

Trail Medicine #3

Hiking in the Cold

by Alan Ungaro, M.D.

This is the third "Trail Medicine" to appear in Finger Lakes Trail News. Dr. Bob Michiel, who wrote the first article, obtains contributions from his friends who are specialists in various fields of medicine for this popular column.

Bob Michiel asked me to write about hiking in the cold. I am an emergency room specialist, which biases my approach to this topic. Much has been written about outdoor activities in the cold, and I cannot cover all aspects of this topic in one article. I will concentrate on two areas—symptoms and prevention of cold-related problems.

There are two major injury problems related to the cold. First is frostbite. Frostbite is the term used to describe injuries of variable severity caused by exposure to low temperatures. Any condition that promotes heat loss will increase the probability of frostbite. Two of the most common predisposing factors are exposure to the wind (wind-chill factor) and wet clothes. The conductivity of water is 25 times greater than that of air at the same temperature, and thus wet clothes increase heat loss. It is unusual for a healthy, adequately clothed person to develop frostbite. Other factors that predispose to frostbite include fatigue, storms, immersion, and additional injuries.

Frostbite is classified as a burn type of injury, ranging in severity from first degree and progressing to fourth degree. The deeper the freezing of the tissue, the greater the severity of injury. The area of frostbite appears white and is surrounded by red skin. It will be numb to touch.

Recognition of frostbite is crucial. Rapid rewarming, to minimize the extent of freezing, decreases the severity of injury. Once thawing and rewarming are complete, the affected area must be protected from refreezing, pressure, abrasion, and infection. It is considered better not to rewarm a frostbite injury until it can be kept unfrozen, so that refreezing can be avoided. Slow or partial warming and thawing with stoves, fires, or heaters adds to the risk of thermal burns. The ideal means for rewarming is to utilize a bath of water



104-108 degrees Fahrenheit. In view of these considerations, rewarming any injury other than a superficial frostbite in the field is to be discouraged. Remember that slow rewarming or refreezing can cause harm. In the extreme, severe frostbite can lead to loss of function and loss of body parts. Long-term problems encountered following frostbite injury can include cold sensitivity, tendency to get frostbite again, skin color changes, pain, and numbness.

Hypothermia is the second major cold-related illness. It occurs when one's body temperature falls below 96 degrees Fahrenheit. Hypothermia can manifest itself in subtle ways: fatigued hikers may become uncooperative, uncoordinated, moody, or apathetic. Symptoms may progress to include joint stiffness, slurred speech, and ultimately to unconsciousness. Later stages of hypothermia may develop into a life-threatening illness and need to be treated as soon as possible. Therapy in a medical facility may be necessary for instances of severe hypothermia. Mild cases of hypothermia may be treated with available resources and techniques such as utilization of dry clothes, hot liquids, warm environment, and placing in a sleeping bag with another (friendly) person. Review of the various therapies of severe hypothermia is beyond the scope of this discussion.

The best therapy for cold-related problems is prevention. Of course, the best way to stay warm and avoid the cold is to stay inside by the fire reading a good book. This does bring up a serious point: check the weather before you go out. Good judgment is important. Sometimes it is better to postpone a hike or stop before your goal has been achieved in the interest of safety.

Equipment is the other key to keeping warm. Cotton and such natural fibers are to be discouraged in the cold. Cotton tends to get wet and not dry. It is also a poor insulator. Wool and synthetic fibers are better in this regard.

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Starting from the top, an appropriate hat is important, such as a fleece hat with earflaps, which will remain warm even when wet. A large amount of heat can be lost through your head. In windy weather, consider covering your face and neck with a neck gaiter and face mask. Again, fleece is a great material for this. Long underwear should be synthetic and of an appropriate thickness for you and the weather. Some obsessive hikers even wear synthetic underpants—nice but expensive. For hiking, I find that a long underwear top with a zipper is great for venting when I get hot. As an outer layer, GoreTex® provides the best combination of breathability and water resistance.

Moving on to the extremities: Boots are very important. The most important property of boots in cold weather is that they be waterproof—get wet, get cold! I find in wet/snowy weather, gaiters are a must. They add a layer of waterproofing and keep snow out

of a hiking boot. Gloves should be of a combination of Thinsulate™ fleece or Gore-Tex®. A polypropylene glove liner really adds to the warmth of a glove.

My own favorite special equipment is the umbrella. Although it is of no use on trails with low branches, I use it to cover myself while resting, doing camp chores, and sometimes while hiking. Try it before you say no.

The other important equipment/behavioral consideration is consuming lots of hot food and drinks. For a day hike bring a thermos; for overnight hikes and backpacking, bring extra fuel and extra portions of soups, coffee, tea, etc. Avoid alcohol, which can promote heat loss. Best wishes for enjoyable and safe hiking this winter. □

Bob Michiel, MD, is the editor of the Trail Medicine column, and is a practicing cardiologist in Syracuse and a hiker.