

UE Assessment



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Certificate in Motor Rehabilitation of the Neurological Upper Extremity

The screenshot shows a course page with a blue header. On the left, there's a promotional graphic with the text 'New Certificate Series: Neurologic Occupational Therapy' and 'In this 11 course series, you'll acquire an in-depth understanding of the neuroscience, assessment principles underlying skill acquisition, and treatment of commonly seen motor impairments encountered in occupational therapy practice.' Below this are six circular portraits of the course instructors: Stephen Page, J.J. Mowder-Tinney, Salvador Biondo, Deborah Schwartz, Lorie Richards, and Dorian Rowe. On the right, a list of course chapters is visible, including 'Section 1: Foundational Concepts' and 'Section 2: Treatment and Assessment of the Neurological Upper Extremity'. At the bottom, there's a search bar with 'medbridge UE neuro' entered and buttons for 'Google Search' and 'I'm Feeling Lucky'.

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Where Can I Find The "Best" Stroke Measures?

3

The Brunnstrom stages...

- **Stage 4** During stage 4, spasticity begins to decline. Stage 4 also is the stage where some movement outside of synergy is possible.
- **Stage 5** Synergies continue to decline. Folks in stage 5 are able to have more voluntary control out of synergy and spasticity continues to decline.
- **Stage 6** This is the final stage and, if this stage is achieved, movements are near normal and spasticity absent except when fatigued or performing rapid movements. Individual joint movements become possible and coordination approaches normal.

Movement Therapy in Hemiplegia: a Neurophysiological Approach

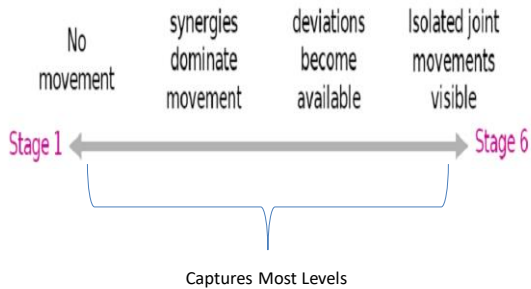
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The Brunnström stages simplified



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The Fugl-Meyer



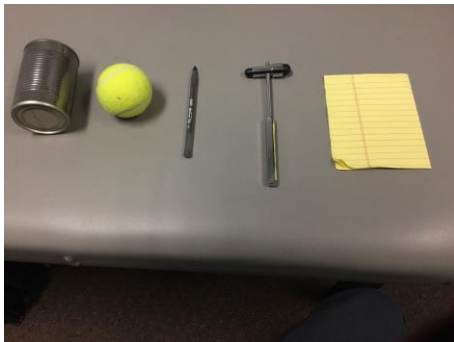
9

Characteristics of the Fugl-Meyer

- All parts of the UE
- Well-established (1975) → Insurance likes it
- “Highly Recommended” in all settings (StrokeEdge)
- Any time post stroke
- Correlated with functional outcomes (*but not functional*)
- Hierarchical = fast
- Few equipment needs

<https://www.sralab.org/rehabilitation-measures/fugl-meyer-assessment-motor-recovery-after-stroke>

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ARM MOTOR FUGL-MEYER

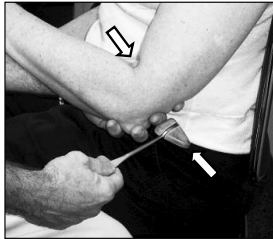
- Unaffected side is assessed first: 2 reasons
 - Tester can see what “normal” looks like
 - Participant can demonstrate they understand
- Up to three attempts are allowed and the best performance is scored
- Use as a “dive in” to other measures
- **Most** items are scored on a 3-point scale:
 - 0 = cannot perform
 - 1 = performs partially
 - 2 = performs fully

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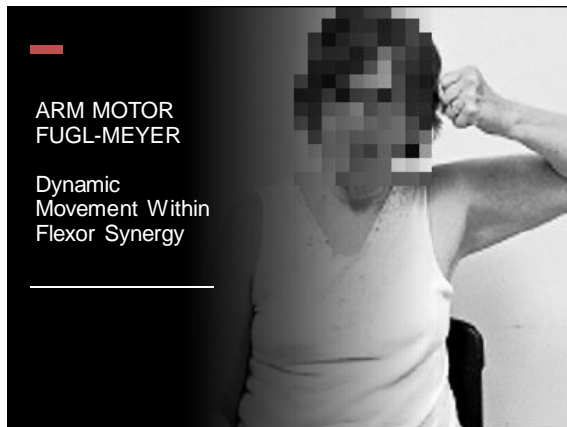
ARM MOTOR FUGL-MEYER Reflex-Activity

0 = NO reflex activity
2 = YES reflex activity

This is the only task that is scored 0 or 2;
Everything else is 0,1, 2



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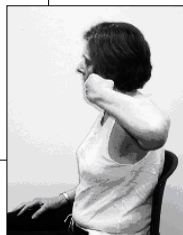


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ARM MOTOR FUGL-MEYER Flexor Synergy

- Retraction of the shoulder girdle
- Elevation of the shoulder girdle
- Abduction of the GH joint
- External rotation at the GH joint
- Elbow flexion
- Supination of the forearm

0 = cannot perform
1 = performs partially
2 = performs fully



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Flexor synergy testing: Anterior



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Flexor synergy: Posterior



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ARM MOTOR
FUGL-MEYER

Dynamic
Movement Within
Extensor Synergy

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ARM MOTOR FUGL-MEYER
Extensor Synergy

- Adduction/Internal Rotation of the shoulder
- Elbow extension
- Pronation of the forearm.

- 0 = cannot perform
- 1 = performs partially
- 2 = performs fully



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Extensor synergy



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ARM MOTOR FUGL-MEYER
Hand to lumbar spine

- Score:
- 0 = Hand does not move posterior to the ASIS
 - 1 = Hand does move posterior to the plane
 - 2 = Hand is placed on the small of the back equal to the unaffected side



Hand= FROM WRIST CREASE ON

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Hand to back



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ARM MOTOR FUGL-MEYER Shoulder flexion to 90° with elbow at 0°

Score:

0 = Participant cannot achieve the testing position

OR elbow flexion occurs at the onset of shoulder flexion

OR there is no shoulder flexion

1 = Elbow flexion occurs following the onset of shoulder flexion OR shoulder flexion does not reach 90°

2 = Elbow remains fully extended equal to or greater than the unaffected side and shoulder flexes to 90°



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ARM MOTOR FUGL-MEYER The "shake hands" position



If necessary, the examiner may provide support at the mid-forearm by with the palmer surface of an open hand.



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ARM MOTOR FUGL-MEYER
Pronation/Supination with elbow at 90°



The
“shake hands”
position



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ARM MOTOR FUGL-MEYER
Abduction to 90°

Assessed by asking the participant, “rest your arm at your side; without bending your elbow bring your arm out to shoulder height; be sure not to bend your elbow and keep your palm facing the floor; do it like this (demonstrate).”



- 0 = Participant cannot achieve the testing position
- OR elbow position is lost the onset of AB
- 1 = Elbow flexion/supination occurs following the onset of AB
- OR AB does not reach 90°
- 2 = Elbow remains fully extended and forearm remains pronated equal to or greater than the unaffected side and AB is to 90°

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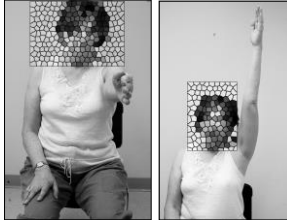
Abduction



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ARM MOTOR FUGL-MEYER
Shoulder flexion 90° to 180° with elbow at 0° and forearm in neutral

Starting position: The participant must begin with the arm outstretched with 90° of shoulder flexion and with the elbow fully extended to 0° in order to score > 0.



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ARM MOTOR FUGL-MEYER
Pronation/Supination with elbow at 0° and shoulder between 30° and 90° of flexion



Starting position: The participant must begin with the arm outstretched with the elbow fully extended to 0°. If this is not possible, support is given just proximal to the elbow to stabilize the humerus in the correct position. Elbow extension cannot be assisted.

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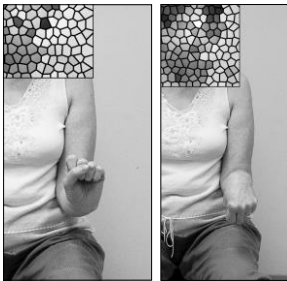
ARM MOTOR FUGL-MEYER
Wrist stability with wrist in 15° extension and elbow at 90



Slight downward pressure

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ARM MOTOR FUGL-MEYER
Wrist mobility with the elbow at 90°



Forearm pronated

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ARM MOTOR FUGL-MEYER
Wrist stability with wrist in 15° extension and elbow at 0°
and shoulder between 30° and 90° of flexion

- The examiner may provide support just proximal to the elbow to stabilize the humerus in the correct position.
- Elbow extension cannot be assisted.



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ARM MOTOR FUGL-MEYER
Wrist mobility with the elbow at 0°
and shoulder between 30° and 90° of



Forearm pronated

The examiner may provide support just proximal to the elbow to stabilize the humerus in the correct position. Elbow extension cannot be assisted.



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ARM MOTOR FUGL-MEYER
Circumduction of the wrist



Resting position on lap

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ARM MOTOR FUGL-MEYER
Mass flexion Mass extension



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ARM MOTOR FUGL-MEYER
Grasp A (hook)

- The MCPs are extended and the DIPs and PIPs are flexed.
- Resistance is applied in a pulling motion only if the participant can achieve the testing position.



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ARM MOTOR FUGL-MEYER Grasp B (thumb adduction)

- The MCPs, DIPs, and PIPs are extended to 0° .
- Paper is placed between the pad of the thumb and the radial surface of the 1st MCP joint if the participant can achieve the testing position.
- The paper is pulled away only if the participant can achieve the grasp in the correct testing position.



The "shake hands" position- support allowed

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ARM MOTOR FUGL-MEYER
Grasp C (1st and 2nd digit pulpa approximation)

- A pencil is presented horizontally from the opposite side only if the participant can achieve the standard position.
- Pulpa of the 1st and 2nd digits grasp the pencil without the assistance of the 3rd through 5th digits.
- The pencil is then pulled away horizontally toward the opposite side only if the participant can achieve the grasp in the correct testing position.

The "shake hands" position- support allowed

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ARM MOTOR FUGL-MEYER Grasp D (1st and 2nd digit cylindrical)

- A can is presented from the opposite side only if the participant can achieve the standard position.
- The volar surface of 1st and 2nd digits interpose the can without assistance from the 3rd through 5th digits.
- Resistance is applied in a pulling motion toward the opposite side only if the participant can achieve the grasp in the correct testing position.

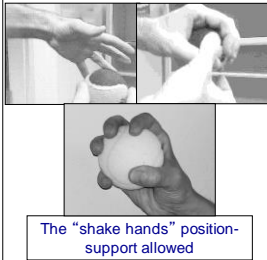


The "shake hands" position- support allowed

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ARM MOTOR FUGL-MEYER
Grasp E (spherical)

- A tennis ball is presented only if the participant can achieve the standard position.
- Distal and volar surfaces of all digits interpose a tennis ball.
- All digits must be in contact with the ball.
- Resistance is applied in a pulling motion toward the opposite side only if the participant can achieve the grasp in the correct testing position.



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ARM MOTOR FUGL-MEYER
Coordination/Speed

Tremor:

- 0 = Marked tremor
- 1 = Slight tremor
- 2 = No tremor

Dysmetria:

- 0 = Pronounced or unsystematic dysmetria
- 1 = Slight and systematic dysmetria
- 2 = No dysmetria

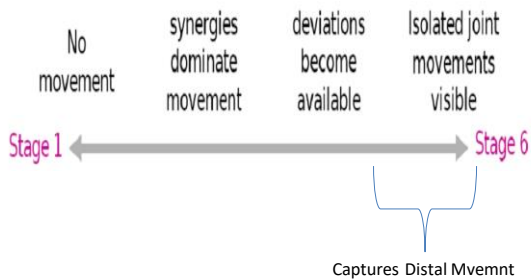
Speed:

- 0 = At least 6 seconds slower than the unaffected side
- 1 = Between 2 and 5 seconds slower
- 2 = Less than 2 seconds slower



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The ARAT
(in your notes)



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The Action Research Arm Test

- Nuray Yozbatiran, Lucy Der-Yeghiaian and Steven C. Cramer
- **A Standardized Approach to Performing the Action Research Arm Test**
- *Neurorehabil Neural Repair* 2008; 22; 78

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Characteristics of the Action Research Arm Test

- Distal parts of the UE (mostly)
- Moderate to minimally impaired UEs
- Well-established (1981)
- “Recommended” in all settings (StrokeEdge)
- Any time post stroke
- Correlated with functional outcomes (*but not functional!*)
- Moderate equipment needs
- Can be used in other dx’s

<https://www.sralab.org/rehabilitation-measures/action-research-arm-test>

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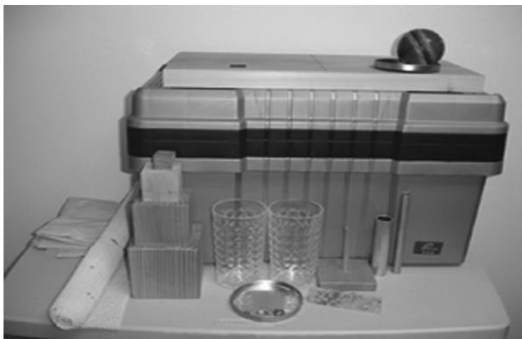


Figure 1. The complete ARAT kit is displayed.

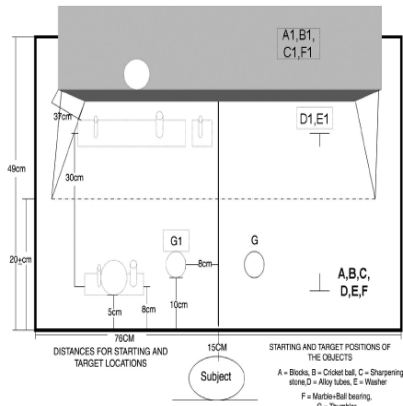
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Task Material	Dimensions
Table	Height, 75 cm; width, 76 cm; depth, 49 cm
Chair	Height of seat 46 cm from floor; no arm rests
Shelf (or box on the table)	37 cm above level of table
Four wooden blocks	10.0, 7.5, 5, and 2.5 cm ³ , respectively
Large alloy tube	Diameter, 2.5 cm; length, 11.5 cm
Small alloy tube	Diameter, 1 cm; length, 16 cm
Cricket ball	Diameter, 7.1 cm
Marble	Diameter, 1.6 cm
Sharpening stone	10.0 × 2.5 × 1 cm
Ball bearing	6-mm diameter
Two plastic tumblers	Upper diameter, 7 to 8 cm; lower diameter, 6 to 7 cm; height, 12 to 15 cm

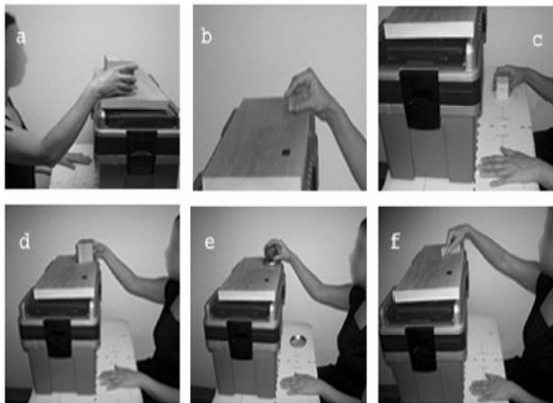
46

Task Material	Dimensions
Washer	Outer diameter, 3.5 cm; inner diameter, 1.5 cm
Plank for the tubes	
Starting point	1.5 × 8.5 × 8.5 cm
Target point	3.5 × 8.5 × 34 cm
Bolt for the large alloy tube	
Starting position	Round wooden peg; diameter, 2.0 cm; height, 13.5 cm
Target position	Round wooden peg; diameter, 2.0 cm; height, 8.0 cm
Bolt for the small alloy tube	
Starting position	Round wooden peg; diameter, 0.8 cm; height, 6.0 cm
Target position	Round wooden peg; diameter, 0.8 cm; height, 6.0 cm
Plank for the washer	1.5 × 8.5 × 8.5 cm
Bolt for the washer	Round wooden peg; diameter, 0.8 cm; height, 8.5 cm
Tin lid	Diameter, 9 cm; rim height, 1 cm

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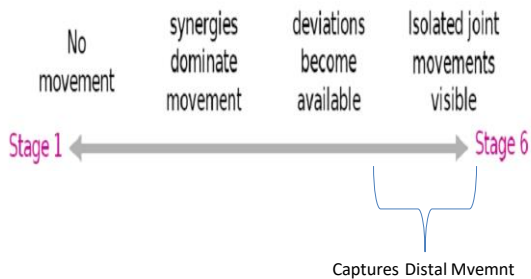
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ARAT Scoring, simplified

- 0 – cannot perform the activity at all. Usually no movement.
- 1 – Can initiate and/or perform some pieces of the movement but is very messy and/or very slow. May drop items several times.
- 2 – The performance resembles the less affected UE but is slow and/or a little clumsy.
- 3 – Looks like less affected UE.

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The AMAT
(manual and example in your notes)



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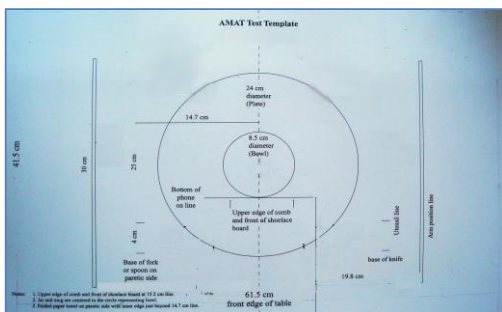
Arm Motor Ability Test (AMAT)

- All parts of the UE
- Moderate to minimally impaired UEs (frustrating for max impaired)
- Well-established (1997)
- "Recommended" in all settings **EXCEPT acute** (StrokeEdge)
- Any time post stroke
- Functional
- Substantial equipment needs
- Can be used in other dx's

<https://www.sralab.org/rehabilitation-measures/arm-motor-ability-test>

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AMAT-9 (Ohio Modified Arm Ability Test)



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AMAT Scoring



- 0 = They didn't even try. No movement.
- 1 = Tried and there is some movement. Completely non-functional, no ability to weight-bear.
- 2 = Movement/Task accomplished, but it is ugly. Really ugly.
- 3 = Movement/ Task accomplished but with synergy or its uncoordinated
- 4 = Movement close to normal, but: slightly slower, or less coordinated of movement
- 5 = Normal

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See AMAT manual to review the following...

AMAT: The first 4

1. Cut "meat"



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See AMAT manual to review the following...

AMAT: The first 4

2. Foam Sandwich



56

See AMAT manual to review the following...

AMAT: The first 4

3. Eat with spoon



57

See AMAT manual to review the following...

AMAT: The first 4

4. Comb hair



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See AMAT manual to review the following...

AMAT: The last 5 tasks

5. Open Jar



59

See AMAT manual to review the following...

AMAT: The last 5 tasks

6. Tie shoelace



60

See AMAT manual to review the following...

AMAT: The last 5 tasks

7. Use telephone



61

See AMAT manual to review the following...

AMAT: The last 5 tasks

8. Put on cardigan



62

See AMAT manual to review the following...

AMAT: The last 5 tasks

9. Put on T-shirt



63



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