

# Strong Base and Painless Feet

by James Bone

**Oooooohhhh my aching feet!!!**

This can be a common problem for many people – are you one?

There are many causes to foot pain and many structures in the feet that can cause pain, so I am going to confine this article to the commonest problems, especially related to the arches.

The feet are very important!

They form our base – the basis of good posture.

We walk with our feet, taking as many as 8000 - 10000 steps per day or over 200,000 km in our life time.

The feet are also at the lowest part of the body – so it is all up hill for the blood to travel back to the heart.

What's more!

We can be really good at ignoring our feet, and especially shoving them into tight and ill fitting shoes, taken in more by the look of a shoe rather than its function and support.

Often it is only with pain, that we give our feet attention, and then we may find we can think of nothing else.

I'm sure many of you have experienced how painful it is to get around, even if all you have done is **stub** your toe. It's amazing how much one small toe can hurt, or even a small prickle in the sole of your feet.

So let's briefly consider the structure of the feet and its brilliantly designed arch. For it is the arch which gives the foot its amazing capacity to be both a powerful lever to push off while running, jumping, and walking, yet at the same time allow the foot to gracefully adapt to any surface or uneven ground, so you can maintain your balance. To do all this it also needs some tricky co-ordination of information from your sensory nerves, eyes, inner ear, and brain to have the muscles and joints all working in harmony to produce the right action.

There are 26 bones, 33 joints, and 19 muscles in the foot – pretty complex isn't it.

The key to the foot arch is its structure: the bones and the connective tissue, especially a structure called the plantar fascia. The Plantar fascia is a tough sling of connective tissue which is interconnected with the calf, the heel bone, and slings across the arches to the balls of the feet called the heads of metatarsals, where it joins with the toe tendons. Its action is to tighten up and strengthen the arch, when the toes are extended, as would happen when pushing off while walking, but be soft **enough** to relax the arch when the toes are down, during **mid stance** or just standing. (see **diagram below**)

Other connective tissue and the small muscle in the feet called the lumbricals also contribute to the arch strength. There is an interesting neurological connection between your lumbricals and your pelvic floor and other postural muscles. When you

tighten your lumbricals it helps to activate the pelvic floor, and the reverse can also apply.

Common problems with the foot

- *Flat feet called pronated feet*

This is when the foot structures, which form the arch have become weak, so the foot arch is more collapsed than normal, and fails to fully form even in walking, during push off. It is possibly due to injury, over use, genetics or other factors. One very important structure which can lead to collapsed arches is the weakening of the Tibialis Posterior Muscle and tendon. This is an important muscle sling for the arch.

This can lead to many problems in the foot and leg – being a great cause of aching or tired feet or legs, often associated with walking, running, etc. Interestingly research has shown that people with flat feet (taking all other factors into consideration) also use more energy to walk about than people with normal arches.

*Think Whole body*

There is an interesting connection between the arches and the hips, which can also lead to pain in the knees, back or legs. When the arches flatten or pronate, the hips roll inward – internally rotate, when the arches lift or supinate, the hips roll outward – externally rotate. Note – weak or stiff hips can also lead to foot problems, due to this connection.

There is also a possible connection between the flat feet and urinary incontinence – this may be because the association to the pelvic floor, or 2 increased stresses through the body.

- **Plantar Fascitis**

This is when the plantar fascia becomes strained, and inflamed, and may even calcify forming a heel spur. It is characterised by heel pain in the morning, or when you get up after resting. Movement may ease the pain, but extended exercise may lead to increased pain. It is often related to the pronated foot problem, but may also relate to tight calves, and other factors.

- **Arch pain**

This is a often burning or aching pain in the arch, often associated with long standing, or standing still for long periods. It maybe related to the plantar fascia, but there are other structures, which can cause pain also. The foot is a major shock absorber for the body when running, jumping, dancing, etc, so many structures can be stressed or damaged, including the over stretching of ligaments and connective tissue structures in the foot.

There are of course many other types of foot problem, which I may discuss at another time.

The key to healthy pain free feet is:

- **Good Strength** – of the foot structures and muscles of feet, legs and hips

- Correct Mobility – flexibility of the feet calves, hamstrings and hips, being mindful of not being over flexible as this can also cause problems, especially if strength is poor.

- Correct Function

One factor, which is often forgotten with the feet, is “use it or lose it”. The muscles and structures of the feet are just like the rest of the body. If not used or used poorly, then they can become weak. Many arch problems may stem from this one problem. The probable cause you may ask! Very simple – shoes – wearing shoes too much. The best way to strengthen the feet and normalise foot movement is to walk around in BARE feet. However, this maybe initially difficult if you have painful or very weak feet, so you may need to do strength exercises and build up to this slowly. Walk around on carpets, floors, then uneven surfaces, beach sand, etc. Bare foot also helps to stimulate and activate all the sensory nerves in the feet, so that proper co-ordination can occur, returning the foot to normal function.

Yoga is fantastic for your feet, because we do yoga in bare feet, do a number exercise to stretch and strengthen the feet, and learn the all important locks, called bandhas, including the foot lock. (see below)

**The following exercises may help relieve mild foot pain. However, if you have severe pain, a chronic problem, inflammation, night pain, or have any symptom which seems strange like loss of feeling, pins and needles or loss of balance, you should seek advice from a doctor, physiotherapist, podiatrist or other qualified health practitioner with special interest with feet.**

Exercises – cause no strain or pain, and stop any exercise, which increases pain or causes you a problem and see your health practitioner or yoga teacher before continuing with that exercise.

### *Elevation*

Lie on the floor with a pillow under lower spine and buttocks, and place your feet up the wall (with legs straight up) or onto a chair (with bent legs). To get close to the wall you may need to lay down side onto the wall, then pivot around placing your feet up on the wall. Elevation can help relieve foot and leg ache, especially if it is from long standing. Yoga shoulder stand may also be helpful, fo those who know how to do it.

### *Foot lock*

This is an especially important exercise to help your feet. It strengthens the feet arches, and small muscles of your feet, including the lumbricals. Sitting or standing feel your feet on the floor – balls of feet, toes long, sides of feet and heels. Look at your arches – are the insides of your feet off the floor – not much (flat feet), a little (slightly flat feet), a normal amount or a lot (High arches). With this exercise even if your arches are flat, you should be able to create some arch – if not see your physio or podiatrist for help.

Keeping your toes long (NOT curled), and keeping the balls of your feet and heels flat, PRESS the tips of your toes into the floor. Feel your arches lift and inner muscles contract. Note one side maybe weaker. Contract and relax for 3 to 30 times – start slowly as this can be difficult and you can cause foot cramp. Then contract and hold for 5 to 30 seconds to 1 to 3 times or more. Do a little often through the day.

To bring in the Posterior Tibialis component (and so help strengthen this muscle also) - think of pushing the inside of the big toe inward, as you press down, so the floor provides resistance. You should find the arch lifts more, and you feel the muscle working on the inside of your leg, just behind the tibial (leg) bone.

### *Ball Roll*

Place tennis ball on the floor, then roll your foot over it to massage and stretch your foot arch. This can be very soothing and relaxing.

If your arch is inflamed it maybe better to roll your arch over plastic drink, which is filled with water, then frozen.

### *Stand on your toes – Mountain Lift*

Standing, feel your big toes and ball of foot firm to the floor. Push through the big toes and ball of your feet and raise your heels off the floor, then lower slowly. Keep your spine lengthened, and gently contract your buttocks to help lift onto your toes. Repeat slowly 5 to 30 times, or hold on your toes for 5 to 30 seconds.

This can be nicely combined with the Mountain Press in yoga.

### *Special Stretch*

This is a special stretch, which has been proven to relieve plantar fascia pain. Try it and see if it helps you. Sitting cross one leg over the other, take hold of the toes and extend them backward to you feel the stretch in the arch. Hold for 10seconds, relax and repeat up to 10 times.

Don't forget to stretch your calves, hamstrings, hips and spine also. If your not sure what to do, see your yoga teacher, physiotherapist, or exercise personal trainer.

### *Soaking your Feet*

Some people find relief by soaking their feet in a warm footbath – to make it more soothing add some Epsom salts. Avoid this if you have any open wounds on your feet.

### *Massage – marma (pressure) point relief*

Try this simple 4-step massage to relieve pain and help make your feet feel more alive. This is especially beneficial before going to bed.

Clean your feet with a damp washcloth. Apply a little warm oil to the foot and rub it in nicely. Use aloe vera gel if your feet feel overheated.

1. Massage the middle of your sole in a gentle circular manner, clockwise and counterclockwise, about 15 circles each way.
  2. Using both hands or your thumbs, apply pressure on the following points in a circular manner, then go in a little deeper if it feels good – on the points between the big and 2<sup>nd</sup> toes on the top of your foot, and down the tendons on the top of your foot.
  3. Press and rub around the ankle joint.
  4. Press and squeeze the tips of the toes and all around the joints of the toes. Pull the toes.
- Repeat all on the other foot. Wipe off excess oil etc.

### *About Foot wear*

Its beyond scope of this article to go into details about shoes, but remember correct footwear can help relieve foot pain and problems. See your podiatrist, physio, or specialist foot wear shop for advice. (Just a point of interest – a study in 2006 found that with running shoes, expensive wasn't necessarily better. Correct fit and the right shoe for your needs is more important.)

Don't forget to build up your bare foot walking also.

Please note in severe cases strapping or orthotic support may be needed to relieve pain and improve function.

**This information is for educational purposes and is not designed to diagnose or treat – see your doctor for this.**