

Table 17.1 Goniometric Examination of Knee ROM

Motion	Location of goniometer	Movement	Normal range
Knee flexion	P: Supine A: Lateral femoral epicondyle S: Long axis of femur M: Long axis of fibula	Athlete flexes knee by bringing heel toward buttocks.	0-135°
Knee extension	P: Supine A: Lateral femoral epicondyle S: Long axis of femur M: Long axis of fibula	Athlete extends knee as far as possible. Hyperextension (past 0°) may occur.	-5-0°
Medial and lateral tibial rotation	P: Seated, knee flexed to 90° with foot placed on markable surface A: Midcalcaneus S: Long axis of 2nd MT at start position M: Long axis of 2nd MT at end position	With the foot placed neutrally on a sheet of paper, draw an outline of the foot, marking the tip of the 2nd ray. Have the athlete maximally internally and externally rotate the tibia, keeping the thigh stable. Mark the boundaries at the end of medial and lateral ranges. Draw lines between the 2nd ray and the midpoint of the heel for both the start and end positions. Measure the angle between the start and end lines for both motions. (Ensure that the athlete does not invert or evert the foot, or rotate the thigh during these motions).	Medial rotation = 10-20° Lateral rotation = 20-30°

P = athlete position; A = goniometer axis; M = movable arm; S = stationary arm; MT = metatarsal.

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