

## LECTURE #2

### Safety, Health & Nutrition, Mechanics of Belaying & Rescue

Lecture 2 Topics												
Health & Nutrition												
Mechanics of Belaying/Rescue												
Mountain Rescue/First Aid												
Safety												
Field Trip Leader Q & A (Field Trip #2)												
Assigned Reading (complete prior to Lecture #2)												
<p><i>The Freedom of the Hills, 9th edition</i></p> <table style="width: 100%; border: none;"> <tr> <td style="padding: 2px;">Camping, Food and Water</td> <td style="padding: 2px; text-align: right;">Chapter 3</td> </tr> <tr> <td style="padding: 2px;">Belaying</td> <td style="padding: 2px; text-align: right;">Chapter 10</td> </tr> <tr> <td style="padding: 2px;">Glacier Travel and Crevasse Rescue</td> <td style="padding: 2px; text-align: right;">Chapter 18</td> </tr> <tr> <td style="padding: 2px;">Safety</td> <td style="padding: 2px; text-align: right;">Chapter 23</td> </tr> <tr> <td style="padding: 2px;">First Aid</td> <td style="padding: 2px; text-align: right;">Chapter 24</td> </tr> <tr> <td style="padding: 2px;">Alpine Rescue</td> <td style="padding: 2px; text-align: right;">Chapter 25</td> </tr> </table> <p><i>Basic Rock &amp; Glacier Climbing Course Manual</i> All Lecture #2 Material</p>	Camping, Food and Water	Chapter 3	Belaying	Chapter 10	Glacier Travel and Crevasse Rescue	Chapter 18	Safety	Chapter 23	First Aid	Chapter 24	Alpine Rescue	Chapter 25
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Alpine Rescue	Chapter 25											
Additional Resources												
<p><u><a href="#">Accidents in North American Mountaineering</a></u></p> <p>Watch this video on the basics of belaying (PBUS device method) : <a href="http://blog.alpineinstitute.com/2013/10/toprope-climbing-belay-technique.html">http://blog.alpineinstitute.com/2013/10/toprope-climbing-belay-technique.html</a></p>												

## SAFETY

It cannot be emphasized enough that safety should be the first priority for everyone involved in climbing activities. It is your individual responsibility and cannot be delegated to the leaders or other team members. Practice safety by doing the following:

- **Memorize and follow the Mountaineers' Climbing Code.**
- Prevent mishaps: be alert and speak up about potential hazards, both objective and subjective.
- Be responsible by physically and mentally preparing yourself for the climb. Do not climb past your limits.
- Make sure you have learned and mastered the technical skills needed to effectively perform on a climb.
- Learn the proper use of your equipment and keep it in good condition. Make sure the equipment fits before leaving for field trips and climbs. Always follow the manufacturer's instruction on how to use equipment.
- Bring and know how to use your 10 Essentials
- On all climbs make sure to:
  - Check and double check harnesses, tie-ins, anchors, etc.; both yours and your partners.
  - Keep yourself attached to an anchor in exposed places until you are on belay or rappel.
  - Practice good rope management.
  - Stay alert and learn to recognize potential objective hazards and ways to mitigate them.
  - Bring and **use** appropriate clothing and equipment. **Always wear a helmet.**

Again, YOU are responsible for preparing and taking care of yourself to minimize risk and prevent mishaps. If you have information or thoughts that might be of value, share it with the party, especially with the leader. You and your fellow climbers share in the responsibility for the climbing party with whom you travel.

## **FIRST AID, ACCIDENT RESPONSE AND ALPINE RESCUE**

When traveling in the mountains, first aid takes on an entirely new meaning. Here professional medical help is hours or days away. The medical supplies that are available are those that you have with you, and you are your own rescue team. Therefore it is important to understand the 7 steps of accident response in case someone becomes injured in your party. They are listed below, but make sure to use *Freedom of the Hills* to understand the details of each step.

1. Take charge of the situation
2. Approach the patient safely
3. Perform emergency rescue and urgent first aid
4. Protect the patient
5. Check for other injuries
6. Make a plan
7. Carry out the plan

When an emergency does arise, and you cannot move the victim or need help, it is important to know how to contact and interact with local authorities' vs search and rescue (SAR). Start by calling 911 or using the help mode of a personal locator beacon that you are carrying with you. Search and rescue will need to know specific information to be able to quickly and effectively extract the injured climber and party, but initially called local authorities might not completely understand the information you are giving them. Make sure to know what information to provide **and** to whom.

With all this in mind, and the fact that this is such an important topic, all Mountaineer Basic Climbing Courses require completion of a Wilderness First Aid (WFA) or alternate course. It will contribute as much to the well-being of the group as proper knowledge of belaying, rappelling, crevasse rescue, etc. However, make sure to be able to recognize the signs and symptoms and know how to prevent and/or treat common mountain maladies, such as:

Hypothermia	Snow Blindness	Strain
Heat Exhaustion	Acute Mountain Sickness	Sprains
Heat Cramps	High Altitude Cerebral Edema	Blisters
Frostbite	High Altitude Pulmonary Edema	Lightning Strikes
Dehydration	Immersion Foot	Contaminated Water

## **HEALTH AND NUTRITION**

Maintaining your health and energy in the mountains is not tremendously different from what you do every day - you need to eat, drink, stay warm, rest and have ok hygiene. It does, however, require a little more creativity, effort and planning ahead.

### **Health/Hygiene**

It's fairly easy to stay healthy and to practice adequate hygiene in the mountains. Follow these tips:

- Bring a hand wipes or a small bottle of hand sanitizer to use:
  - after washing your hands in a lake or stream
  - before eating or preparing food
  - after going to the bathroom
- Do not eat snow/ice – it may appear pure, but it's likely not
- Always use filtered water for drinking and/or brushing your teeth (if necessary)
- If bringing other hygiene products (deodorant/body wipes) make sure to put them in a separate air tight bag/container – they must be put into a bear canister or hung up with the rest of the food at night or when leaving camp.

### **Climbing Day Nutrition**

On short trips, your biggest concerns will be getting plenty of water and food to sustain your energy level until you reach your goal. Obviously, the lighter the food is, the less weight you have to carry on your back. At the same time, it's not a good idea to short-cut on needed calories, electrolytes and especially not on water.

**WATER:** As a general rule of thumb, you should drink a about one liter per hour at lower altitudes, moderate temperatures, and medium exertion, and up to 1.5 liters per hour at higher elevations, in extreme environments, and/or high levels of exertion. In addition to these recommendations, the best rule of thumb is to monitor urine output and color. Urine should be copious and clear. You are not drinking enough if you are not urinating and/or it is dark in color. Try to remember to drink **before** you start to get thirsty.

**FOOD:** Energy requirements (i.e. calories) will vary somewhat depending on an individual's conditioning and metabolism, as well as on the length and strenuousness of the climb. Overall, you should expect to expend between 2500 - 4500 calories per day on an average climb in the Pacific Northwest. Plan your food accordingly!!! Include:

- **Simple carbohydrates** for fast energy and muscle recovery (ie something to snack on if you start to feel tired or are taking a quick break). Good sources of this are: honey sticks, dried fruit, candy, chocolate, and gels.
- **Complex carbohydrates** for sustained energy and to keep hunger away (i.e. something you would eat for breakfast, lunch or dinner). Good sources of this are: breads, rice/pasta, tortillas, pizza, oatmeal, and bars.
- **Protein** to help in muscle repair and recovery and to keep you feeling full longer (i.e. eat this when you stop for a longer breaks or are starting to get hungry): Good sources: tuna packets, beef or turkey jerky, and pepperoni sticks.
- **Fats** help to keep you full and provide the needed energy for high altitude/extremely cold temperature expeditions. Good sources: nuts and nut butters
- **Electrolytes:** your body needs these salts to function properly, and to prevent muscle cramps. Make sure you continue to take in electrolytes because you sweat out a ton. Good sources: Gatorade, nuun, and sports legs.

**IDEAS FOR PREPARING FOR A TRIP:** Try to take foods that are simple to prepare and require minimal clean-up. Prepackage/repackage your food to save on bulk and weight.

- **Breakfast:** Often eaten cold to save time. Granola, granola bars, French rolls, “muesli” cereals, bagels, and dried fruit are all good choices. Instant oatmeal, cocoa, and herb tea are popular when taking the time to cook.  
NOTE: ALWAYS EAT BREAKFAST, EVEN IF YOU ARE NOT HUNGRY. If you are having a hard time eating breakfast, keep food easily accessible.
- **Lunch:** Typically it is best to “snack” from breakfast until dinner—get something to drink and munch at every stop. Suggestion: Sandwiches, pizza, Granola bars, GORP, cheese and crackers, beef jerky, dried fruit, or bagels. “Sport drinks” such as Gatorade, ERG, etc. will help maintain needed body salts (“electrolytes”) as well as providing energy.
- **Dinner:** Begin replenishing water supplies (internal as well as external) as soon as you get into camp. Cocoa, Gatorade, protein powder or hot Jell-O will add energy as well as fluids. Herb tea or various drink flavorings are good for just rehydrating. Food options are many and varied. Freeze-dried foods are easy but expensive; quality is variable. Many grocery-store items work well, either alone or when combined: couscous meals, Top Ramen, instant soups, instant rice, dried or packaged meats etc. Be as creative as you'd like when planning your meals—but make sure they work at home before trying them out on a trip.

### **INADEQUATE NUTRITION**

- **Bonking/Hitting the Wall:** Bonking or “hitting the wall” is a popular name for a condition in endurance sports and mountaineering when an individual has a sudden and overwhelming feeling of running out of energy. You are hiking along at what seemed like a manageable pace, then seemingly without warning your legs turned to cement. With heavy legs, a body-wide feeling of fatigue and sometimes dizziness, you are forced to stop.  
Bonking is caused by running out of the stored glycogen (aka food/energy for your brain and muscles) in the liver and muscles. This severe glycogen depletion does not occur during short duration, high intensity efforts, rather it occurs during continuous exercise at some 70- to 85-percent of VO<sub>2</sub> max that is sustained for periods of more than about two hours. Hence, why conditioning (increasing VO<sub>2</sub> max) and (nutrition) eating an adequate amount of calories is important for mountaineering.
- **Dehydration:** Occurs when you use or lose more fluid than you take in, and your body doesn't have enough water and other fluids to carry out its normal functions. Signs and symptoms: dry/sticky mouth, tiredness, dry skin (when everyone else is sweating), headache, dizziness, and cramping. Make sure to continuously take in fluids.

## **LECTURE 2 KEY POINTS, OBJECTIVES AND MENTOR MOMENT**

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### **Key points:**

#### **1. Safety**

Name the contributing factors to mountaineer accidents. Explain the difference between objective and subjective mountain hazards and give examples. Explain the objectives of risk *assessment*.

#### **2. Health and Nutrition**

Explain the importance of adequate fluid intake and the symptoms and effects of dehydration. Name three types of waterborne pathogens. Describe the principal methods of water purification in the backcountry. List the symptoms of giardia. How is it treated? Name the three major food components. Describe the rules of safety when using a stove (fuel storage, lighting, and cooking in a tent).

#### **3. First Aid**

Differentiate heat exhaustion from heat stroke. How would you treat each? List the signs and symptoms of hypothermia. Describe how to prevent hypothermia. List two physical ailments related to climbs in higher altitudes. Describe the signs and symptoms of each and explain the treatment. Explain what to do if caught in a lightning storm. Describe how to treat blisters. List the Seven Steps of Accident Response, in order and understand what each step means!

#### **4. Mountain Rescue**

Describe what to do if an accident or illness requires an evacuation with outside help. When 2 climbers are sent out for help, what information should they take with them? Describe whom you would call for assistance if a party member requires evacuation. Describe how you would protect an injured person from heat loss on snow.

### **“Mentor Moment”**

#### 1. Technical skills:

- Make sure you have been practicing for your skills test (belaying, prusiking, and leader-tie off) at FT 2. You are expected to perform these skills without the assistance of an instructor.
- Keep practicing your knots until they become second nature. Practice with gloves on, you will be expected to tie the knots with your gloves on.
- Attend Mentor Night, even if you feel you have mastered these skills. Helping/teaching other students is the best way to ensure you know your own skills. In addition, being at Mentor Night is a great way to start meeting/getting to know more climb leaders and a great chance to ask them questions.
- Make sure to start looking over glacier travel skills prior to FT2 – how to carry your ice axe, kiwi coil, carabiner – ice axe belay, belaying into and out of camp, and crevasse rescue.

2. Familiarize yourself with the components of a basic first aid kit, and carry these on all field trips and climbs.

3. Assess your own performance and respect your limits. Self-assessments aren't easy! Ask field trip instructors and climb leaders for feedback.

4. Start making friends in the class. The majority of you are probably taking the class, not only to learn technical skills, but to meet other climbers. Use the FB page to post practice sessions (like we said before, even if you don't need the practice), conditioner hikes, and to ask questions (intermediate students and instructors read these posts too).

### **DATES TO REMEMBER:**

- Belaying, Prusiking, and Leader-Tie off with escape must be passed by the end of Field Trip 2.
- 10 Essential Systems must be passed by the beginning of FT 3.
- Practice your knots and attempt to pass the Knot Test as early in the course as possible. The Knot Test must be passed by the end of Field Trip 3.
- Two conditioners must be passed; One prior to FT 3 and the second prior to FT 5 or any climbs. Sign up for these ASAP.
- Sign up for the Navigation and WFA courses early. They fill up, and students miss out on graduating every year.