

# **Frostbite**

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## **What Is Frostbite?**

Frostbite is the freezing of the skin and/or the bodily tissues under the skin. The fluids in the tissues and cellular spaces freeze and crystallize. This can cause damage to the blood vessels and result in blood clotting and lack of oxygen to the affected area. Infection and death and decay of tissue (gangrene) can occur, with subsequent loss of body parts.

## **Is Frostbite A Serious Condition?**

It can be. Serious cases of frostbite have been known to kill and damage tissue to the extent that amputation has been required. The extent of frostbite is best evaluated by a qualified medical professional.

## **What Parts Are Most Commonly Affected?**

The hands, feet, ears, nose and face most often suffer frostbite.

## **What Causes Frostbite?**

Frostbite is caused by exposure of the body to temperatures below freezing (32°F). Several factors can contribute to its development including:

- length of time a person is exposed to the cold
- temperature outside
- force of the wind (wind chill factor)
- humidity in the air
- wetness of clothing, shoes and body coverings
- ingestion of alcohol and other drugs
- high altitudes

## **Is It True That Frostbite Can Occur In Just a Few Minutes?**

If the conditions are cold with a high wind-chill factor or if the temperature is bitterly cold, the brief exposure of uncovered body parts (for example, the ears) can actually result in frostbite in just minutes.

## **Who Is At Greater Risk?**

The elderly and young are particularly susceptible. Additionally, persons with circulation problems, such as diabetics; history of previous cold injuries; those who use particular drugs (such as alcohol, nicotine and beta-blockers); and those with recent injury or blood loss are at risk. Although not medically related, it seems that persons from southern or tropical climates may also be more at risk.

When in frostbite-causing conditions, dress appropriately, stay near adequate shelter, avoid alcohol and tobacco, and avoid remaining in the same position for long periods.

## **What Are The Signs and Symptoms of Frostbite?**

Mild frostbite (frostnip) affects the outer skin layers and appears as a blanching or whitening of the skin. Usually, these symptoms disappear as warming occurs, but the skin may appear red for several hours.

In severe cases, the frostbitten skin will appear waxy looking with a white, grayish-yellow or grayish-blue splotchy color. The affected part(s) will have no feeling (numbness) and blisters may be present. The tissue will feel frozen or "wooden". This indicates a very serious condition.

Other symptoms that indicate frostbite are swelling, itching, burning and deep pain as the area is warmed.

## **Can I Treat Frostbite Myself?**

If you think you may have frostbite, even if it is a mild case, it is highly recommended that you consult a medical professional. The following list will provide some guidelines to decrease the chance that you suffer further injury:

### **DO LIST. . .**

- Have your injury re-warmed under medical supervision, if possible.
- Get to a warm place where you can stay warm after thawing.
- Rest the injured areas (avoid walking on frostbitten feet, etc.).
- Use lukewarm water (100°F = 38°C, should be warm to the touch - not hot) for 30 to 45 minutes until a good color



(flush) has returned to the entire area. This process may be painful, especially the final ten minutes. You may apply warm towels or immerse the area.

- If warm water is not available, cover the area with a warm hand or warm object.
- Leave the blisters intact. Cover with a sterile or clean covering if protection is needed to prevent rupturing.
- Keep the affected part(s) as clean as possible to reduce the risk of infection.
- Elevate the area above the level of the heart.
- Offer a hot beverage such as coffee or tea if the affected person is fully awake.
- Make sure your tetanus booster is within 10 years.

#### DO NOT LIST. . .

- Don't allow the injury to thaw then refreeze. This is very dangerous and can cause serious or permanent injury. It is better to delay warming. For example, keep walking to a permanent shelter rather than warm frozen toes at a temporary shelter and then expose them to more cold on the rest of the trip.
- Don't use dry heat (sunlamp, radiator, heating pad, etc.) or hold the injured area next to a fire to thaw it. Don't thaw the injury in melted ice.
- Don't rub the area with snow.
- Don't use alcohol, nicotine or other drugs that may affect blood flow.

## How Can I Prevent Frostbite?

Proper clothing for winter weather insulates from the cold, lets perspiration evaporate and provides protection against wind, rain and snow. Wear several layers of light, loose clothing that will trap air, yet provide adequate ventilation. This is better protection than one bulky or heavy covering. Best fabrics for the cold are wool, polyester substitutes and water-repellent materials (not waterproof, which holds in perspiration). Down coats and vests are warm;

however, if down gets wet it is not an effectively warm fabric.

- Coverings for the head and neck are important. Hats, hoods, scarves, earmuffs and facemasks are good protection.
- Protect your feet and toes. Wear two pairs of socks - wool is best, or cotton socks with a pair of wool on top. Wear well-fitted boots that are high enough to cover the ankles.
- Hand coverings are vital. Mittens are warmer than gloves, but may limit what you can do with your fingers. Wear lightweight gloves under mittens so you'll still have protection if you need to take off your mittens to use your fingers.
- Be sure your clothing and boots are not tight. A decrease in blood flow makes it harder to keep the body parts warm and increases the risk of frostbite.



## Summary

Frostbite can be a serious, disabling condition. Use your head! Keep safety in mind when traveling in cold weather, during winter sports participation and when outside during the frigid winter months.

