

THE ANATOMY OF RUNNING...

Running is a complex, highly coordinated process involving the entire body. While every runner has his or her somewhat unique style, key motions associated with running are common.

If you're looking to improve your running or just seeking to prevent running injuries it is important to follow the information in this article. In addition, making stretching a part of your fitness regime, **along with sports massage treatment to aid recovery**, this will have a significant impact on your overall results.

While running alone includes a wide range of competitive sports events, running ability is also a key ingredient in many other sports including football, soccer, rugby, basketball, tennis, cricket and many more, which is why running is usually part of the training regimen for most other sports.

Running is known to affect the mind as well as the body, with many runners reporting a post-run euphoria known as *runner's high* - believed to be the result of increased endorphin production in the brain, this in our pressurised environment today can only be a huge plus for us to do it regularly, and manage our mental and emotional attitudes.

Competitive running events vary by distance from very short sprints to marathons ultra marathons and multi-day events, trail and cross country. Running is engaged in for recreation, exercise and in strenuous competition worldwide.

Anatomy Involved

Proper running is executed as a sequence of *strides*, alternating between the two legs. Leg stride can be loosely divided into three phases: support, drive, and recovery. Support and drive refer to phases when the foot is in contact with the running surface. Recovery refers to the period when the foot is off the ground.

In the support phase, the contact foot supports the body against the force of gravity, with the body's centre of mass in the lower abdominal area between the hips. Just prior to the support phase, the knee joint is at its greatest extension, though when contact is made with the running surface, the knee joint begins to flex. The extent of knee flexion varies depending on the particular runner's style. As the supporting leg bends at the knee, the pelvis dips on the opposing side, acting to absorb shock.

Following the support phase, a transition to the drive phase takes place. At this point, the drive leg extends at the knee joint and hip, with the toe maintaining contact with the ground and the leg trailing behind the body. During the drive, the foot may extend through a flexing of the *SOLEUS* and *GRASTOCNEMIUS* muscles of the calf.

Once the driving toe loses contact with the surface, the recovery phase begins. Here, the hip flexes, rapidly driving the knee forward. (Forces transferred from the upper leg not by the action of the muscles, drive most of the lower leg's motion). As the knee kicks forward, torque is exerted against the lower leg via the knee joint.

In the last phase of recovery, the hip achieves maximal flexion. As the lower leg rapidly unfolds, the knee joint reaches its greatest extension. In the process of this extension of the leg and flexion of the hip, hamstring and gluteal muscles rapidly stretch, and reflexively respond to the stretch with sudden contraction. The recovery stage ends when the foot again comes into contact with the ground, beginning the support phase. During all three-stride phases, the upper body anatomy is also in use, in order to maintain balance and continue forward motion. At higher speeds, the arms, spine and shoulder often come into play, absorbing forces and helping to maintain balance.

Most Common Running Injuries

Runners are prone to a wide variety of both acute injuries and those resulting from overstress. The a high impact nature of the activity causes considerable stress to muscles, tendons and ligaments as well as making such athletes vulnerable to strains, sprains and fractures.

Some of the more frequently encountered injuries include:

- Runner's knee: also known as **CHANDRAMALACIA**, the condition results from a softening or wearing away of the cartilage under the kneecap, resulting in pain and inflammation
- **ILIOTIBIAL BAND SYNDROME**: The Iliotibial band is a sheath of connective tissue attaching muscles in the gluteal region to the outside (or lateral) surface of the tibia or shin bone. The band functions in extending the knee joint and abducting the hip
- **SHIN SPLINTS**: An inflammation of muscle attachments and interosseous membranes to the tibia or shin bone

When choosing running as your sporting discipline either recreationally, socially or competitively, understand it is the hardest on the body, it is in your interests to have an understand of the impact on the body. Support recovery and AVOID injury via following a program specifically attuned to YOU and your lifestyle, along with strong commitment to run specific strength training, cross training (not in place of a run session) and do regular deep tissue sports massage treatment.

For any questions around your running please do not hesitate to contact Lynda Stanton

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