

ANKLE DORSIFLEXION

By Brad Hiskins

Adequate range of motion in ankle dorsiflexion is necessary for long term running health.

Dorsiflexion is the ability to ‘bend’ at your ankle joint allowing your knee to move over your foot. (See figure 1).

When in the strike phase of your running gait (when your foot hits the ground), it is vital that your lower leg moves over your foot with relative ease. Due to overloading of other structures, decreased dorsiflexion range can result in numerous types of injuries. Lower back, hips, knees, ankles and foot mechanics may all be affected and limit your ability to train.

If you are unsure of your dorsiflexion

range, place a ruler on the floor against a wall (as seen in figure 2) then position your big toe 5-7 cms from the wall and lean your bent knee towards it. If your knee easily touches the wall without your heel coming off the ground, then move your big toe back and try again. When you have established the point that your heel begins to come off the ground when leaning forward, measure the distance of your big toe from the wall. This distance should be at least 10cm, anything less and your dorsiflexion range of motion may be limiting your ability to run and put you at risk of injury.

Furthermore, you may find that from left to right there are some differences. Small amounts, such as 1cm, don’t usually cause any major problems, however anything more and it is worth your while remedying the difference. Limited dorsiflexion on one side or the other may result in quite different running gait patterns from left to right. The side that has limited range of motion may cause consequential patterns through your foot, lower and upper leg, pelvis and lower back. These consequential patterns may excessively load other structures, causing pain and injury.



Figure 1.



Figure 2.

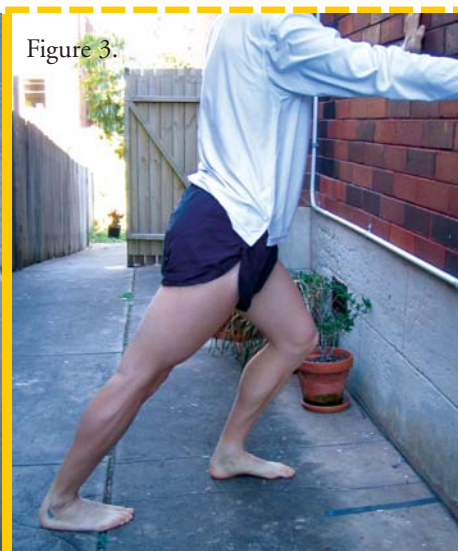


Figure 3.

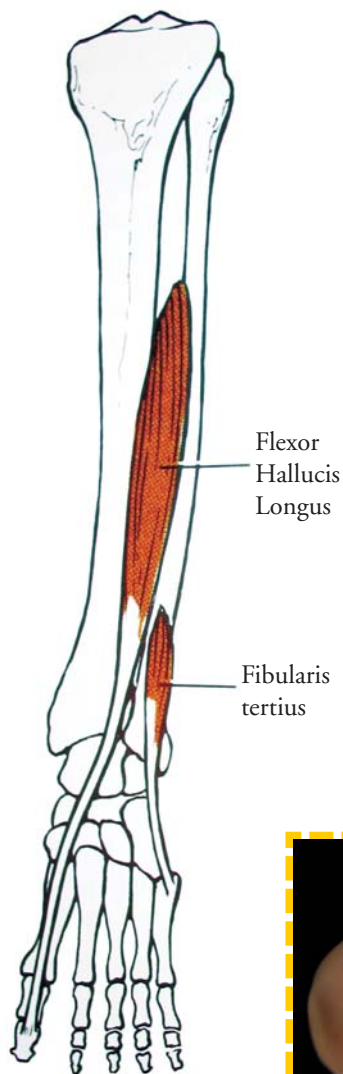


What to do

If your dorsiflexion range of motion is limited, increase your calf stretching (see figure 3) and self massage the deep flexor muscles (either side of your achillis), gastrocnemius and soleus (Pictured left and right). If this doesn’t increase your range of motion, consult your physical therapist for further instruction.



Muscle in Focus



Flexor Hallucis Longus is the muscle that attaches your fibula (small lateral bone in lower leg) to your big toe. The muscle runs from the fibula to the inside of the ankle then along the underside of the foot where it inserts into the bottom of the big toe.

It's **action** is to flex the big toe, that is take it towards the underside of the foot. In walking or running the flexor hallucis longus helps to 'push' off the ground and therefore drive you forward. It also helps maintain your foot arch when walking and running.

The major **injury** seen to this muscle is tendonitis. Pain may be felt on the inside of your ankle and further towards the middle of the inside of the foot. This may be due to some form of overload such as excessive hill running, step running, or repeated track starts. Changing from training shoes to racing flats decreases the support to this muscle and therefore may put it at risk.

Assessment of this muscle is via palpation to the muscle and tendon itself in an attempt to replicate the symptoms felt on running. A tight Flexor Hallucis Longus will limit the ability of the big toe to be raised towards your

head. Resisted flexion of the big toe that reproduces foot pain also suggests the flexor hallucis longus is involved.

Causes may be inappropriate foot wear, your training methods, stiff ankle joints and surrounding muscles or a tight Flexor Hallucis Longus.

Treatment is by removing the cause.

This muscle can be **stretched** by placing your big toe up against a door jam while leaving the toes resting on the floor (see figure X). When in this position, lean forward as if doing a bent knee calf stretch. You can also stretch this muscle by sitting on your heels while having your big toe on the floor (see figure Y).

To **strengthen** this muscle, repeated calf raises with an emphasis on pushing off with your big toe will suffice. To ensure eccentric strength have only your toes on a step when doing the calf raises and calf dips. Allow your foot to go below the level of the step, (slowly – as you are attempting to build eccentric strength and control) using your big toe to control the movement before rising up into a calf raise and then repeating.



Figure X - stretching



Figure Y - Door jam stretch

R4YL

Thoracic Extension Rack

The perfect posture tool

was ~~\$195.80~~
\$175.50

*plus delivery

Adjustable head rest means:

- Progression in flexibility
- Suitable for the whole family



www.portacoverly.com
info@portacoverly.com
ph: +61 2 6278 4171

- Assists in thoracic spine mobilisation
- Encourages athletic mobility, essential for most sporting actions