

Table 6.1 Ranges of Joint Motion

Joint	Movement	Range of motion (start to end)	Variations in end ranges of motion
Shoulder	Extension–flexion Hyperextension Adduction–abduction Lateral rotation Medial rotation Horizontal abduction Horizontal adduction	0-180° 0-45° 0-180° 0-90° 0-90° 30° 135°	150-180° 40-60° 150-180° 80-90° 70-90° --- ---
Elbow	Extension–flexion	0-145°	120-160°
Forearm	Supination Pronation	0-90° 0-80°	80-90° 70-90°
Wrist	Extension Flexion Radial deviation Ulnar deviation	0-70° 0-90° 0-20° 0-30°	65-70° 75-90° 15-25° 25-40°
Thumb CMC	Abduction Flexion Extension Opposition	0-70° 0-45° 20° Tip of thumb to tip of #5	50-80° 15-45° 0-20° ---
Thumb MCP	Extension–flexion	0-45°	40-90°
Thumb IP	Extension–flexion	0-90°	80-90°
#2-5 finger MCP	Flexion Hyperextension Adduction–abduction	0-90° 0-30° 0-20°	--- 30-45° ---
#2-5 finger PIP	Extension–flexion	0-100°	100-120°
#2-5 finger DIP	Extension–flexion	0-90°	80-90°
Hip	Extension–flexion Hyperextension Abduction Adduction Lateral rotation Medial rotation	0-120° 0-15° 0-45° 0-20° 0-45° 0-35°	110-125° 10-45° 45-50° 10-30° 36-60° 33-45°
Knee	Extension–flexion	0-135°	125-145°
Ankle	Dorsiflexion Plantar flexion	0-15° 0-45°	10-30° 45-65°
Subtalar joint	Inversion Eversion	0-30° 0-15°	30-52° 15-30°
MTP	Extension–flexion Hyperextension	0-40° 0-80°	30-45° 50-90°
IP	Extension–flexion	0-60°	50-80°

CMC = carpometacarpal; DIP = distal interphalangeal; IP = interphalangeal; MCP = metacarpophalangeal; MTP = metatarsophalangeal; PIP = proximal interphalangeal.

Based on information from Hoppenfeld 1976; Hislop and Montgomery 2002; AAOS 1965; Kendall, McCreary, and Provance 1993; Kapandji 1980; Esch and Lepley 1974; Gerhardt and Russe 1975.

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