**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