Hiking and your Feet Part 2

Thomas Rambacher

Lower Extremity Injuries in Hiking

- Blisters!!!

Blisters:

Blisters:

- Foot blisters are among the most common injuries for athletes.

Blisters:

- Aside from being painful, blisters can alter an athlete's running and hiking form and lead to even more serious injuries of the leg and hip due to irregular gait biomechanics.

Blisters:

- Blisters result from frictional forces that mechanically separate epidermal cells at the level of the stratum spinosum.

Blisters:

- Hydrostatic pressure causes the area of the separation to fill with lymph-like fluid.

Blisters:

- The magnitude of the frictional forces and the number of times an object cycles across the skin determine the probability of blister development.

Blisters:

- The higher the frictional forces, the fewer cycles are necessary to produce a blister

Blisters:

- Moist skin increases frictional forces, leading to blister formation

Blisters:

- Very dry or very wet skin decreases frictional forces, preventing blisters.

Blisters:

- Other risk factors for foot blister formation include ethnicity (African-Americans are at lower risk than others)

Blisters:

- Increased risk with flat feet and feet with structural prominences, such as bunions, hammertoes and Haglund's deformity.

Blisters:

- In order to prevent blisters, we need to minimize friction.

Blisters:

- This begins with shoe selection. Emphasize to patients that their shoes should fit comfortably, with about a thumb's width (3/8-inch to 1/2-inch) between the longest toe and the end of the shoe.

Blisters:

- Narrow shoes can cause blisters on the Great toe and fifth toe.

Blisters:

- A shallow toe box can lead to blisters on the tops of the toes

Blisters:

Blisters:

- Loose shoes often create blisters on the tips of the toes.

Blisters:

- Shoe fitting should take place in the afternoon or evening, since feet tend to swell during the day.

Blisters:

- Do not wear socks with large toe seams.

Blisters:

- Carry an extra pair of socks to change into if your socks become too damp.

Blisters:

- If you have areas of the feet that are prone to blistering, applying lubricants (like petroleum jelly, bag balm or even dry soap flakes) before you put on socks helps reduce friction.

Blisters:

- reapply large amounts of lubricant every 10 miles petroleum anti-chafing lubricants or BodyGlide (W. Sternoff, LLC) or Runner's Lube (Mueller Sports Medicine, Inc.),. These products are waterproof, perspiration-proof, non-greasy, and wash off with soap and water.

Blisters:

- Another recommendation is to massage both feet with lanolin every night for a month before a big walking or running event. It's better than petroleum jelly since it doesn't create heat when friction occurs.

Blisters:

Minimizing moisture on the feet by using drying agents is another way to reduce blister formation.

Blisters:

- In a double-blind study conducted at the U.S. Military Academy, cadets who used the prescription antiperspirant Drysol (Person & Covey, Inc.) for at least three nights before a 21km hike had a 21 percent incidence of foot blisters, as compared to 48 percent for the placebo group.

Blisters:

- Drying foot powders, such as Zeasorb (Stiefel Laboratories, Inc.), and antiperspirant sprays (that contain aluminum chlorhydrate or aluminum chloride) are inexpensive ways to decrease moisture.

Blisters:

- Toughening the skin is another method of avoiding blister formation.

Blisters:

- Applying multiple coats of tincture of benzoin to sensitive areas or soaking feet in strongly brewed tea (tannic acid) are commonly used skin toughening procedures.

Blisters:

- Protecting or “shielding” areas of the foot with a high potential for blister formation is an excellent preventive approach. Some of these susceptible areas include bony prominences

Blisters:

- Band-Aid Blister Block (Johnson & Johnson, Skillman, N.J.) and Dr. Scholl's Cushion Blister Treatment (Schering-Plough Healthcare Products) are self-adhesive, silicone-like pads that act as an extra layer of skin to absorb friction.

Blisters:

- Cut slightly larger than areas of intense friction or sensitive skin, moleskin provides another inexpensive method of preventing blister formation.

Blisters:

- Liquid adhesives, such as Mastisol (Ferndale Laboratories, Inc.), promote adherence of moleskin to the foot.

Blisters:

- Alternatives to moleskin are the "liquid" bandages such as New Skin (Medtech Laboratories, Inc.), which dries to form a tough protective covering on the skin.

Blisters:

- May also consider using lambswool, commonly used by dancers, between the toes in order to prevent and/or soothe blisters.

Blisters:

- Since it's not always possible to prevent blisters, it is important to relieve pain, prevent enlargement or infection, and promote a speedy recovery when they do occur.

Blisters:

- Small, intact blisters that don’t cause discomfort usually don’t need treatment. The best protection against infection is a blister’s own skin or roof.

Blisters:

- To protect the roof, you can cover this type of blister with a small adhesive bandage or blister guard.

Blisters:

- However, you should drain larger or painful blisters that are intact without removing the roof. Proceed to apply an antibiotic ointment and cover it with a bandage. Remember to change their dressings daily.

Blisters:

- If you're dealing with blisters that have large tears, you should "unroof" them and cleanse the base thoroughly with soap and water or an antibacterial cleanser. Then cover it with an antibiotic ointment and bandage.

Blisters:

- Additional padding may be necessary for continuing sports activity. Ring-shaped pads made of felt will protect small blisters.

Blisters:

- Larger blisters may require dressings.

Treating Blisters-On The Trail

- Small blister

- Cover with tape
- Do not De-roof
- Do not Lance

Treating Blisters-On The Trail

Treating Blisters-On The Trail

- Large intact blister

- Lance
- Do not De-roof
- Cover with antibiotic ointment

Treating Blisters-On The Trail

Treating Blisters-On The Trail

- Large blister with multiple large rip
- De-Roof
- Dress as large open Wound (Abx and DSD)

Treating Blisters-On The Trail

Toenail Problems:

- Ingrown toenails and subungual
- hematomas are the most common
- toenail injuries.

Toenail Problems:

- Ingrown toenails may
- result from tight fitting boots or
- socks or improper trimming of the
- nail plate.

Toenail Problems:

Toenail Problems:

- Subungual hematomas
- may form from the repetitive
- micro-trauma of the nail plate
- hitting the front of the boot.

Toenail Problems:

Toenail Problems:

- This often occurs when descending from
- a climb or hiking downhill.

Toenail Problems:

- It is important during the boot fitting
- process that one walks up and down
- an incline board to make sure the
- distal aspect of the toes are not
- being compressed against the front
- of the boot.

Toenail Problems:

- Toenail injuries can be
- difficult to treat in the wild and
- therefore prophylactic
- measures should be considered.

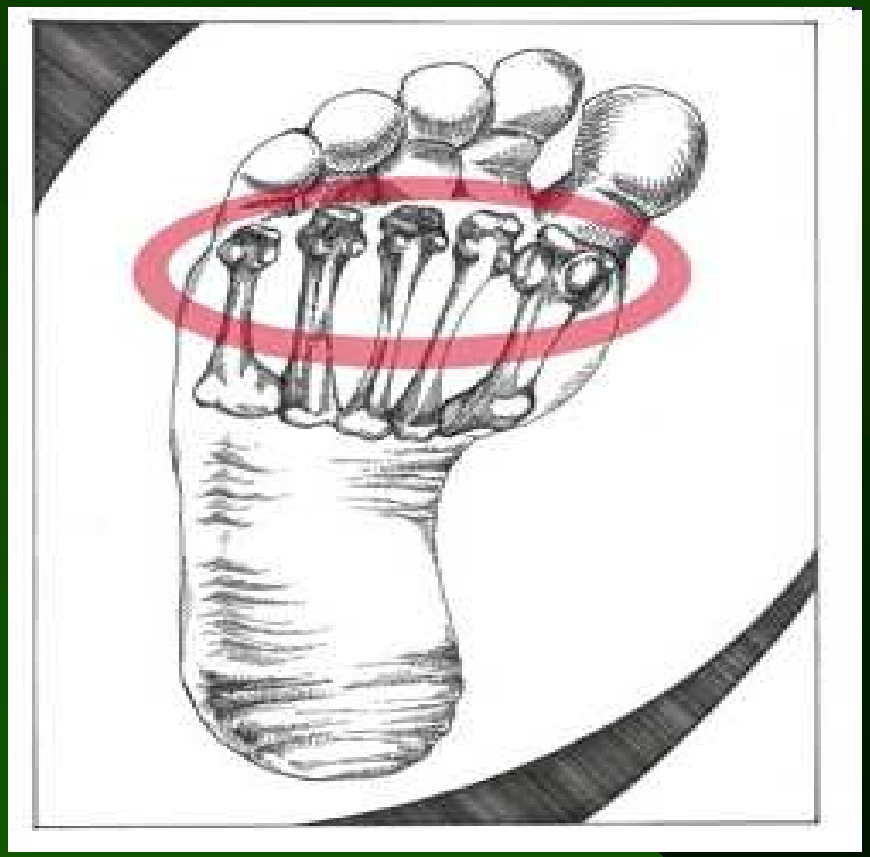
Toenail Problems:

- How to cut Toenail?
- Depends on anatomical Toe type and active.
- Straight and Short Usually

Metatarsalgia (Ball of Foot Pain):

- Plantar metatarsal pain may
- result from a direct injury such as
- stepping on a protruding rock.

Metatarsalgia (Ball of Foot Pain):



Metatarsalgia (Ball of Foot Pain):

- May be due to the repetitive stress
- placed on the sub-metatarsal area
- when carrying a heavy backpack
- over rugged terrain.

Metatarsalgia (Ball of Foot Pain):

- The stress to the metatarsal region
- may be further compounded by
- heavy-weight hiking boots
- that incorporate stiff shanks and
- outsoles.

Metatarsalgia (Ball of Foot Pain):

- Podiatric intervention for this
- type of metatarsal pain involves
- the use of a metatarsal pad
- proximal to the point of tenderness

Metatarsalgia (Ball of Foot Pain):

- These metatarsal pads can
- also be incorporated
- into a orthotic device.

Metatarsal Pad

Metatarsalgia (Ball of Foot Pain):

- Similar pain from
- intermetatarsal space neuroma or
- metatarsal stress fractures.

Tarsal Tunnel Syndrome:

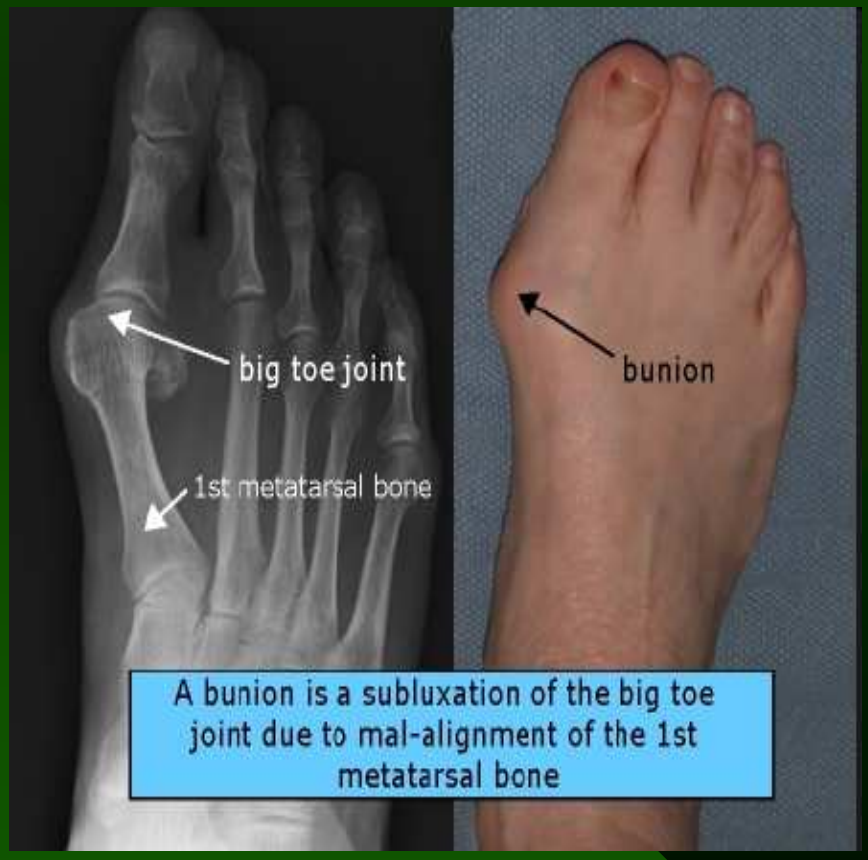
- Compression of the posterior tibial
- tendon nerve can occur from
- irritation to the tarsal canal from the cuff
- of a low or mid-height hiking boot.

Tarsal Tunnel Syndrome:

Pedal Prominences:

Bone deformities such as (bunion) hallux valgus, hammertoes, and Haglund's retrocalcaneal exostosis may become inflamed when subject to repetitive micro-trauma or shoe gear irritation.

Bunion


big toe joint
1st metatarsal bone
bunion
A bunion is a subluxation of the big toe joint due to mal-alignment of the 1st metatarsal bone

Hammertoes

Haglund's retrocalcaneal exostosis

Pedal Prominences:

- These can be alleviated by the modification
- of hiking footwear, the use of
- accommodative padding or orthotic
- devices, and surgery when necessary.

Plantar Fascia Pain:

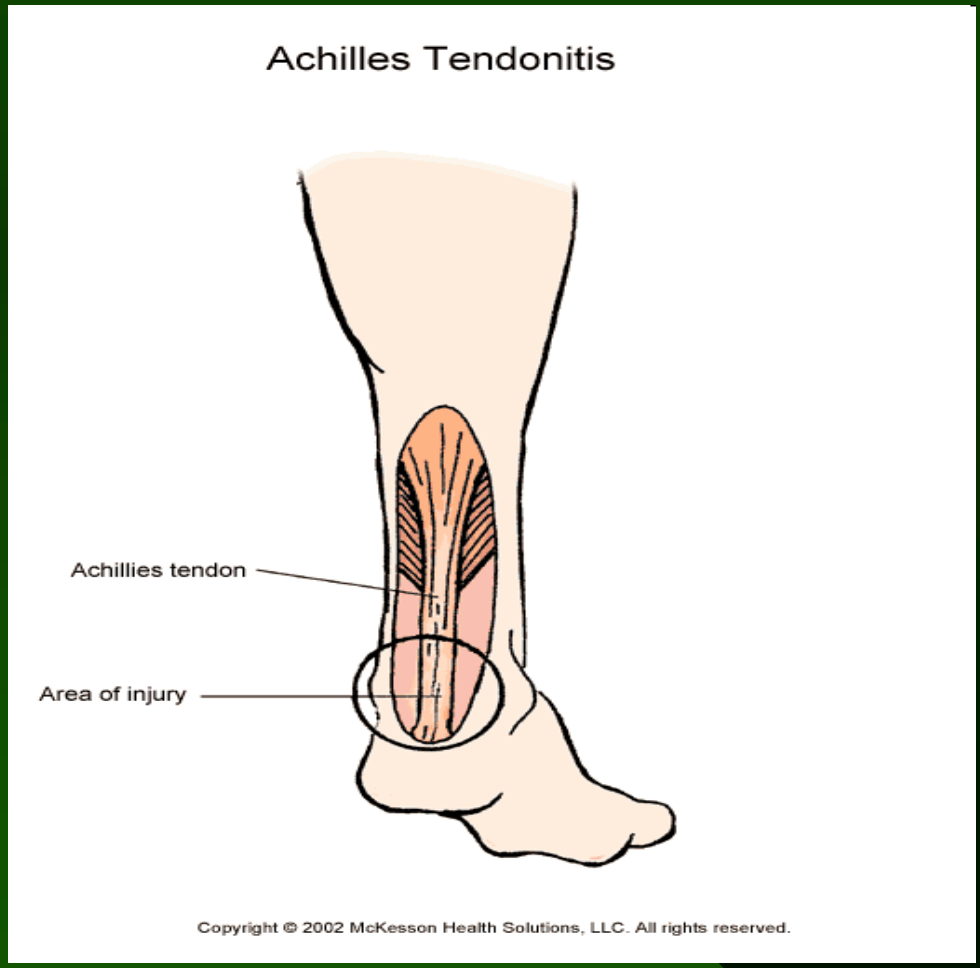
- Inflammation in the plantar fascia
- usually responds to RICE.
- Treat with stretching and rigid shoe insert.

Plantar Fasciitis

Achilles Tendon Pain:

- Usually from irritation of shoe heel counter

Achilles Tendon Pain:

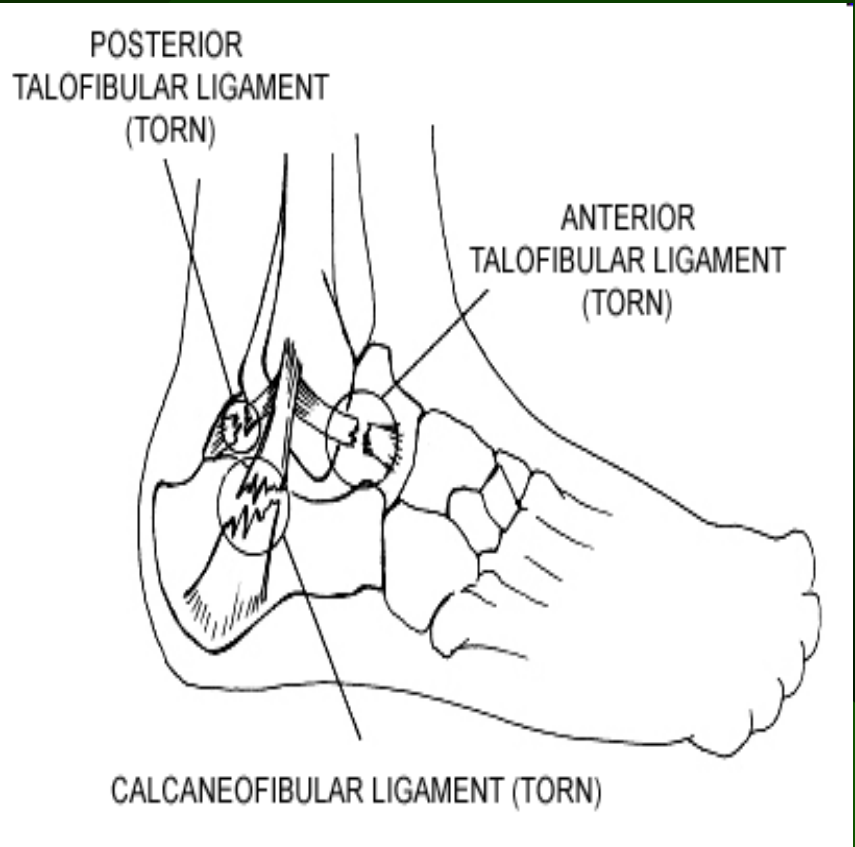


Ankle Sprain:

- Usually from improper shoe selection.
- Treat with wrap and ice.
- Follow up with podiatrist upon return.

Ankle Sprain:

Ankle Sprain:



- Outcome and treatment
- based on areas of injury

Questions? Thank You

Dr. Thomas Rambacher 949-637-0038

More info on foot conditions

with free downloadable brochures at

dr.rambacher.com