**Keiser University**

**PHT 1261C Tests and Measurements**

**Upper Extremity MMT Lab Handout**

**Po = Position; Pa = Palpation; M = movement; R = resistance; S = Stabilization**

**AG = against gravity; GM = gravity minimized**

**1. Upper Trapezius**

 Po: Sitting with arms relaxed (AG); supine or prone with UE supported (GM)

 Pa: superior and posterior shoulder

 M: elevate the shoulders toward the ears

 R: applied on top of shoulder pressing inferiorly

 S: Apply resistance bilaterally to shoulders or unilaterally to posterior lateral side of head

**2. Levator Scapula**

Po: Sitting with arms relaxed & hand behind back in small of back (AG); supine or prone with UE supported (GM)

 Pa: superior and posterior shoulder

 M: elevate shoulders toward the ears

 R: applied on top of shoulder pressing inferiorly

 S: apply resistance bilaterally to shoulders or unilaterally to posterior lateral side of head

**3. Middle Trapezius**

Po: Prone with shoulder abducted to 90 & ER so thumb points to ceiling; elbow extended (AG): Sitting with shoulder abducted to 90 and ER; elbow extended; arm supported on friction free surface

 Pa: medial border of scapula towards spine

 M: raise arm to ceiling & pinch scapula together (into adduction)

 R: distal forearm; medial border of scapula

 S: Stabilize contralateral trunk

**4. Lower Trapezius**

Po: Prone with shoulder abducted approx. 130 degrees; head rotated to opposite side (AG); UE supported manually or by table for (GM); also arm at side in prone position for (GM)

 Pa: medial end of spine of scapula & medial border to spinous process T6-T12

 M: Lift arm up toward ceiling (AG); pull scapula down and in (for GM arms at side)

 R: over lateral angle of scapula in elevation and abduction/upward rotation

 S: trunk on opposite side

**5. Rhomboids**

Po: Prone with hand on lumbar spine/behind back/IR (AG); sitting with hand on lumbar spine/behind back/IR (GM)

 Pa: beneath and along medial border of scapula

 M: lift hand off back

 R: vertebral border pushing into scapular abduction and upward rotation

 S: opposite side of trunk

**6. Serratus Anterior**

Po: Supine with shoulder flexed 90 & elbow fully flexed or extended (AG): sitting with shoulder flexed to 90 & UE supported on table; elbow extended (GM)

 Pa: Midaxillary line adjacent to inferior angle of scapula

 M: Reach up or forward (scapular protraction)

 R: to elbow pushing into scapular retraction/adduction

 S: opposite side of trunk

**7. Pectoralis Minor**

Po: Supine with hand behind back (lumbar spine); (AG); Sitting with hand behind back (lumbar spine) (GM);

 Pa: inferior to coracoid process of scapula

 M: round shoulders; lift hand off back; tip scapula forward

 R: to acromion process pushing scapula posteriorly

S: stabilize ipsilateral trunk

**8. Anterior Deltoid**

Po: sitting shoulder neutral or IR & elbow flexed (AG): sidelying with UE supported, shoulder neutral, elbow flexed (GM)

 Pa: inferior to lateral third of clavicle

 M: flex shoulder to 90; horizontally adduct to 90

 R: proximal to elbow, pushing shoulder into extension and horizontal abduction

 S: opposite shoulder

**9. Middle Deltoid/Supraspinatus**

Po: Sitting with shoulder neutral elbow flexed to 90 (AG); supine with UE supported & elbow flexed to 90 (GM)

Pa: lateral and inferior to acromion process

M: Abduct shoulder to 90 (middle deltoid); abduct to 30 (supraspinatus)

R: lateral arm proximal to elbow; into shoulder adduction

S: Opposite shoulder

**10. Posterior Deltoid**

Po: Prone with shoulder flexed over edge of table; elbow relaxed (AG); Sitting with UE supported shoulder & elbow flexed to 90 (GM)

Pa: below and lateral to spine of scapula

M: horizontal abduction from 90 degrees of shoulder flexion

R: posterior arm proximal to the elbow

S: scapula on same side

**11. Latissimus Dorsi**

Po: Prone, shoulder flexed & IR over edge of table (AG); sidelying with UE supported in 90 degrees shoulder flexion, IR & elbow flex

 Pa: midaxillary line

 M: Extend the shoulder allowing elbow to flex

 R: Posterior arm just proximal to elbow

 S: trunk

**12. Teres Major**

Po: Prone with hand behind back (IR/Add) (AG); no GM position

 Pa: lateral to inferior angle of scapula

 M: adduct and extend shoulder

 R: proximal to elbow pushing into abduction

 S: upper trunk

**13. Pectoralis Major**

Po: Supine with shoulder abducted to 90 & elbow flexed (AG); sitting with UE supported, shoulder abducted 90 degrees and elbow flexed 90 degrees (GM)

 Pa: inferior to medial end of clavicle (Clavicular portion); anterior axillary fold (sternal portion)

 M: Sternal – horizontal adduct & extend; clavicular – horizontal adduct & flex

 R: anteriomedial arm proximal to elbow

 S: contralateral shoulder and ipsilateral trunk

**14. Subscapularis**

Po: prone with shoulder abducted to 90; elbow flexed off table (AG); prone with shoulder flexed

 Pa: anterior surface of scapula;

 M: internal rotation of shoulder to 60 degrees

 R: proximal wrist and anterior forearm into ER

 S: humerus and trunk

**15. Infraspinatus/Teres Minor**

Po: Prone with shoulder abducted to 90 & elbow flexed over table (AG); prone with shoulder flexed over edge of table, elbow extended (GM)

Pa: inferior to spine of scapula (infraspinatus); lateral border of scapula superior to inferior angle (teres minor)

 M: ER shoulder to 90

 R: proximal to wrist on extensor surface of forearm into internal rotation

 S: humerus and trunk

**16. Biceps/Brachialis/Brachioradialis**

Po: Sitting with UE in anatomical position; Biceps – forearm supinated; Brachialis – forearm pronated; brachioradialis – forearm neutral (AG); sitting with UE supported on table in 90 abduction, shoulder neutral rotation, elbow extended (GM)

Pa: Biceps – anterior arm & cubital fossa; Long head – bicipital groove; short head – corocoid process; Brachialis – lateral & medial to distal biceps; brachioradialis – lateral border cubital fossa along lateral radius

 M: flex elbow (with either pronation, supination, or neutral)

 R: proximal to wrist on anterior forearm

 S: arm

**17. Triceps Brachii**

Po: Supine shoulder flexed to 90 & elbow fully flexed (AG); sitting with shoulder supported on table in 90 degrees flexion and IR, elbow flexed & forearm neutral (GM);

 Pa: Posterior arm – differentiate long, lateral and medial heads

 M: Extend elbow

 R: proximal to wrist on posterior forearm

 S: arm

**18. Supinator**

Po: sitting with arm at side elbow flexed to 90 (AG); prone with arm supported on table in 90 degrees abduction & forearm perpendicular to table (GM)

 Pa: under common extensor muscle group off lateral epicondyle of humerus

 M: From pronation to neutral (AG); from full pronation to full supination (GM)

 R: proximal to wrist into pronation

 S: arm & elbow close to trunk

**19. Pronator Teres/Quadratus**

Po: Sitting with arm against trunk, elbow flexed to 90 (AG); Sitting with arm supported on table with shoulder & elbow flexed to 90 & forearm perpendicular to table

Pa: medial surface cubital fossa laterally to radius (Teres); Quadratus proximal forearm – too deep to palpate

 M: full supination to neutral (AG); full supination to full pronation (GM)

 R: proximal to wrist into supination

 S: arm with elbow next to trunk

**20. Flexor Carpi Radialis**

Po: Dorsal surface of hand rests on table with fingers slightly flexed (AG); ulnar border of hand on table, fingers resting in flexion (GM)

 Pa: tendon at level of carpal creases slightly lateral to midline

 M: flex & radial deviate the wrist

 R: to palm of hand into extension & ulnar deviation

 S: forearm stabilized

**21. Flexor Carpi Ulnaris**

Po: sit or supine forearm supinated dorsal surface of hand on table fingers slightly flexed (AG); hand in neutral with ulnar border off table (GM)

 Pa: proximal to pisiform palmar side of wrist

 M: flexion with ulnar deviation

 R: to palm of hand into extension and radial deviation

 S: forearm stabilized

**22. Palmaris Longus**

Po: same as #20 & #21 (AG); same as #20 (GM)

 Pa: if present, midline of wrist at carpal creases

 M: flexion of wrist

 R: on palm of hand into wrist extension

 S: forearm stabilized

**23. Extensor Carpi Radialis Longus**

Po: palmar surface of hand on table with fingers relaxed in flexion (AG); hand rests on ulnar border with fingers relaxed (GM)

 Pa: radio dorsal aspect of wrist proximal to second metacarpal

 M: extend wrist with radial deviation

 R: dorsum of hand into flexion and ulnar deviation

 S: forearm stabilized

**24. Extensor Carpi Radialis Brevis**

Po: same as #23

 Pa: base of 3rd metacarpal dorsal side of wrist over capitated

 M: extend wrist

 R: dorsum of hand into wrist flexion

 S: forearm stabilized

**25. Extensor Carpi Ulnaris**

Po: same as #23

 Pa: between head of ulna and tubercle of 5th metacarpal

 M: extend and ulnarly deviate wrist

 R: dorsum of hand into flexion and radial deviation

 S: forearm stabilized

**26. Flexor Digitorum Superficialis**

Po: hand rest on table on dorsal surface; wrist and metacarpals neutral

 Pa: palmar surface of proximal phalanx

 M: flexion of PIP without flexion of DIP

 R: palmar surface of middle phalanx

 S: proximal phalanx & hand

**27. Flexor Digitorum Profundus**

Po: same as #26

 Pa: palmar surface of middle phalanx

 M: flexion of DIP

 R: palmar surface of distal phalanx

 S: middle phalanx and PIP

**28. Extensor Digitorum/Extensor Indicis/Extensor Digiti Minimi**

Po: sitting with forearm pronated, palmar surface on table wrist neutral; MCP flexed 90 degrees off edge of table

Pa: ED – dorsal aspect of hand; EI – dorsal aspect of second metacarpal, close to ulnar side; EDM – dorsal aspect 5th metacarpal, close to head of ulna

 M: extension of MCP joints with IP joints flexed

 R: distal end of proximal phalanx on dorsal aspect into flexion

 S: hand and wrist

**29. Lumbricals**

Po: palmar surface on table with middle and distal phalanges flexed

 Pa: cannot be palpated

 M: extension of the PIP & DIP

 R: dorsal surface of middle & distal phalanges

 S: under proximal phalanx & wrist & MCP joint

**30. Dorsal Interossei/Abductor digit minimi**

Po: palmar surface on table wrist neutral fingers extended

 Pa: 1st dorsal interossei = radial side of 2nd metacarpal;

 2nd dorsal interossei = radial side of proximal phalanx of middle finger

 3rd dorsal interossei = ulnar side of proximal phalanx of middle finger

 4th dorsal interossei = ulnar side of proximal phalanx of ring finger

 Abductor digit minimi = ulnar border of 5th metacarpal

M: move index, ring & little finger away from middle finger; move middle finger towards index & ring fingers

 R: side of distal end of proximal phalanx of each of 4 fingers

 S: hand and fingers not being tested

**31. Palmar Interossei**

Po: same as #30

 Pa: 1st palmar interossei = ulnar side of proximal phalanx of index finger

 2nd palmar interossei = radial side of proximal phalanx of ring finger

 3rd palmar interossei = radial side of proximal phalanx of little finger

 M: Adduct fingers toward middle finger from abduction starting position

 R: side of distal end of proximal phalanx

 S: hand and fingers that are not being tested

**32. Flexor Pollicis Longus/Brevis**

Po: hand resting on dorsal surface on table; wrist is neutral; thumb is adducted

Pa: longus = crossing the palmar surface of the proximal phalanx of thumb; brevis = ulnar side of first metacarpal

 M: flexion of MCP and IP joints of thumb

 R: proximal phalanx of thumb for FPB & distal phalanx of thumb for FPL into extension

 S: first metacarpal for FPB; proximal phalanx of thumb for FPL

**33. Extensor Pollicis Longus/Brevis**

Po: sitting with hand resting with ulnar border on table; EPB = MCP is flexed & abducted; EBL = MCP is flexed, IP joint flexed

Pa: EPL = crossing the dorsal aspect of base of first MCP to the distal phalanx; EPB = lateral aspect of base of first MCP toward proximal phalanx

 M: extension of MCP & IP joints

 R: EPB = Dorsal surface proximal phalanx; EPL = dorsal surface of distal phalanx

 S: EPB = first metacarpal; EPL = proximal phalanx and first metacarpal

**34. Abductor Pollicis longus/Brevis**

Po: hand rests on ulnar border on table or forearm supinated with wrist neutral & thumb adducted

Pa: APL = immediately proximal to CMC joint; most anterior of 3; APB = anterior surface shaft of first metacarpal

 M: Abduct thumb

R: distal end of first metacarpal into adduction (EPL); proximal phalanx of thumb (EPB)

 S: palm of hand

**35. Adductor Pollicis**

Po: Hand resting comfortably on table, ulnar border or supinated

 Pa: first web space; deep to first dorsal interossei

 M: adduct thumb from abducted position

 R: to proximal phalanx into radial abduction

 S: palm of the hand

**36. Opponens Pollicis**

Po: hand rests on dorsal surface on table with forearm supinated

 Pa: lateral shaft of first metacarpal; deep to APB

 M: Opposition of thumb to 5th finger

 R: distal end of first & fifth metacarpals into derotation

 S: first & fifth metacarpals & palm of hand

**37. Opponens digiti minimi**

Po: hand rests on dorsal surface on table with forearm supinated

 Pa: along shaft of5th metacarpal deep to ADM

 M: Oppose 5th digit to thumb

 R: distal end of 5th metacarpal into derotation

 S: palm of the hand

**38. Flexor Digit minimi**

Po: same as #37

 Pa: laterally along shaft of fifth metacarpal

 M: Flexion of 5th MCP with IP joints remain extended

 R: palmar surface of proximal phalanx into extension

 S: 5th metacarpal & palm