Preventing Knee Injuries

Dr. Charles Hummer

As an orthopaedic surgeon with a sub-specialty in Sports Medicine, I often hear this complaint from family, friends and patients. Both acute injuries and overuse injuries can cause knee pain and dysfunction in athletes of all ages. So, what are common knee problems? How can they be prevented? And, what treatments are there for common knee pain?

The most common knee problem I see in my practice is “kneecap pain” or patella-femoral pain syndrome (PFPS). The kneecap (patella) acts as a lever to allow the front thigh muscles to extend the knee, allowing us to stand upright and walk. The force generated through the kneecap increases geometrically as the knee bends in the standing position—in full squat there’s about seven times body weight pressure on the kneecap joint surface. Kneecap pain occurs because of this pressure, and because of subtle misalignment of the kneecap in the groove of the femur, caused by injury or change in level or type of activity—a new sport, lots of kneeling.

Some other common causes of knee pain are sprains or tears of the knee ligaments, tears of the knee floating cartilages, and wear and tear of the joint cartilage on the surface of the kneecap, the femur and the shin bone.

No matter your age, my key message is that prevention of knee injuries is much easier than treatment. Fortunately, sports science has advanced rapidly, and we’ve learned that strengthening muscles around the knee is important to prevent injury, and that core conditioning is vital.

Modern injury prevention focuses on conditioning the entire athlete, and particularly strengthening the strongest muscles in the “core” of the body—lower back, abdominal, hip and buttock muscles.

Many effective conditioning programs can be done several times weekly before engaging in sports. These programs have been statistically validated to reduce the incidence of lower body injuries, especially injuries of the knee.

I recommend the “Fifa 11 plus” program, created by the world soccer governing body and freely available online (Google “Fifa 11 plus” for descriptions and videos). This 20-minute warm-up program was designed for soccer athletes but is useful for everyone.

The most common treatment for overuse knee problems or acute injuries is rehabilitation, with exercises initially supervised by a physical therapist or an athletic trainer. These exercises share many elements of the Fifa 11 plus program. The key to rehabilitation is for the injured athlete to actually do the exercise program daily until completely recovered!

In rare cases, surgery is needed for acute knee pain. Almost always, though, this can be done in a minimally invasive way, most often with a fiberoptic camera (arthroscope) used in the knee joint. With an arthroscope as a guide, surgeons can treat meniscus tears, knee ligament tears (most commonly, the ACL or Anterior Cruciate Ligament, which prevents abnormal knee twisting), joint
surface cartilage injuries and other problems. Recovery after arthroscopic surgery is usually rapid, so patients can return to activity much sooner than using older technologies.

The most serious pain from overuse occurs when there’s advanced degenerative arthritis. This condition involves wear and tear of the knee joint surface resulting in the cartilage no longer functioning or being absent, leaving bone to meet bone. Strengthening exercises, anti-inflammatory medicine (Ibuprophen), lubricant injections (called “injectable visco-supplementation”), and using braces may provide relief.

If non-surgical treatments are unsuccessful, surgery for advanced knee joint wear and tear involves re-surfacing the joint with an artificial implant—a composite of metal and polyethylene, a “knee replacement.” Today, this treatment is no longer used exclusively for senior, sedentary patients. Knee replacement technology has advanced significantly, and is at most a two-night hospital stay with return to activities in three months for active adults.

**Bottom line:** For healthy knees, prevention is best, but when injury occurs or overuse leads to pain and dysfunction, rapid recovery with modern technology and rehabilitation can get you back in your game quickly.

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