

TREKKING

THE GEAR

Cadets will be required to take part in many exercises while involved with the Army Cadet Program. It is important that, early in their training, cadets learn the skill of preparing their personal equipment for use during a trek.

THE PACK

There are many devices made to assist in carrying loads on a trek or expedition. For day trips a small pack is required. It should comfortably hold everything desired for the trek, with a little extra capacity for winter jaunts. Some of these packs are:

- fanny packs (small packs);
- day packs; and
- backpacks.

Fanny Pack

The smallest category of pack for short hikes or treks up to a few hours is a fanny pack. This pack is a small, unobtrusive pack that sits atop your buttocks, with a thin belt that clips around your waist. These are also known as waist, or lumbar, packs. The simplest of these packs consists of a pouch sewn to a piece of flat webbing, while the most elaborate ones hold upwards of 10 litres, and have padded belts and suspensions. The fanny pack is lightweight, holds the load close to the spine, and to a person's centre of balance. When carrying articles with a fanny pack, the weight should be limited to 10 pounds.



Day packs

Day packs are produced in numerous model types; however, all have shoulder straps and a waist belt. Most day packs have pockets for organizing your equipment and basic exterior features (i.e., axe loops and daisy chains). Day packs may also come with an internal hydration system. This system provides a water bladder and hose exiting the top of the pack for easy access to water, or extra pockets for water bottles that are within easy reach when wearing the pack. Models similar to those in Figures 12-1-3 and 12-1-4, allow for comfort while carrying loads up to 15 to 20 pounds.



IDEAL PACK PADDING

When properly adjusted, about two thirds of the pack's weight should ride on the hips, with the rest on your shoulders and upper back. Firm padding is mandatory for the following components:

- shoulder straps;
- waist belt; and
- back padding.

WAIST BAND

The waist band allows for the weight of a fanny pack, day pack, or backpack to rest on a person's hips and closer to the centre of gravity. The waist band, or hip belt, helps to make a pack's load more bearable. As the weight load increases, the effectiveness of the hip belt increases. Make sure the belt has soft, broad padding; heavier loads will cause the hip belt to slide down, so look for high-friction fabrics.

PACK CAPACITIES

As discussed, packs come in many different forms and sizes. The capacities of such packs differ with model type; however, there is a basic understanding that each type maintains a cubic inch capacity and weight association, as detailed in the following list:

1. fanny packs: Capacity of 10 litres; and
2. day pack: Capacity of 15 to 35 litres.

BOOTS

The most important factor to consider when selecting backpacking footgear is fit. The footgear should be sufficiently sturdy to hold together throughout a trip. It should provide protection for the feet, and a firm foundation for walking and scrambling. Today's boots are derived from athletic shoe technology. They are light, comfortable and functionally suited. Common characteristics to look for when selecting a hiking boot are:

Sturdy. The boot should support feet and ankles from twisting on uneven surfaces. Higher boots with stiff ankle support provide lateral rigidity. The boot should also support the foot from over bending when placing too much weight on the toe or heel.

Lightweight. The lighter the boots the easier walking will be. Every extra pound of footwear weight can be compared to five pounds of added backpack weight.

Comfortable Fit. When worn, boots shall fit snugly with the heel snug against the wall of the shoe and a small amount of space for the toes to move.

Correct Size. Proper fitting boots ensure comfort during hiking. A boot fits correctly when:

- it is wide enough so the boot matches the width of the foot with little extra room;
- the tongue rests comfortably along the top of the toe; and
- the toes have room to wiggle.

SOCKS

The boot is only one part of the footwear system; socks are the first line of defence for the feet. A two-sock system is common in many activities. Unless hiking regularly in hot, damp conditions, consider wearing one pair of heavy socks and one pair of light inner socks. Always ensure socks are properly sized for the foot.

Inner Socks. This is a thin layer that helps wick, or pull moisture away, from the foot. They are usually made of a polypropylene material.

Outer Sock. This layer is most often made of wool or wool blend, which can absorb moisture. This layer cushions the foot and provides insulation.

WATER BOTTLES

One indispensable item in any wilderness traveler's kit is a water bottle. Depending on the wilderness to provide drinkable water is a risk not worth taking. Hikers either have to purify water to make it drinkable, or carry water with them.

Types of Water Bottles. Depending on a person's requirements when going on a trek or day hike, one must select a water bottle that most suits their personal choice, equipment no comma and capacity.

Canteen. Simple water storage device, usually contains a litre of water.

Rectangular. Rectangular wide mouth storage containers. Wide mouths are easy to fill, and allow easy mixing of water additives (purification tablets, juice crystals etc.).

Bottle Bag. Water storage vessel, when empty can be rolled and stored using little space.

Water Bladder Pack. Water is stored in a backpack bladder or just as a bladder pack. This bladder is capable of storing large amounts of water with ease ranging from ounces to litres.



Ideal Material Make Up. Water bottles can come in many forms, and be made of many materials. The optimum bottle is one that is easy to clean, does not pick up flavours easily, and is very durable. Of the many types of bottles available, Lexan and polycarbon bottles perform very well.

Wide Mouth Versus Narrow Mouth. The various constructions of water bottles have different advantages. The narrow mouth allows for slow pour and simple drinking. The wide mouth allows for fast pour and fill, mixing of additives, and allows for additional attachments (i.e., water purifier, mug mouth piece, drinking spouts, etc.).

Capacity Requirements. A hiker must plan water requirements, and determine what size of water storage vessel will be required for any hike. The absolute minimum amount of water a person needs under normal conditions is two litres per day. A person, when hiking, will require at least one litre every two hours. With increased exercise or temperature, fluid intake will increase.

OPTIONAL TREKKING GEAR

When participating in a trek there will be many items that may be of use depending on the route, terrain, and season of travel. Preparation of additional items for trekking will ensure an enjoyable trip.

Raingear. A lightweight raincoat in case of unexpected weather.

Hat. A wide brimmed hat will protect the back of the neck, ears, and face from burning.

Extra Insulation layer. A light down vest, sweater, or fleece jacket will provide insulation should the weather be cooler than expected, and during breaks when sweat evaporates and the body cools.

Sunglasses. Protect your eyes against damage from the sun's light (i.e., ultraviolet, bright or intense light, and blue light).

Sunscreen. Blocks or prevents the skin's exposure to the sun, or ultraviolet light. The skin will burn when the amount of exposure to the sun, or ultraviolet light source, exceeds the ability of the body's protective pigment to protect the skin. According to the Canadian Dermatology Association a minimum of SPF 15 with UVA and UVB protection should be worn.

Insect Repellent. Apply insect repellents to ward off unwanted insects. The repellent should be applied to the exposed areas of the body. Many insect repellents rely on chemicals such as DEET to repel insects and have effective durations per application.

Camera and Film. Many treks into the wilderness will expose sites of pure beauty. Having a camera on hand to capture such moments will allow one to share, keep and record many moments.

Notebook and Pencil. Allows one to record trek details, route choice, memorable moments, injuries etc.

Bathing Suit and Towel. Many treks into the wilderness will cross paths with rivers and bodies of water. One may want to stop and go for a swim or wash. Packing a bathing suit allows for that option when with a group.

Binoculars. Provides the ability to see far off objects and routes. One may want to view wildlife from a distance This can be a very practical item in the field.

Participating in trekking activities will be commonplace for Army Cadets. The ability to knowledgeably forecast required materials and items for a trek is important when cadets are required to prepare their own personal equipment for a trek.

THE HIKE

The day hike allows the cadet to participate in physical fitness while challenging themselves and having fun. It introduces the Green Star Cadet to the necessary skills required for progressing through the hiking aspect of the Army Cadet Program.

Leave No Trace

Trekkers have always known, that proper planning before entering an outdoor environment serves as one of the key elements in having a safe and successful trip. No trace camping also involves avoiding or reducing the damage caused by humans frequenting the environment. Preparing for an environmentally sound outdoor experience includes following the "leave no trace" guidelines that are listed in the following paragraphs.

Repackage Food Before Leaving. This will greatly reduce weight and the likelihood of litter, broken glass, and surprise openings and spillage in your pack. Repackaging food requires the removal of food from cardboard boxes and placing it in reusable zipper bags, and emptying contents from glass containers and placing them into reusable plastic containers. If you have something that has special

instructions for its preparation, clip it out and put it in the plastic bag. Be sure the plastic bags are of at least two-ply strength. For liquids like soy sauce, cooking oil and vinegar, plastic Lexan or polycarbon bottles with screw tops work well.

Stay on Established Trails. This helps limit the amount of overall erosion caused by constant trampling and travel over environmental surfaces. Avoid taking shortcuts and, when travelling cross-country where no trails exist, try and remain on the most durable surfaces.

Walk on Durable Surfaces. This will help maintain the natural beauty of the area. Surfaces vary from soft marshes to solid rock, and trekkers will continuously cross many different types of terrain. It is imperative to take the time to travel on surfaces that will not be significantly affected, rather than taking the straightest line to get to a destination, trampling whatever lies in the way.

Travel in Small Groups as increased group numbers can have a greater impact than smaller ones. Stick to appropriate group sizes of 10 or less. Understand that every action has the potential to impact the natural environment. Take the necessary precautions to protect the environment when travelling in a group.

Avoid Making Loud Noise and allow nature's sounds to prevail when travelling through the wilderness. Avoid using loud voices and making loud noises, secure all pots and pans on the backpack and only use the whistle in emergency situations.

TAKE CARE OF YOUR BODY

BLISTERS

A blister is a small bubble on the skin filled with fluid caused by friction. It is basically the body's way of saying the boots don't fit, they are not broken in, or the feet are still too tender for the miles being covered.



Preventing Blisters. To prevent blisters a hiker must ensure:

- proper boot fit;
- multiple sock layers (multiple layers wick moisture and minimize direct rubbing on the skin);
- foot powder is applied prior to and during hiking; and
- to address hot spots as they arise.

It is especially important to stop and take care of feet early in the trip when feet become tender. By taking boots and socks off at rest breaks, the hiker will have an opportunity to cool feet, apply foot powder and look for red areas which may indicate oncoming hotspots.

Treating Blisters. If a blister develops there are two solutions to help relieve the pressure:

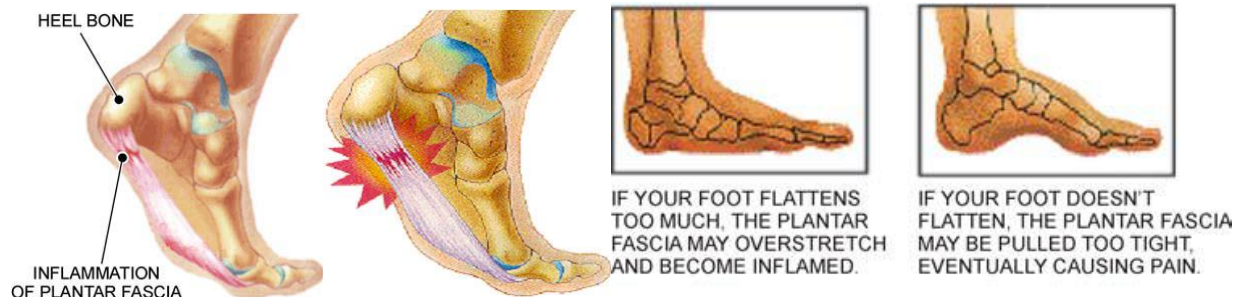
1. Cut a piece of moleskin that generously covers the blister. Cut a smaller hole in the moleskin, making a little donut shape. The donut should fit around the blister, the idea being that the moleskin relieves the pressure from the injury. Fill the moleskin donut with an antibiotic cream and cover the whole donut with athletic tape.
2. Use 2nd skin directly over the blister, followed by a layer of moleskin to keep the second skin in place. Second skin is a padding that has high water content and has a slimy feel, giving it a lubricating quality. If a blister develops into a full bubble it may be necessary to lance the blister. Determining whether to lance a blister is complicated; a drained blister increases the chance of infection. The rule of thumb to follow is if a blister is smaller than a nickel do not drain it and follow the steps above; however, if it is bigger than a nickel it will have to be drained as it will most likely pop anyways. Once drained ensure to apply an antibiotic cream/ointment to the area to ward off infection and then follow the steps above.

HOT SPOTS

Hot spots are the precursor to blisters. The slight reddening of the skin and early hints of pain are telling signs of an impending blister (a hot spot). This reddening is the result of friction, between the skin and the sock or boot/liner. To avoid blisters, stop and address hot spot(s). The best action is to tape the spot with moleskin or athletic tape. Use a tincture of benzoin, if available, and place the tape carefully over the area.

PLANTAR FASCIITIS

Plantar fasciitis (fashee-EYE-tiss) is an overused injury affecting the sole or flexor surface (plantar) of the foot. A diagnosis of plantar fasciitis means one has inflamed the tough, fibrous band of tissue connecting the heel bone to the base of the toes. This condition occurs in people who excessively run or walk, stand on hard surfaces for prolonged times, or people with very flat feet or very high arches. This condition starts gradually with mild pain at the heel bone. One is more likely to feel it after exercise.



Prevention. There are several things you can do to prevent plantar fasciitis including:

- wear proper footwear for the activity;
- stretch (tight and cold muscles are prone to injury); and
- condition the body in a progressive manner when preparing for activities that will see the trekker covering great distances on foot.

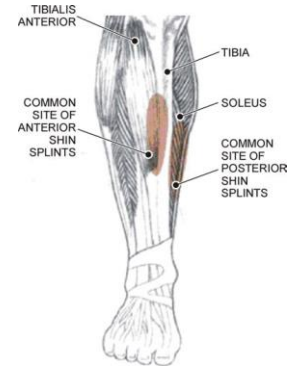
Treatment. Rest and keep weight off the foot until inflammation goes away, and apply ice to the area for 20 min three or four times daily. Stretching your Achilles tendon and plantar fascia are the mainstay of treating the condition.

SHIN SPLINTS

Excess training with inadequate recovery causes shin splints; over running is most often the culprit. Shin splint occurs when the foot strikes the ground, followed by a loading/energy transfer

phase, and finally a push off with the forefoot. Each foot strike delivers a shockwave that travels up the leg. This energy is absorbed by the musculoskeletal system. The harder the running surface the greater the shockwave (i.e., soft grass, smooth dirt, asphalt, and concrete represent increasing hardness, concrete being the hardest).

Symptoms. In the early stages of shin splints a runner will describe a pain that is present when the training run first begins, then disappears as running continues. The pain will often return after exercise or the following morning. Eventually, if ignored and training continues, the pain may become quite sharp and may focus on a very small area of the bone. If this happens a stress fracture may be present.



Prevention. There are several things you can do to prevent shin splints:

- overstriding when hiking occurs when a person throws the leg out too far in front, unnaturally lengthening the stride. To correct, slow down and try to push off with back foot rather than extending the front leg. The lead leg should strike closer to the body, roll through the step, and push off with the toe. Note the extension should be in the back, not in the front;
- avoid wearing footwear with a high heel;
- wear proper footwear for activity – over-pronation rolls the foot inward on each step. Get fitted with motion control running shoes;
- stretch (tight and cold muscles are prone to injury); and
- condition the body by beginning with activities that cover distance in a progressive manner. If hiking, beginning training with short distance hikes progressing to longer distances over time.

Treatment. Rest, and depending on the severity, it is often necessary to completely stop running for a period of time. When running is resumed, a significant change in routine must be adhered to or else the injury will return. Lengthen the time between training and decrease the volume and intensity of training.

MUSCLE CRAMPS

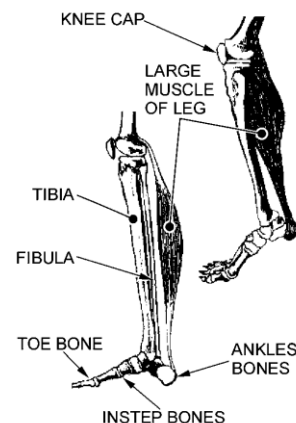
A cramp is a muscle spasm that occurs when the blood circulation is impaired or if the muscle is over exerted. It usually occurs in the leg and may develop when swimming in cold water. It can happen when a person is immobile in a “cramped” position. This commonly occurs while sleeping.

Heat Cramps are caused by the loss of salt when there is excessive sweating. The lack of salt causes cramps that are spasmodic, painful contractions of muscles, usually in the leg.

Prevention. To reduce the probability of these cramps:

- eat well-balanced meals rich in potassium and sodium (i.e., eggs, liver, chicken, milk, citrus fruits, bananas and dark green leafy vegetables); and
- stay well hydrated.

Treatment. A victim of an attack should rest in a cool area and drink a saline solution or lemonade. Avoid cramps by warming up before strenuous activity. During an attack stretch out the muscle while massaging above the painful area to increase the flow of blood.



SPRAINS

A sprain is the ligament of a joint that is torn by a sudden twist or wrench. The joint is very painful when moved, and there can be considerable swelling. A deep bruise may gradually appear. A bad sprain is hard to distinguish from a fracture. To treat a sprain, wrap the sprained joint in a heavy bandage. Rest the limb in a comfortable elevated position.

Prevention. To reduce the probability of sprains:

- stretch before and after exercising. Tight muscles pull on the Achilles tendon and can reduce the range of motion of the foot;
- select footwear with good ankle support – wear snugly laced, high-topped shoes; and
- select footing carefully while on uneven surfaces.

Treatment. RICE (Rest, Ice, Compression, and Elevation) is key to rapid healing.

STRIDE RHYTHM AND SPEED

An average day of hiking will consist of periods of hiking and periods of rest. The combination of good hiking rhythm, good walking speed, and fixed rest intervals are things that separate hiking beginners from good hikers. Enthusiasm often tends to cause one to start too fast, get tired quickly, take an early rest, and start off too fast again. A steady hiking rhythm is generally more enjoyable as one over exerts themselves less and generally keeps the physical strain at enjoyable levels. Having a steady rhythm will enable a hiker to stick to a fixed schedule and lessen the strain put on the feet, legs, lungs and overall body. This allows a hiker to travel while being less fatigued.

Developing a Hiking Rhythm. A hiking rhythm is very personal and is developed over the course of many hikes. To develop a rhythm there are some guidelines to follow:

- choose a specific stride rhythm and speed and keep to it. A good rhythm is one that allows a hiker to hike at the same intensity level for at least one hour without having to take a break;
- adjust rhythm to terrain, weather and weight. The point where a person can no longer carry on a conversation indicates the hiker has gone beyond a comfortable tempo;
- make the rhythm a full body movement where breathing and the swing of the arms happen in harmony with the body; and
- uneven surfaces like uphill and downhill slopes of varying incline can make it difficult to maintain a steady hiking rhythm.

CONTROLLING FATIGUE

The purpose of resting is to slow down the heart rate and breathing, thereby allowing the heart and lungs to rest. Resting gives the body time to get rid of the lactic acids built up in muscles, and to recover from hot spots or sores.

Resting guidelines:

- rest in regular intervals; try 10 minutes for every hour hiked (make them part of the rhythm);
- stick to 10 minutes rest breaks. Use only lunch and dinner (supper) breaks as extended rest periods;
- 10 minutes is the most effective rest duration for body recovery;
- ensure to take off backpacks, rest in the shade, and sit down during rests; and
- during the extended rest breaks, allow feet to rest and dry by removing shoes, and airing out footwear.

ADJUSTING RHYTHM

Generally, hiking rhythm on a flat surface can be maintained easily; however, when weather and additional weight are included, hiking becomes more difficult. How fast travel is depends on the fitness level of the entire group, the terrain, the altitude and pack weight. One of the best ways to measure and regulate pace is to pay close attention to the tempo of breathing.

If breathing determines pace then, for example, on level ground one takes three steps per inhalation, and three steps per exhalation. Climbing a hill, while maintaining the same breathing rate, the steps per inhalation fall to two steps. A good rule of thumb to follow is to walk at a pace where one can still carry on a conversation. When travelling in different conditions ones pace will change, according to:

- **Weather.** Poor weather will reduce pace and force the hiker to reduce step size for safety.
- **Weight.** Weight will affect pace size as the more weight one carries the more energy must be expelled.
- **Terrain.** Travelling up hill will reduce pace size and distance traveled.

EMPLOYING FULL BODY SYNCHRONIZATION

Hiking rhythm is a full body affair. Just like marching, hiking requires coordinated movements where every action has a reaction. The swing of arms provides momentum, breathing controls pace etc. To properly control rhythm, one must first learn what body parts work in unison with each other.

To employ full body synchronization during movement, the arms should be in motion at a natural swing opposite to the forward foot. The swing of the arms provides momentum to help carry the body forward for the next step. Breathing will control pace (keeping in mind a good rhythm is when a person can carry on a conversation while hiking).

RESTING INTERVALS

An average day of hiking consists of periods of hiking and of resting. Resting intervals should occur once ever hour, for a duration of 10 minutes, in an area that is conveniently shaded and possibly near a water source. During the first 5 to 7 minutes of resting, the body flushes out about 30 percent of the lactic acid build-up in the muscles, but only five percent in the next 15 minutes (be cautious rest does not extend beyond 10 minutes). Rests also provide the body with much needed breaks. In addition to lactic acid build-up in the muscles, the body works in unison and other areas may become fatigued. By resting:

- the heart rate slows and beats at a reduced rate;
- the lungs supply less oxygen to the body;
- the body and mind rest; and
- feet and footwear can be aired out, reducing the chance of blisters.

TYPES OF RATIONS

Staple Foods. This type of meal is made up of food such as pastas, flour, dried beans, rice, sugar, potatoes etc. This type of food in comparison to others is:

- cheaper than freeze-dried meals;
- easier to find as it is available at any grocer; and
- more flexible as it allows one to pick and choose ingredients when preparing a meal.

Freeze Dried. This is a preserved food that has gone through a process that freezes and dries the food before it is packaged. To prepare such a food, just add hot water. This form of meal in comparison to others is:

- expensive;
- light in weight;

- non-perishable; and
- convenient to prepare.

Trail Food. This is a quick snacking food which is easy to eat while on the trail. Providing a quick fix for hunger prior to a main mealtime, trail food consists of nuts and seeds, dried fruits, energy bars and fruit bars, breadstuffs, trail mixes, etc. This form of meal, in comparison to others, is:

- easily accessible;
- small and snackable; and
- requires no preparation.

EATING FREQUENCY

The average person in the field eats between 1.5 and 2.5 lb of food each day, or between 2500 and 4500 calories. Planning the amount of food to bring can be a daunting task; if one packs too much it will have to be carried, if one brings too little one may be forced to find alternate food sources. How much food is required depends on how strenuous of a trip is planned. A person will eat less while hiking on light days in the summer than when skiing in the winter. One would also eat more on a climbing trip than on a fishing trip. To determine the amount of food reference the table provided below.

Ration Table

	Pounds per Person per Day	Calories per Person per Day
Average Activities (Backpacking or Kayaking)	1.5 to 2 lb	2500 to 3000 calories
Strenuous Activities (Snow Camping)	2 to 2.25 lb	3000 to 3700 calories
Very Strenuous Activities (Extreme Mountaineering)	2.25 to 2.5 lb	3700 to 4500 calories

Keeping in mind the weight in food should be split between trail foods and stable foods. Plan meals individually, and carefully, to determine what will be required on the trip.

DAILY WATER REQUIREMENTS

The human body constantly loses water from sweating, urinating, breathing and defecating. When the body is working hard and sweating heavily, we can lose up to a litre of water per hour. At high altitudes where the air is dry, a person can dehydrate by merely breathing at rest.

Performance Related Water Loss. Dehydration impairs humans both physically and mentally. As a person becomes dehydrated, the blood plasma level lowers (blood becomes thicker) and consequently, the heart has to work harder to pump blood. As the body becomes increasingly dehydrated, complications occur, such as:

- a decrease in cardiovascular performance (person finds it harder to catch their breath);
- the body is less able to dissipate heat through sweat;
- the ability to digest and metabolize food is impaired; and
- physical performance declines.

Pre-hydration is the key to staying hydrated. When a person becomes thirsty the body is already showing signs of dehydration. Drinking extra water before strenuous activities will also help performance. The best fluid to maintain hydration is water.

Note: Caffeine and carbonated drinks accelerate dehydration.

Daily Water Intake by Weight. To stay hydrated, daily intake levels have been produced based on body weight. Reference the chart below.

RECOMMENDED DAILY WATER INTAKE ACCORDING TO WEIGHT

Body Weight (lb)	Litres of Water at Rest
100	3
120	3.6
140	4.2
160	4.8
180	5.4
200	6

MAINTAINING SAFE HYDRATION LEVELS

Motorized cars require oil to lubricate a combustion engine. Just like a car, the human body requires lubricant in the form of **WATER** to run its engine. To keep this engine running effectively a person must maintain a safe hydration level by:

- **Pre-hydrating.** Drinking extra water before you start activity.
- **Drinking Small Amounts Often.** Small amounts will effectively feed the engine constantly.
- **Drinking Cool Water.** The intestines absorb cool water more easily.
- **Avoiding Sugary Drinks.** Sugar impedes the body's ability to absorb fluid.
- **Making Drinking Water a Habit.** A good habit is never forgotten.
- **Drinking at Least 8 oz of Water.** For every half hour of strenuous activity.

LOCATING WATER SOURCES

Water is essential to life. All life depends upon it and all living things contain it. The average person can survive for three weeks without food, but only three days without water. It is the number one priority. When in the field, one must know where to locate water in the case of emergency.

The first place to look is:

- **Rivers.** A common source of water, one should draw the water from flowing water away from the banks.
- **Streams.** A common source of water, one should draw the water from flowing water away from the banks.
- **Lakes/Ponds.** A common source of water, one should draw from deeper areas of the source.
- **Valley Bottoms.** Water naturally drains into these areas from surrounding heights.
- **Patches of Green Vegetation.** These indicate a water source. One can dig below the surface to locate water if it is not visible on the surface.
- **Dry Streams or Riverbeds.** Even though a stream might be dry on the surface water may still be flowing below the surface in a spring. Dig down to locate water.

When collecting water from the natural environment for consumption, it is important to ensure the water is safe to drink. Be sure to boil or filter water through a water purifier, or use water purification tablets.

This activity has provided the cadets with an opportunity to participate in physical fitness, while challenging

WINTER TREKKING

March discipline is the observance of the drills and precautions taken before, during, and after a march to ensure that a group of cadets arrives at a destination fully equipped, and capable of carrying out further training. It involves a number of things such as adequate march control, care of

equipment, obedience to march instructions, proper conduct and performance of duty, suitable formations, suitable rate of march, correct distances and effective use of cover and concealment. March discipline in the winter is basically the same as it is in warm weather, but severe cold and snow are factors that must be taken into consideration.

Dress. Dress should be as light as possible, and consistent with the weather. Choice of footwear will vary depending on the temperature. When temperatures are likely to go above the freezing point, a boot appropriate for wet-cold conditions should be worn instead of mukluks.

Trek Route. Before the march begins, the route must be planned in detail. The easiest route, consistent with training required, should be chosen. Obstacles such as open water, rocky or hilly terrain, soft snow etc., should be avoided when possible. Route cards may be passed out to cadets. Cadets should be given the route in a briefing before the winter trek begins.

Trail Breakers. The purpose of trail breaking is to make the march of the main body as easy and quick as possible. It is a difficult and time-consuming job. Arrangements for a system of relief of tasks - or trading up of tasks - should be made in advance. The progress of trail breaking depends on such things as terrain, weather, snow conditions, vegetation, and physical condition of the trail breaking party. Instructors and supervisors should be aware of any medical or physical conditions of their cadets that will require extra supervision or attention before beginning any hike or march.

REST PERIODS

There is a requirement for multiple rest stops while on any hike. This need is amplified by the special factors brought about by the cold.

Equipment and Clothing Checks. Ten to 15 min after the march begins, a rest must be taken to adjust equipment and clothing.

Physical Breaks. Subsequent halts should be taken often but should be short, merely long enough to allow a short rest or change of duties, but not long enough to get chilled. Two to three minute breaks every 15 to 20 min should be taken.

Refreshments. Hot drinks should be prepared before the march, and taken in thermos bottles. Cadets should be encouraged to drink them during rest periods.

Frostbite Checks. These need to be carried out day and night. During the day, the "buddy" system should be used to check for frostbite during the march and during rests. At night, it is mostly the individual's responsibility to check if there is no light. If there is an adequate light source, then the "buddy" system should be used as well.

Windbreaks. If trekking in the wind, rests can be taken and the backpack used as a windbreak. During long rests, windbreaks can be constructed by snow blocks, trees, etc.

MARCH FORMATIONS

These will vary and change depending on what the cadets are doing.

Single File. Normally during marches, the best formation to adopt is single file since it maintains track discipline, reduces the number of trailbreakers, and makes pulling a toboggan on a broken trail easier.

Parallel Columns. On firmly packed snow where there is no need to break a trail, you will probably find it better to travel in parallel columns as it lets you travel faster. To keep a group together in

single file it is a good policy to make each person responsible for the person directly behind them. This way a cadet stopping in the rear of the group will automatically stop the entire group. Cadets should know that they should not wait until the next scheduled rest to inform a supervisor that they are extremely cold, sick, or that they may be injured.

MEDICAL INSPECTIONS

When the march is completed and the destination is reached, march discipline must continue. Like the rest periods during the march, there are checks that should be done at the end.

Frostbite Checks. Checks for frostbite should be performed using the “buddy” system, first to all skin that is visible. An individual check should be done after to ensure that there is no frostbite in other parts of the body not visible to your buddy on the march.

Body Injuries. Instructors and supervisors will check the cadets for any injuries that may have occurred during the course of the march. These injuries include things such as blisters, sore feet, sprains, extreme fatigue, etc.

Cold and Flu Symptoms. Instructors and supervisors will check cadets to see if there are any cadets who have signs and symptoms of the cold and flu such as coughing, wheezing, sneezing, runny nose, congestion, etc. Instructors and supervisors should physically check cadets’ feet, hands, etc., for frostbite and injuries because cadets do not always report sickness and injuries when they feel them.

SNOWSHOEING

Snowshoeing enhances winter camping and trekking by providing a mode of personal transportation to use in the winter. It also provides fun, physically challenging exposure to a new sport.

CONDITIONS

Newly fallen snow undergoes many alterations on the ground. As the snow on the ground becomes denser, snowflakes consolidate and trapped air is expelled. These changes are affected by conditions of temperature that are caused by sunlight and wind.

Sunlight. In the springtime, the sun may melt the surface of the snow even though the air temperature is below freezing. This will usually cause dry, powdery snow in shaded areas, and wetter snow in sunny areas. Low temperatures at night can cause the wet snow to form a crust over the surface during the night.

Wind. Wind can pack and drift snow. The more constant the wind is, the harder the snow will be packed. Activities such as snowshoeing, skiing and walking will make no impression on the surface. Changes in temperature between warm wind, and those below freezing, will cause an ice crust to form. Movement under such conditions can be quite difficult. Loose snow will drift in the wind causing a wavy surface.

MAIN CHARACTERISTICS OF SNOW

There are three main characteristics of snow that are of interest:

- **Carrying Capacity.** The harder the snow is packed, the greater the amount of weight it will be able to support. An ice crust may have a good carrying capacity, but be difficult to move across because it is too slippery.
- **Sliding Characteristics.** Generally dry snow, packed snow and crusted snow provide better sliding characteristics than wet snow, falling snow and newly fallen snow.

- **Holding Capacity.** This is of interest mainly to skiers, not to snowshoers. It is the ability of the snow to hold the ski and prevent it from sliding backward.

CATEGORIES OF SNOW

Wet Snow. Wet snow is most common in springtime, but can be found in autumn or late winter. It can be made into a solid snowball.

Moist Snow. Moist snow is usually found in early winter, but may occur later in the winter during warm periods. It can be made into a snowball, but has a tendency to fall apart.

Dry Snow. Generally found in mid-winter but can occur at any time when the temperatures are low. It may be packed from the wind, or powdered. At very low temperatures, this snow is more like sand, and has poor qualities for sliding.

New Snow. It may be wet, moist or dry depending on the conditions in which it falls.

SNOWSHOE COMPONENTS

FRAMES

The frame is the skeleton. It usually, but not always, includes both an outside framework and crosspieces that provide stability within. Most snowshoes have either a traditional steamed and bent wood frame, or an aluminum alloy frame that is welded or riveted together.

Wood Frame. Wood frames must be made from wood that has straight grain and no knots or other flaws that may weaken it. Common woods for snowshoes are white ash, sugar maple or yellow birch.

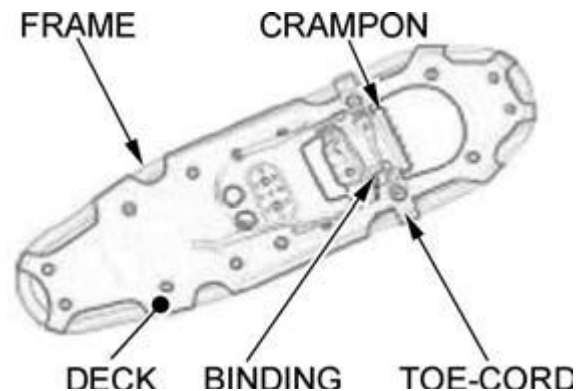
Aluminum Frame. Some aluminum alloy frames are anodized with an electrostatic coating that protects the aluminum from corrosion. Others are painted using an etching preparation to prevent chipping. Some snowshoes, particularly military-issue snowshoes, are made with frames made of high-strength, aircraft-grade magnesium alloy.

Plastic Frame. Some interjected snowshoes have a frame and deck that are constructed to be one solid piece of plastic.

DECKING

Decking (or lacing), is also known as the carrying surface, is the surface that effectively makes our feet bigger. It may be webbed, as are traditional rawhide-laced snowshoes, or it may be solid or nearly solid, as are many new design snowshoes with neoprene or other synthetic decks. These new style decks give better flotation using a solid decking than those with more traditional webbing. As a result, a smaller snowshoe can be worn if it is decked. Neoprene is a rubber-like material. It is the same material used to make wet suits.

BINDINGS



The binding attaches the foot to the snowshoe. Bindings come in a bewildering array of styles, from an impromptu harness fashioned of cord, to a snap-in binding similar to those used for cross-country skis or snowboards, designed so the wearer can switch from one to another in a matter of seconds. Between those two extremes are the A-type and the H-type bindings, named for the approximate shapes their straps form. The binding may also have a crampon, or metal cleat, used to dig in on icy routes.

TECHNIQUES

WALKING

Simply place one foot in front of the other, sliding it if the binding provides free rotation, stepping if fixed. Make sure one snowshoe does not land on the other, or you will tumble. If you fall, roll your weight back on to the snowshoes while tucked, and then rise. Once you are able to walk, try finding a pace that is comfortable for you.

BACKING UP

Backing up is a little more difficult. The easiest way to reverse direction is to make a sweeping U-turn, but it is not often possible. While stepping in reverse, it helps to watch your feet. Fixed-rotation snowshoes and free rotation snowshoes without tails make it easier to move backward.

EDGING

To move across a hillside, kick the uphill edge of the snowshoe into the hillside, to create a horizontal step. Poles will help you balance as you move.

TRAVERSING

Traversing is probably the most practical climb and descent manoeuvre. In this switchback edging technique, you move diagonally back and forth across a hill, creating a zigzag track up or down the hill.

DOWNHILL

Going downhill can be one of the most difficult snowshoe manoeuvres. The snowshoe will tend to slide. When going downhill a snowshoe with heel traction is useful. Keep your knees bent, leaning back slightly to place as much weight as possible on the heels, providing additional traction. No matter where you are walking, try not to walk too close to rocks, trees, or shrubs, especially if they are partially covered with snow. The wind may have left snow less pockets near these objects into which you might drop.

USING POLES

Poles can be a great aid in helping you balance on top of your snowshoes. You can also push against poles for some forward momentum, taking some of the weight off your legs and giving more of the work to your upper body and arms. Poles can also be used to prod the snow in search of avalanche victims.