegia • acute and chronic • understanding simple instructions • shoulder: minimal 90 anterior flexion	Stroke, traumatic brain injury • mild, moderate and lower functioning • acute and chronic • understanding simple instructions • shoulder: minimal motor activity
Construct Validity	• 0,87 – 0,94 (Fügl-Meyer) • 0,96 (MAL), 0,87 (MI), 0,94 (Modified MA)	• 0,86 – 0,89 (Fügl-Meyer) • 0,96 (ARAT)
Test-retest Reliability	• Total test: 0,99 • Subtests: 0,93 – 0,99	• Performance time: 0,90 • Functional ability: 0,95
Inter-rater Reliability	• 0,98	• Performance time: 0,98 • Functional ability: 0,88
Practice	• Expensive equipment, tall • Training is necessary • Must be done sitting on a chair • Guidelines are very clear • Average completion time = 5-15 min	• Cheap equipment, small size, portable • Training is not as such necessary • Can be done bed-sided, in the wheelchair, sitting on a chair • Test's manual not easy to comprehend • Average completion time = 20 min

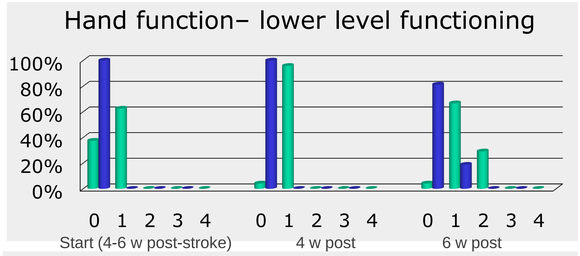
Results from Pilot study

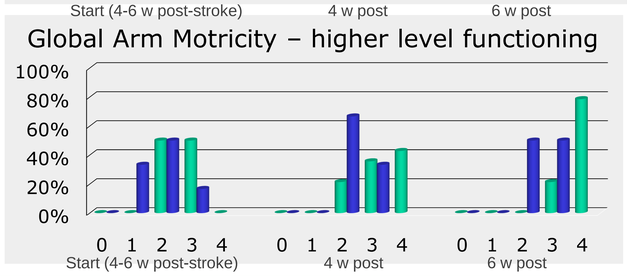
N = 5
Lower level functioning = 3
Higher level functioning = 2

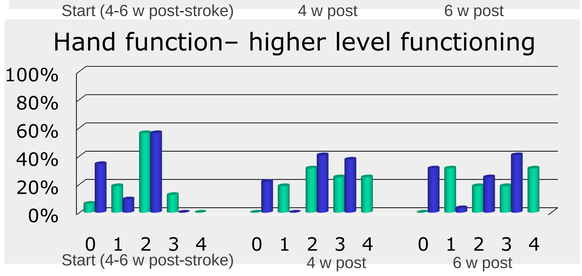
5-point scale WMFT
0 = no movement
1 = partial movement
2 = abnormal or slow movement
3 = movement limited precision
4 = normal movement

4-point scale ARAT:
0 = no movement
1 = partial movement
2 = abnormal or slow movement
3 = normal movement









Discussion & Conclusions

⇨ **ARAT** useful for **differentiating the hand functions**

WMFT useful for measuring **gross motor function** and **global hand functions**

⇨ **WMFT** more useful for patients with **lower or higher levels** of arm functionality

ARAT more useful for patients with **higher levels** of upper motor extremity function

⇨**WMFT** can be **administered first**. If high marks are obtained , the **ARAT** can then be used to **identify problems in certain areas** of upper extremity function (grasping, gripping or pinching).

Recommendations

Both assessments, ARAT and WMFT are useful in clinical practice.

Therapists should consider the motor level of the patient and the clinical setting to choose a suitable measurment for upper extremity assessment.

References

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