

RUNNING INJURIES

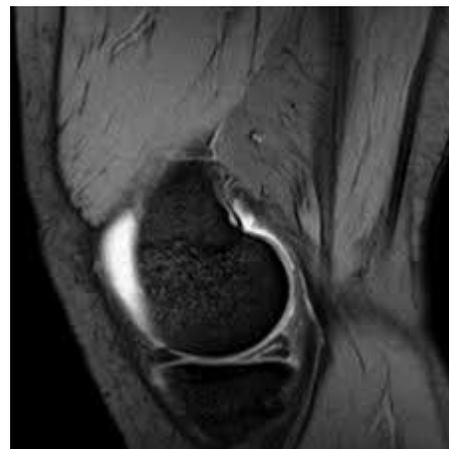
Running is a simple and convenient low cost sport and with increasing awareness of disease prevention together makes it a popular form of exercise. It lowers the rate and progression of disability, risk to chronic diseases and mortality rates. It is estimated that the number of recreational runners far exceed those that run competitively and that those who participated in running were mostly inexperienced.

The average age of the runners is 40yr with an estimated yearly rate of 37-79% of injuries. The common injuries sustained are mostly due to overuse that usually they heal without major intervention. For more serious injuries it can lead to long term consequences if precautions are not taken and appropriate treatment not started early.

Previous injuries and total running mileage in many studies consistently seems to predict running injuries. Serious distance runners, defined as those who run more than 25 miles per week, have an injury rate about 30% per year

There are many injuries associated with running that affects different parts of the lower limb at different rates. About 25% affects the knee. 20% the lower leg, 16% the ankle, 10% the upper limb, 7% hips and pelvis and 7% lower back. A survey in US shows a differing pattern of injury between the younger and older runners. Knee and shin problems affected the young while the older runner more commonly sustain injury to the calf, Achilles tendon, and hamstrings.

For the purpose of this article, meniscus injury that can lead to long term arthritis of the joints will be discussed.



MENISCAL TEAR

The knee is the largest joint in the body and has many parts and that performs different functions and is prone to injuries. Meniscal tear is one of the commonest injuries that can occur from running. If left untreated some may progress to osteoarthritis of the knee. Meniscal tears can occur at any age although the type of tears is different. In the younger age group the tears are usually related to sports trauma from twisting injuries while the degenerate tears tend to occur in the older age group due to age related changes in meniscus. This can occur as easily as from a simple twist sitting to standing position.

Often there is a 'pop' when the meniscus tears. If the tear is small, there is an often minimal symptom with minimal effect on walking or running. There may be associated swelling and often full weight bearing is painful and if severe, the knee is stiff with reduced range of motion. When large meniscal tears occur, it may cause catching, locking or sudden 'giving way' while walking. This is the result of the loose fragments that slips into the joint between the femur and tibia. It may act as a loose body abrading the articular cartilage at the end of the femur and tibial surfaces. Persistent abrasion will lead to loss of articular cartilage and eventually bone is exposed leading to osteoarthritis when both bone surfaces of the femur and tibia abrade each other causing pain and deformity and reduced function of the knee.

Tenderness along the joint line and special examination on the knee may produce clicking suggestive of a meniscal tear. XR is often not conclusive but is usually done to exclude bony loose fragments or other bone conditions causing similar symptoms. MRI is most helpful in confirming the diagnosis and more importantly to check for other injuries to the articular cartilage on the femur and tibia that will influence treatment and any additional procedures needed.

Often if the knee is stable and the symptoms are not prolonged, PRICE management is all is needed. PRICE stands for Pain control, Rest, Ice, Compression and Elevation. Pain control can be managed by NSAIDs (Non-steroidal anti-inflammatory drugs) like Aspirins, Ibuprofen (BRUFEN, NUROFEN, MOTRIN, ADVIL) and Diclofenac (VOLTAREN) or the newer class of medication called the Cox2 that include Etoricoxib (ARCOXIA) and Celecoxib (CELEBREX) that markedly reduce gastric and gut irritation and ulceration. It is a common mistake to think of such medication as pain control medication only. It is equally important to be aware that these medications reduce pain by reducing the inflammatory process that occurs after any injury. Next is Rest that is often trivialized but is essential for the injured meniscus adequate time to heal. As is often the case, healing is programmed in humans but the noncompliance of resting the injured part will prolong the healing process beyond the average four to six weeks. Crutches and non-weight bearing and sometimes bracing the knee allow it adequate rest for healing. In addition, Ice is a simple and effective means of reducing swelling in an acute injury but needs to be applied every 20 minutes at a time several times a day. Direct contact of ice to skin continuously will cause cold burns causing more injury. An elastic compression support would help to reduce the additional swelling and blood loss after injury and also restrict the range of motion for pain relief. Lastly, Elevation is often overlooked and is the simplest measure to reduce swelling by elevating the knee above the horizontal level to the heart.

When pain, swelling and mechanical locking symptoms persists in spite of non-operative treatment then surgery may be needed. Knee arthroscopy also called key-hole surgery is one of the commonly performed knee procedure that involves inserting a small video camera through small incision into the knee joint. Another small incision is often used for inserting specialized small instruments. This provides an excellent view of the injury of the knee where they can be examined closely and manipulated with a probe or treated with other instruments.

The outer third of the meniscus (red zone) has a rich blood supply that enables tears in this region to heal together best with repair. Reparability depends on the size, location and type of tear. With complex tears, being thin and with multiple tears, it is often excised. The middle third however has moderate blood supply while the inner third has the least blood supply and the thinnest cross section that is not amenable to repair. Often this is trimmed at surgery to a stable edge using specialized arthroscopic hand instruments and shavers. Occasionally it is possible to trim some parts of the meniscus and repair some other parts with the aim to preserve as much of the meniscus that can heal stably as possible.

Trimming the meniscus probably increases the risk of osteoarthritis with the loss of meniscus that does not grow back causing the loss of shock absorption protection. However the risk of articular cartilage damage from loose symptomatic meniscal fragments can be more damaging leading to more rapid osteoarthritis changes. It is analogous to a stone inside the shoe abrading the sole of the foot causing blistering and ulceration. Other factors that need to be considered in the treatment of meniscal tear include age, activity level and occupation.

Rehabilitation of the knee after arthroscopic surgery is another often ignored aspect that has a major bearing on the final result. Early controlled rehabilitation programme is essential for optimal results. Occasionally a knee brace is needed after surgery to prevent excessive movements. During the healing process initial regular controlled progressive range of motion and exercises to maintain muscle strength is necessary. When meniscal healing is complete a full range of motion and strengthening programme is added. Much of the rehabilitation programme can be done at home with simple resistive exercises with exercise bands that are cheap and lightweight.

PREVENTION

Muscles, tendon and ligaments are important to support the knee. As such muscle conditioning, muscle, tendon and ligament flexibility are important to prevent knee injury. Muscle strength, endurance and balance training of the entire lower limb and sustained gentle stretching to hamstring and calf muscles is important as tightness of these muscles are common in runners.

Adequate warm up and stretches before running is essential to prevent muscle, tendons and ligament injuries. It is equally important to cool down after running reducing the intensity of the run towards the end to enable the body to recover.

Proper running shoe wear is important to prevent injuries particularly the foot and essentially are of three types. A motion-control shoe is for a runner who needs more rigid support, support shoe is for those that do not need much control and a cushion shoe is for a runner with a rigid foot requiring flexibility and cushioning for shock absorption.

WARM UP

Adequate warm up is important to allow the body to prepare for the demands for intense running activity. It increases the blood flow to the muscles, body temperature and breathing rate. This can be done with running at an easy pace at the beginning. The warming up duration can vary with those who are newer to running taking a longer time. After warming the muscles stretches need to be done to improve flexibility. Stretching cold muscles can cause injury. Stretches should probably best be done standing up at the start of the running session then floor stretches during the cooling down after running. This will allow the body to respond better and prevent injuries. Stretches should be done slowly to avoid muscles tension and gently with no pain with each stretch held to 10-30sec.

COOLING DOWN

This phase at the end of running is to allow the body to recover effectively. It begins by a gradual decrease in the running intensity at the end of the running session and gradually down to walking at a comfortable pace until breathing and heart rate returns to normal.

In summary, running is a healthy way to stay fit with minimal cost. With proper precaution and adequate regular training programme, the risk of injury can be minimized while maintaining the health benefits. It is also important to be aware that injuries may occur and that early intervention may be advisable to prevent longer term disability.