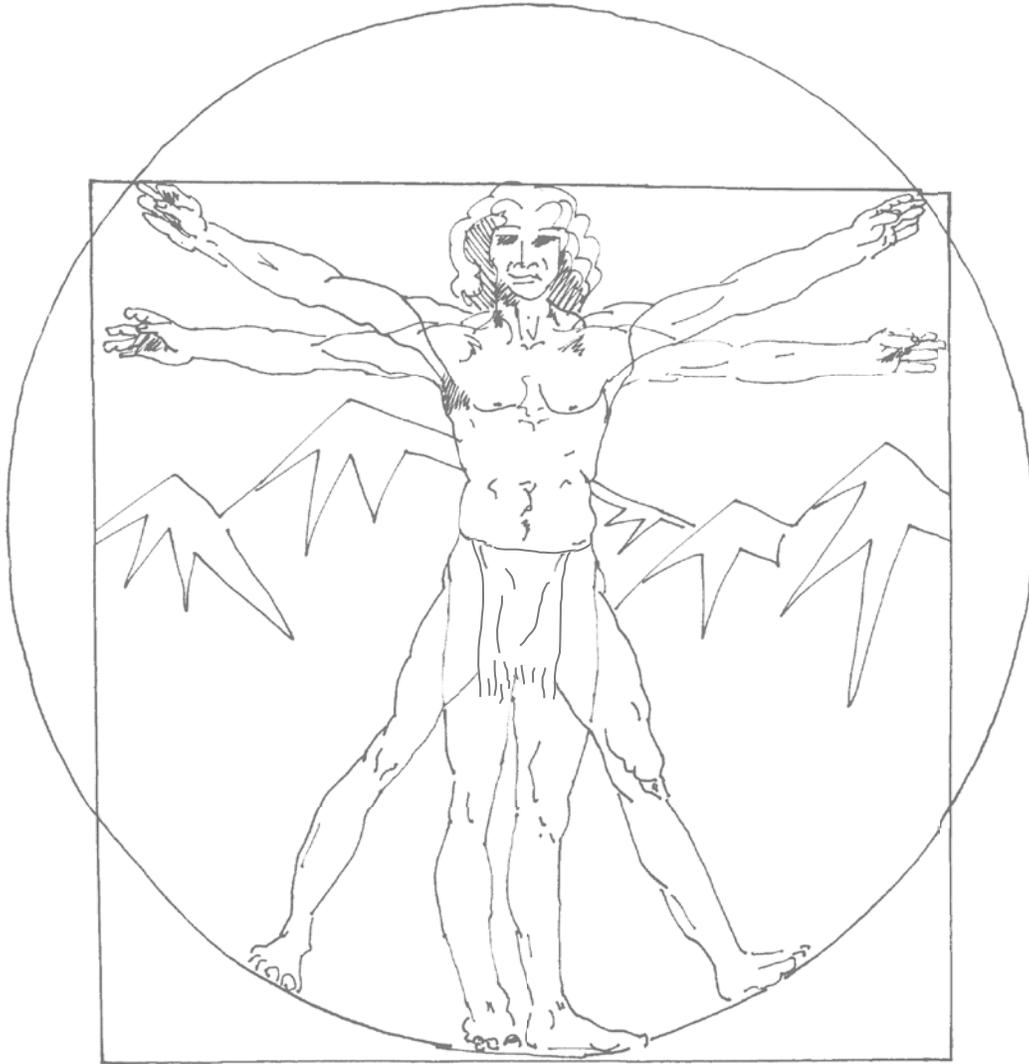


Blisters: Their Prevention & Treatment

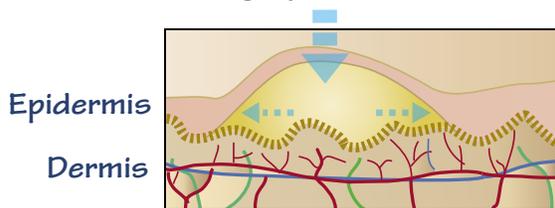


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Friction Blisters

Pathophysiology

Friction and pressure combine to create shear forces that first stretch and irritate the connective tissue between the epidermis and dermis creating a “hot spot”. Later, when the connective tissue finally tears, the skin delaminates and plasma leaks between the torn layers, a blister forms. As long as friction and pressure are present, the skin continues to delaminate and the blister grows...until it breaks. More pressure—due to a heavy pack or persistent hiking downhill—will cause deeper damage and a more painful blister. Both the prevention and treatment of friction blisters focus on reducing shear forces within the skin; in many cases this requires adding an external “sliding layer.”



Shear forces and pressure within the skin create “friction” blisters.

Contributing Factors & Prevention

- **Dirty skin increases surface friction.** Wash skin, socks, etc. on a regular basis. Wear gaiters over boot tops and laces to keep dust and dirt out.
- **Wet, saturated skin weakens the epidermis making it more susceptible to shear forces.** Keep skin, socks, gloves etc. dry. Change socks regularly. Sleep in clean dry socks. For some people a antiperspirant helps keep feet dry.
- **A rapid increase in shear forces over normal use doesn't allow enough time for connective tissue to adapt.** Increase load/pack weight and distance slowly to allow the skin to adapt to new forces. Avoid continuous downhill hiking until skin has had time to strengthen.

- **Poor-fitting footwear creates pressure spots.** Make sure footwear, gloves and clothing fit well.
- **No external sliding layer predisposes skin to blisters.** Anticipate blisters; treat hot spots immediately BEFORE they become a blister by adding an external sliding layer to reduce shear forces within the skin. Add a friction patch (ENGO®) to footwear to create a sliding layer between the outer sock and footwear.



Use tincture of benzoin and cloth or duct tape to create a sliding layer

between the skin and the inner sock. (Caution: the adhesive on duct tape may tear skin on removal.) Tincture of benzoin helps protect the skin and increases adhesion at the same time.



Add a friction patch (ENGO®) to footwear to create a sliding layer between the outer sock and footwear.

Treatment for Friction Blisters

- **At home:** Leave closed and wear footwear that does not irritate the blister—or pad with mole-foam donut—until it is reabsorbed (3-10 days).



- **To complete a day hike:** Drain the blister by nicking with a clean scissors, scalpel, or pin; leave skin cover intact. Pad with “donuts” of mole skin or mole foam to relieve pressure. Add a ENGO® blister patch to footwear or socks.



- **To continue a multi-day hike:** Remove skin over blister. Cover the exposed blister with a hydrogel dressing (preferred) or petroleum jelly and gauze. Secure in place with porous cloth tape or flexible medical tape (preferred). Add a ENGO® blister patch to footwear or socks. Use Tincture of Benzoin prior to taping.



Remove lid.



Vaseline® impregnated gauze & tape.



Second Skin® & flexible medical tape.

Treatment for Blood Blisters

- **Beneath skin:** Treat as per friction blister. Blood blisters—because they are deeper—are at higher risk of infection. Keep clean.
- **Beneath nail bed:** If large and painful, heat a small piece of metal (a paperclip works well...) over the blue flame of your cook stove until it's red hot and melt nail to release blood, pressure, and pain.