

Common Knee Disorders in Endurance Athletes

by Brad J. Bernardini, MD, FAAOS, Reconstructive Orthopedics

Endurance sports have become an increasingly popular part of modern day exercise and training programs. Currently, triathlon is one of the most rapidly growing recreational sports in the nation. Unfortunately, it is also responsible for a significant number of common overuse injuries in and around the knee and lower leg. Running is plagued by a higher proportion of knee injuries than cycling because of the “high impact” nature of the sport. Endurance athletes running more than 25 miles per week have an annual injury rate of 30%. Approximately 50% of these injuries occur in the knee!

The great majority of these injuries are due to overuse and improper training programs. The most common errors involve a sudden change in frequency, duration, and/or intensity of training. Additionally, improper gear selection, fit, and poor biomechanics play major roles in endurance related injuries. Generally, an athlete should plan for increases of no more than 10% per week with regard to duration and distance, and should seek consultation with sports specialists when symptoms persist despite conservative treatment.

The following are brief descriptions of several common causes of knee pain in the endurance athlete.

IT Band Syndrome (Iliotibial Band Syndrome)

ITB Syndrome is one of the most common overuse injuries in the endurance athlete! The IT band is a tough band of tissue running from the outer hip to the outer knee. Many elements factor into its development, but in general, increases in distance and intensity coupled with a tight IT band and muscular imbalances in the hip are to blame. Repetitive friction of the IT band over the knee joint during motion causes inflammation resulting in pain and sometimes clicking over the outer part of the knee.

In runners, this disorder is particularly aggravated by running downhill or running on a crested road for extended durations. In cyclists, it can be exacerbated by poor seat and pedal position which causes the foot to tilt inward.

Treatment involves modifying causative factors such as running distances, changing hill routes, and improving bike fit issues. Additionally, anti-inflammatory medication, icing, and a good physical therapy program for stretching and strengthening of the hip and knee are beneficial. Foam Rollers used on the outer thigh are particularly helpful. Rarely does ITB Syndrome require surgery.

Popliteus Tendonitis:

While rare, tendonitis of the popliteus is worth mention because it can mimic ITB syndrome very closely. The popliteus is a small muscle that supports the knee in rotation and extension. If you have pain on the outer side of the knee, and have not had a complete resolution with the above recommendations; popliteus tendonitis should be considered. A sports medicine specialist will be able to make the diagnosis based on a good physical examination. An MRI may be required to confirm the problem. Fortunately, conservative treatment and protocols similar to those used for ITB syndrome usually lead to its resolution.

Patellofemoral Syndrome

Patellofemoral syndrome is a very common cause of pain in the front of the knee, and is exceedingly common in female athletes. It actually refers to a group of disorders that can occur between the knee cap and the groove that it rides in. The most commonly seen problems are due to instability of the joint or excessive pressure to the knee cap cartilage. Typically, this syndrome causes pain that is exacerbated by squatting, kneeling, and stair climbing. Pain is usually progressive and many times triggered by hill repeat training sessions. Those with instability may notice a “popping out of place” sensation of the knee cap that occurs while bending and extending the knee. Relative rest, avoidance of offending training programs, and strengthening exercises for the hips and quadriceps serve as the cornerstone for a successful non-op treatment program. Unfortunately, this can be a challenging problem for the endurance athlete and sports physician! Many times, complex treatment options, including surgery, may have to be explored.

Quadriceps / Patellar Tendonitis:

Often referred to as “jumpers knee”; this is an extremely common diagnosis in endurance athletes, especially distance runners. Both involve tendon inflammation at their bony attachments to the knee cap. Patellar tendinitis is more common, and involves the lower portion of the knee cap. Pain at the attachment is the main complaint and is usually worse immediately after a workout is completed and the cool-down has finished. Interestingly, many athletes can usually continue to perform their workouts after a thorough warm-up. Contributing factors include knee cap mal-alignment, tight quads, high mileage training, and repetitive deep knee bending activities. An excessively low seat position on the bike can also aggravate this condition. Treatment

involves anti-inflammatories, a quad stretching program to decrease tension at the tendon attachment, and ice after training sessions. A Cho-Pat strap may also decrease symptoms and allow running to continue without transmitting 100% of the impact to the inflamed tendon attachment.

Plica Syndrome:

A Plica Band is a remnant of an infolding on the inside of the knee joint that typically disappears after birth. Those in whom the band remains may develop inflammatory changes, causing pain on the inner part of the knee. The band is irritated by the repetitive friction associated with endurance sports. Additionally, athletes may notice a snapping sensation associated with the pain. Another classic complaint is pain noted after sitting in a 'cross-legged' position. The physical exam is diagnostic of Plica Syndrome and rarely are imaging studies required for diagnosis. Most improve with anti-inflammatories, an icing regimen, and cross-training. Severe cases may respond to a single cortisone injection. Arthroscopic removal of the band is rare, but may be necessary in resistant cases.

Hamstring "Pes" Bursitis:

A Bursa is a thin sac of fluid that serves to decrease friction between 2 adjacent structures such as a tendon and a bone. There is one located on the inner aspect of the knee, immediately beneath the hamstring tendons, that is particularly prone to develop inflammatory changes. Inflammation within the bursa causes swelling, pain, and sometimes a "gritty" feeling that occurs during motion of the knee. The major causes are repetitive motion and excessively tight hamstrings. Treatment protocols are focused on hamstring stretching, strengthening, decreasing inflammation within the bursa, and correcting poor mechanics and positioning during training. This is a relatively rare diagnosis in endurance sports, but nonetheless worth mention!

Meniscus Tears:

Meniscus tears are one of the most common conditions treated by Orthopaedic knee specialists. Fortunately, they are rare cause of symptoms in endurance athlete. Tears in

the "younger" population are generally caused by a single event. Usually involving an impact landing, deep squat, or a hard pivoting type of maneuver. Symptoms are immediately obvious in cases such as these. After the tear, pain is described as sharp and episodic with periods of relatively pain free function scattered in between. Additionally, mechanical symptoms such as popping, clicking and snapping may be present. Many athletes also describe a feeling that the knee is going to "give way"! In the "older" population, tears may have a much more gradual onset, and may not be attributable to a single event. Symptoms are similar in this patient population. Clinical exam and an MRI can confirm this diagnosis. Once diagnosed, the majority of cases require arthroscopic surgery to remove the torn portion of the meniscus. Most of these tears do not have the ability to heal themselves because of an inherently poor blood supply in the torn portion. If untreated the tear can enlarge and can go on to cause additional damage within the knee!

Degenerative Joint Disease:

Its worth a brief mention that there have been no well designed studies that have shown that endurance sports cause knee arthritis. Unfortunately, athletes with previous knee surgery or pre-existing mal-alignment of the knee are more likely to develop arthritis at an accelerated rate if they participate in endurance sports.

Summary:

The above mentioned conditions represent the more commonly seen causes of knee pain in endurance athletes, but by no means is it an exhaustive list. Most of these conditions can be avoided with a well designed training program and recovery plan. "Listen to your body" is a phrase that my patients hear often! Training modifications at the earliest phases of these conditions usually allow continued sports participation. If these conditions persist, an evaluation with a sports medicine specialist is beneficial in providing an early and accurate diagnosis. It is also essential for avoiding complications and a prolonged delay of return to competition. Don't hesitate to let me know if you KNEEd me!

Dr. Bernardini is a former Division I Collegiate Academic All-American Football Player, and Track & Field Team captain. He is currently Co-Director of the Virtua sports medicine program and voted one of South Jersey Magazine's Best Sports Medicine Physicians as voted by its readers. He maintains his passion for athletics as a competitive Triathlete and three time Ironman finisher. He is the co-founder of the Jersey Devils Multisport Club, and has achieved distinction as a USA Triathlon Certified Level I Coach. He currently sees patients at his Vineland and Washington Township Offices, and has privileges in the Virtua, Inspira, and Kennedy Healthcare systems.