
Rescue Dynamics®

5109 - 17A Avenue NW, Edmonton, AB T6L 1K5

780 - 461 - 5040 fax / voice

Internet - www.compumart.ab.ca/resqdyn/ or email: resqdyn@compumart.ab.ca



Subject: **Getting Ready for Winter Outdoors**

Instructional
Support
Technical Note

Version: 4.0

09/95 _ Winter

Contents: 3 Pages

INFORMATION PROVIDED IN THIS DOCUMENT AND ANY SOFTWARE THAT MAY ACCOMPANY THIS DOCUMENT (collectively referred to as a Technical Note) IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. The user assumes the entire risk as to the accuracy and the use of this Technical Note. This Technical Note may be copied and distributed subject to the following conditions: 1) All text must be copied without modification and all pages must be included; 2) If software is included, all files on the disk(s) must be copied without modification; 3) All components of this Technical Note must be distributed together; and 4) This Technical Note may not be distributed for profit or as part of a course of training or newsletter.

Copyright © 1995 Cyril Shokoples. All Rights Reserved.

Overview

Outdoor recreation in the winter was once the domain of only a few hardy souls. With the growing popularity of downhill and cross country skiing, snowshoeing, winter mountain climbing and other winter sports, this is no longer true. Although it can take years to be truly at home outdoors, this article can help you enjoy the wonders of winter.

Heat Loss

Two significant winter problems exist that your clothing can help prevent. The first problem, hypothermia, is a general cooling of the body core temperature. The second problem, frostbite, is the local freezing of skin and tissues. Both of these problems are caused by heat loss and are avoided with similar methods.

In order to understand how to protect against heat loss you should know where and how it occurs. There are five major ways in which your body loses heat. Exposed flesh loses heat to the environment through **radiation**. When you touch a cold object, such as sitting on cold ground, heat is lost from your body through **conduction**. When your clothing or body is wet, you lose heat through **evaporation**. If wind is blowing across your body, heat loss is increased by the process of **convection**. Finally, breathing cold air in and out, particularly during strenuous exercise, can accelerate heat loss during **respiration**.

Fabrics & Materials

Some fabrics perform better in winter than others. Cotton, in particular jeans, is poor for winter clothing. It loses all of its insulating value when it is wet and dries slowly.

Wool has good insulating properties, even when wet. A drawback of wool is that it may cause itching. Many synthetics such as nylon, polyester and polypropylene are being used in outdoor clothing with a great deal of success. Polypropylene underwear has become standard fare in the outdoors. Nylon or polyester pile clothing is warm when wet and dries out quickly. Wool and nylon blends are warm and durable. Remember, wool and many of the synthetic materials are not wind proof.

For your outer insulating layer, down is still one of the warmest materials for its weight. Unfortunately, down is useless when wet and next to impossible to dry out in the cold. If down is used, be extra careful to keep it dry. Synthetic pile jackets and ski jackets with polyester or other similar fiber-fill insulation have become the norm for modern outer jackets. Thinsulate™ is an example of another current state of the art insulating material. It is a very light, very thin synthetic fiber with exceptional insulating properties and allows fashionable looking warm clothing without bulk.

Your outer layer of clothing should also protect against wind and snow. Breathable nylon shells

of the uncoated variety, such as wind pants, wind jackets and overmitts, which allow sweat to evaporate while blocking the wind are good extra protection. Some persons prefer the waterproof / breathable fabrics such as Thintech™ or Goretex™, which also protect you from wet snow or spring rain. Be aware that no coated fabric can keep up with the perspiration of heavy exercise. Ventilate your clothing while exercising to avoid excess moisture buildup.

Layering

When dressing for the cold, dress in layers. Start with wool or polypropylene underwear (long johns and T-shirt). Over this add a long tailed, long sleeve shirt and tightly woven trousers. Over top of this add a sweater, then an outer jacket and wind breaker if required. Add mittens, which are warmer than gloves, and a warm hat such as a toque or balaclava. Be sure your head and neck are well protected. Leaving your head and neck uncovered can allow more than 50% of your body heat to be lost. A scarf is handy for face and neck protection. Adequately insulated boots are important to keep your feet warm. Insoles can reduce heat lost to the ground. Two pairs of socks, preferably wool or synthetics, should be worn. Wear a thinner pair beneath a thicker insulating pair. Warm knee length knicker socks are available. Gaiters, a windproof cover for your boot tops and lower legs, can keep snow out and heat in.

As you become cooler, add additional layers of clothing. If you become too warm, remove a layer of clothing before you begin to sweat. Remember that sweating can quickly destroy the insulating value of many fabrics and increase your heat loss.

No layer of clothing should be so tight fitting that it becomes restrictive. Reduced circulation to an area can increase your chance of frostbite. Too many pairs of socks inside boots that do not have adequate room, as well as gloves that are too tight, can be a recipe for frostbite trouble. Jewelry such as rings, bracelets and necklaces can also cause constrictions and heat loss and should be removed prior to going outdoors for prolonged periods.

Keeping Warm

Wearing adequate clothing is only part of the key to staying warm in winter. Avoid contact with cold objects and if you are going to sit down, place some insulation beneath you. When you take a break, stay out of the wind and add more layers to keep warm as you rest. As you resume your activity, take off a layer of clothing to reduce sweating. Stay dry at all costs.

Keep the body fueled up by eating properly. Eat a good meal before heading out, including fats and proteins for continuous energy. Along the way, eat high energy foods like chocolate bars, trail mix or fruit cake. Prevent dehydration by drinking plenty of warm (not cold) fluids. Avoid alcohol as it interferes with your body's temperature regulation.

Other Problems

Since snow can reflect up to 85% of the ultra-violet radiation from the sun, it is a good idea to wear proper sunglasses to protect your eyes. This is especially important in the late winter and spring and when at higher altitudes such as those found while skiing in the mountains.

When crossing ice covered bodies of water or heading off into avalanche terrain, it is best to seek advice from park wardens, rangers or other professionals on the conditions you may encounter and precautions you should take. Every year people die in winter accidents due to these hazards.

Winter Pack

If you are traveling in the back country in the winter, carry a pack with spare dry warm clothes, extra food, water bottle or thermos, map, compass and emergency supplies. The emergency supplies should include matches, lighter, fire starter, a candle, whistle, light and spare batteries, first aid kit, space blanket or tube tent, collapsible aluminum shovel and an insulating ground pad. If you are skiing, include a ski repair kit.

Emergencies

If you are having problems staying warm or the weather is getting bad, turn back before you get

in trouble. If you become lost or cannot continue, seek a sheltered spot protected from the wind and cold before it becomes dark and before you become exhausted. Use your resources and emergency gear to build a shelter and start a fire. Remember that dry snow is an insulator and many people have survived a cold night by digging a snow pit or snow cave to sleep in.

If your fingers, toes or areas on your face begin to get cold and numb, with small white areas, you likely have frostnip. Rewarm the area as soon as possible by direct contact with another warm part of your body. Protect the area from further cooling and get out of the cold. If larger areas are white and cold or hard, solid and cold, you likely have more serious frostbite and should get to a doctor or hospital as quickly as possible. Protect the area from further cold or injury but do not attempt to rewarm the area. Don't rub the affected area or rewarm it directly in front of a fire.

If someone in your group is so cold that they begin shivering, they may be getting **mildly hypothermic**:

- Remove any wet clothing,
- Add more dry clothing,
- Have them eat some high energy food,
- Give them a warm drink,
- Start a fire for warmth if appropriate,
- Transfer body heat from other group members, and
- Recognize that they are at risk and should get out of the cold.

If they are confused, tired, stumbling, or have slurred speech they may be **moderately or severely hypothermic**. It is also very serious if their shivering stops but they continue to get colder. If this happens:

- Seek shelter as soon as possible,
- Replace any wet clothing,
- Put them in a sleeping bag with another member of your party to transfer heat,
- If no sleeping bag is available, start a fire and huddle with the person to keep them warm, and
- If the person is conscious and able to swallow without difficulty, warm sweet drinks or candies can be given for energy.

If the victim is **unconscious**:

- Nothing should be given by mouth,
- Maintain your efforts to transfer heat,
- Treat them very gently,
- Shelter the person from the elements, and
- Avoid any rough handling.
- Get help as soon as possible.

Enjoying a cold environment is a complex subject with some simple rules. Avoid heat loss in its many forms. Dress in layers using proper clothing and stay dry. Maintain your input of calories and watch for signs of frostbite and hypothermia. Carry appropriate equipment and know your limits. By taking these precautions you can enjoy winter outdoors SAFELY.

This article originally appeared in Family Health Magazine and is reprinted courtesy of Cyril Shokoples. Cyril is an internationally certified Mountain Guide and has been a member of the Alpine Club and Edmonton Section since 1975. He became a Senior member in 1979 and received the Silver Rope Award in 1988. He currently resides in Edmonton and is the proprietor of the firm Rescue Dynamics, which is involved in climbing, rescue and safety instruction, as well as mountain guiding. Further information on courses as well as additional copies of this and other technical notes in this series can be obtained directly from Rescue Dynamics. On the Internet, visit the Rescue Dynamics World Wide Web Site at - <http://www.compumart.ab.ca/resqdyn/>