Backpacking Honor

(Master Guide Outdoors version)

Introduction

There is no such a thing as an ultimate outdoor equipment brand, or fabric, or technique. Every year new equipment shows up in the market: lighter, more comfortable, and more resistant.
The idea for this material is to provide the basics for a backpacking event at a Master Guide level (for ages 16 and older).
This material should be revised and updated every year, however, there are general principles to be respected that have been here since the creation.
The most important? Share your hike in nature with its Creator.

1. Discuss with your instructor the meaning of the motto: "Take nothing but pictures and leave nothing but footprints."

"Take nothing but pictures, leave nothing but footprints" means that you do not disturb nature while you are out enjoying it. If you see a pretty rock, leave it there for someone else to enjoy. If you eat an energy bar on the trail, don't toss the wrapper — take it with you.
There are a few exceptions to both these rules. If you see trash, by all means, take it. Throw it in the trash when you get to a proper trash receptacle. Also be aware that footprints are not always harmless. Many tundra plants that take years to grow can be destroyed by a single footprint. Stay on the trail.

Campfires

One of the most important ways people leave their mark on the land is by building a campfire.
Answer this question: **do you really need to start a campfire?**
For cooking: Plan ahead for a "no trace" camping and bring a camp stove. If you are on the trail, trail mix, energy bars, or fruit will replace a cooked meal.
For low temperatures: The main source of heat for your body is: your body. Little jumps, a short jog without sweating will warm up your body. Do this right before going to the sleeping bag.

For safety: The most likely problems when dealing with wild animals are hassles, not attacks, and those hassles are likely to revolve around small animals and their attempts to get your food.

To avoid those hassles, the most straightforward thing you can do is to take measures to prevent animals from getting access to your food or even the smell of your food or any other item that emit an odor, like garbage, lotions, deodorants, etc. You should keep all these items sealed inside zip-lock bags, and hang it from a tree.
A campfire will not make any difference for a bear that provably has been in more campgrounds than you ☺

Mound Fire

If your campsite has a fire ring or an existing fire pit, use that. If it does not and you *must* have a campfire, make a mound fire.
Construction of a mound fire can be accomplished by using simple tools: a garden trowel, large stuff sack, and a ground cloth or plastic garbage bag. It may be an option to have a commercial fire blanket as an option for emergencies.

To build this type of fire: Collect some mineral soil, sand, or gravel from an already disturbed source. The root hole of a toppled tree is one such source. Lay a ground cloth on the fire site and then spread the soil into a circular, flat-topped mound at least 3 to 5 inches thick. The thickness of the mound is critical to insulate the ground below from the heat of the fire. The ground cloth or garbage bag is important only in that it makes cleaning up the fire much easier. The circumference of the mound should be larger than the size of the fire to allow for the spreading of coals. The advantage of the mound fire is that it can be built on flat exposed rock or on an organic surface such as litter, duff or grass.

#1 and #2 (toilet time)

Urine odor attracts bears. So you should go far from the campsite to go #1.
Be aware of the direction the wind is blowing when nature calls. The smell could send a signal to bears downwind. On that note, your campsite should be upwind from your urine. When you need to go #2, dig a hole 6 to 8 inches deep and squat. When you're done, cover up the hole and stamp it with your foot. Be sure to do this at least 100 feet away from any water source.

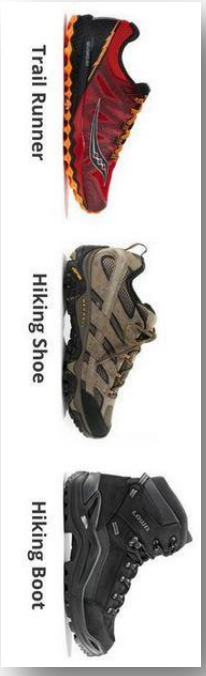
2. Know the essentials of proper clothing, shoes, and rain gear to use in backpacking.

Warm Weather Clothing

Keep in mind that the weather can change suddenly. Just because it is warm when you begin your outing does not mean it will be warm the whole time. If there is a chance that the weather will turn cold, take along some cold weather gear as well. Check different weather reports during the days before the trip to see how cold it can get during the time you are planning to be out.

Here is a list of clothing appropriate for a warm-weather outing.

- <u>Hiking shoes</u>:
  - Traditional **hiking boots** will provide stability, ankle support, and safety in order to avoid an ankle sprain, however, they are heavier and may have poor ventilation for summer.
  - Comfortable **hiking shoes** are lighter and could be a blessing for your feet, keeping them dry. Also, they would be helpful for people with back problems, releasing weight from its feet. You may avoid waterproof fabric in order to prioritize breathability.
  - **Trail runner shoes** are a lighter option to regular hiking shoes but are also less durable.
  - A fourth option are **hiking sandals**. Many hikers prefer the comfort of super ventilated feet for summer, with or without socks.
  - **This is a personal decision.** In any case, personal comfort, breathability, and grip are key. The right shoes will be related also to the characteristics of the trail. If the trail is going thru water often, sandals may be a good option. If it is a long distance (more than 15 miles by day) but a simple trail, with a lightweight backpack, trail runner shoes may be appropriate.



Keep in mind weather conditions for the specific time of the year, and the geography of the trail. Boots or shoes? It is up to you.

- 💡 Break your shoes/boots in before your first trip.

- Cotton socks: They will absorb better your sweat. If you are planning to walk for a while in a stream or river, or with rain, nylon socks will dry much faster, however, will not be as comfortable as cotton. Always bring an extra pair to change in the middle of the trail, your feet will appreciate it.
- Sports underwear: These will avoid painful rash during the hike.
- Hiking pants: Usually are fresh and comfortable, and dry fast. Avoid shorts in order to protect your legs from insects, poison plants, sunburn, and scratches. Also long pants will keep the humidity in your legs, delaying dehydration.
- Cotton T-shirt: More comfortable than synthetic fabrics. If in a narrow trail hea vily forested or in a desert, long sleeve light shirt may be a good option for the same reasons that long pants.
- Hat with a wide brim: Always remember, your head is the control center of your body and needs special protection.

Cold Weather Clothing

The key factor is to dress in layers. This will allow you to control your temperature better. In cold weather, **you do not want to sweat**, because that will soak your clothing and chill you. If you find yourself working up a sweat, remove a layer of clothing, or open a zipper. Rely on wool rather than on cotton, because wool stays warm even when wet. There is a popular saying among experienced outdoorsmen that "cotton kills." This is because when cotton gets wet, it steals the body's heat which can lead to hypothermia and death.

Here is a list for hiking in snow:

The first layer (underwear layer):

- Wool socks: Avoid overlapping socks, this can cause a poor blood circulation in the feet. Use real wool socks, avoid synthetic wool, cotton or synthetic fabrics.
- Long thermal underwear (pants and shirt): The best option is merino wool (also known as smart wool) above any synthetic fabric. However, if you have to choose, keep merino wool as the first layer for sleeping and use synthetic thermal underwear for walking. Your body will be warm due to the physical activity, and the synthetic fabric will evacuate the humidity fast.
- Wool hat: Real sheep wool, merino wool, fleece, or a combination of these materials are a very good idea. Avoid synthetic wool. If the weather is severe or the temperature too low, a ski mask will protect you much better.

- Wool gloves: Following the layers system, the first layer of thin wool gloves will provide you with more options than a single layer of a bulky pair of gloves.
    - Read the tag. It may say wool, it may look like wool, it may feel like wool, but it could be synthetic.

The second layer (insulating layer):

- Hiking pants: Your legs will be warm due to the hike, so this will be a transition layer, letting the sweat to escape, and protecting the first layer from the wind. We could say that these pants are an insulating layer, but without materials that would make you sweat.
- Insulation jacket: There are many options that will perform very well for this layer:
    - *Polyester fleece*: Available in lightweight, midweight and heavyweight fabrics (sometimes marketed as 100, 200 and 300 weight), fleece stays warm even if gets damp, and it dries fast. Fleece also breathes well, so you're less likely to overheat in it.

    - *Down insulated jackets*: Highly compressible for easy packing, down offers more warmth for its weight than any other insulating material. The efficiency of down is measured in fill power—from 450 to 900. Because down is always inside a shell material, down jackets also offer some water and wind resistance. The drawback to down is that it loses insulating efficiency when damp.
    - *Synthetic insulated jackets*: Synthetic insulations have long tried to mimic down's efficiency, coming closer to that standard every year. And, while synthetics don't compress as well as down, they're a popular option for rainy conditions because they retain insulating ability when they get damp. And, like down, synthetic insulation is always inside a shell material that offers added water- and wind resistance.
        - In general, thicker (or puffier) equals warmer, though the efficiency of the insulating material is also important.
        - It is also important for this jacket to have a hood, in order to create a double layer with the wool hat from the first layer, protecting also the neck.

Third layer (shell layer):

- Comfortable snow boots: You need to evaluate different factors like weight and insulation. If it is a hiking expedition you may need comfortable and light boots, which could mean less insulated, but if you are using skis or dogs sledding, you may choose a heavier option with more insulation. In case of extreme low temperature or a camp of many days, *overboots* may be necessary.
- Waterproof pants and jacket: This will be the first protection from snow. In case of extremely low temperatures and camps of many days, you may need a one piece (overall) or two pieces (pant and jacket) *snowsuit*.
- Winter gloves: Waterproof gloves over the wool gloves from the first layer, will complete the necessary insulation.

Rain Gear

Be ready for bad weather on your backpacking trip by bringing along a poncho. If there is a many days camp, to include rain pants may be a good idea. In a pinch, you can use a garbage bag as a raincoat by cutting a hole in the bottom, turning it over, and poking your head through the hole. A slit along each seam on the side will make arm holes. It will not cover your head like that, but it will keep the rest of you dry.

3. Know the principles in selecting a good quality backpack. In an emergency, what might be used in place of a backpack?

A backpack suited for backpacking will have a hip strap on it that fastens around the hips. The shoulder straps will carry a small percentage of the weight as well, but they are really intended to keep the backpack from tipping off.

Backpacking backpacks come in two basic designs: with an **internal** or an **external frame**.

- **The external frame backpack** has a rigid frame made from aluminum, plastic, or both. The pack itself attaches to the frame, and the frame is attached to the body via shoulder and hip straps. The frame holds the pack away from the back so that air may circulate back there, making it backpack cooler to carry. The downside of this option is that the body tends to twist and flex as a hiker moves, and the frame resists this. These kind of backpacks are less frequent every year.

- **The internal frame backpack** drapes over the back. It gets its structure from an internal frame and the gear placed inside it. This allows this backpack to flex and move as the body does, making it generally more comfortable to carry. This backpack uses foam in the straps to add more comfort. There are two basic types of foam: open-cell foam, and closed-cell foam. Open cell foam is highly compressible. While this may add comfort in some places, it should not be used in the straps. In the straps, the foam compresses too much, leaving the webbing to dig into the shoulders. Closed cell foam compresses much less than open-cell foam, and is therefore preferred in the straps. You can easily tell the difference by squeezing the padding. If it compresses to about a quarter its original thickness, it is open-cell foam.
    - Beyond the system (with internal or external frame), the bodies of the backpacks are more or less similar, however, the quality of the shoulder and hip straps will determine a big part of the comfort and performance of the backpack.

- It is possible to mention a third option that is getting renown: **the ultralight backpack**. Basically, it is a minimalist backpack, very light, without frame or accessories. It was created for a style of backpacking that emphasizes carrying the lightest and simplest gear safely possible for a given trip. If loaded with weight as a regular backpack, it may be uncomfortable. It is not as durable as a regular backpack.

- Regarding the **loading capacity**, between 50 to 70 liters size should be enough. Even for extreme backpacking expeditions. Less than 50 liters may be appropriate for a day hiking, and larger than 70 may be a big temptation to keep loading equipment that may not be necessary, just because "there is still space".
- **The right size**: Not every 65 liters backpack (as an example) will fit correctly in a person. The height of a person will define the distance between the shoulders straps and the hip straps. Some models are able to adjust this distance, for others you need to try them beforehand.
- In an emergency, you can toss your gear into a blanket, gather the corners, and throw it over your shoulders. Another option would be to stuff your gear into a closed sleeping bag and sling that over your shoulders. Either of these solutions is obviously going to be far inferior to even the least adequate backpack though, so this substitution should be reserved for only emergencies.

4. Know the essential items to be taken on a backpack trip.

The key word in this phrase is ESSENTIAL. Do you really need it? Are you really going to use it? What would be the worst scenario if you don't take it with you?
With the experience, we will learn to adjust our list to what is absolutely necessary, because you don't want to carry useless weight for several miles, and you can't abandon it on the trail.
As a general principle, the less the best, and in order to accomplish this, you need as much information as possible about the place (geography), the team (physical capacity and experience), and especially the weather (reliable weather forecast). If you need a number, aim for 5% to 10% of your own weight as the goal for your backpack weight. With intensive training, you may carry up to 30% or even more, but the goal of the activity is to connect with God and enjoy the hike.

Let's review a list of equipment following a possible order for packing:

- ✓ **Backpack** (review point #3)
- ✓ **A big plastic bag inside the backpack**: this is a very light item that will prevent your equipment from getting wet even if your backpack falls into the water.
- ✓ **Sleeping bag** (review point #5): The heavier objects should be packed over the shoulders against the back, and the lighter ones in the bottom of the backpack. Considering the relation weight-size, the sleeping bag may be the lighter object for square inch.
- ✓ **Sleeping pad** (review point #5): If small enough, the sleeping pad should follow the sleeping bag in the backpack.
- ✓ **Sleeping bag liner:** This layer will increase the temperature of a sleeping bag in low temperatures and could replace the sleeping bag at high temperatures.
- ✓ **Sleeping clothes:** The sleeping equipment should be will be at the bottom of the backpack because it probably will be the last equipment you will need.

  For high temperatures:
  - Regular **pajamas** will be appropriate.
  - **Cotton socks**.

  For low temperatures:
  - **Long underwear** (shirt and pants), dry and clean, that should be used only to sleep. Good materials for this are merino wool (or smart wool), regular wool, or thermal fabric.
  - **Thick wool socks** (not synthetic)
  - **Fleece or wool ski mask**: Even if the body does not lose most of its heat through the head, which is a popular myth, the head is the body part most exposed to cold in a sleeping bag.
  - **Wool gloves** (not synthetic)
  - 💡 Sleeping clothes for low temperatures are similar to the first layer during the hike in this weather condition.
- ✓ **Extra clothes:** Beyond the comfort, fresh clothes will help us regulate our body temperature. Include one extra **shirt**, one pair of **socks**, and one **underwear** by day. This is aside from the sleeping clothes and to travel from your home to the base camp. Extra pants, extra jackets, and extra boots are optional, but in a normal hiking, you will probably not need them.
  - 💡 When safe, a quick bath in a river or a creek will stimulate blood circulation, help us to recover and to sleep better. Even if the water is cold, this is a common practice among professional athletes (cryotherapy) and also in different cultures in northern countries. Bring your **swimwear**.

- ✓ **Mess kit**: Mess kits can bring multiple items that are unnecessary, just bring what is 100% essential. Plastic kits are lighter than metallic.

- ✓ **Meals**: Keep it simple. It would be nice to have a single menu, but the reality is that different peoples have different diets due to different reasons. With this in mind and to avoid issues, each participant should bring its own favorite **dehydrated food** for breakfast, lunch, and supper. Also trail mix, energy bars or fruit **for the trail**.
  - Consider that commercial dehydrated food packages may include more than one portion per unit.
  - Keep all your meals in a Ziploc bag with your name on it, in that way it will be easier to store it in a hanging bag to prevent the visit of wild animals.
- ✓ **Water for the trail**: Unless the totality of your hiking occurs beside a water source, you will need water for the trail. Different people drink a different amount of water. A bottle of 16.9 fl. oz. (500ml) of water will be enough for some people, others will need 3.
  - Consider the options to refill during the trail.
  - Even if maybe are not very popular, rehydration salts are a good option to recover electrolytes. You may add them to the water to prevent dehydration.
  - A very useful accessory popular among backpackers is the water bag (hydration bladders). Many backpacks bring compartments for this accessory and to drink from it is easy while walking. The negative part is that it will take time to access it for refilling.

At hand items:

- ✓ **Water filter**: The best method to purify water are all the methods together. Filtering, boiling, chemical purification, etc. The trend in trails seems to be compact water filters. These are light, quick, and easy to use, even on the go. Ideally, each participant should bring one. Other options are welcome, but considering that may take longer to complete the purification process.

- ✓ **Cellphone**: Unless there is an exam on the Orienteering honor, the GPS in a smartphone will be the easiest and safest way to lead the expedition.
  - At the base camp, propose to participants rules on the use of cell phones.
    - An option would be to keep them in Airplane mode, just to take photos and videos.
    - Even this could be discussed if the event brings their own photographers.
    - Some people will choose to leave their phones at the base camp to avoid the phone weight (plus extra battery) and connect 100% to nature. Statistics and researches show that young adults can survive 3 days without a screen. ☺

- **For organizers**: 1 smartphone for the leader that guide and 1 or 2 backup phones, should be loaded with maps (to navigate without offline), the chosen route, and different alternatives. This needs to be prepared weeks before the event.
  - Use apps like ViewRanger or any other that will allow you to create your own route and following it with the GPS, even being offline.
  - If the trail is well signalized, keep the phone off and just turn it on a couple of times to check the progress of the expedition.
  - Bring an extra battery to recharge the phone for the trail back.
  - Keep the use of these phones exclusively for navigation and emergencies.

- ✓ **Multi-tools**: its blade and pliers may be useful in different situations. Remember avoid taking it in your hand luggage on a flight.
- ✓ **Flashlight**: A good option is a headlamp in order to keep your hands free all the time.
  - If you don't have your phone with you (to use as a backup flashlight), you need to bring extra batteries, especially in winter or if the event includes night activities.

- ✓ **Rain gear** (review point #2)
- ✓ **Toiletries:**
  - Tiny **paste** and **toothbrush**.
  - Unscented **toilet paper** for a weekend.
  - Tiny biodegradable **soap** or biodegradable wipes.
- ✓ **Snacks**: Trail mix, energy bars or fruit for the trail. Try to avoid salty chips or candies because these will accelerate your dehydration.

- ✓ **Cocoa butter lip balm**.
- ✓ **Personal medications**.
- ✓ **Emergency whistle**: SOS is the International Morse code distress signal. In an emergency situation, use your whistle like this: (…---…) Three short whistles, three long and three shorts again, without gaps in between. A regular plastic whistle will do the job.
- ✓ **Emergency blanket**: In case of hypothermia.
- ✓ **10 feet rope**: For multiple purposes, from fixing a backpack and prepare a shelter, to hang food. It doesn't need to be thick.
- ✓ **Sunscreen and sunglasses** *(Optional)*

For the team (Items that only assigned people will bring):

- ✓ **Tent or tarp shelter**: This is an important decision. The pros and cons can be discussed but at the end of the day, every participant will have its own preference. The main difference is the weight. A 2 person tent will weight around 3 lbs., a tarp for a 4 person shelter may weight 1 lbs. Some people prefer the bugs protection from the tent, some others appreciate an open space and to sleep watching the sky.

  - A third option would be a hammock. Again, this is personal, but a recommendation would be to try sleeping on the hammock BEFORE the expedition.
  - Also, consider the campground characteristics. Are there trees for a hammock? If so, how many hammocks are they bringing? There will be enough trees?
    - 💡 **For organizers**: **Make sure that every participant has a place in a tent or a shelter. You should check one by one and make a map/list.**
- ✓ **Cooking stove**: There are basically two options in backpacking stoves: Stoves for canister fuel and stoves for liquid fuel. Canister fuel stoves tend to be less expensive and easier to use than a liquid fuel stove, but do not offer the same versatility for different weather conditions and fuel variety. Canister stoves, in most cases, are also not compatible with windscreens or heat reflectors. Liquid fuel stoves tend to be a bit more expensive and a little more difficult to use due to the priming and maintenance needed. However, the extra cost and effort may prove worth it as a liquid fuel stove can perform in various conditions.

    - 💡 A canister stove provably will be more than enough for a weekend or two a year. For extensive use and cold weather conditions, a liquid fuel stove may be more appropriate.

      How much fuel? Multiply the number of people in your group for the number of hot meals. This number will give you a rough sense of about how many fluid ounces or liters of water you'll need to boil.
      Do you need to melt snow or make hot water bottles for your sleeping bag? Will you be making freeze-dried meals or cooking regular food?
      Practice ahead of time so you learn how much fuel you use doing all these activities and you can estimate how much you need to bring. Also, remember that you can't bring fuel on an airplane. If you're flying, you'll need to plan on buying it at your destination.

- Consider splitting the equipment among the participants to split the weight.
- Consider to bringing one stove every 3 or 4 participants.
- Double check at the base camp that there is enough fuel for the activity.
- Ask the participants who can bring this equipment, and bring only the necessary number.

✓ **Cooking pot**: Be efficient by bringing only one pot for each stove. That pot should have enough capacity to boil water for 3 or 4 meals at once (according to the number of participants assigned for each stove).

✓ **First aid kit**: If the group is of 10 people, 2 complete first aid kits will be more useful than 10 small kits carrying Band-Aids only.
- It is always a good idea to invite a nurse or health professional to manage the first aids in the expedition.
- This professional needs to be a regular participant.

✓ **Compact shovel**: like a garden trowel. It could be from plastic or metal.
- At least 100 feet from any water source, find a convenient object to hide behind, then dig a hole that's at least six inches deep. Keep the dirt you dig out just off to one side, then bury your poop when you're done.

✓ **Stove starter**: Magnesium flint fire starter, or matches in a waterproof case, or a lighter. All of them will ignite the fire, however, if raining or windy, the first one could be the best option. Be careful and avoid taking it in your hand luggage on a flight.

✓ **Insect repellents**: Any with more than 10% of DEET content. Remember it is to share.

✓ **Bear spray**. This is mandatory in areas with bears presence.

✓ **Garbage hanging bags** and 25 feet of **rope** for hanging food and garbage.

5. What kind of sleeping bag and pad are best for your camping area? Know at least three kinds of each that are available.

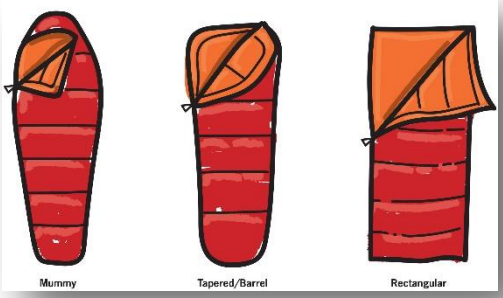
Sleeping Bag Shape[1]

Sleeping bags keep you warm by trapping and holding a layer of "dead" (non-circulating) air next to your body. Your body heat warms this dead air, and the bag forms a barrier between it and the colder ground or outside air. The less air space there is to heat, the faster you warm up and stay warm.

✓ Rectangular: Many camping bags are designed with a rectangular shape for maximum comfort and roominess. Camping bags are roomier than backpacking bags for greater comfort, with the tradeoff being a less efficient warming of this dead space.

[1] https://www.rei.com/learn/expert-advice/sleeping-bag.html

- ✓ Semi-rectangular (or barrel-shaped): These can be used for both camping and backpacking. Their tapered design offers greater warmth and efficiency than rectangular bags, but they're still plenty roomy for a comfortable night's sleep. They are popular with larger-frame backpackers or restless sleepers who don't like the tight fit of a mummy bag.
- ✓ Mummy: Mummy-shaped bags have narrow shoulder and hip widths in order to maximize warmth and reduce weight. However, some people have trouble getting comfortable in these more restrictive bags. This sleeping bag shape usually is the lightest and the most efficient for backpacking.



Sleeping Bag Insulation Type

- ✓ Synthetic Insulation: Many campers choose synthetic insulation (versus down insulation) for its strong overall performance and friendly price tag. Typically made of polyester, a synthetic fill has many advantages: It's quick-drying and insulates even if it gets wet. It's less expensive than down-filled bags, it's durable and it's non-allergenic. However, synthetic insulation doesn't pack down as small as down and usually are heavier, so it's less versatile if you plan to use your bag for backpacking also.
- ✓ Goose-Down Insulation: It provides a more durable, light, and compressible alternative to synthetic fill but features a slightly higher price tag.
- ✓ Water-Resistant Down Insulation: The downside of down is that it loses its insulating power when it gets wet. To help alleviate the problem, some sleeping bags feature down that has been treated to protect the feathers from moisture.

Sleeping Bag Temperature Rating

A sleeping bag's temperature rating identifies the lowest temperature at which a bag is intended to keep the average sleeper warm. When a bag is described as a "20-degree bag", it means that most users should remain comfortable if the air temperature drops no lower than 20°F. These ratings assume that the sleeper is wearing a layer of long underwear and using a sleeping pad under the bag. This is called COMFORT range temperature and it is the number you need to pay attention to. EXTREME range (or RISK RANGE) temperature means that in this range, a

strong sensation of cold has to be expected. There is risk of health damage by hypothermia. A sleeping bag should only be used in this range in an emergency.
Metabolism varies from person to person, and sleeping bag temperature ratings vary from one manufacturer to the next. Use these ratings as a guide only—not a guarantee.

Sleeping bags are typically categorized like this:

Bag Type	**Temperature Rating (°F)**
Summer Season	+35° and higher
3-Season	+10° to +35°
Winter	+10° and lower

Sleeping bag liner

Slip a soft sleeping bag liner (or a fleece blanket) inside your bag to minimize wear and keep the bag clean. Layering in a liner adds 8° to 15°F of warmth, allowing a single bag to serve you in a wider variety of temperatures. Camping in very warm weather? Skip the bag and just sleep in the liner.

- If too hot, you can always open the sleeping bag, but if you know about that night temperature in advance, you can sew a light sleeping bag with a regular twin sheet.
- Storing your bag: Do not leave it squashed into its outer bag. Hang it up on a hanger to let the bag breathe when not in use.

Sleeping Pads

Sleeping pads can perform two main functions:

1. Provide cushioning
2. Provide insulation between the sleeper and the ground.

Types of Sleeping Pads[2]

✓ Air Pads: Air pads have gotten lighter than ever and are ideal for backpacking. Most air pads now contain insulation or reflective materials to increase warmth. You'll need to inflate them, usually with your breath (most can be inflated in 3 minutes or less). However, some models feature a built-in hand pump and some brands offer a lightweight bag-style external hand pump.
Pros: Air pads are incredibly comfortable and lightweight and the most compact type of pad when packed.

[2] https://www.rei.com/learn/expert-advice/sleeping-pads.html#TypesofSleepingPads

Cons: Air pads tend to be more expensive the lighter and more compact they are. They can be punctured or ripped (this is most common when sharing a tent with dogs), but field repairs are not difficult.

- Air pads have a tendency to feel as if they are losing air if the outside temperature fluctuates, so try to blow them up right before you go to sleep.

✓ Self-Inflating Pads: Self-inflating pads offer a combination of open-cell foam insulation and air. Open the pad's valve and air fills the chambers automatically. Some are specifically designed for backpacking and can be folded lengthwise and then rolled up to fit inside your pack.

Pros: They're comfortable and compact, they offer excellent insulation, and you can adjust their firmness by adding or releasing air.

Cons: They're heavier and more expensive than simple foam pads, and not as compact as air pads. They can be punctured or ripped, though field repairs are not difficult.

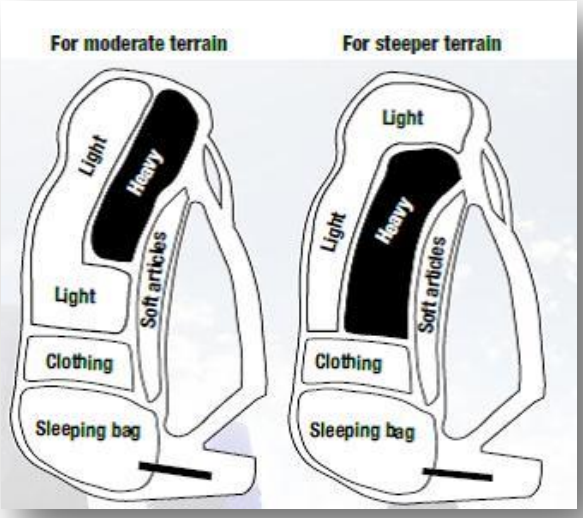
✓ Closed-Cell Foam Pads: These basic backpacking pads are made of dense foam filled with tiny closed air cells. They're usually rolled up or folded in a Z formation.

Pros: They're lightweight, inexpensive, durable, and offer good insulation. You don't need to worry about punctures or leaks. They can also double as sit pads in camp.

Cons: They are less comfortable. They're relatively stiff and firm, so they tend to be bulky.

6. Know how to pack a pack properly.

- Lay out all your gear where you can see it, next to your pack.
- Look for empty spaces in your gear - for instance, there may be room inside your cooking pot. Put any small items that will fit inside that to conserve space. Look for other "hidden" space as well.
- Follow the order of the list in point #4. Double check that you have everything you need, what is ESSENTIAL, and that you are leaving everything else.
- Load the heavy items on top, inside the backpack, placing them as close to

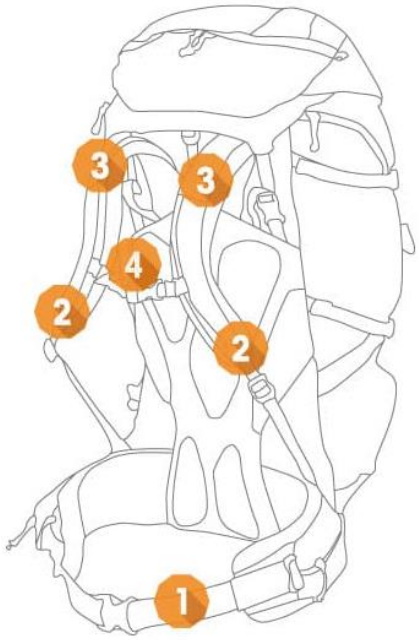


your back as you can. This will shift the center of gravity forward which will help your balance and improve comfort.

- Put the things you'll need on the trail (like water, trail mix, cellphone, etc.) in the outer pockets where you can get to them. If they're hard to get to, you'll be unlikely to use them.
- Try to pack everything INSIDE the backpack. Avoid hanging items outside the backpack, especially loose items.
- The backpack shape should become more a cylinder going up than to the sides or backward.

How to adjust a loaded backpack[3]

- Step 1. Fasten and tighten the hipbelt. Make sure the padded hipbelt is sitting on top of your hips, not around them.
- Step 2. Tighten shoulder straps. Pull straps straight down to tighten. Straps should be tight, but should not be carrying most of the weight.
- Step 3. Adjust load lifters. Tighten the load lifter straps until they are at a 45° angle to the backpack's body. This pulls the weight of your pack closer to your body.
- Step 4 Fasten the sternum strap. Tighten the sternum strap so it takes some of the stress off of your shoulders. It should be set about an inch below your collarbones.
- Step **5**. Make final adjustments for a comfortable fit. You may need to loosen the shoulder straps, tighten the hipbelt or make other small adjustments as you hike to ensure a comfortable fit.



7. What types of food are best for backpacking? Visit a grocery store and list the foods found there that are suitable for backpacking. With your instructor, do the following:

The best type of food to take backpacking is dehydrated food, as it is very lightweight, compact, and nutritious. You can buy food pre-packaged or you can dehydrate it yourself. For more details on how to dehydrating your own food, see the Food Drying honor or search different options on the Internet, like the Backpacking Chef website.

[3] https://www.sierratradingpost.com/blog/hiking/how-to-adjust-a-backpack/

a. Prepare a menu for a weekend backpack trip using foods obtained from a grocery store.

To prepare a menu, first you need to decide between the main two meal options: Prepared at home or pre-packaged food. Visit grocery websites, specially related to outdoor activities, to explore different options.
You can buy prepared dehydrated foods for backpacking at an outdoor outfitter.

Here are some points to consider about pre-packaged dehydrated food:

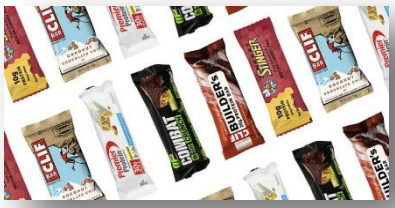
- ✓ Pay attention to the number of servings and the fact that, usually, dehydrated food packages can be zipped, which means that you can use one package for two different meals.
- ✓ Also, you can share your package with somebody else. The idea is to prevent extra packages in your backpack that nobody will use.
- ✓ Read the instructions in advance on how to hydrate that specific food.
- ✓ Prepare these type of meals takes around 10 minutes after pouring the boiling water on them, be patient for a better outcome.

Also, you can get dehydrated food at a regular grocery store. Here's a short list of options:

- ✓ Instant mashed potatoes
- ✓ Instant oatmeal
- ✓ Quick-cooking rice
- ✓ Powdered milk
- ✓ Powdered eggs
- ✓ Pasta
- ✓ Nuts and peanuts
- ✓ Dry soup mixes
- ✓ Granola
- ✓ Dried fruits (apples, apricots, banana, mango, raisins, etc.)
- ✓ Flour, mixed with other dry ingredients to make pancakes or biscuits

  - Keep it simple, if possible try the food at home before, to see how you feel about it and prevent any surprise. Do not make experiments, you should eat food that you are familiar with.
  - Consider that some menus can affect the quantity of fuel needed to cook during the activity.
  - Eat healthy food, avoid salty snacks, candies, sodas, energy drinks, etc.

A third, important and popular alternative is energy bars or meal bars.



There are several brands and flavors for every possible diet. For a long hiking day, a meal bar can replace the time needed to unpack the gas, stove, boil water and cooking dehydrated food, for example, for lunch.

b. Learn the techniques of measuring, packaging, and labeling backpack foods for your trip.

Once you've bought the food you plan to eat on your backpacking trip, you should consider that food packaging is designed to catch your eye at the grocery store and to do this, sometimes it does not come in space-efficient sizes. If this is the case, empty that food and repack it into sealable plastic bags (such as Ziploc bags).

Make up a menu before you do this, and pack each meal into a separate bag.

Then clearly label the bag with a permanent marker or a mailing label. The label should be legible even in dim light - you never know when you'll have to cook your food in the dark. This is a lot of work, but it is well worth it when the time comes for cooking.

c. Make a trail snack.

There are dozens of recipes for trail mix, and every seasoned backpacker has a favorite. Choose some of the items from the list below, mix them together, and put them in a baggie:

- ✓ Raisins
- ✓ Peanuts
- ✓ Pretzels
- ✓ Chocolate chips
- ✓ Dried fruit
- ✓ Shelled sunflower seeds
- ✓ Etc.

💡 Put the baggie in a place easy to reach in your backpack, so you can grab it while you hike. Don't worry about getting low-calories items. You'll be doing enough hiking (carrying a backpack) to burn a lot of calories.

- If you are planning to share, keep in mind what is in the baggie, due that the most common allergies are related to milk products, eggs, tree nuts, peanuts, wheat, and soy, leaving dry fruits as the alternative commonly less related to allergies. Although fruit allergies are relatively common, most people react only after eating or touching fresh, raw fruits, since the drying process alters the proteins.

8. Know the prevention, symptoms of, and the first aid for:

a. Sunburn [4]

Sunburn is from over-exposure to the harmful ultraviolet rays of the sun. While the symptoms are usually temporary (such as red skin that is painful to the touch), the skin damage is often permanent and can have serious long-term health effects, including skin cancer.

- There is no such thing as a "healthy tan." Unprotected sun exposure causes premature aging of the skin.
- Sun exposure can cause first and second-degree burns.
- Skin cancer usually appears in adulthood but is caused by sun exposure and sunburns that began as early as childhood. You can help prevent skin cancer by protecting your skin.

Factors that make sunburn more likely:

- Infants and children are especially sensitive to the burning effects of the sun.
- People with light skin are much more likely to have sun damage, but darker-skinned people, including people of any ethnicity, can also be affected.
- The sun's rays are strongest during the hours of 10:00 a.m. to 4:00 p.m. The sun's rays are also stronger at higher altitudes (mountains) and lower latitudes (closer to the equator). Reflection off water, sand, or snow can intensify the sun's burning rays.
- Sun lamps can cause severe sunburn.
- Some medications (such as the antibiotic doxycycline) can make you more susceptible to sunburn.

First Aid

- Try taking a cool bath or shower. Or place wet, cold washcloths on the burn for 10 to 15 minutes, several times a day. You can mix baking soda in the water to help relieve the pain.

[4] http://www.who.int/uv/faq/uvhealtfac/en/index2.html

- Apply a soothing lotion to the skin.
- Aloe gel is a common household remedy for sunburns. Aloe contains active compounds that help stop pain and inflammation of the skin.
- An over-the-counter pain medication, such as acetaminophen or ibuprofen may be helpful.

Do Not

- DO NOT apply petroleum jelly, benzocaine, lidocaine, or butter to the sunburn. They make the symptoms worse and can prevent healing.
- DO NOT wash burned skin with harsh soap.

b. Blisters

Blister Prevention

When it comes to blisters on the feet, it is always best to avoid them. Blisters are caused when your foot rubs against something repeatedly. Blisters can be avoided by wearing footwear and socks that fit you correctly. Also, be sure to break your footwear in before embarking on a long hike. Finally, dry socks will prevent blisters, so pack an extra pair for the trail.

Blister Treatment

Try not to break the blister open. It is far better if the skin continues to cover the injury, as this will keep out germs and prevent infection. If you must open the blister in order to be able to walk, do it as follows.

1. Clean the affected area.
2. Sterilize a needle
3. Pierce the blister in several places around its perimeter to drain the fluid, but try to leave as much of the skin intact as possible.
4. Wipe the injury down with rubbing alcohol.
5. Cover a small blister with an adhesive bandage.
6. Cover a large blister with gauze and adhesive tape.
7. Be sure to allow the blister to breathe.

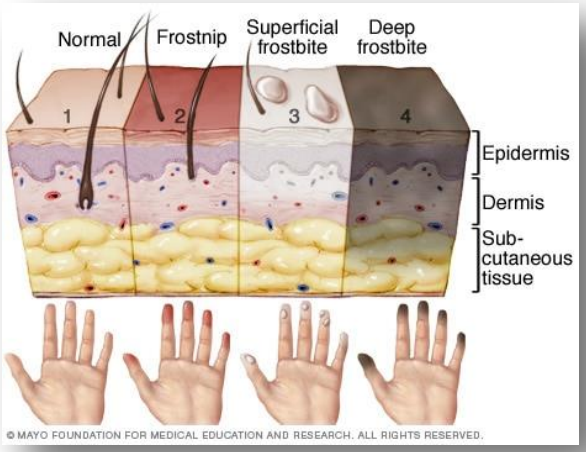
c. Frostbite

Frostbite occurs when ice crystals form in the skin or deeper tissues after exposure to a temperature of 32 °F (0 °C) or lower. Depending upon the temperature, altitude, and wind speed, the exposure time necessary to produce frostbite varies from a few minutes to several hours.

The areas most commonly affected are the face and extremities. The symptoms of frostbite are progressive. Victims generally incur this injury without being acutely aware of it. Initially, the affected skin reddens and there is an uncomfortable coldness. With continued heat loss, there is a numbness of the affected area due to reduced circulation. As ice crystals form, the frozen extremity appears white, yellow-white, or

mottled blue-white, and is cold, hard, and insensitive to touch or pressure. Frostbite is classified as superficial or deep, depending on the extent of tissue involvement.

Superficial Frostbite[5]



In superficial frostbite, the surface of the skin will feel hard, but the underlying tissue will be soft, allowing it to move over bony ridges. This is evidence that only the skin and the region just below it are involved. General treatment for superficial frostbite is as follows:

1. Find a shelter as soon as possible.
2. If possible, do not walk on frostbitten feet or toes. Walking increases the damage.
3. Rewarm hands by placing them under somebody else's armpits, against the abdomen, or between the legs.
4. Rewarm feet by placing them in somebody else's armpit, against the abdomen, or between the legs.
5. GRADUALLY rewarm the affected area by warm (not hot) water immersion, skin-to-skin contact, or hot water bottles.
6. Don't rub the frostbitten area with snow or massage it at all. This can cause more damage.
7. Don't use a heating pad, the heat of a stove, or fireplace for warming. Since frostbite makes an area numb, you could burn it.

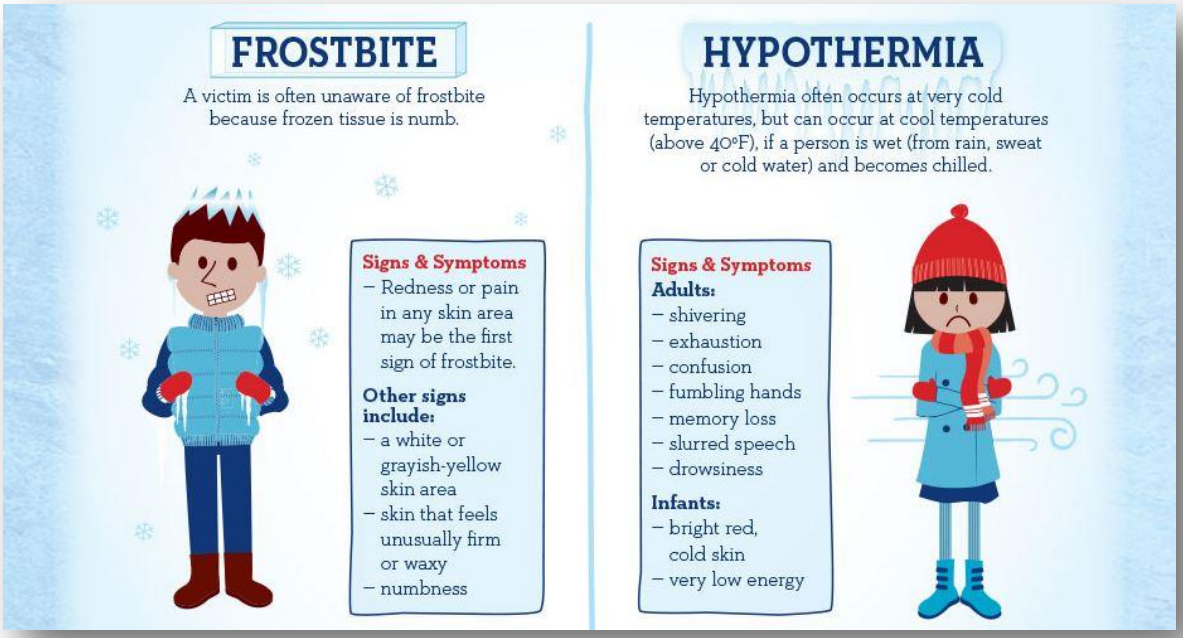
Deep Frostbite

In deep frostbite, the freezing reaches into the deep tissue layers. There are ice crystals in the entire thickness of the extremity. The skin will not move over bony ridges and will feel hard and solid. The objectives of treatment are to protect the frozen areas from further injury, to rapidly thaw the affected area, and to be prepared to respond to circulatory or respiratory difficulties.

1. Carefully assess and treat any other injuries first. Constantly monitor the victim's pulse and breathing since respiratory and heart problems can develop rapidly. Be prepared to administer CPR if necessary.
2. Do not attempt to thaw the frostbitten area if there is a possibility of refreezing. It is better to leave the part frozen until the victim arrives at a medical treatment facility equipped for long-term care. Refreezing of a thawed extremity causes severe and disabling damage.

[5] https://medlineplus.gov/frostbite.html

3. Treat all victims with injuries to the feet or legs as litter patients. When this is not possible, the victim may walk on the frozen limb, since it has been proven that walking will not lessen the chances of successful treatment as long as the limb has not thawed out.
4. When adequate protection from further cold exposure is available, prepare the victim for rewarming by removing all constricting clothing such as gloves, boots, and socks. Boots and clothing frozen on the body should be thawed by warm-water immersion before removal.
5. Rapidly rewarm frozen areas by immersion in water at 100 °F to 105 °F (38 °C to 41 °C). Keep the water warm by adding fresh hot water, but do not pour the water directly on the injured area. Ensure that the frozen area is completely surrounded by water; do not let it rest on the side or bottom of the tub.
6. After rewarming has been completed, pat the area dry with a soft towel. Later it will swell, sting, and burn. Blisters may develop. These should be protected from breaking. Avoid pressure, rubbing, or constriction of the injured area. Keep the skin dry with sterile dressings and place cotton between the toes and fingers to prevent them from sticking together.
7. Protect the tissue from additional injury and keep it as clean as possible (use sterile dressings and linen).
8. Try to improve the general morale and comfort of the victim by giving hot, stimulating fluids such as tea or chocolate. Do not allow the victim to smoke or use alcoholic beverages while being treated.
9. Transfer to a medical treatment facility as soon as possible. During transportation, slightly elevate the frostbitten area and keep the victim and the injured area warm. Do not allow the injured area to be exposed to the cold.



d. Hypothermia

Hypothermia is caused by continued exposure to low or rapidly falling temperatures, cold moisture, snow, or ice. Those exposed to low temperatures for extended periods may suffer ill effects, even if they are well protected by clothing, because cold affects the body systems slowly, almost without notice. As the body cools, there are several stages of progressive discomfort and disability. The first symptom is shivering, which is an attempt to generate heat by repeated contractions of surface muscles. This is followed by a feeling of listlessness, indifference, and drowsiness. Unconsciousness can follow quickly. Shock becomes evident as the victim's eyes assume a glassy stare, respiration becomes slow and shallow, and the pulse is weak or absent. As the body temperature drops even lower, peripheral circulation decreases and the extremities become susceptible to freezing. Finally, death results as the core temperature of the body approaches 80 °F (27 °C). The steps for treatment of hypothermia are as follows:

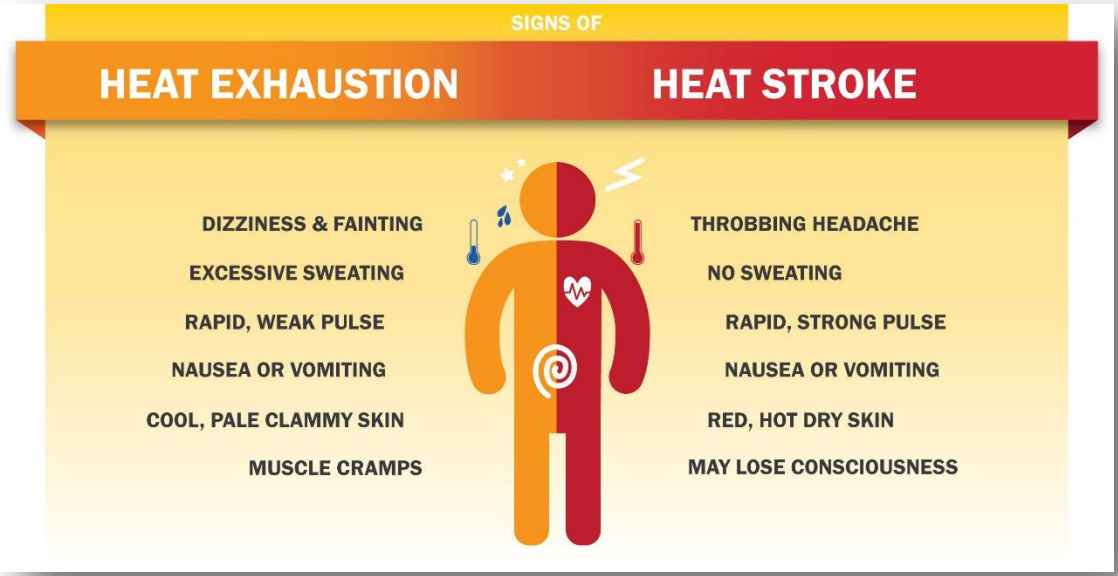
1. Carefully observe respiratory effort and heartbeat; CPR may be required while the warming process is underway.
2. Rewarm the victim as soon as possible. It may be necessary to treat other injuries before the victim can be moved to a warmer place. Severe bleeding must be controlled and fractures splinted over clothing before the victim is moved.
3. Replace wet or frozen clothing and remove anything that constricts the victim's arms, legs, or fingers, interfering with circulation.
4. If the victim is inside a warm place and is conscious, the most effective method of warming is immersion in a tub of warm (100° to 105 °F or 38° to 41 °C) water. The water should be warm to the elbow - never hot. Observe closely for signs of respiratory failure and cardiac arrest (rewarming shock). Rewarming shock can be minimized by warming the body trunk before the limbs to prevent vasodilation in the extremities with subsequent shock due to blood volume shifts.
5. If a tub is not available, apply external heat to both sides of the victim. Natural body heat (skin to skin) from two rescuers is the best method. This is called "buddy warming." If this is not practical, use hot water bottles or an electric rewarming blanket. Do not place the blanket or bottles next to bare skin, however, and be careful to monitor the temperature of the artificial heat source, since the victim is very susceptible to burn injury. Because the victim is unable to generate adequate body heat, placement under a blanket or in a sleeping bag is not sufficient treatment.
6. If the victim is conscious, give warm liquids to drink. Never give alcoholic beverages or allow the victim to smoke.
7. Dry the victim thoroughly if water is used for rewarming.
8. As soon as possible, transfer the victim to a definitive care facility. Be alert for the signs of respiratory and cardiac arrest during transfer, and keep the victim warm.

e. Heat stroke

Heat stroke is a less common but far more serious condition than heat exhaustion since it carries a 20 percent fatality rate.

The main feature of heatstroke is the extremely high body temperature, 105 °F (41 °C) or higher, that accompanies it.
In heatstroke, the victim has a breakdown of the sweating mechanism and is unable to eliminate excessive body heat built up while exercising. If the body temperature rises too high, the brain, kidneys, and liver may be permanently damaged.
Sometimes the victim may have preliminary symptoms, such as headache, nausea, dizziness, or weakness. Breathing will be deep and rapid at first, later shallow and almost absent. Usually, the victim will be flushed, very dry, and very hot. The pupils will be constricted (pinpoint) and the pulse fast and strong.

When you provide first aid for heatstroke, remember that this is a true life-and-death emergency. The longer the victim remains overheated, the higher the chances of irreversible body damage or even death occurring. First aid treatment for heatstroke is designed to reduce body heat. Reduce body heat immediately by dousing the body with cold water, or applying wet, cold towels to the whole body. Move the victim to the coolest possible place and remove as much clothing as possible. Maintain an open airway. Place the victim on his/her back, with the head and shoulders slightly raised. If cold packs are available, place them under the arms, around the neck, at the ankles, and in the groin. Expose the victim to a fan or air-conditioner since drafts will promote cooling. Immersing the victim in a cold water bath is also effective. Give the victim (if conscious) cool water to drink. Do not give any hot drinks or stimulants. Get the victim



to a medical facility as soon as possible. Cooling measures must be continued while the victim is being transported.

f. Heat exhaustion

Heat exhaustion is the most common condition caused by working or exercising in hot spaces. Heat exhaustion produces a serious disruption of blood flow to the brain, heart, and lungs. This causes the victim to experience weakness, dizziness, headache, loss of appetite, and nausea.
Signs and symptoms of heat exhaustion are similar to those of shock: the victim will appear ashen gray; the skin will be cold, moist, and clammy; and the pupils of the eyes may be dilated (enlarged). The vital (blood pressure, temperature, pulse, and respiration) signs usually are normal; however, the victim may have a weak pulse together with rapid and shallow breathing.

Body temperature may be below normal. You should treat heat exhaustion victims as if they were in shock. Loosen the clothing, apply cool wet cloths, move the victim to either a cool or an air-conditioned area, and fan the victim. Do not allow the person to become chilled. If the victim is conscious, administer a solution of 1 teaspoon of salt dissolved in a quart of cool water. If the victim vomits, do not give any more fluids. Transport the victim to a medical facility as soon as possible.

g. Snake bite First aid[6]

Of the estimated 6,000 to 8,000 poisonous snake bites that occur in the United States each year, there are only five to eight fatalities. The reason: Snakes don't want to waste their precious venom. They prefer to save it for something useful, like killing rodents they can then eat. Most human strikes are merely defensive in nature and leave behind just enough venom-the process is known as envenomization-to make you sick. Keep in mind that any amount of snake venom is life-threatening to young children. Parents who take children hiking should be especially cautious in snake country.

If you or someone in your party is struck by a poisonous snake, better safe than sorry: Get to a medical facility. Administering antivenin is the only successful treatment. Longtime folk remedies like giving the person whiskey or the old "cut-and-suck" method (slicing the bite with a knife and sucking out the poison with your mouth) only make the victim's condition worse.
For the hike out to the car, immobilize the bitten extremity with a splint, and if possible, carry the victim to the trailhead. If you can't carry the person, he'll have to hike out on his own. It takes at least 2 hours for the symptoms of envenomization to take effect. Watch for signs of shock (heavy sweating, clammy skin, shallow breathing), since the fear of having been bitten is often more dangerous than the bite.
For more information check this link.

[6] https://www.backpacker.com/survival/snake-bite-first-aid


The Truth About VENOMOUS SNAKEBITES in the USA
Venomous
There are 25 species of venomous snakes in the United States. Most are rare or hard to find.
Nonvenomous
There are over 100 species of nonvenomous snakes in the United States. Many can be found easily around populated areas
no Snakes
* There are no native snakes in either Alaska or Hawaii
© 2015 E. Nixon Shapiro
Bites
Each year, there are about 8,000 reported envenomations
Approx. 75% of all bites envenomate the victim.
25% of all bites involve no venom. These are called DRY BITES
Of those, there are only 5 fatalities
10x more people die from lightning strikes annually.
www.nixonmedicalmedia.com
Most fatal bites come from the Eastern or Western Diamondback
C. adamanteus
Copperhead bites make up the majority of reported snakebites
Copperhead venom is among the LEAST TOXIC of venomous snakes in the USA.
A. contortrix
Most Bites Occur
when trying to pick up or handle the snake
- or -
trying to kill the snake
alcohol is involved in 40% of snakebite cases.
In a recent study of S.C. Cottonmouths:
2 in 5 bit a false hand holding them
1 in 10 bit a false foot stepping on them
none bit a false leg standing next to them
When Bitten
Do NOT cut on the bite
Do NOT apply a tourniquet
Get the victim to a hospital IMMEDIATELY
REMEMBER:
"Snakes are first cowards then bluffers and last of all, warriors."
- Clifford Pope
so make sure to respect their space and avoid a bite.
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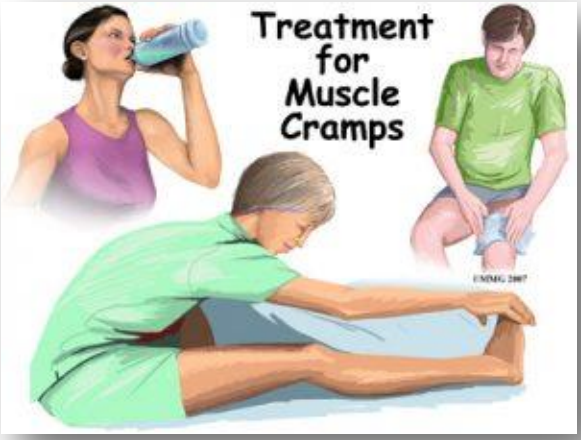
www.nixonmedicalmedia.com
most information from: http://snakesarelong.blogspot.com/2013/11/the-truth-about-snakebite.html

h. Cramps

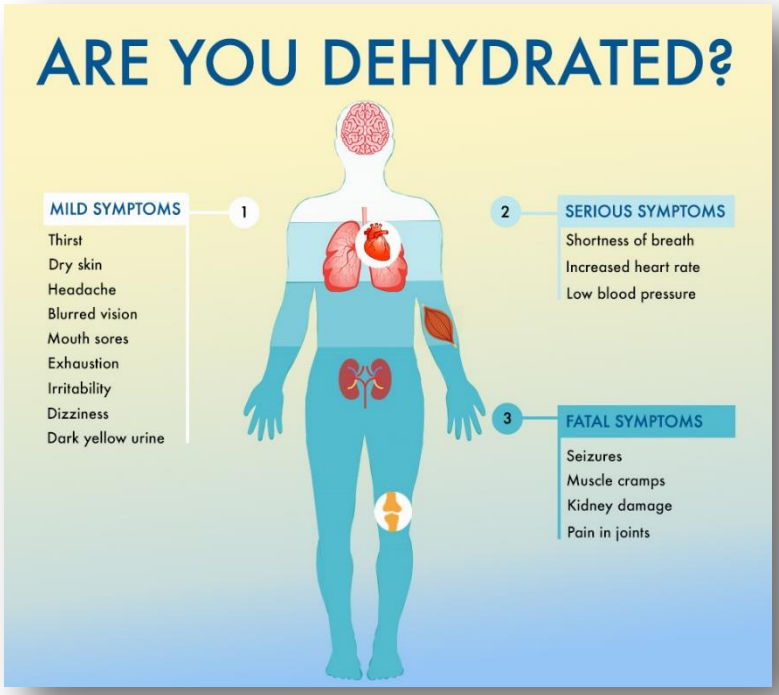


There are two basic causes of cramping. One is inadequate oxygenation of muscle, and the other is lack of water or salt. Cramps from poor oxygenation can be improved by rapid deep breathing, and stretching the muscle. Cramps from lack of salt and water can be treated by stretching the muscle, drinking water and eating salt. Pounding on the muscle can increase soreness.

What happens in a cramp is that lactic acid builds up because of normal anaerobic muscle metabolism. When the muscle burns sugar without enough oxygen, it makes lactic acid. The lactic acid finally becomes concentrated enough to trigger the contraction of the muscle. When the muscle lacks salt, the nerves firing the muscle are unable to recharge properly, causing a similar effect.

i. Dehydration

Dehydration is the depletion of water from the body. It can be prevented by drinking plenty of water, especially during periods of physical exertion. One to five percent dehydration will make you lose your appetite, become sleepy and nauseated, and begin to vomit. As dehydration goes up to 10 percent, dizziness results. You will have headaches, difficulty in breathing, tingling of the legs and arms caused by poor circulation, indistinct speech, and, finally, an inability to walk. Still, 10 percent dehydration generally causes no permanent ill effects. When dehydration exceeds 10 percent, you will become delirious, spastic, almost deaf, and barely able to see. The skin shrivels and becomes numb. At temperatures above 90 °F, dehydration over 15 percent is generally fatal. At 85° and less, the body can stand up to 25 percent dehydration. Dehydration is quickly cured by water—in fact, only water can cure it. When you are dehydrated, you don't have to worry about how much water you drink or how quickly you drink it, or if the water is warm or cool. Cold water, though, will upset the stomach. For more information check this link.



j. Hiking at Altitude (added for this material)[7]

High mountain ranges such as the Himalaya and Andes offer some of the most spectacular hiking opportunities on the planet. That being said, walking at high altitude brings with it certain inherent risks, the most common of which is altitude sickness, also known as acute mountain sickness (AMS). Whilst the dangers of AMS are very real, it is a malady which is almost entirely preventable, so long as some basic precautions are followed before and during your trek.

WHAT IS ALTITUDE SICKNESS?

Altitude sickness is the name given to the collection of symptoms which can occur, when a person attempts to ascend too quickly at altitudes above 2500 m (8202 ft).

Why does it happen?

As altitude increases, atmospheric pressure decreases. As a result, less oxygen is available to the body's tissues, which in turn means that the heart and lungs need to work overtime in order to compensate. If a person has ascended at such a rate that their body has not had sufficient time to acclimatize to the change in atmospheric conditions, altitude sickness may result.

Initial symptoms of AMS include headache, dizziness, nausea, shortness of breath, difficulty sleeping and extreme lethargy.

Advanced or severe symptoms include rapid pulse, irrational behavior, loss of balance and coordination, severe headache, vomiting and persistent cough.

[7] https://www.thehikinglife.com/health-safety/altitude/

PREVENTION OF AMS

The key is to acclimatize gradually. Keep in mind that there is no universal yardstick by which each and every hiker can gauge their tolerance to high altitude conditions. Everyone acclimatizes at different rates. If you take the necessary precautions and listen to your body, chances are you will be fine.

Upon Arrival

If you fly directly into a high altitude city, be sure to take it easy for the first few days. Gradually increase your exercise workload. Factor in some touristy activities that involve walking. Going straight from the airport to the start of your trek is potentially putting yourself at risk of AMS.

Hydration

- From the time you arrive at altitude drink at least 3 liters (0.8 gallon) of water per day. When you hit the trail, drink even more. The air is drier and thinner at altitude, however, due to cooler temperatures many hikers make the mistake of not drinking enough water.
- As the initial symptoms of AMS are similar to those of dehydration, people often assume they have AMS when in actual fact they are simply dehydrated. Either way, keep drinking. A good indicator as to whether or not you are sufficiently hydrated is your urine. The clearer the better.
- Note that both alcohol and caffeine increase dehydration. Limit your intake of both when hiking at high altitudes. This particularly holds true during the first few days of your hike.

Ascend Gradually

Don't overexert in the initial stages of your hike. Pace yourself. Aim at becoming progressively stronger as the trek continues.

Climb High, Sleep Low

Climb high, sleep low is the strategy by which you sleep at a lower elevation to which you have ascended during the day. It is said that when hiking above 3000 m (9843 ft), you should not increase your sleeping altitude (i.e. the altitude at which you make camp) by any more than 300 m (984 ft) per day. This is a conservative estimate, but considering the potential dangers of AMS, nonetheless represents a useful benchmark for people who are new to high altitude trekking. In the beginning, it is always better to err on the side of caution.

Treatment

If mild AMS symptoms occur:

- Don't ascend any higher.
- Drink lots of water (at least 4 liters (1 gallon) per day).
- If necessary, take a couple of ibuprofen or paracetamol for headache.
- Rest
- Once symptoms have subsided, which could take two to three days, it should be ok to start ascending again. Do so slowly and with awareness.

In case of severe AMS symptoms:

- Descend immediately (at least 500m).
- Seek medical attention ASAP.
- Note that if your symptoms are severe, you are beyond the point at which Diamox or any other medication (such as Dexamethasone) can provide relief. Your only option is to descend.

OTHER ALTITUDE ILLNESSES

Less common, but more serious forms of altitude illness occur when fluid accumulates on the lungs (High-Altitude Pulmonary edema or HAPE) and brain (High-Altitude Cerebral Edema or HACE).

9. Have a first aid kit in your pack and know how to use it.[8]

Compact, lightweight first aid kits are available at many retailers and outdoor outfitters. But don't just go out, buy one, and toss it in you pack without another thought. It is important for you to open it up and examine every item.

Building a Wilderness First Aid Kit

Walking through the first aid aisle at your local outfitter store can be overwhelming. While there are many excellent prepared kits on the market, often enthusiasts choose to create and specialize their own. Your kit will be different based on where you are camping and hiking. Trips at altitude, near marine environments or canyoning, and desert trekking each have unique needs that would require you augment your kit accordingly.

Below is a "basic kit list," to which you can add on as your number of adventurers, length of trip, level of training, or destination dictate. An asterisk marks items that you might include for your week-long trip. For your overnight, you can feel comfortable paring down the quantities.

Personal Protection:

- **Gloves** (Nitrile) – Vinyl is too porous, and latex is a common allergen. Bring a few more pair than you think you need. You use one pair of gloves each time you clean a wound, and gloves aren't designed to be re-used. If your gloves have been in your kit for a long time, check them to make sure they didn't degrade in heat or cold. Have these easily accessible so that you are inclined to use them when needed.
- **CPR mask** and airway management – you can get a quality mask with a filter for around $12. "Keychain" masks are better than nothing, but have a short life span when put to use. If you have been trained to use airway adjuncts, include some—they are a little bit of weight for a lot of good.

[8] https://www.wildmed.com/blog/building-a-wilderness-first-aid-kit/

Wound care (probably the most common supplies I use on trips):

- 1" **athletic tape** – one roll per person per week for hiking/skiing/climbing trips (really). It's good for blister prevention, blister covering, ankle taping, and much more.
- **Gauze** / dressings (4-6) – different sizes and a few nonadherent (great for burns or abrasions).
- **Adhesive bandages** (8) – various styles.
- **Roller gauze** or vet wrap (2) – something to keep the gauze next to the wound that won't cut off circulation. Vet wrap lasts longer than roller gauze.
- **Waterproof**/ **breathable** (occlusive) **wound dressings** (2-3) – an invaluable addition to wound care if you will be out for a few days. On a clean wound, this can create an environment conducive to healing that lasts a couple days. These are generally 2" x 3" or larger.
- **Tweezers** – invest in a good pair (sharp and pointy), which will only cost a couple dollars more than a cheap pair.
- Small **magnifier** – for wound cleaning. Be sure you have a reliably bright light source for wound exploration.
- **Wound cleaning** – a 60cc syringe (check the local feed store) with an irrigation tip is cheap and lightweight and gives better pressure than anything we could improvise.
- **Trauma shears** (1) – there are some cool tiny ones (4") on the market that only cost a few dollars and work great.
- **Blister care** – Moleskin, foam, gel pads, or whatever your flavor. Duct tape should not be used on open blisters.

Musculoskeletal injuries:

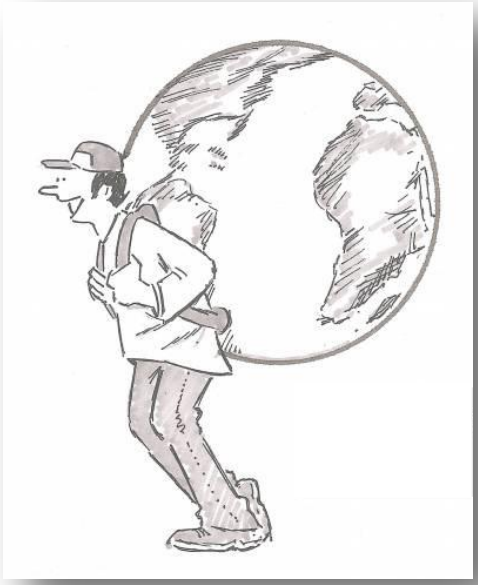
- **Compression wrap**(s) – 3" works great for supporting ankles or knees.
- **Aluminum foam splint** (1)
- **Triangular bandages** (2) – these are multi-functional.

Over the counter medications:

- **Pain management** – ibuprofen and acetaminophen work in different ways. Bring what you prefer, and pack a few grains of rice if you have bottles of tablets. It keeps the tablets from becoming a paste in moist conditions.
- **Gastrointestinal meds** – antacids such as calcium carbonate, anti-diarrheal such as loperamide, or whatever works for you.
- **Antihistamines** – diphenhydramine for allergic reactions. Epinephrine injectors are prescription only and should be carried by those who require them.

- **Topical antibiotic cream** – good for small, shallow wounds. No need to get a huge tube, and beware of antibiotic allergies among your group.

10. According to your weight, what is the maximum number of pounds you should be allowed to carry?



A loaded backpacking pack should not weigh more than about 20 percent of your body weight. (If you weigh 150 pounds (68kg), your pack should not exceed 30 pounds (13kg) for backpacking.)
A loaded day hiking pack should not weigh more than about 10 percent of your body weight. (If you weigh 150 pounds (68kg), your pack should not exceed 15 pounds (6,8kg) for hiking.)[9]

Your aim should never be to load your pack until you hit the maximum, but rather, to bring as little as you can get by with. But don't carry anything you aren't going to need. When it comes to backpacking, less is more! Evaluate every item you put into your backpack. Little things add up quickly, so try not to duplicate functionality. For instance, if you're bringing a pocket knife, you can probably leave other knives behind. Bring a "spork" rather than a spoon and a fork. Distribute "group" gear among the group. Take the tent apart and have one person carry the fly, another the canopy, and a third the poles. Instead of bringing a pillow, stuff tomorrow's clothes into a sack and use that.
With experience, your loaded backpack may weigh less than 10% of your body weight, even for a 2 or 3 days backpacking trip.

- **For organizers**: Organizers usually will comfortable carrying extra equipment due to its preparation and experience. However, while organizing, you should avoid this extra equipment in order to have space for EMERGENCIES (carrying somebody else equipment, due to injuries, exhaustion, or the lack of space in its backpack).

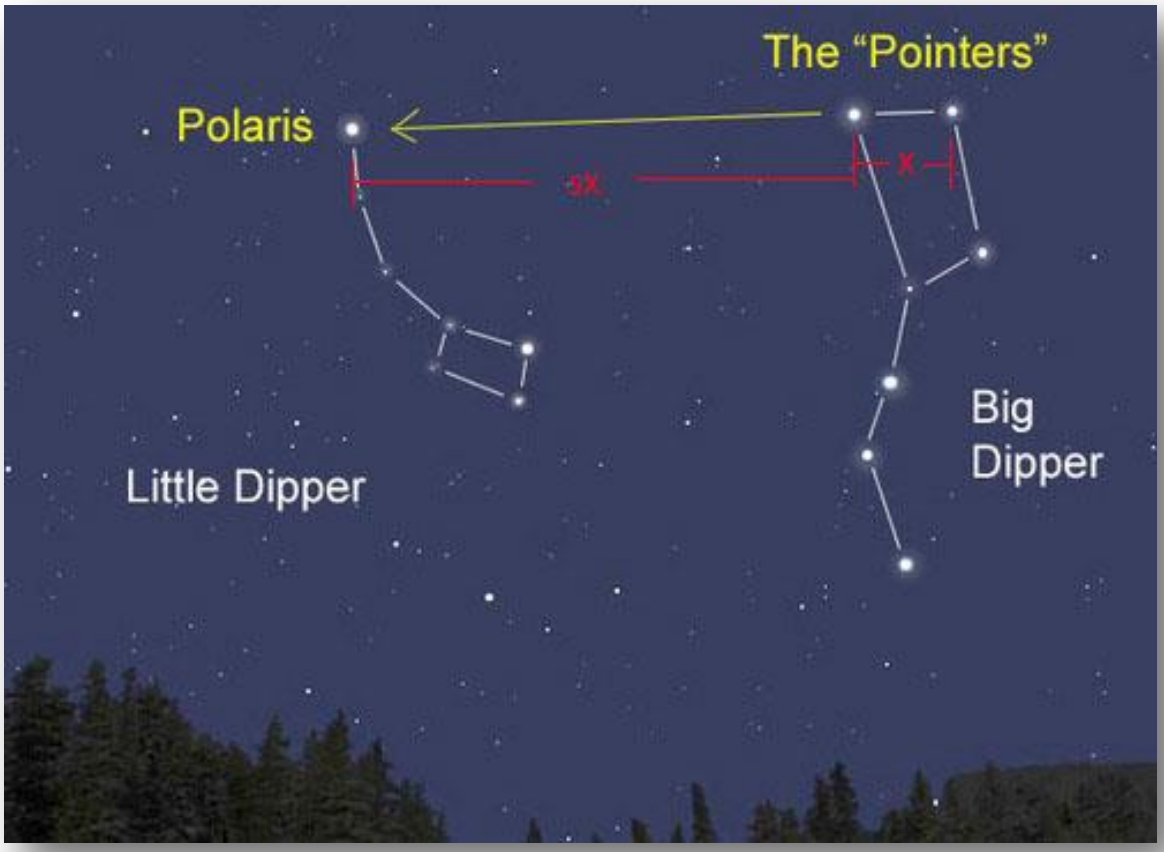
11. Know three ways to find direction without a compass. Demonstrate at least two Northern hemisphere instructions

Northern hemisphere instructions

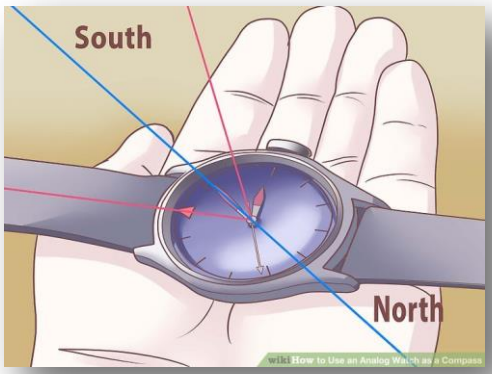
Finding Polaris (the North Star)

[9] https://www.rei.com/blog/camp/how-much-should-your-pack-weigh

In the northern hemisphere on a clear night you can determine which direction is north by finding Polaris (the North Star). You can find Polaris by following the two "pointer stars" in the Big Dipper. Unfortunately, this method is only effective on clear nights.

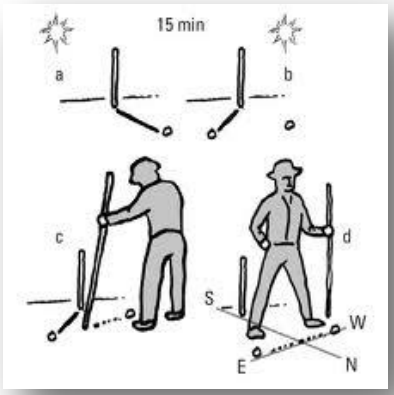


Using a Watch



You can use an analog watch to figure out which way is south during the day. To do this, it is easiest if you remove the watch from your wrist first. Hold the watch so that the face is pointing upwards. Then rotate it until the hour hand points to the sun. You can use a blade of grass to cast a shadow on the watch face to make this easier - just line the hour hand up with the shadow. Once the hour hand is pointing towards the sun, you can find south by bisecting the angle between the hour hand and the 12 o'clock position. In other words, if it is 4:00pm, south will lie in the 2:00 o'clock direction (because 2:00 is halfway between 4:00 and 12:00). At 7:00 am, south will lie in the 9:30 direction (because 9:30 is halfway between 7:00 and 12:00).

Using a shadow



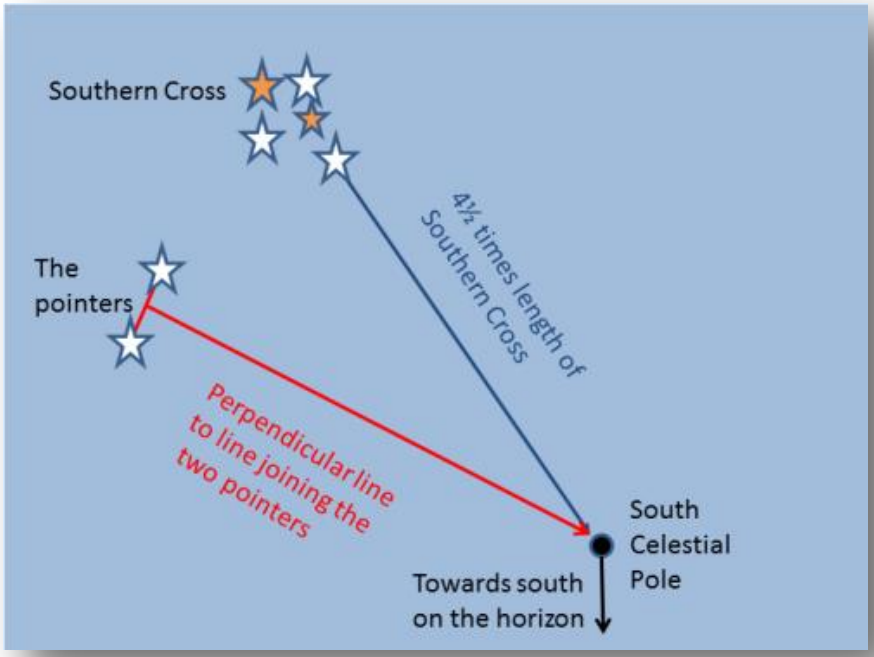
Find a straight stick at least 12 inches long (30 cm) and drive it into the ground such that it points directly at the sun. You can tell the stick is pointing directly at the sun because its shadow will disappear. Then wait until the earth rotates enough so that you can see the shadow. The shadow will point directly east.

Southern hemisphere instructions

Southern Cross to find south at night

With the lack of a significant pole star in the southern sky (Sigma Octantis is closest to the pole, but is too faint to be useful for the purpose), two of the stars of Crux (Alpha and Gamma, Acrux and Gacrux respectively) are commonly used to mark south. Following the line defined by the two stars for approximately 4.5 times the distance between them leads to a point close to the Southern Celestial Pole.

Alternatively, if a line is constructed perpendicularly between Alpha Centauri and Beta Centauri, the point where the above line and this line intersect marks the Southern Celestial Pole. The two stars are often referred to as the "Pointer Stars" or "White Pointers", allowing people to easily find the top of Crux.
The junction of these two lines is the SCP Southern Celestial Pole. If you were at the South Pole this would be directly above you. This is the point where the night sky revolves around. Point to this spot then lower your arm to the horizon. Where you are pointing is South.



Watch method

Southern Hemisphere method only. Point the 12 to the sun. Halfway between the hour hand and the 12 is North. You still have to use your intelligence for this as early morning time and evening time care m0ust be taken as to which half you use. E.g. 8am sun is rising in the East; point 12 to the sun North is halfway between the 8 and the 12 at the 10. BUT late evening the sun is heading to set in the west say time is 8pm you point the 12 at the sun. North is halfway between the 8 and the 12 at the other side of watch at the 4. This should be used only as a guide as in some countries the real time has been adjusted and sometimes there is daylight saving time etc.

Stick method

This method is a waste of time. We all know the sun rises in the East and sets in the West. The stick shadow shows you this. Also when the sun is at its zenith the highest it gets in the Southern Hemi look at the sun and it is towards the North the opposite in the Northern Hemi. So we learn that at mid-day is the best time to find North (or South).
But if you must... place a stick in the ground on an open area. Mark the shadows at times throughout the day. From this you can find North or South (depending what side of the

equator you are on) from the shortest shadow and also East and West by drawing a line from the ends of the longest shadows assuming you had an early morning and late evening marking with equal time from mid-day. But for this you have to be lucky to have sunshine for most of the day, which usually is not the case if you are lost. Anyhow it is something to know if you do not have a watch to know when mid-day is.

12. Show the proper way to put on and take off a backpack alone and with a partner.

Alone

Set the backpack on a table (or a large rock), put your arms through the straps (loosened off), and lift with your legs. You can also set it on a rock or a log and sit down in front of it. Again, lift with your legs, not with your back. If there is nothing available to set your pack on; stand with your feet apart, one leg ahead of the other, knee bent enough to set your pack on it. With shoulder straps loosened off, slip one arm through the shoulder strap, lean into your pack and slightly downward, and roll it up onto your back. Once in place, slide your other arm through the shoulder strap. Always tighten your hip belt first, shoulder straps next and lastly your chest strap. Reverse this procedure for removing your pack.

With a Partner

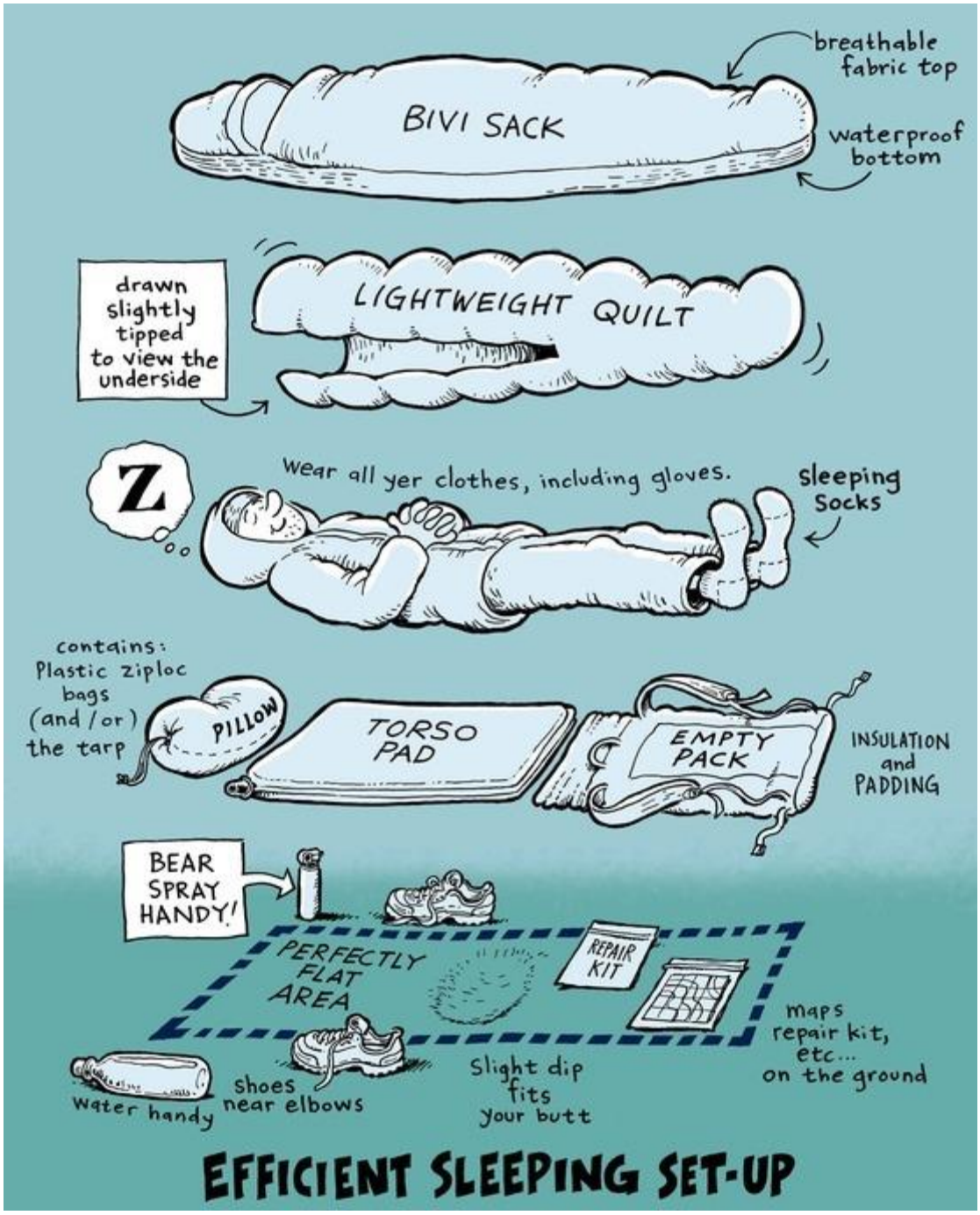
Have your partner lift your pack and hold it while you slip your arms into the straps. If you have to stoop, bend your knees. Remember to lift with your legs!

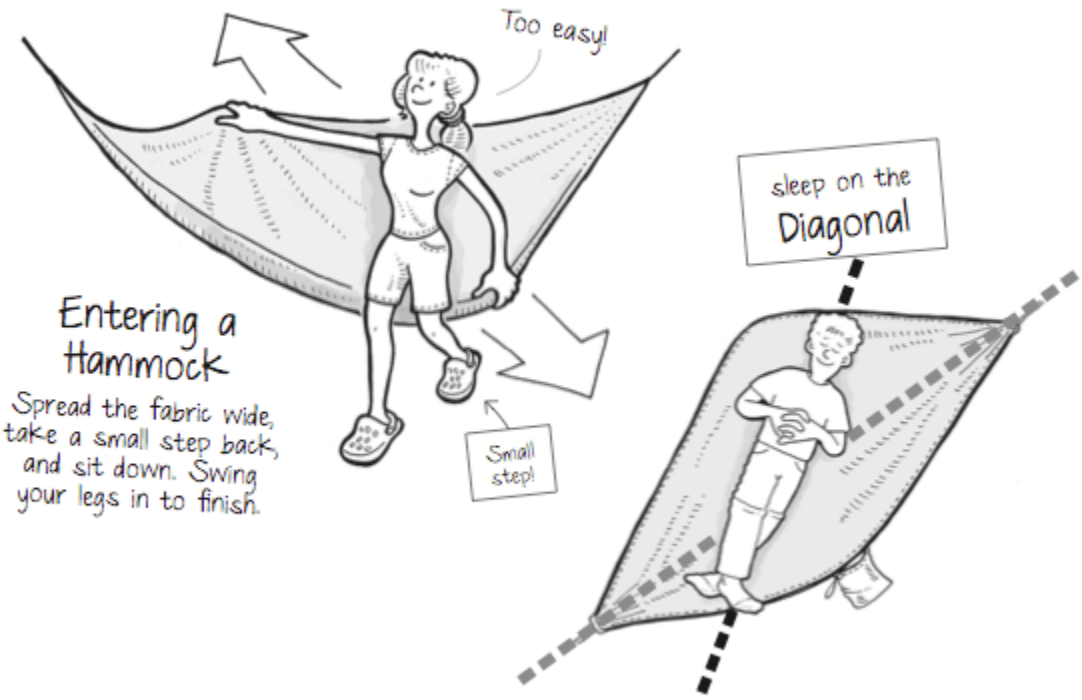
13. Participate in a weekend backpack trip of at least five miles (8 km) to a site not accessible by a vehicle and cook your own meals.

Five miles is a good backpacking trip for a beginner. There is a lot information on internet about almost every trail for backpacking in the US and Canada. Also, you can find information by visiting your local outdoor outfitter.
The next MGO expedition could be a great opportunity to accomplish this requirement.

Extra tips and tricks

- **Buddy partner**: especially in hiking that requires a high physical effort or occurs in extreme temperatures, chose another hiker walking with you that will have the task to check on your general status every often, doing you the same for he/her. Hypothermia, heat exhaustion, blisters and many other problems can be prevented by someone else checking your status during the hike.
- **Include the Bible in your program. Use passages like Job 38, 39 and share it.**


breathable fabric top
BIVI SACK
waterproof bottom
drawn slightly tipped to view the underside
LIGHTWEIGHT QUILT
Z
Wear all yer clothes, including gloves.
sleeping Socks
contains: Plastic ziploc bags (and/or) the tarp
PILLOW
TORSO PAD
EMPTY PACK
INSULATION and PADDING
BEAR SPRAY HANDY!
PERFECTLY FLAT AREA
REPAIR KIT
maps repair kit, etc... on the ground
water handy
shoes near elbows
Slight dip fits your butt
EFFICIENT SLEEPING SET-UP


Too easy!
Entering a Hammock
Spread the fabric wide, take a small step back, and sit down. Swing your legs in to finish.
Small step!
sleep on the Diagonal

Compiled and edited by Nestor Osman
nestorosman@hotmail.com