

**Table 14.2** Manual Muscle Tests for the Wrist and Hand

Motion	Athlete position	Stabilizing hand placement	Resistance hand placement	Instruction to athlete	Primary muscles tested
Forearm supination	Seated, elbow flexed to 90°	Elbow at athlete's side	Grasping distal forearm, resistance on dorsal aspect	From neutral position, supinate forearm (laterally rotate) while trying to move forearm into pronation.	Biceps brachii, supinator
Forearm pronation	Seated, elbow flexed to 90°	Elbow at athlete's side	Grasping distal forearm, resistance on ventral aspect	From neutral position, pronate forearm (medially rotate) while trying to move forearm into supination.	Pronator teres, pronator quadratus
Wrist flexion	Seated, forearm supinated	Distal forearm, just proximal to wrist	Palm	Move fingers and palm toward wrist.	Flexor carpi radialis and ulnaris
Wrist extension	Seated, forearm pronated	Distal forearm, just proximal to wrist	Dorsal surface of hand over MCs	Move back of hand toward wrist.	Extensor carpi radialis longus and brevis, extensor carpi ulnaris
Radial deviation	Seated, forearm neutral	Distal radius, just proximal to wrist	Radial side of palm	Deviate hand toward radial side (thumb) of forearm.	Extensor carpi radialis longus and brevis, flexor carpi radialis
Ulnar deviation	Prone, forearm neutral	Distal ulna, just proximal to wrist	Ulnar side of palm	Deviate hand toward ulnar side (5th finger) of forearm.	Flexor carpi ulnaris, extensor carpi ulnaris
MCP flexion	Seated, forearm supinated and hand resting on table	Over metacarpals	Over dorsal aspect of proximal phalanx of finger(s)	While maintaining DIP and PIP extension, move fingers toward palm.	Lumbricales (2nd-4th), flexor digiti minimi (5th)
MCP extension	Seated, forearm pronated and hand extended off the table	Over metacarpals	Over dorsal aspect of proximal phalanx of finger(s)	Starting in slight flexion, extend MCP joints against your resistance.	Extensor digitorum (2nd-5th), and extensor indicis (2nd) or extensor digiti minimi (5th)
MCP abduction	Seated, forearm pronated and hand resting on table	Over metacarpals	Radial (2nd and 3rd digits) or ulnar (3rd-5th digits) aspect of proximal phalanx	Move finger away from midline.	Dorsal interossei (2nd-4th), abductor digiti minimi (5th)
MCP adduction	Seated, forearm supinated and hand resting on table	Over metacarpals	Ulnar (2nd digits) or radial (4th and 5th digits) aspect of proximal phalanx	Move test finger toward 3rd finger.	Palmar interossei

(continued)

From S. Shultz, P. Hougum, and D. Perrin, 2016. *Examination of musculoskeletal injuries*, 4th ed. (Champaign, IL: Human Kinetics).

**Table 14.2** (continued)

Motion	Athlete position	Stabilizing hand placement	Resistance hand placement	Instruction to athlete	Primary muscles tested
IP flexion (PIP, DIP)	Seated, forearm supinated and hand resting on table	Proximal phalanx (PIP) or midphalanx (DIP)	Midphalanx (PIP) or distal phalanx (DIP)	PIP: Flex PIP while maintaining DIP extension. DIP: Flex DIP.	Flexor digitorum superficialis (PIP) and profundus (DIP)
IP extension (PIP, DIP)	Seated, forearm pronated and hand off end of table	Same as IP flexion	Same as IP flexion	PIP: Extend PIP while maintaining DIP extension. DIP: extend DIP.	Extensor (2nd-5th) digitorum, and extensor indicis (2nd) or extensor digiti minimi (5th)
Thumb flexion (MCP and IP)	Seated, forearm supinated and hand resting on table	Metacarpal (MCP) or proximal phalanx (IP)	Palmar surface proximal phalanx (MCP) or distal phalanx (IP)	MCP: Flex MCP while maintaining IP extension. IP: Flex distal segment.	Flexor pollicis longus (IP) and brevis (MCP)
Thumb extension (MCP and IP)	Seated, forearm pronated and hand resting on table	Metacarpal (MCP) or proximal phalanx (IP)	Dorsal surface of proximal phalanx (MCP) or distal phalanx (IP)	MCP: Extend MCP while maintaining slight IP flexion. IP: Extend distal segment.	Extensor pollicis longus (IP) and brevis (MCP)
Thumb abduction	Seated, forearm supinated and hand resting on table	Proximal forearm and wrist	Lateral proximal metacarpal (APL) or phalanx (APB)	Move thumb away from palm.	Abductor pollicis longus (APL) and brevis (APB)
Thumb adduction	Seated, forearm supinated and hand resting on table	Palmar aspect of hand	Medial aspect of thumb	Move thumb toward palm.	Adductor pollicis
Opposition	Seated, forearm supinated and hand resting on table	Proximal wrist	Between the thumb and opposing 5th finger	Maintain contact between distal pads of thumb and 5th finger while attempting to pull them apart.	Opponens pollicis and digiti minimi

MCP = metacarpophalangeal joint; MC = metacarpal; IP = interphalangeal joint; DIP = distal interphalangeal joint; PIP = proximal interphalangeal joint; APL = abductor pollicis longus; APB = abductor pollicis brevis.

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