

Knee Anatomy - Understanding ACL Injuries and How They Are Repaired



The anterior cruciate ligament (ACL) is one of the four main ligaments in the knee. It connects the femur to the tibia and helps stabilize the knee. The ACL also provides rotational stability, important for movements that involve sudden stops, pivots, or changes in direction. It is a common site of injury, especially in athletes who play sports like soccer or football.

How ACL Injuries Happen

An ACL injury often occurs when the knee is twisted or bent in an unnatural way. For example, landing awkwardly from a jump, suddenly changing direction while running, or receiving a direct blow to the side of the knee can cause the ligament to tear.

When the ACL tears, people often report hearing or feeling a “**pop**” followed by immediate pain and swelling. The knee may feel unstable or “give out” when walking or trying to stand.

Doctors can diagnose an ACL tear through a **physical exam**, where they test the movement of the knee, and confirm it using an **MRI** (magnetic resonance imaging) scan to see the soft tissues.

Treatment and Surgical Repair

A completely torn ACL does not heal on its own because the ligament has a limited blood supply. In some cases, physical therapy and wearing a brace may be enough. However, for athletes or active individuals, surgery is often recommended to restore full knee stability.

During ACL reconstruction surgery, the damaged ligament is replaced with a graft, which acts as a new ligament. Surgeons can take the graft from the patellar or quadriceps tendon, the hamstring, or a donor tendon from a cadaver. In some

The surgeon removes the torn ACL and drills small tunnels in the femur and tibia. The new graft is threaded through these tunnels and secured with screws or other devices so it can hold tight while it heals. Over time, the body’s cells grow into the graft, and it becomes a functioning ligament.

Recovery and Rehabilitation

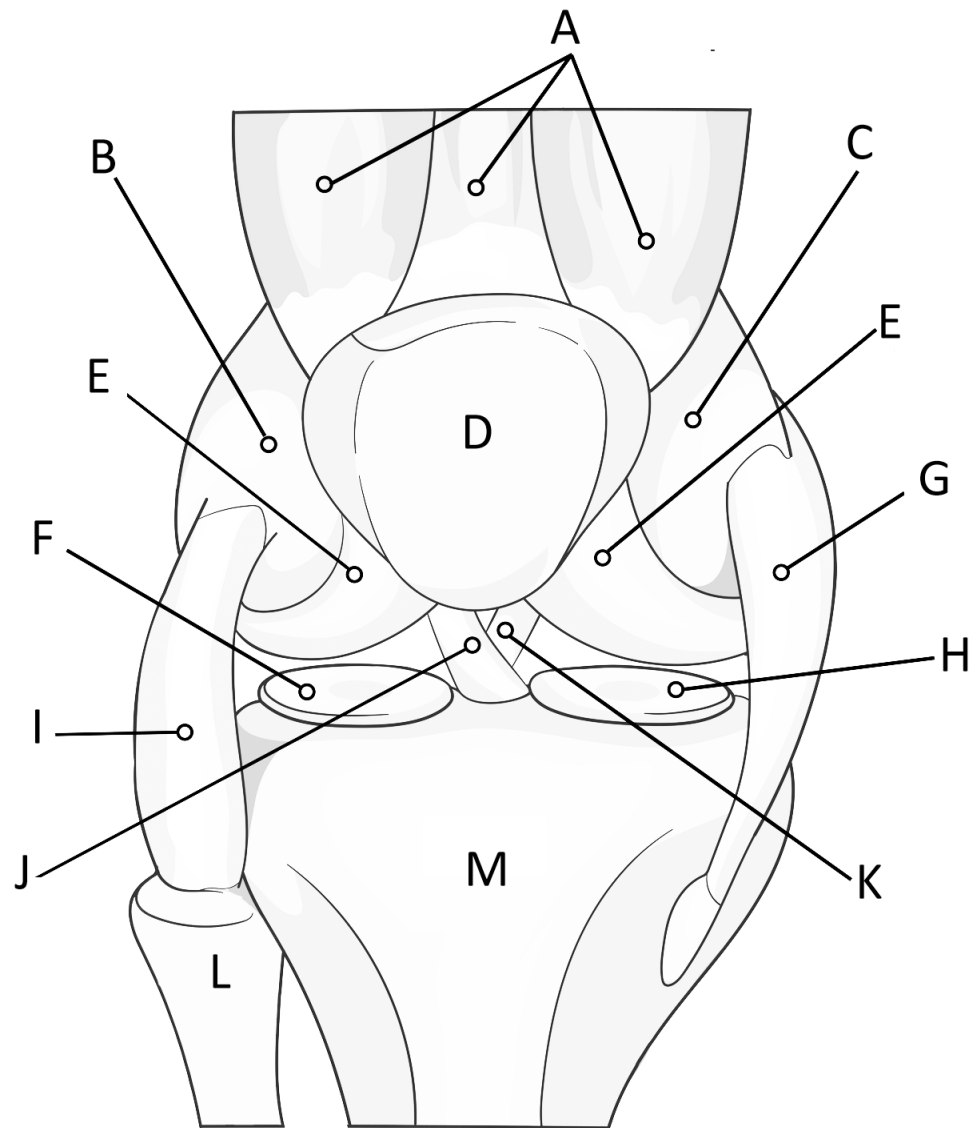
After surgery, recovery takes several months and involves a structured rehabilitation program. Physical therapy focuses on regaining range of motion and strengthening the muscles around the knee. Most people can return to sports after 6 to 12 months, depending on the severity of the injury and the person’s dedication to therapy.

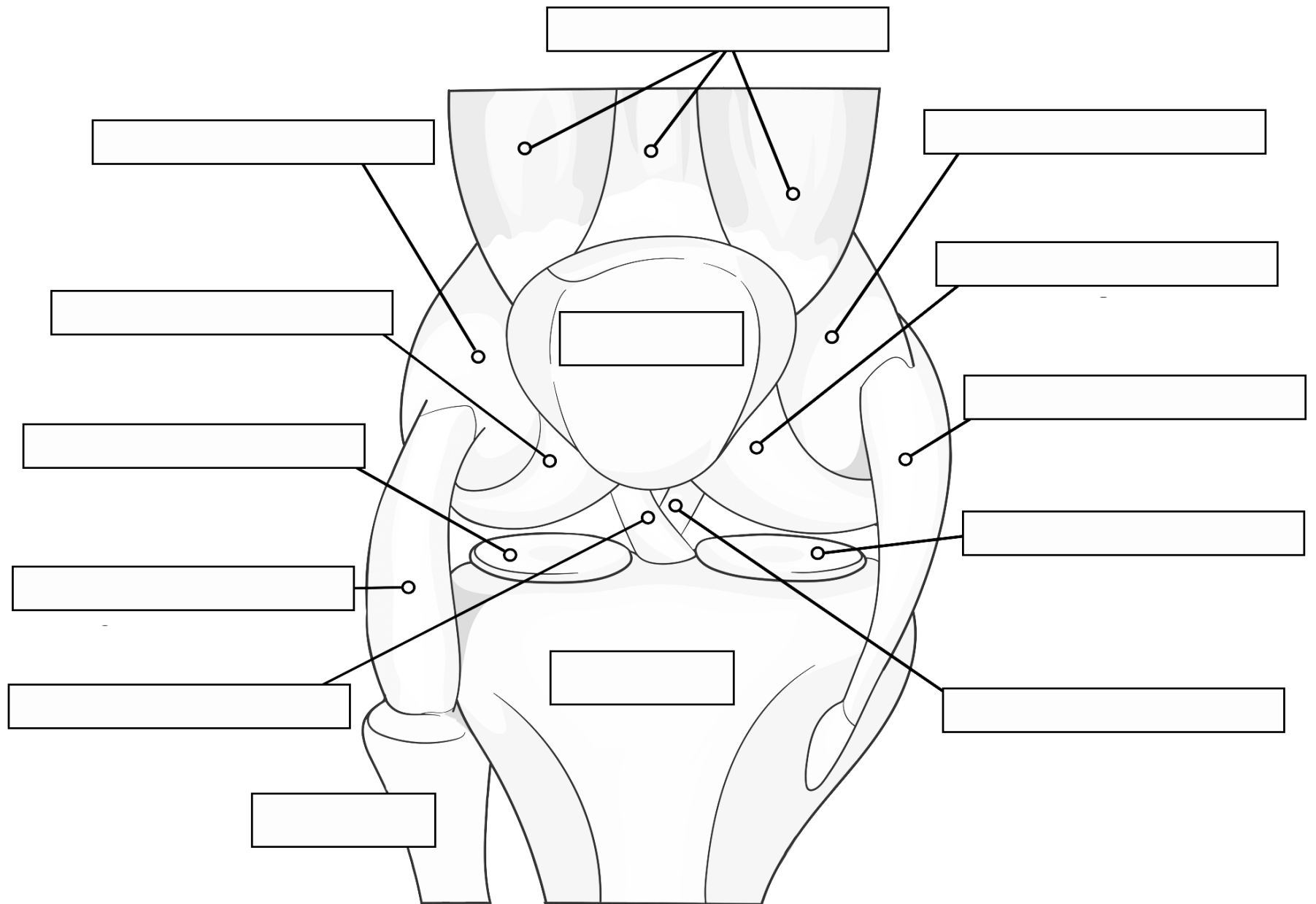
1. What does “ACL” stand for?
2. What is the main function of the ACL in the knee?
3. What types of movements cause ACL injuries?
4. What are some symptoms of a torn ACL?
5. What diagnostic tool can confirm an ACL tear by showing the soft tissues of the knee?
6. Why can’t a completely torn ACL heal on its own?
7. What are three possible graft sources for ACL reconstruction?
8. How does the body eventually make the graft function like a normal ligament?
9. What is the focus of physical therapy?
10. How long does it take most people to fully recover from ACL reconstruction surgery?



*Color the image of the knee, place a star next to the ACL.

- A. Quadriceps muscle (pink)
- B. Lateral malleolus of femur (orange)
- C. Medial malleolus of femur (yellow)
- D. Patella (red)
- E. Articular cartilage (light blue)
- F. Lateral meniscus (purple)
- G. Medial collateral ligament (light green)
- H. Medial meniscus (pink)
- I. Lateral collateral ligament (dark green)
- J. Anterior cruciate ligament (orange)
- K. Posterior cruciate ligament (yellow)
- L. Fibula (purple)
- M. Tibia (red)





Part II - Other Knee Injuries

A. Meniscus Tear

The meniscus is a C-shaped piece of cartilage that acts as a cushion between the femur and tibia. Tears often happen during twisting or pivoting movements, especially while the foot is planted.

B. MCL (Medial Collateral Ligament) Injury

The MCL runs along the inner side of the knee and helps prevent it from bending inward. Injuries usually occur from a blow to the outside of the knee or sudden twisting.

C. CL (Lateral Collateral Ligament) Injury

The LCL is on the outer side of the knee and stabilizes it against forces pushing the knee inward. It can be injured by a blow to the inside of the knee or from extreme twisting motions.

D. PCL (Posterior Cruciate Ligament) Injury

The PCL works with the ACL to stabilize the knee. It is often injured in car accidents (when the shin hits the dashboard) or falls.

*** Label the knee image and indicate (by letter) where other knee injuries occur.**

