

Heel Pain: Fat - Skinny Heel Bones

Heel pain is a frequent problem for runners. The most frequent diagnosis for heel pain is plantar fasciitis. The plantar fascia is a ligament on the bottom of the foot that connects the toes to the heel. The suffix "itis" suggests there is an injury and inflammatory process. It is important to recognize there are more tissues on the bottom of the foot that can get injured than the plantar fascia. Additional explanations for heel pain include entrapped nerves (tarsal tunnel syndrome), tendonitis of the intrinsic muscles of the foot, stress fractures of the heel bone, and damaged fat pad on the bottom of the foot. Damage to the fat pad on the bottom of the heel is a little recognized injury.

A recent study by K Rome looked at 166 runners 33 were diagnosed with pain on the bottom of the heel. Using a special measurement tool to measure the stiffness of the fat pad on the bottom of the heel, and he found the stiffness of the fatty tissue was 11% greater in the non-heel pain group compared to the group with heel pain. The results suggest that heel pad stiffness may be associated with pain on the bottom of the heel. The stiffer the heel pads the more protection to the body.

Individuals at Risk for Dystrophy of Heel Fat Pad

The fatty tissue on the bottom of the heel is made of a matrix of connective tissue in which there are globules of fatty tissue. One of the functions of this tissue is to cushion and pad the bottom of the foot. Obviously some individuals have more fat on the bottom of their feet than others.

One group of individuals who have very thin fat pads on the bottom of the foot are individuals who have had multiple injections of steroid to the bottom of the heel. Steroid injections are standard treatment for Plantar Fasciitis. Getting too many injections leads to thinning of the fatty tissue.

A recent study by TC Hsu compared the thickness of the calcaneal fat between individuals under forty to those over forty and discovered older individuals have thinner fat on the bottom of the heel.

In my experience females who are undergoing large changes in the levels of female hormones during pregnancy or menopause seem to have thinner layers of fatty tissue on the bottom of their feet. Female hormones get the basic chemicals to make hormones from stores in fatty tissues.

Individuals with rheumatoid arthritis the fatty tissue under the ball of the feet seems to slip forward away from the normal location leaving the bones on the ball of the feet exposed.

As suggested by the study by K Rome another cause maybe the number of times a runners' heel strikes the ground in training for marathons and ultra-marathons. The fatty tissue and the matrix supporting the fatty tissue on the bottom of the heel can be subject to damage in runners.

Clinical Exam for Heel Fat Pad Dystrophy

One of the challenges is identifying damage to the fat pad on the bottom of the heel. Scientific methods include using radiographs, ultrasound testing, and strain gauges. Obviously these diagnostic tests are not routinely available; therefore we must rely on clinical examination. If damage to the calcaneal fat pad is just one foot examination of the un-involved heel first allows us to get calibrated as to what a normal fat pad looks and feels like. Then examine the injured heel to look and feel if it looks a different shape. Is it flatter? When lightly pressed does the fatty tissue feel thinner before it feels like pressing the bone? Is the color different, is it pale, or is it red compared to the un-involved heel?

Treatment ?

If damaged fat pad is the source of pain than it is questionable if the multitude of standard treatments for heel pain addressing inflammation, such as, anti-inflammatory medication, ice, stretching, night splints are appropriate. If heel pain is misdiagnosed as plantar fasciitis instead of dystrophy of the calcaneal fat pad, it helps explain why it takes so long to recover from this overuse injury. A more appropriate treatment for heel pain which is related to damage heel fat pad is to identify ways to make the bottom of the foot more elastic or less stiff. Possibilities include new shoes, heel pad inserts, heel cups, or taping/strapping the heel.

An unanswered question is if the fatty tissue on the bottom of the heel is damaged is the damage permanent or can it recover? I am not aware of data which can definitively answer this question. Anecdotally, I believe depending on the degree of damage the body can repair damaged fatty tissue.

You would think if the bottom of the heel needs more or better quality fatty tissue that it would make sense to gain weight and become fatter. Well there are a multitude of research studies documenting a greater incidence of heel pain in individuals who are overweight. Perhaps in the future plastic surgeons will be able to suck fat from our hips and inject this tissue on the bottom of the heel.