

# Frequent Injuries .101

I have outlined below the four most common injuries triathletes face during training.

## 1. Shoulder pain

Due to the repetitive arm stroke action involved in the freestyle stroke, swimming can often be the catalyst to developing shoulder pain. Poor technique and over training can increase the incidence of shoulder injuries even further. Posture, poor mobility in your neck and upper back and muscle imbalances around your shoulder can also contribute to shoulder pain.

### What is causing the pain in my shoulder?

Shoulder pain is most commonly classified into three categories; Impingement Syndrome, Overuse Injury or Shoulder Joint Laxity and/or Instability. These labels describe the injury patterns of the shoulder and are described in detail below.

#### *Shoulder joint Impingement*

Shoulder Impingement can be defined as compression or impingement of the structures within the subacromial space (top of the shoulder joint). Within this space lie muscular tendons (i.e. rotator cuff), and the subacromial bursa (fluid filled sac that prevents muscle on bone traction). Impingement arises due to thickening or swelling of the structures within the space, upward migration of the ball in the shoulder joint and/or poor posture/ biomechanics while swimming.

#### *Overuse Injury*

Overuse injuries are generally defined as tendonopathies. Tendonopathy means injury/ degeneration to the tendon of a muscle. Damage to a tendon occurs when the load applied to the tendon, over a period of time or in a single episode, exceeds the ability of the tendon to cope with the load. Tissue breakdown occurs, which may or may not be accompanied by inflammation. Tendon injuries can be very difficult to treat because tendons have a poor blood supply and rest is one of the most important factors to a successful recovery!

#### *Joint Laxity and/ or Instability*

Joint laxity and/or instability most often develop over an extended period of time if there is no traumatic injury to the shoulder joint. Gradual deterioration in the ligaments and inhibition of the rotator cuff muscles leads to laxity or loosening of the shoulder joint. If this is not addressed instability of the shoulder can occur which may lead to a capsular lesion (a tear in the lining of the socket of the shoulder joint).

Elements of each of these three patterns can co exist and are often interrelated. For example, a swimmer who has been diagnosed with a rotator cuff injury will experience pain, which prevents the muscles from working properly thereby allowing the ball to move more in the socket. Overall, the shoulder joint moves more than normal which can lead to laxity or instability of the shoulder. This laxity allows the head of the humerus (ball) to migrate upwards in

the glenoid fossa (socket), which causes impingement or compression of the structures in the top of the shoulder.

### **What are the signs and symptoms?**

- Shoulder pain may begin as mild pain in the shoulder, which is only felt when swimming but can quickly progress to moderate or severe pain, which is felt performing daily activities and while sleeping.
- Early on, symptoms will subside shortly after swimming. If there has been no period of rest or treatment pain may come on sooner and persist with other activities involving shoulder movements.
- Pain, limited movement, a painful arc, muscle weakness, tenderness to touch, clicking or catching sensations and noises are common symptoms associated with shoulder pain.
- Pain can be felt in the top, front, side or back of the shoulder and may even radiate down the arm to the elbow.
- Swelling and torn tissue may also be present however, most likely will only be seen on a diagnostic ultrasound examination.

### **Suggestions for preventing shoulder pain.**

- i) If you are learning to swim or have recently started your swimming training for the upcoming triathlon season, schedule a technique sessions with a qualified swimming/ triathlon coach. Addressing any technical faults early will significantly reduce your chances of developing shoulder pain.
- ii) Always be mindful of your training mileage. Slowly increase your distance, intensity and frequency in the pool over a period of time. A general rule of thumb for swimming is to gradually increase your training by 5 % per week.
- iii) Always warm up and stretch before a training session. Be sure not to overstretch your shoulders, as too much flexibility can be detrimental. Including strengthening/ stability exercises to your training program to maintain muscle balance around your shoulder joint will help to maintain healthy strong shoulders and upper back.

### **Treatment and Rehabilitation**

Activity modification is critical to prevent the pain and swelling from continuing. Rest from activities or movements, which aggravate your pain and applying ice, are the first steps to a successful, quick recovery. Seek medical advice early from a physiotherapist, athletic therapist or Sports Doctor to determine the severity of the injury and begin rehabilitation.

## 2. Iliotibial Band Friction Syndrome (ITBFS)

ITBFS is one of the most common over use running injuries. Although this particular injury can be easily diagnosed, treatment can be extremely challenging especially if the problem has not been addressed early when the symptoms were first noticed.

The iliotibial band (ITB) is a thick band of tissue called fascia, which runs from the outside of the hip to the outside of the knee cap and lower leg bone. The ITB surrounds muscle and attaches into the gluteal muscles and the tensor fascia lata muscle at the side of the hip. When the muscles contract they create tension in the band. If there is an imbalance between the muscle groups this can create abnormal tension, which leads to irritation and inflammation at the distal attachment at the knee.

### **What is causing the pain on the outside of my knee?**

As the knee bends, the band is pulled backwards over the bone on the outside of the knee (lateral femoral epicondyle) and as the knee straightens the band is pulled forward. To decrease friction between the band and the bony structure on the outside of the knee there is a thin bursa, or fluid filled sac, which lies between the band and the bones. Repetitive bending, especially between 0 and 30 degrees can cause inflammation of the bursa and band as well as irritation of the bone due to rubbing or impingement.

### **What are the signs and symptoms?**

- Initially, an ache may be felt in the outside of the knee when running and will typically subside shortly after the run.
- If the problem is ignored a sharp or burning pain on the outside of the knee will become stronger to the point that you are no longer able to 'run through it'. At this stage pain may also persist with walking and/ or going up and down stairs.
- Tenderness may be felt on the outside of the knee at the knee joint, along the ITB or even higher up on the outside of the hip.
- Symptoms include tightness, ache to a sharp localized pain on the outside of the knee, which may radiate down the leg.
- Thickening and inflammation is most likely not seen but may be present in the ITB and bursa. Tightness in the tensor fascia lata and weakness in the gluteal and quadriceps muscles may also be present when examined by a physiotherapist.

### **Suggestions for preventing ITBFS.**

- i) Be proactive and address training errors early before problems arise. This includes replacing your running shoes every 550-850 km, or if you average approximately 40-50 km per week, every 3-4 months. Slowly increase your running distance, frequency and intensity. If you are introducing hill training do so slowly as downhill running significantly increases friction on the ITB. Finally, avoid training on uneven surfaces or vary the direction if you are training on tracks or ovals.
- ii) Incorporate strengthening exercises for your pelvic stabilizing muscles. Weakness in hip abductors ( specific gluteal muscles), poor control of the quadriceps muscles and over activity in the anterior hip muscles (i.e. TFL) contributes to ITBFS.

- iii) Practice good training habits. Gradually warms up, cool down and include gentle stretching during your training sessions.

### **Treatment and rehabilitation**

Initially rest, ice and anti-inflammatory medication will reduce the swelling and irritation in the ITB. Running should be avoided until your symptoms have subsided and a physiotherapist has assessed you. Rehabilitation with a physiotherapist will help to reduce the inflammation, restore flexibility in your ITB and address muscle imbalances and poor control of the lower extremity. A consultation with a podiatrist is also recommended to address any specific foot biomechanics that may be contributing to the problem.

### **3. Achilles Tendonopathy**

The Achilles tendon is the thickest and strongest tendon in the human body. It is the combined tendon of the soleus and gastrocnemius muscles of the calf. The Achilles tendon is surrounded by a paratenon (also known as peri-tendon/ paratendon, which is continuous with the fascia of the muscle and the periosteum of the calcaneus. Injuries to the Achilles tendon occur when the load applied to the tendon exceeds the tendons ability to cope with that load. This can occur over time or in one single episode.

#### **What is causing the pain?**

In the region of the Achilles tendon are two bursae (fluid filled sacs). The retrocalcaneal bursa lies between the heel bone (calcaneus) and the Achilles tendon. The second bursa, Achilles bursa lies between the Achilles tendon and the skin. When these bursae become inflamed pain can be felt in the Achilles region, which, may or may not involve any injury to the Achilles tendon.

Injuries to the Achilles tendon are most commonly described as overuse tendon degeneration rather than acute inflammation. Repetitive micro trauma occurs over time at a degree and frequency that does not allow the tendon to heal it self. Eventually, this repetitive micro trauma leads to pain.

#### **What are the signs and symptoms?**

- There is commonly pain locally in the Achilles tendon region, which develops gradually over a period of time. The pain is usually worse in the morning or after a period of rest and often eases with active exercise/ walking or the application of heat but then worsens after completing the exercise.
- Thickening and/ or tenderness may be felt along the Achilles tendon or at the base of the tendon where it attaches to the heel bone.
- Tightness in the calf muscles especially if the problem has not been addressed and training continues.

#### **Suggestions for preventing Achilles pain.**

- i) Identify abnormal foot biomechanics. If you are new to triathlon or running having a biomechanical assessment of your feet and running pattern would be very beneficial, especially if you can recognize that you have very low/ fallen arches or very high arches. A physiotherapist or a podiatrist can complete an assessment.
- ii) Regular stretching of your calf muscles and maintaining balanced muscle strength at the front of your shins and in your calves will also reduce the possibility of developing Achilles problems.
- iii) As with other lower extremity injuries preventing pain from starting includes smart training, replacing your running shoes regularly and seeking advice as soon as you first notice pain. These good training habits will help to prevent Achilles pain and treat the problem before it becomes worse.

### **Treatment and Rehabilitation**

Similar to other lower extremity injuries, the first steps to successfully treating any condition include RICER – rest, ice, compression, elevation and referral to a physiotherapist. The first step to any treatment or rehabilitation of an injury is to reduce the swelling and pain. Once this has been achieved then attention can be directed to abnormal biomechanics, footwear, training habits and muscle strength and flexibility.

## **4. Plantar Fasciitis**

Plantar Fasciitis is one of the most common causes of heel pain. The plantar fascia originates from the heel bone (calcaneus) and runs along the bottom of the foot to attach to the toes. It forms what is called the longitudinal arch of the foot and acts as a shock absorber as well as a support for the arch of the foot. This is a condition, which involves more degeneration of the fascia than actual inflammation and is caused by repetitive micro trauma.

### **What is causing the pain?**

Repetitive stress on the plantar fascia leads to tearing of the tissue and inflammation. Over time this tearing causes thickening of the tendon and irritation of the plantar fascia where it attaches to the bone, which then causes pain in the bottom of your foot. Runners with tight calf muscles, high arches or flat feet are predisposed to plantar fasciitis. Poor footwear or continually wearing high heels can also increase your risk of developing plantar fasciitis.

### **What are the signs and symptoms?**

- Pain is most often felt in the heel or along the arch of the sole of the foot and is commonly worse first thing in the morning or after you have been sitting or non-weight bearing for a period of time.
- Unusual tightness may be felt in the calf or arch area.
- Running or walking in bare feet may increase the pain.
- Tenderness may be felt when you palpate your heel or along your arch in the bottom of your foot.

### **Suggestions for preventing Plantar Fasciitis.**

- i) Good supportive footwear that is appropriate for your foot will help to keep your feet healthy and injury free. If you pronate excessively (have flat feet) or do the opposite and have very high arches custom made orthotics may provide you with the support you need for running.
- ii) Maintaining flexible calves and feet will prevent your feet from becoming rigid and tight.
- iii) Smart training habits as mentioned previously.

### **Treatment and Rehabilitation.**

Initially stop running if pain is an aggravating factor and apply ice 15-20 minutes 3-4 times daily. Anti-inflammatory medication will also help to reduce any irritation and acute inflammation in the early stages. Although stretching is important to maintain flexibility in the calf muscles, strengthening the calf muscle and small intrinsic muscles in the foot is also important to prevent these muscles from becoming fatigued too quickly. If symptoms continue for 2-3 days seek the advice of a physiotherapist and/or podiatrist to address biomechanical faults.