# I. NUTRITION

The body "fires" burn somewhat hotter in cold weather. With food affecting morale, you will want to supply your group with this in mind. Caloric intake in cold weather increases for two reasons: 1) the extra activity required by dressing for the cold and the effect of that weight increases energy needs; 2) living and working in the cold gives us a ravenous appetite. In cold weather camping, each person consumes 3,000 to 4,000 calories per day. These calories should come from a diet made that is 40% carbohydrates, 40% fats, and 20% protein. This diet should include drinking two to three quarts of water per day. The single biggest problem encountered with winter camping is dehydration so drinking water should be encouraged all day long. The amount of water consumed should increase with extra activity.

# II. FOOD PREP TIPS

Prepare meals before the trip using "seal-a-meal" technology. This allows you to just place them in boiling water, heat and enjoy! Encourage the use of plastic bowls and utensils. Plastic conducts less heat than metal, and they are easier to clean.

Suggestions for foods:

- Warm applesauce (with or without cinnamon red-hots) makes a good warm-up food in the morning. It tastes good includes fruit.
- Warm orange juice or apple juice. This provides a quick "pick me up" and is often used as pre-meal upon getting up in the morning.
- Warm fruit juice available all day long.

# III. FIRST AID

It is impossible (and poor judgment) to cover the entire first aide you'll need in cold weather camping in a few pages. Consult your First Aid Merit Badge Book, other resources and be aware of other resources on-hand for your event. Many Camporee's and winter campouts such as Klondike's have Emergency Medical Technicians (EMTs) available to assist.

**A. First Aid Condition: Dehydration.**

Most winter emergencies are linked to dehydration, which is the excessive loss of body water. Exposure to the cold has a diuretic effect resulting in increased output of urine. Additionally, water is lost through respiration (lungs), skin (evaporation) and the gastrointestinal tract (digestion). Normally, water intake or "thirst" is regulated by the "thirst mechanism." However, in the cold, this thirst mechanism is not a dependable indicator of your need for water. When dehydration occurs, reasoning and judgment may be impaired. You may simply not recognize that you are thirsty. Often it is easier to recognize a change in urine color than to judge degree of thirst. With this in mind, a rule of thumb is: "If your urine is not clear by noon, you should be drinking more water."

Prevention of Dehydration -- Drink two to three quarts of water per day; increase intake at first sign of color change of urine; Avoid dehydrating foods and drinks that contain caffeine and foods high in protein.

Symptoms of Dehydration -- Increased pulse rate; Nausea and loss of appetite; Urine dark in color or constipation; Fatigue, sleepiness or irritability; Thirst; Headaches or dizziness; Bluish or grayish skin color.

Treatment for Dehydration -- In mild cases, the victim should drink liquids. Warm fluids are absorbed fastest. Keep the victim warm and allow rest. More severe cases require professional medical care.

Proactive Measures -- Since dehydration can lead to other more serious problems such as hypothermia and frostbite, the buddy system MUST be used and everyone in the group should be on the alert for signs of dehydration.

**B. First Aid Condition: Hypothermia.**

Hypothermia is a lowering of the temperature of the inner core of the body. Hypothermia can and usually does occur at above freezing temperatures. The victim may not be able to think clearly enough to react to this condition. Injury or death may be a result. Predisposing conditions may include poor

physical condition, poor circulation, thin build, and exhaustion.

Prevention of Hypothermia-
- Get plenty of rest, eat well, drink lots of liquids,
- Use Polypropylene and wool clothes and windproof clothing.
- Make camp early,
- Exercise to keep up the body's heat function,
- Use Buddy System to watch for problems

Symptoms- Slowing of pace, drowsiness, fatigue; Thickness of speech; Amnesia; Irrationality and poor judgment; Hallucinations; Blueness of skin; Dilation of pupils; Decreased heat and respiration rate; Stupor.

Treatment- Shelter the victim from wind and weather; Insulate the victim from the ground; Change wet clothing; Put on windproof, waterproof gear. Increase exercise if possible. Put victim in a pre-warmed sleeping bag or blankets. Give warm drinks, followed by candy or high sugar foods. Apply heat with warm water bottles or canteens. Huddle for body heat from others. Place someone in sleeping bag with victim.

Self-Test for Hypothermia-Touch the little finger and thumb together. If this cannot be done, stop immediately and warm up!

**C. First Aid Condition: Snow Blindness**

Snow blindness is an inflammation of the eye caused by exposure to reflected ultra violet (UV) rays from sunlight reflecting off snow.

Symptoms
- Sensation of grit in eyes, watering, redness, headache and sensitivity to light.

First Aid for Snow Blindness
- Blindfolding and rest
- Avoid further exposure to light without sunglasses
- This condition may heal in a few days without permanent damage
- Put on sunglasses to prevent further injury

Proactive Measures
- Wear sunglasses

New Development… More Sun Related Problems

Macular Degeneration is a major cause of vision problems in older people. The macular is that part of the eye that allows for "fine focus" when trying to view detailed work and when reading. Macular Degeneration is on the rise in the US and is directly related to people not wearing sunglasses to protect their eyes from the sun's ultra violet rays. Is it essential that everyone wear UV rated sunglasses in winter camping.

**D. First Aid Condition: Frostbite**

Frostbite occurs when there is actual freezing of the skin and underlying tissue. Recovery from frostbite is slow and often painful. Once exposed, victims are predisposed toward frostbite in the future. Frostbite occurs when the body needs heat elsewhere; the body redirects blood flow from the extremities to protect internal organs. The blood in the extremities slows and thickens becoming sludge-like. Ice crystals form in skin cells, making it impossible for the skin to get oxygen and the nutrients it needs. This further damages the tissue.

Prevention of Frostbite
- Proper insulation -- cover exposed skin,
- Guard against wind chill and moisture,
- Maintain good nutrition, drink water and exercise,
- Use Buddy System to check exposed skin for frostnip and frostbite;
- Avoid restrictive clothing, dress in layers

Symptoms of Frostnip

Redness of skin, pain, burning, stinging or prickly sensation. After the pain disappears, the skin may appear white, gray or waxy in color. The skin is firm to the touch but resilient underneath. Upon thawing there is pain, aching or brownness. If pain goes away, the victim may be danger of moving into severe injury from frostbite. Take corrective action immediately!

Symptoms of Second Degree Frostbite

All signs of frostnip may occur; No pain, the body part may feel dead or like a stump; Numbness, the

body part may be immobile or hard to move; Tissue is hard to the touch.

Symptoms of Severe Frostbite
The full thickness and perhaps bone is involved. Swelling and sweating occur after thawing. Gangrene may develop and amputation may be necessary.

Treatment of Frostbite
- Do not rub the affected area!
- Hold it near fire or use cold water to thaw it,
- Exercise the affected area to promote circulation,
- Place victim's hands in armpits or crotch, place foot inside your shirt against your chest,
- Make certain thawed part will not refreeze
- DO NOT attempt to thaw frostbitten limbs in the field.
- Check for hypothermia
- Transport the victim to a hospital or physician immediately!

# IV. CLOTHING SYSTEMS

Winter camping calls for clothing that protects you from the cold and wind, while holding in body heat and allowing ventilation. Several thin layers are better than one big heavy layer. This layering allows for flexibility in varying conditions. A key consideration is function over appearance.

**A. Socks**
Wear a wicking sock (liner) next to your foot. Polypropylene liner socks, silk socks and even nylon stockings work well. An insulating sock should be placed over this wicking or liner sock. The best insulating socks are wool or a wool blend. NEVER USE COTTON!! Cotton soaks up water, looses all insulating qualities, stays wet, and makes your feet cold.

**B. Long Underwear**
Use long underwear made from a wicking material such as polypropylene. Polypropylene long underwear comes in light, medium and expedition weight. Never use cotton!!

**C. Pants**
Good, loose fitting wool pants are the best for insulation. Inexpensive wool pants can be found at Army Surplus stores, and used clothing stores. Use suspenders to hold them up. Ski bibs also work for keeping you warm. Blue Jeans are completely useless on winter campouts! (Of course… they're made of cotton!)

**D. Upper Body Protection**
Use layers consisting of a turtleneck, shirt, sweater, vest and jacket. Make sure items fit together comfortably and are not restricting. Correct layering captures heat in the air spaces between the layers.

**E. Hand Protection**
Mittens are warmer than gloves. Gloves are more useful when you have work to do, so bring both. Some polar fleece liners allow you to use a liner that can be replaced. Don't forget extras, your mittens and gloves WILL get wet.

**F. Neck Protection**
Be sure that you have either a scarf or neck gaiter to protect your throat and neck areas.

**G. Head Gear**
A warm hat will help you minimize the heat loss from your head. Radiation of heat from an covered head can account for 50% to 75% of total heat loss. Remember the old maxim: "When your feet are cold, put on a hat."

**H. Footwear**
This may be the most important item of your gear. Strongly consider Pak Boots. They have waterproof bottoms, upper leathers that breathe (vent that moisture out!), and a removable liner. Take the felt liners out and take them to bed with you, and in the morning you'll have warm liners to put your feet into. When using liners, put duct-tape on the heels to prevent wear. Be sure to use boots that fit comfortably and allow for good circulation. Leather hunting boots are less desirable because they do not have removable liners. When leather boots get wet (and they will) they will freeze solid. Moon boots are acceptable as long as you have many replacement socks.

# V. SLEEPING SYSTEMS

Sleeping comfortably will make or break your experience in cold weather camping.

**A. Insulation**

The insulation under you is almost more important than what is on top of you. Leave the snow on the ground under your tent. Build several layers of insulation between you and the ground. In very cold weather, snow itself can be insulation against severe cold. While the ground temperature may drop to zero or below, snow remains 32 degrees (F).

**B. Selection of Sleeping Bag**

Use a "zero bag" or simply place you summer bag inside a second bag. Or, make a liner for your sleeping bag out of polar fleece and put it inside your three-season bag. Army Surplus stores offer inexpensive bag covers to add another layer of insulation (pocket of air) to your mummy bag. Be sure to keep bedding clean and dry.

**C. Before Turning In- Dry your feet well**

"Dry" wash with foot powder. The best foot powder contains aluminum chlorohydrate. This substance dries to your skin and shrinks your pores, reducing normal perspiration. Wear a stocking cap and wristlets to keep your head and hands warm. Do not overdress for bed. Overheating will cause you to sweat and then you'll freeze because you are wet! You need to change all your clothes, including that long underwear you have.

<u>STAYING WARM</u>

The keys to keeping warm are in the word **COLD**. Use the letters C-O-L-D to remember the keys to staying warm:

**C**lean - Keep yourself and your clothes clean. Dirt and body oils that build up on clothing destroy its insulating qualities

**O**verheating - Avoid overheating. Avoid wearing clothing that cannot be removed in layers as needed.

**L**ayers - Your clothing system should be designed so layers can be added or taken off. Proper layering helps to maintain even body heat. Layers should be loose fitting.

**D**ry - Keep dry. Wet clothing removes heat 200 times faster than it will dissipate through dry clothing. Wet cloth mean trouble.

Remember this key: "C-O-L-D will help you learn the techniques to keep warm!"

**FIRE…Good or Bad?**

Nowhere in winter clothing or sleeping systems will you see any provision for fire to provide body heat. Fire in the winter is a “false god” in regard to warmth. The human body itself is like a big furnace. You stoke your furnace with good food and water; it burns the food and provides the heat, which your heart circulates throughout your body. Layers of insulation determine how much of that heat is retained and how warm you will feel. Fire is useful for turning snow into water, for heating water for cooking, and for its cheerful glow. Extreme care must be taken around an open fire. Do not get too close with synthetic fiber garments or boots. These can shrivel, melt, or become damaged from the reflected heat.