

**FUGL-MEYER ASSESSMENT
UPPER EXTREMITY (FMA-UE)
Assessment of sensorimotor function**

ID:
Date:
Examiner:

Fugl-Meyer AR, Jaasko L, Leyman I, Olsson S, Steglind S: The post-stroke hemiplegic patient. A method for evaluation of physical performance. Scand J Rehabil Med 1975, 7:13-31.

| A. UPPER EXTREMITY, sitting position | | | | | |
|---|--|-----------------------------|------------------------|---------------|---|
| I. Reflex activity | | none | can be elicited | | |
| Flexors: biceps and finger flexors (at least one) | | 0 | 2 | | |
| Extensors: triceps | | 0 | 2 | | |
| Subtotal I (max 4) | | | | | |
| II. Volitional movement within synergies, without gravitational help | | none | partial | full | |
| Flexor synergy: Hand from contralateral knee to ipsilateral ear. From extensor synergy (shoulder adduction/ internal rotation, elbow extension, forearm pronation) to flexor synergy (shoulder abduction/ external rotation, elbow flexion, forearm supination). Extensor synergy: Hand from ipsilateral ear to the contralateral knee | Shoulder | retraction | 0 | 1 | 2 |
| | | elevation | 0 | 1 | 2 |
| | | abduction (90°) | 0 | 1 | 2 |
| | | external rotation | 0 | 1 | 2 |
| | Elbow | flexion | 0 | 1 | 2 |
| | Forearm | supination | 0 | 1 | 2 |
| | Shoulder | adduction/internal rotation | 0 | 1 | 2 |
| | Elbow | extension | 0 | 1 | 2 |
| | Forearm | pronation | 0 | 1 | 2 |
| | Subtotal II (max 18) | | | | |
| III. Volitional movement mixing synergies, without compensation | | none | partial | full | |
| Hand to lumbar spine hand on lap | cannot perform or hand in front of ant-sup iliac spine hand behind ant-sup iliac spine (without compensation) hand to lumbar spine (without compensation) | 0 | 1 | 2 | |
| Shoulder flexion 0°- 90° elbow at 0° pronation-supination 0° | immediate abduction or elbow flexion abduction or elbow flexion during movement flexion 90°, no shoulder abduction or elbow flexion | 0 | 1 | 2 | |
| Pronation-supination elbow at 90° shoulder at 0° | no pronation/supination, starting position impossible limited pronation/supination, maintains starting position full pronation/supination, maintains starting position | 0 | 1 | 2 | |
| Subtotal III (max 6) | | | | | |
| IV. Volitional movement with little or no synergy | | none | partial | full | |
| Shoulder abduction 0 - 90° elbow at 0° forearm pronated | immediate supination or elbow flexion supination or elbow flexion during movement abduction 90°, maintains extension and pronation | 0 | 1 | 2 | |
| Shoulder flexion 90° - 180° elbow at 0° pronation-supination 0° | immediate abduction or elbow flexion abduction or elbow flexion during movement flexion 180°, no shoulder abduction or elbow flexion | 0 | 1 | 2 | |
| Pronation/supination elbow at 0° shoulder at 30°- 90° flexion | no pronation/supination, starting position impossible limited pronation/supination, maintains start position full pronation/supination, maintains starting position | 0 | 1 | 2 | |
| Subtotal IV (max 6) | | | | | |
| V. Normal reflex activity assessed only if full score of 6 points is achieved in part IV; compare with the unaffected side | | 0 (IV), hyper | lively | normal | |
| biceps, triceps, finger flexors | 2 of 3 reflexes markedly hyperactive or 0 points in part IV 1 reflex markedly hyperactive or at least 2 reflexes lively maximum of 1 reflex lively, none hyperactive | 0 | 1 | 2 | |
| Subtotal V (max 2) | | | | | |
| Total A (max 36) | | | | | |

| B. WRIST support may be provided at the elbow to take or hold the starting position, no support at wrist, check the passive range of motion prior testing | | none | partial | full |
|--|---|------|---------|------|
| Stability at 15° dorsiflexion elbow at 90°, forearm pronated shoulder at 0° | less than 15° active dorsiflexion dorsiflexion 15°, no resistance tolerated maintains dorsiflexion against resistance | 0 | 1 | 2 |
| Repeated dorsiflexion / volar flexion elbow at 90°, forearm pronated shoulder at 0°, slight finger flexion | cannot perform volitionally limited active range of motion full active range of motion, smoothly | 0 | 1 | 2 |
| Stability at 15° dorsiflexion elbow at 0°, forearm pronated slight shoulder flexion/abduction | less than 15° active dorsiflexion dorsiflexion 15°, no resistance tolerated maintains dorsiflexion against resistance | 0 | 1 | 2 |
| Repeated dorsiflexion / volar flexion elbow at 0°, forearm pronated slight shoulder flexion/abduction | cannot perform volitionally limited active range of motion full active range of motion, smoothly | 0 | 1 | 2 |
| Circumduction elbow at 90°, forearm pronated shoulder at 0° | cannot perform volitionally jerky movement or incomplete complete and smooth circumduction | 0 | 1 | 2 |
| Total B (max 10) | | | | |

| C. HAND support may be provided at the elbow to keep 90° flexion, no support at the wrist, compare with unaffected hand, the objects are interposed, active grasp | | none | partial | full |
|--|---|------|---------|------|
| Mass flexion from full active or passive extension | | 0 | 1 | 2 |
| Mass extension from full active or passive flexion | | 0 | 1 | 2 |
| GRASP | | | | |
| a. Hook grasp flexion in PIP and DIP (digits II-V), extension in MCP II-V | cannot be performed can hold position but weak maintains position against resistance | 0 | 1 | 2 |
| b. Thumb adduction 1-st CMC, MCP, IP at 0°, scrap of paper between thumb and 2-nd MCP joint | cannot be performed can hold paper but not against tug can hold paper against a tug | 0 | 1 | 2 |
| c. Pincer grasp, opposition pulpa of the thumb against the pulpa of 2-nd finger, pencil, tug upward | cannot be performed can hold pencil but not against tug can hold pencil against a tug | 0 | 1 | 2 |
| d. Cylinder grasp cylinder shaped object (small can) tug upward, opposition of thumb and fingers | cannot be performed can hold cylinder but not against tug can hold cylinder against a tug | 0 | 1 | 2 |
| e. Spherical grasp fingers in abduction/flexion, thumb opposed, tennis ball, tug away | cannot be performed can hold ball but not against tug can hold ball against a tug | 0 | 1 | 2 |
| Total C (max 14) | | | | |

| D. COORDINATION/SPEED , sitting, after one trial with both arms, eyes closed, tip of the index finger from knee to nose, 5 times as fast as possible | | marked | slight | none |
|---|---|--------|--------|------|
| Tremor | at least 1 completed movement | 0 | 1 | 2 |
| Dysmetria at least 1 completed movement | pronounced or unsystematic slight and systematic no dysmetria | 0 | 1 | 2 |
| | | ≥ 6s | 2 - 5s | < 2s |
| Time start and end with the hand on the knee | at least 6 seconds slower than unaffected side 2-5 seconds slower than unaffected side less than 2 seconds difference | 0 | 1 | 2 |
| Total D (max 6) | | | | |

| | | TOTAL A-D (max 66) | | |
|---|-----------------------------|---|---|--|
| H. SENSATION , upper extremity eyes closed, compared with the unaffected side | | anesthesia | hypoesthesia or dysesthesia | normal |
| Light touch | upper arm, forearm | 0 | 1 | 2 |
| | palmary surface of the hand | 0 | 1 | 2 |
| | | less than 3/4 correct or absence | 3/4 correct or considerable difference | correct 100%, little or no difference |
| Position small alterations in the position | shoulder | 0 | 1 | 2 |
| | elbow | 0 | 1 | 2 |
| | wrist | 0 | 1 | 2 |
| | thumb (IP-joint) | 0 | 1 | 2 |
| Total H (max12) | | | | |

| J. PASSIVE JOINT MOTION , upper extremity, sitting position, compare with the unaffected side | | | | J. JOINT PAIN during passive motion, upper extremity | | |
|---|---|-----------|--------|--|-----------|---------|
| | only few degrees (less than 10° in shoulder) | decreased | normal | pronounced pain during movement or very marked pain at the end of the movement | some pain | no pain |
| Shoulder | | | | | | |
| Flexion (0° - 180°) | 0 | 1 | 2 | 0 | 1 | 2 |
| Abduction (0°-90°) | 0 | 1 | 2 | 0 | 1 | 2 |
| External rotation | 0 | 1 | 2 | 0 | 1 | 2 |
| Internal rotation | 0 | 1 | 2 | 0 | 1 | 2 |
| Elbow | | | | | | |
| Flexion | 0 | 1 | 2 | 0 | 1 | 2 |
| Extension | 0 | 1 | 2 | 0 | 1 | 2 |
| Forearm | | | | | | |
| Pronation | 0 | 1 | 2 | 0 | 1 | 2 |
| Supination | 0 | 1 | 2 | 0 | 1 | 2 |
| Wrist | | | | | | |
| Flexion | 0 | 1 | 2 | 0 | 1 | 2 |
| Extension | 0 | 1 | 2 | 0 | 1 | 2 |
| Fingers | | | | | | |
| Flexion | 0 | 1 | 2 | 0 | 1 | 2 |
| Extension | 0 | 1 | 2 | 0 | 1 | 2 |
| Total (max 24) | | | | Total (max 24) | | |

| | |
|-----------------------------------|-----|
| A. UPPER EXTREMITY | /36 |
| B. WRIST | /10 |
| C. HAND | /14 |
| D. COORDINATION / SPEED | / 6 |
| TOTAL A-D (motor function) | /66 |

| | |
|--------------------------------|-----|
| H. SENSATION | /12 |
| J. PASSIVE JOINT MOTION | /24 |
| J. JOINT PAIN | /24 |