

Sole Support

Our feet are two of our most important load bearing assets. From heel strike to toe off it is walking and running that moves us from place to place, and our feet carry the whole load every step of the way. The average weight of the North American male is 86.6kg (191 lbs) and the female is 74.4kg (164 lbs); this is a lot of weight for our size tens and sevens to be carrying – so how do they do it.

The Anatomy

The foot is made up of twenty-six bones, a great number of ligaments (connective tissue that typically holds bones together at joint lines), as well as numerous layers of muscle, tendon and fascia (connective tissue that assists in maintaining the body's integrity). The talus bone sits directly under the leg bones (tibia and fibula) and allows movement in all planes; the calcaneus, which forms the heel, supports the talus. These two bones, typically, bear most of our weight at heel strike. As the rest of the foot meets the ground the weight is transferred from the heel through the remaining twenty-four bones and supporting structures to the ball (distal metatarsals) of the foot. Load bearing should be distributed evenly between the calcaneus and distal metatarsals when standing in place.

The Weakness

There are two longitudinal (heel to toe) arches in the foot. The lateral shorter arch is considered a true arch because of its bony configuration; the cuboid bone acts as the arch's keystone (similar to the Volkswagen Arch Theory). The medial (big toe side) arch is false because it is supported by connective tissue (ligaments and fascia) and muscle. The goal of the arches is to provide flexibility as well as strength.

Unfortunately, the tendency of connective tissue is to lose its tensile strength over time; eventually it will stay in an elongated, over-stretched position. This is what typically happens to our medial arches. When we lose the medial arch, we are said to have flat feet or Pes Planus. Usually one foot will be flatter than the other, but often the medial arch is lost, to some degree, in both feet.

It's easy to determine the shape of your arches. The next time you get out of the shower - stand on the tiled floor with your feet slightly damp. Then step back and look at the impressions left on the floor. The lateral aspects of your feet should have a line of wet running from the heels to the little toes. The medial aspects should be dry on the floor - almost like a reversed 'C' shape between the heel and the ball (distal metatarsal) of the foot; the more wetness you see here the more the arch has fallen.

Potential Solutions

Try to wear shoes that have good, flexible arch supports; unfortunately, dress shoes are not usually in this category – walking shoes are a better bet. Walk in sand or on soft ground, in your bare feet, to help to strengthen the muscles. Get a foot massage to

improve suppleness, strip out scar tissue and increase blood flow to the feet. There are also a number of over the counter shoe inserts available that support the arch. If the arch is severely challenged consider custom orthotics from a Chiropodist or other professional.