

KNEE PAIN

There are two general kinds of knee problems: mechanical (e.g., from injury) and inflammatory (e.g., from arthritis). The same symptom may occur in several knee diseases, and not all symptoms typical of a particular disease may be present in an individual person with the condition. In the following descriptions, "below" the knee means towards the lower leg, and "underneath" means further inside the body. The diagnoses below are listed in order of frequency for adult diagnoses in an interim analysis of 10,000 subjects in TMT's ongoing knee pain study, a web-based study in which any person with knee pain can participate (<https://www.masterdocs.com/kneepain/start.php>).

ARTHRITIS (usually osteoarthritis): Pain may be widely distributed in knees. Morning stiffness (lessens as person moves around). Knee swelling. Decrease in knee motion. Joint locks or clicks when knee is bent or straightened. More common in older people (e.g., over 50).

CHONDROMALACIA/RUNNER'S KNEE/PATELLOFEMORAL PAIN SYNDROME: Various terms are used for pain in the front of the knee around the kneecap. The underlying cause is often unclear but is often an overuse injury. Dull pain around or under kneecap that is worse when walking down or climbing up stairs or hills. Pain when knee bears weight as it straightens.

MENISCUS INJURY (torn cartilage on inside or outside of knee): May be injured when twisting (rotating) knee while bearing weight. Pain when knee is straightened. Knee swelling. Knee may click or lock. Knee feels weak.

TENDINITIS (inflammation of a tendon): Often overuse injury from running, cycling, basketball. Tender where tendon meets bone. Knee pain during running or hurried walking. Difficulty bending, straightening or lifting leg.

ILIOTIBIAL BAND SYNDROME: Common thigh overuse injury (running, cycling, hiking, weight-lifting). Ache or burning/stinging on outside and just above knee during activity. Pain radiating up outside of thigh during activity (especially as foot strikes ground) and after activity. Snap when knee is bent and then straightened.

ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY: Partial or complete tear of femur-tibia ligament at front of knee. Often sports injury when knee is bent back or side-to-side or twisted. Popping sound on injury. Pain on outside and back of knee. Swelling of knee. Knee movement limited. Knee may feel unstable or buckle.

PREPATELLAR BURSITIS: Common form of bursitis associated with chronic kneeling ("housemaid's knee") or a direct blow to knee. Knee pain when kneeling on floor. Swelling between kneecap and skin.

BAKER'S CYST: Pain and swelling at back of knee. If cyst ruptures, pain in back of knee can travel down the calf.

DISLOCATION OF KNEECAP: Pain, tenderness and swelling of knee possibly resulting from sports injury. Kneecap is displaced to outside of knee and knee appears deformed. Kneecap moves excessively from side to side.

MEDIAL COLLATERAL LIGAMENT (MCL) INJURY: May result from blow to outside of knee. Pain on inside of knee. Popping sound on injury. Knee feels unstable. Swelling. (The MCL joins inside femur to tibia).

TENDON TEAR: May be injured trying to break a fall. Pain above kneecap (quadriceps tendon) or below kneecap (patellar tendon).

ANSERINE BURSITIS: Most often seen with osteoarthritis, especially in overweight middle-aged women. Can also be an overuse injury in athletes. Knee pain just below inside of knee when knee bent. May be worse at night and on climbing stairs.

PLICA SYNDROME Unusual condition. Symptoms may be similar to meniscus injury or tendinitis. Swelling. Weakness of knee. Locking of knee. Snapping or clicking sensation. (Plica syndrome comes from irritation of synovial membrane bands around knee joint, possibly from overuse or injury).

LATERAL COLLATERAL LIGAMENT (LCL) INJURY: Unusual injury. May result from blow to inside of knee. Pain on outside of knee. Popping sound on injury. Knee feels unstable. Swelling. (The LCL joins outside femur to fibula).

POSTERIOR CRUCIATE LIGAMENT (PCL) INJURY: Unusual injury. Partial or complete tear of femur-tibia ligament at back of knee. Often from blow to front of a flexed knee (e.g., dashboard in auto accident). Popping sound on injury. Severity of pain depends on severity of tear. Pain may be worse with stairs or hills. Swelling or bruising on back of knee. Knee movement limited. Knee may feel unstable or buckle.

INFRAPATELLAR BURSITIS: Unusual condition. Pain and swelling just below front of knee. Symptoms may be similar to jumper's knee or tendinitis. Localized tenderness. Limitation of knee movement.

PEDIATRIC CAUSES OF KNEE PAIN: Children can suffer from some of the same causes of knee pain as adults. However, some conditions occur primarily in children. Osteochondritis dissecans is caused by loss of blood supply to bone beneath a joint and can be associated with a family history of the same condition, weakness of the knee, sharp pain in the knee, and locking of the knee joint. Osgood-Schlatter disease is a common cause of knee pain in young athletes, mostly in boys who are having a growth spurt during their pre-teen or teenage years; it causes swelling, pain and tenderness just below the knee and over the tibia bone in the shin.

ANATOMY: The point at which two or more bones are connected is called a joint. In a joint, cartilage acts as padding, ligaments are bands that join bones to each other, tendons connect muscle to bone, and muscles bend and straighten joints. The knee joint is the junction of three bones: the femur (thigh bone or upper leg bone), the tibia (shin bone or larger bone of the lower leg), and the patella (kneecap). The patella is 2 to 3 inches wide and 3 to 4 inches long. It sits over the other bones at the front of the knee joint and slides when the leg moves. It protects the knee and gives leverage to muscles. The ends of the bones are covered with cartilage. The medial and lateral menisci (singular is "meniscus"; sometimes referred to as "cartilage" of the knee) are pads that separate the tibia and the femur and act as shock absorbers. Two groups of knee muscles (quadriceps and hamstrings) are at the front and back of the thigh. The collateral and cruciate ligaments connect the femur and tibia and strengthen the knee. A bursa is a fluid-filled sac between tendon and skin or between tendon and bone (and is inflamed in bursitis).

DIAGNOSIS: The patient is questioned about the pain, associated symptoms, knee injury, and any conditions that may cause knee pain. A physical examination checks knee movement and knee tenderness. Additional tests can include x-ray; CT, MRI or bone scan; arthroscopy; biopsy. Extensive injuries and diseases of the knees are usually treated by an orthopedic surgeon. Nonsurgical treatment of arthritis of the knee is usually by a rheumatologist.

PREVENTION OF KNEE PROBLEMS: Many knee problems can be avoided by maintaining a healthy weight, wearing shoes that fit and are in good condition, and using orthotics (shoe inserts) to correct flat or overpronated feet. Many people recommend warming up and doing stretches before exercise, doing exercises to strengthen the knee muscles, and avoiding sudden changes in the intensity of exercise.

SUITABLE EXERCISE FOR PEOPLE WITH KNEE PROBLEMS: **Range-of-motion exercises** help maintain normal joint movement, relieve stiffness, and maintain or increase flexibility. **Strengthening exercises** help keep or increase muscle strength. Strong muscles help support and protect joints affected by arthritis. **Aerobic and endurance exercise** in combination with diet help control weight as well as provide cardiovascular fitness.

The information above should not be considered medical advice and is not intended to replace consultation with a qualified health care professional. It is based largely on the following article provided by the U.S. Government's National Institutes of Health (NIH). You are advised to read this article for definitive information on this subject: <http://www.niams.nih.gov/hi/topics/kneeprobs/kneeqa.htm>.

To answer TMT's Knee Pain questionnaire, go to <https://www.masterdocs.com/kneepain/start.php>.