Did you know that taking a step forward uses around 200 muscles? One muscle action that plays a central role in walking and running is knee flexion. Let’s take a look at this muscle action and all of the individual muscles used. Download Human Anatomy Atlas to learn about more muscle actions.
The knee is one of the largest joints in the human body. It provides shock absorption during walking and running, and allows flexion and extension. The knee’s stability is maintained by different ligaments like the anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), medial collateral ligament (MCL), medial meniscus, lateral meniscus, lateral collateral ligament (LCL).
Knee flexion is the action of the knee bending the leg towards the buttock. The reverse of this action, when the lower leg is straightened, is called knee extension.
There are 8 main muscles used in knee flexion. We will take a look at each one and their individual origins, insertions, innervation, and blood supply points.
The sartorius is the longest muscle in the body. It is located in the anterior compartment of the thigh and assists in the movements of the hip, thigh, knee, and lower leg.

**Origin:** Ilium (anterior superior iliac spine)

**Insertion:** Medial surface of the superior shaft of the tibia via a common tendon of the pes anserinus

**Innervation:** Femoral nerve (L02 and L03)

**Action:** Flexion, abduction, and lateral (external) rotation of the thigh at the hip joint; flexion and medial (internal) rotation of the lower leg at the knee joint

**Blood supply:** Profunda femoris and saphenous branch of the descending genicular artery
The gracilis is the most superficial muscle in the medial compartment of the thigh, and assists in movements of the hip, thigh, knee, and lower leg.

**Origin:** Lower half of the pubic symphysis and upper half of the pubic arch

**Insertion:** Medial surface of the superior shaft of the tibia via a common tendon of the pes anserinus

**Innervation:** Obturator nerve (L03 and L04)

**Action:** Adduction and flexion of the thigh at the hip joint; flexion and medial (internal) rotation of the lower leg at the knee joint

**Blood supply:** Obturator artery
The semimembranosus is a muscle in the posterior compartment of the thigh, and is the deepest of the hamstring muscles.

**Origin:** Ischial tuberosity, sharing a common tendon with the semitendinosus and biceps femoris

**Insertion:** Posterior surface of the medial condyle of the tibia

**Innervation:** Tibial nerve (L05–S02)

**Action:** Flexes the leg at the knee joint; rotates the leg medially (inward)

**Blood supply:** Perforating branches of profunda femoris and inferior gluteal artery
The semitendinosus is a muscle of the posterior compartment of the thigh and is one of the hamstring muscles.

**Origin:** Ischial tuberosity, sharing a common tendon with the semimembranosus and biceps femoris

**Insertion:** Medial surface of the superior shaft of the tibia via a common tendon of the pes anserinus

**Innervation:** Tibial nerve (L05–S02)

**Action:** Flexes the leg at the knee joint; rotates the leg medially (inward)

**Blood supply:** Perforating branches of profunda femoris and inferior gluteal artery
The biceps femoris is a hamstring muscle in the posterior compartment of the thigh that assists in movements of the hip, thigh, knee, and lower leg. The long head is the lateral portion.

**Origin:** Ischial tuberosity, sharing a common tendon with the semitendinosus and semimembranosus

**Insertion:** Lateral surface of the head of the fibula

**Innervation:** Tibial nerve (S01–S03)

**Action:** Flexion and lateral (external) rotation of the lower leg at the knee joint; extension of the thigh at the hip joint

**Blood supply:** Perforating branches of profunda femoris and inferior gluteal artery
BICEPS FEMORIS: SHORT HEAD

The short head of the bicep femoris is the medial portion.

**Origin:** Linea aspera of the femur

**Insertion:** Lateral surface of the head of the fibula

**Innervation:** Common fibular (peroneal) nerve (L05–S02)

**Action:** Flexion and lateral (external) rotation of the lower leg at the knee joint

**Blood supply:** Perforating branches of profunda femoris and inferior gluteal artery
The gastrocnemius is a superficial two-headed muscle of the posterior compartment of the leg and one of the two muscles that make up the triceps surae.

**Origin:** Medial and lateral heads arise from the posterior surfaces of the respective femoral condyles

**Insertion:** Posterior surface of calcaneus by way of the Achilles tendon

**Innervation:** Tibial nerve (S01–S02)

**Action:** Plantar flexion of foot, flexes leg at knee joint

**Blood supply:** Sural arteries, posterior tibial artery
The Achilles tendon is the thickest and strongest tendon in the body. Located in the posterior compartment of the lower leg, it extends from the gastrocnemius and soleus muscles and inserts on the posterior surface of the calcaneus.
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