



The
Mountaineers

EVERETT BRANCH

Nordic Ski Course

NORDIC SKI COURSE

STUDENT INFORMATION



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REI - Cross-County Skiing: Kick UP Your Heels!

Want to add some variety and “kick” to your winter? Cross-country skiing may be just the thing. Unlike alpine skiing, in which your feet are completely secured to your skis, cross-country skiing is “free heeled” – that is, the bindings allow your feet and ankles to flex so you can move forward with a normal stride. Cross-country skiing is not just one, but several styles of skiing that allow you to cover varied terrain and get a great aerobic workout. Cross-country skis can take you anywhere from flat, groomed trails to backcountry powder to steep mountain slopes – and without waiting is lift line!

A Little History:

Cross-country skiing was invented as a means of travel hundreds of years ago in Scandinavia. On long narrow skis, travelers were able to kick and glide from place to place on a gentle terrain. They later learned to descend steep slopes using unique styles of bent-knee turns that became known as telemark skiing. Gradually, these modes of travel developed onto a sport. Trails were built specifically for the new pastime, many of which were groomed to allow smooth, rapid skiing. Telemark techniques, which were developed for crossing rougher terrain, were reserved for backcountry play.

Cross-country Skiing Today

Today, the terms “Cross-country” and “Nordic” are used interchangeably to describe the collection of related skiing disciplines that use free-heeled ski gear. These techniques all have roots in the original striding style of early cross-country skiing, but they also have distinct features that set each of them apart. Because all of the similar ski equipment, it is often possible to enjoy a number of these different skiing styles with a single set of skis, poles, boots and bindings.

Classic Striding: This is the original “kick and glide” technique used by cross-country skiers. It consists of a combination of normal walking steps and long, graceful forward glides. It’s the most popular of the cross-country techniques, probably because it’s the most versatile and easiest to learn. Best suited to flat or gently rolling terrain, it can be practiced in groomed ski areas, on snow covered roads or trail, or in the backcountry. Classic striding is the basic technique for all the cross-country disciplines, but there are two main categories within the classic styles:

General Touring: This describes classic kick-and –glide skiing when it’s done in a groomed ski area or on maintained roads or trails. Touring on machine-made tracks is typically called “track skiing.”

Benefits:

- It’s easy to learn o general touring is the style most people learn before venturing into other cross-country disciplines. Following pre-made tracks and maintained trails lets you concentrate in learning and having fun rather than navigating.

QUICK READ

1. Cross-country encompasses several styles of free-heel skiing, from in-track to backcountry.
2. Sleek, lightweight skate gear is made for aerobic workouts and racing on groomed trails.
3. Touring gear is ideal for day trips on groomed trails. Backcountry touring gear is heavier, more durable and has metal edges for turning, stopping and breaking trail.
4. Telemark and randonee (or AT) gear is the most rugged and is made for navigating steep terrain.

- It's excellent form of exercise – striding helps you develop balance, endurance and aerobic capacity, while working muscles in both your upper and lower body.
- It's convenient – skiing in an established ski area doesn't require a lot of extra gear, so you can stuff a few extras in a fanny pack and be on your way.

Backcountry Touring: Think of this style as wilderness exploration on skis. It takes traditional classic striding techniques off trails and beyond flatlands. Backcountry touring often involves up and down travel and offers the chance to learn and practice climbing on skis and making telemark turns.

Benefits:

- It offers variety – it lets you explore a wide range of terrain: plus, you can combine ski trips with winter camping or orienteering.
- It's challenging – it requires physical work and enthusiasm, but rewards those efforts with great views and experiences.
- It lets you “get away from it all” – it allows you to venture into true wilderness, perhaps exploring a mountain bowl filled with fresh powder or making the first tracks across a high meadow.

Skating: This style of skiing is for those who want a great aerobic workout! Developed by racers, skating is a dynamic, exciting style that has a motion similar to incline skating or ice skating. Using angled, gliding strides and long, powerful pole strokes, skaters slide across smooth, hard-pack surfaces, usually on trails that have been groomed specifically for skating. This is a fast-moving and fast-growing cross-country style, popular with everyone from professionals to first-timers.

Benefits:

- It's fast – it's the quickest way to slide on Cross-Country equipment, a natural choice for racers, speed-demons and anyone else looking to ‘fly’ on skis.
- It's unique – skating offers a fun, exciting alternative to traditional striding techniques. It can be enjoyed in established cross-country ski areas or out in the wilderness when conditions are right.
- It's a highly aerobic form of exercise – skating works the entire body, while developing coordination and endurance.

Telemark

This challenging style of free-heel skiing is used for traveling on steep or uneven terrain. Developed hundreds of years ago in the Telemark region of Norway by the pioneers Sondre Norhien, it combines striding with a distinctive technique for carving turns. Telemark is generally practiced in the backcountry, but can also be done on lifted-assisted ski slopes. This style of skiing has experienced a rebirth in recent years and is growing in popularity across the United States and Europe.



Nordic Ski Clothing

Clothing for Nordic skiing must keep you warm, comfortable and protected from the elements. The level of protection you need will depend on the kind of skiing you have planned, the expected weather conditions and the length of your tour. Always be prepared for a range of conditions and choose clothing that allows free movement.

General Guidelines

Be Prepared: Weather conditions can change quickly, no matter how short your tour is or how close you are to home. Be prepared for changes every time you venture out.

Dress in layers: The easiest way to stay warm, comfortable and dry while Nordic skiing is to dress in a series of lightweight, non-binding clothing layers. This will allow you to add or remove layers throughout the day in response to weather and internal temperature changes.

Don't overdress: One of the most common mistakes made by novice Nordic skiers is to wear more clothing than they need. Nordic skiing is an aerobic activity, one that can produce a lot of body heat quickly. Remember – it won't take long to warm up and shake off that early morning chill.

Note: Wearing too much clothing can lead to increased perspiration, which can lead to discomfort, chills and even hypothermia.

Basic Layer Tips

Long underwear – the layer next to your skin: Wicking fabrics help keep you dry and warm by pulling the moisture away from your skin and transporting it out into your other clothing layers (where it can evaporate without robbing you of important warmth).

Long underwear is available in a variety of thicknesses or “weights” to provide different levels of insulation. On warm days, light or medium-weight underwear may be enough to keep you comfortable as you ski. In colder conditions you may want something thicker. If you can choose only one pair of long underwear, opt for lightweight and remember your underwear will be the first of several layers (i.e. you will be able to increase your warmth with other layers).

Don't forget to consider your feet when choosing your underwear. A two-layer system works best. The first layer is a thin sock made out of polyester or wool. The inner layer will keep your feet dry and help prevent blisters (though you should still tape hot spots on your feet to prevent blisters).

Long underwear should be constructed out of a synthetic material like polypropylene or a natural fiber like wool or silk. **Do not wear long underwear made of cotton.** Cotton does not wick moisture, it dries slowly, and it loses its heat retaining qualities when wet. Being cold in winter conditions isn't just uncomfortable; it can impair your well-being.

An insulating layer provides additional warmth. On most ski tours, you'll need additional insulation on top of your long underwear. When choosing insulation layers, consider the expected weather conditions and how hard you'll be skiing.

In general, you'll want layers that are lightweight, comfortable and quick-drying. Examples of insulating layers include shirts (be sure they're long enough to tuck into your pants), vests, pullovers, sweaters, zip-front jackets and pants. No matter what kind of insulating layers you choose, make sure they fit well and allow you to move freely as you ski. Trapping air between layers is the key to generating warmth. Clothes that are too tight will not allow for trapped air, and they may actually constrict blood flow (which will also make you colder) and hamper your ski technique.

The most popular materials for insulating layers are wool and synthetic fleece. Wool is a traditional favorite because it's natural, durable and keeps you warm even when wet. Fleece is extremely popular because it's lighter than wool, dries more quickly, insulates while wet and is available in a wide variety of thicknesses, styles and colors. There are also insulating layers made out of wind-blocking fabrics. These are expensive, but are effective in mildly windy conditions. Again, do not choose clothing made out of cotton for your insulating layer. Cotton will leave you cold if it gets wet, and this will compromise your safety.

Things to consider when packing insulating layers for a trip:

1. Carry a range of insulating layers. Conditions and your activity level will change during the day. A shirt may be enough insulation while you're skiing, but you may want a jacket, pullover or vest to put on while you stop for lunch.
2. Select items that allow for ventilation. Jackets and shirts with buttons and zippers will allow you to customize coverage and ventilation and thereby increase your comfort as you ski throughout the day.
3. Down is warm and light weight, but it is useless when wet. If you carry a down jacket, be sure to have reliable raingear to keep it dry.

Choose reliable raingear

Rain gear keeps out the rain and wind. Precipitation and wind chill can be problems on any Nordic ski trip, no matter how good the weather looks when you start out. Staying dry and warm is essential to staying safe. Carry some form of protective rain gear with you on all trips.

Be sure to purchase parkas with hoods. Also consider your zipper options. Parkas with full zip fronts and "pit zips" offer more ventilation options, and rain pants with full side zips will allow you to put on the pants without taking off your skis and boots. All seams on your rain gear should be sealed. If this hasn't been done in the manufacturing process, purchase a seam sealer and do it yourself.

Rain gear is made out of a variety of materials that vary considerably in cost. Coated nylon is adequate and less expensive than Goretex or other "membrane" laminated fabrics. The advantage of Goretex and similar products is their ability to ventilate. If cost is a consideration remember, you can look for a jacket made from a non-porous material that has ventilation options in the form of a full zip front and pit-zips. (If you find such a thing as cotton raingear, put it back on the rack. Remember: cotton will not keep you warm if it gets wet).

If you ski regularly on ungroomed trails, you will want to consider purchasing a pair of gaiters to keep snow out of your boots and your feet warm and dry. High top gaiters are more effective than the low top variety, and make sure to purchase a pair with an adjustable strap or cord at the bottom. This strap goes under your boot and keeps the gaiter in place. Gaiters should be fitted with side zippers and/or Velcro closures. Those with both are most effective.

Take care of your head, neck and wrists

Skiers lose the most body heat through their heads, necks and wrists. Make sure that you protect these important areas. Wear a warm hat, warm socks and thick, comfortable mittens or gloves. If you get cold, put on a hat.

Protect yourself from the sun

Remember to protect yourself from the sun. Be sure to have a brimmed hat (like a baseball cap) and sunglasses on hand, and be sure to apply sunscreen before you begin skiing. On sunny days the light reflecting off the snow can be intense and obscure your view of the surface of the snow, and prolonged exposure to the sun can cause serious burns and snow blindness. Sunburns are also possible even on cloudy days, so always (yes, always) carry a brimmed hat and protective sunscreen when you tour, as well as reliable sunglasses with good UV protection.

Carry extra layers

Staying dry is an essential part of staying warm and safe. Make sure you have extra socks, extra mittens/gloves and a warm hat nearby whenever you go on a tour. For longer trips and trips further into the backcountry, carry extra insulation layers and extra-long underwear in case your primary layers get wet.

New Equipment and Clothing — Where to Get It

Mountaineering Equipment versus Camping Equipment

Many stores carry outdoor clothing and equipment primarily suitable for camping or light backpacking. While their prices on some items may be less than the specialty stores, these locations mostly do not carry items suitable for mountaineering. These stores include Big 5 Sporting Goods (various locations), GART Sports, Alpine Hut (Seattle), Sports Authority, and various other department and discount stores.

New Equipment & Clothing

The best places to purchase clothing and equipment for skiing, hiking and scrambling are the mountaineering stores listed below. All of these stores have a variety of high-quality equipment suitable for scrambling and mountaineering. In addition, these stores have more experienced and knowledgeable staff available to give you advice and recommendations — although you may sometimes have to ask for someone *experienced* in the item that you're looking for.

Backpackers Supply	Mountaineering	253-472-4402	5206 S Tacoma Way	Tacoma
Cabela's	Gear	360-47444880	9810 Quilceda Blvd	Tulalip
Feathered Friends	Mountaineering	206-292-2210	119 Yale Ave N	Seattle
Patagonia	Clothing	206-622-9700	2100 1st Ave	Seattle
McHale Packs	Custom Packs	206-533-1479	By Appointment	Seattle
Outdoor Research	Mountaineering	206-971-1496	2203 First Ave S	Seattle
North Face	Mountaineering	206-622-4111	1023 1st Ave	Seattle
North Face	Mountaineering	206-525-8500	U Village	Seattle
Pro Mountain Sports	Mountaineering	206-522-1627	5625 University Way NE	Seattle
Recreational Equipment Inc.	Mountaineering	206-223-1944	222 Yale Ave North	Seattle
Recreational Equipment Inc.	Mountaineering	425-882-1158	7500 - 166th Ave NE	Redmond
Recreational Equipment Inc.	Mountaineering	425-640-6200	3000 184th St SW	Lynnwood
Recreational Equipment Inc.	Mountaineering	360-647-8955	400 36th Street	Bellingham
Steven's Pass Snowboard Shop		360-793-0221	617 Croft Ave (Rt. 2)	Gold Bar

Used Clothing

Thrift shops are excellent places to obtain used wool, fleece, and some synthetic clothing for very inexpensive prices (In Snohomish County: Value Village, Deseret, St. Vincent de Paul, Salvation Army, Goodwill, or whatever thrift shop is close to you).

Maps, topographical

The Mountaineers Clubhouse in Seattle offers both Green Trail and USGS maps discounted for members. Other good places include REI, Metsker Maps (206-623-8747 in Seattle), Big 5 Sports, Forest Service offices, University Book Store, and Ranger stations (limited supplies). Your public library may carry a set of each. Use of the National Geographic TOPO software is also an option.

Mail Order Clothing and Equipment

Mail Order and On-line shopping is convenient if you know what you want. You may save money, and avoid crowds and traffic. Below are listed some of the better mail order companies — all of them are *mountaineering* stores. Most of them have websites as well. Doing a web search by product item e.g. packs will disclose product evaluations and on-line store sites. Many of them can provide helpful product information and advice by phone - especially if you ask for an expert. E-bay is also an option.

Campmor	888-226-7667	www.campmor.com	No skis
Climb High	802-865-0900	www.climbhigh.com	
Mountain Gear	800-829-2009	http://www.mountaingear.com/webstore/	
Sierra Trading Post	800-713-4534	www.sierratradingpost.com	

Discounted, Used & Surplus Equipment Many of the larger outdoor shops sell their used rental equipment at reduced prices (Feathered Friends, Marmot Mountain Works, and REI). Likewise, substantial savings may result from talking with your local rental shops.

Ed's Surplus	General	425-778-1441	5911 – 196th SW	Lynnwood
Second Ascent	General	206-545-8810	5209 Ballard Ave. NW	Seattle

Equipment/Clothing Repairs

Dave Page, Cobbler	Boots	206-632-8686	3509 Evanston Ave N	Seattle
Chicks Shoes & Services	Boots	206-232-9414	7637 SE 27th	Mercer Island
REI	General	206-233-1944	222 Yale Ave North	Seattle
Rainy Pass Repairs	General	206-523-8135	4415 Stone Way North	Seattle
Mountain Safety Research	MSR Equip	206-624-8573	3800 1st Ave South	Seattle

Special Sales Events

Most swap meets and special bargain events will not happen in time for you to get the equipment needed for this course. Nevertheless, these places can be a good source of purchases and upgrades. Also see Go Guide.

The 10 Essentials

1. Navigation

It's a good idea to carry a map and compass - and know how to use them. USGS, Custom Correct and Green Trails maps all provide useful topographic information, and the latter two show relatively up-to-date trail info. Even if you don't plan on leaving the trail, being prepared is essential.

2. Sun Protection

Sunglasses, sunscreen and hats are smart items to carry year-round. While the benefits are obvious on a sunny summer day, these items are useful against glare and sunburn while traveling on snow or under cloudy skies where UV rays may still penetrate.

3. Insulation

Pack extra clothing, in anticipation of the worst possible conditions you could encounter on your trip. Weather can change quickly, and it's not uncommon for temperature (and precipitation) to vary significantly between the trailhead and higher elevations. If done smartly, these items won't add too much weight to your pack.

4. Illumination

It can get dark sooner than you think when you're on the trail, so having a flashlight or headlamp is handy. Headlamps also have the benefit of leaving your hands free. When choosing batteries, consider using rechargeable, and always carry extras. Make sure the light won't turn on by itself, and is accessible in case you need to find it in the dark.

5. First Aid Supplies

A good first aid kit doesn't need to be big and bulky, and you probably have many of the basic items around the house. Outdoor stores sell a range of kits that vary from a small "envelope" type kit to the larger "box" kits. Depending on the length of your trip and the size of your pack, you can adjust the contents as needed.

6. Fire

Temperatures can drop significantly overnight, and having a means to start an emergency fire will help ensure you maintain warmth if necessary. Waterproof matches, butane lighters and fire starters (candle stubs, chemical heat tabs, canned heat) should be reliable means of starting a fire. If you are headed where there may be very little firewood, an ultralight stove is a good source of heat.

7. Repair Kit & Tools

Anything to repair the gear and/or equipment you will be carrying. There are a number of multi-tools on the market, along with the standard Swiss army knife. Other items to consider: shoelaces, safety pins, needle and thread, cable ties, wire, duct tape and nylon fabric repair tape.

8. Nutrition

Even if only heading out for a day hike, nutrition is an important factor in your wellbeing. In addition to your lunch and snacks, pack a few extra compact food items in case your trip is unexpectedly extended. Choose no-cook foods: fig bars, cheese, nuts, bagels, candy bars, energy bars or packets, etc...
is unexpectedly extended. Choose no-cook foods: fig bars, cheese, nuts, bagels, candy bars, energy bars or packets, etc...

9. Hydration

Bring extra water with you for the trip. Many people forget that we all need a plentiful supply of water each day, and especially when our body is expending extra energy. 1 liter is a minimum quantity for a short-day hike; 2.5 liters for an all-day excursion. Take hot weather and the strenuousness of your outing into account. More heat or effort means more water. And it's not advisable to rely solely on water sources near the trail. If you must use these, be sure to pack a reliable water purification system

10. Emergency Shelter

Most day hikers shouldn't need to carry a tent with them. However, you should pack an emergency space blanket. Most of these that are commercially available fold down to a wallet sized packet. For the budget minded, a jumbo-sized plastic trash bag can also be used to keep out wind and rain.

GEAR Lite Touring

Set Your Heels Free

Light-Touring Equipment: Skis

by Rick Lovett and Paul Petersen

Skis for use on groomed track are frequently referred to as "track-skiing" or "light-touring" skis. If you go into a ski shop and ask to see equipment in this category, the sales people will know exactly what you're seeking. Light-touring skis are equally at home on groomed track or off-track on gentle terrain such as golf courses or alpine meadows. They're great for beginners, but they're of no use for ski mountaineering and are cumbersome for Nordic downhill (where their plastic edges won't bite into steep slopes).



To Wax or Not to Wax

Cross-country skis come in one of two ways: waxless or waxable. Waxless skis have a fish-scale or wedge pattern on their base which grips the snow to prevent backsliding but still allows easy forward motion. Waxable skis have smooth bases and get their grip and glide from the application of special ski wax. Depending on air temperature and snow conditions, you apply a different color-coded wax.

Approximately 80 percent of the cross-country skis sold in the United States are waxless, and any skis you rent are likely to be waxless. This doesn't mean waxing is archaic, but it is an advanced skill that most novice skiers would just as soon not deal with. For that first pair of skis, consider buying waxables only if you live someplace where winter temperatures are consistently below freezing. The colder and steadier the temperature where you ski, the more advantages waxable skis enjoy over waxless.

Camber

The camber of a ski makes smooth, efficient gliding across snow possible, and it's a key consideration in finding the right ski for you. To understand camber, stand a pair of skis on end with their bases together. With tips and tails touching, you'll notice a gap between the skis at the middle. This slight bowing in ski shape is the camber. Make the mistake of choosing a ski that has a camber too firm for your weight and the ski won't bite the snow when you press your weight down and attempt to kick. A camber that's too soft will leave you wondering why everyone glides past you on descents. Generally, if you're a more experienced skier, you'll want a firmer camber. Skiers who are thin for their height will want a softer camber than skiers who are heavier.

Buying tip: At the store, squeeze paired skis to find the right camber. If you're a beginner, reject any pair you can't squeeze completely together with both hands. If you can collapse the camber with one hand, then it's too soft and will glide poorly (unless you're a featherweight or have extraordinarily strong hands). Camber can differ slightly even between identical skis, so don't give up on a particular model until you've squeezed all of the skis in the shop.

Buying tip: You can check a ski's gliding potential at the ski shop by standing on top of the skis on a non-carpeted floor and sliding a piece of paper beneath the center of the ski's arch. You'll know you have the right camber if the paper slides freely beneath the entire length of the tread pattern, even when your full body weight is on a single ski.

Ski Length

Length is the other key factor in selecting light-touring skis. Here you have two choices: mid-length or the longer, traditional style. Which one is right for you would depend on the conditions in which you'll be using the skis. (FYI, camber is more important than length, so if you have to fudge a bit on length to find the right camber, do it.)

Mid-length: For most skiers, mid-lengths are the best choice. They turn easily, glide well on packed or tracked snow, and have enough flotation to allow a little venturing off-trail. Mid-length skis should be about head height.

Traditional skis: Due to their better flotation in soft snow, these are the ski of choice for skiers who would rather travel untracked snow than cruise the groomed trails at a ski center. But the extra length makes traditional skis harder to maneuver than mid-lengths. The rule of thumb for fit: The ski tip should reach your wrist when your arm is raised overhead.

Ski Width

Light-touring skis also vary in width to match different snow conditions. Here you have three choices:

Narrow: (20 to 30 percent narrower than medium-width models.) Narrow skis are designed for racing. Buy these only if you intend to spend almost all of your time on groomed track and can find a pair with a relatively soft camber.

Medium-width: Like medium lengths, these designs suit a wide range of uses and skill levels, so they make a good choice for your first ski.

Extra-wide: These are designed to provide better flotation on loose snow. They're heavier, harder to tip on their edges, and may not fit perfectly into machine-set track. Pick them if most of your skiing will be off-track

Light-Touring Checklist

- Choose between mid-length and traditional skis.
- Choose a ski width. Use the terms "narrow," "medium," and "wide" rather than worrying about specific measurements.
- Determine the approximate length in your chosen category that is proper for your height, but don't be wedded to it.
- Check the available options for camber. Individual skis vary, so just because one pair isn't right, don't ignore the one next to it.
- Buy a snug-fitting boot with maximum ankle support. Spend as much as you can afford.
- Buy the binding that fits the boot. You'll probably want the step-in style.
- Pick poles suitable for your height, skill, and terrain plans. Rent before you buy or try out equipment for free at a manufacturer sponsored "demo day."

Ski Maintenance

A little maintenance can make your skiing more enjoyable. Your waxless skis do not need glide wax, but will work better with some wax on the base. A simple quick waxing will keep your skis in good condition. You can wax after you get home any time before the next ski trip. Waxing at home is easy and more comfortable than trying to clean up on the trail. Also, your waxing will be done better when you can allow the skis time to set with the wax on. It can be frustrating trying to wax your skis on the side of the trail after you have icing problems with snow build up and stuck to the bottom for your skis. It is also difficult to do as good a job under such conditions.

Waxing will protect the bases of your skis. Wax will repel dirt and makes removing dirt easier. Wax will protect against abrasion and scratches. Wax decreases oxidation that can cause the ski base to deteriorate. Glide wax will improve glide. Wax is a good anti-icing protection. All of these will impact ski performance but the one that will have the most obvious impact is icing up the bases of the ski. It is the grip zone with the scales and multiple surfaces that will attract the most icing problems. The grip zone is the most important to keep clean and waxed and the hardest to rejuvenate.

There are some very quick and easy wax systems for waxless ski. Some are Maxglide, Easy glide F4 Swix, Grip and glide Toko. These waxes can be wiped on and then before skiing there are buffed out as thin as possible. A little applied now and then will help keep your skis performing at a high level. Wax should be rubbed into the base and not applied in a layer on the surface.

Some additional information if you are interested.

Caring for Waxless Skis - Cross country Skier

<https://www.crosscountryskier.com/caring-for-waxless-skis/>

Waxless Ski Maintenance, part 1 - XCski Indiana. Part 2 and 3 are on the website.

<http://xcskiindiana.com/articles/wax1.html>

Book – Mountaineers The complete guide to cross-country ski preparation

There are a lot of videos on line showing waxing, but a lot of them are for waxable skis and include a lot of information on grip wax. Here are a few that cover waxless skis.

Video: 'Waxing waxless skis' <https://www.youtube.com/watch?v=MmEDaRSMK3A>

Video: Toko Grip n Glide Wax: <https://www.youtube.com/watch?v=E--ZVEAv2Vc>

Personal Essentials

While these items aren't part of the 10 essentials system, many are necessary and others will make your trip more enjoyable and comfortable.

Day Pack or Back Pack – Your pack should be large enough to hold all the items you'll want to carry. It should also have a hip belt to transfer weight off your back & shoulders and down to your hips and legs. Daypacks with long narrow shape will transfer weight better than short, wide packs. Load your pack with heavier items close to your back and extra clothing & survival essentials in the bottom (with the exception of your first aid kit, which should be on top & easily accessible).

Plastic Bags – Use these to store your gear in. It will keep items dry and organized in your pack.

Sit Pad – Cut off a 2ft piece from a foam sleeping pad. Use this for a seat when you take a break. It will keep you dry and insulate you from the cold. If you don't have a sit pad, you can use your pack.

Maxiglide and Scraper – This is a waxless, anti-icing agent for no-wax skis. It will prevent your skis from adhering to cold, sticky snow. The scraper is used to remove the snow & ice that can build up on the bottom of your skis in colder temperatures.

Toilet Paper & Blue Bag – Sanitation items for packing out solid waste. This can be a couple of plastic bags & a larger, opaque, garbage bag. A double bagging system is safer. Tie used bags to the outside of your pack. Remember, leave no trace!

Athletic Tape – Apply to "hot spots" on your feet before skiing. This will minimize blisters. This is especially important when using new and/or rental boots.).

Car Keys & Lock De-Icer – Car locks can freeze in colder weather. Taking the keys with you, well, that seems obvious.

Sno-Park Permit – Keep your Sno-Park Permit in your car or truck so it's handy when you need it.

Snow Shovel – It's good to have at least one shovel per group. It can be used in an emergency, or to build seats for lunch.

Warm Drink or Soup – On cold days it's nice to have something warm to sip.

Dry Cloths in Your Car – It's nice to have some warm, dry cloths to change into at the end of a trip. Don't forget underwear!

Fellow Skiers – Skiing with others is safer & more fun!

Avalanche Basics

From the Northwest Weather and Avalanche Center <http://www.nwac.us/education/resources/>

Avalanches don't happen by accident and most human involvement is a matter of choice, not chance. Most avalanche accidents are caused by slab avalanches which are triggered by the victim or a member of the victim's party. However, any avalanche may cause injury or death and even small slides may be dangerous. Hence, always practice safe route-finding skills, be aware of changing conditions, and carry avalanche rescue gear. Learn and apply avalanche terrain analysis and snow stability evaluation techniques to help minimize your risk. Remember that avalanche danger rating levels are only general guidelines. Distinctions between geographic areas, elevations, slope aspect, and slope angle are approximate, and transition zones between dangers exist. No matter what the current avalanche danger, there are avalanche-safe areas in the mountains.

Avalanche Tutorial

[SNFAC Avalanche Tutorial](#)

[CAA Avalanche First Response Training Program](#)

Although there are no substitutes for taking and really learning about the avalanche triangle (snow, weather and terrain) by taking a multi-day avalanche course, viewing and understanding the basics contained within the excellent short [Avalanche Tutorial](#) (developed by the [Sawtooth National Forest Avalanche Center](#)) can help start the education process. This tutorial is highly recommended for anyone heading out into the back country. Gaining knowledge is a powerful tool that can help with route finding and stability evaluation and hopefully help avoid you getting caught by avalanches or otherwise involved in an avalanche accident. However, despite the best-laid plans, accident involvements still occur far too frequently as recent statistics indicate. In most back-country avalanche accident situations, time is critical and how YOU or members of your party respond to the incident strongly affects the outcome in this potentially life and death situation. To this end, the [Canadian Avalanche Association](#) has developed an excellent tutorial on helping the aware traveler gain an insight and understanding as to the most appropriate responses in such an event. This Avalanche First Response training program helps answer the very important question: "**Will you have the skills to save yourself and your friends?**"

Surviving an Avalanche

Most mountain ranges in the United States have a well-deserved reputation of having low avalanche danger. This reputation can be attributed to the National Park Service and the work they perform.

The Park Service works in conjunction with scientists and sophisticated equipment to detect loose snow caps and corrects them usually before the unthinkable happens.

What do you do if the unthinkable happens?

Whenever any situation arises in the back country you need to be prepared and have the survival skills to cope with the situation. No matter if you are hiking, backpacking, or skiing on safe, protected slopes, avalanche danger is present.

Even though the "low avalanche theory" prevails, the fact is the danger is still there no matter how unlikely occurrence is. Most possibly in our lifetimes we will never see an avalanche. Never the less, we must be prepared for it.

The effects of the gradual thaw during the day, and then the overnight freeze would make one believe that this could make the snow cap unstable, however the opposite is true. Actually, this process makes the snow more stable and this action causes this pack to become what many skiers and mountaineers call cement. After the thaw, then refreeze this snow becomes hard as a rock and is very stable.

What happens when fresh snow falls on to a hard cement snow pack?

Avalanches occur most frequently when a new layer of snow falls onto the cement pack. This new snowfall only need be about four inches or slightly more to cause a slide. The slide occurs from the weight of the new wet snow resting on a hard field of snow. Rarely does the cement pack tear loose, but rather the new snow slides off the cement snowpack.

After a snowfall such as this it is best to use precautions in the back country. After all, an ounce of prevention is worth a pound of cure. Remember, knowing what to do beforehand can save a life and may save yours.

In the case that this situation should present itself, stay off steep terrain at least a day after a snowfall of this type. Do not make any climbs where your incline is over thirty degrees. Avoid the north sides of any slopes. Most recorded avalanches have been noted occurring on north sides of steep terrain in winter months. In spring months, the opposite is true and most recorded avalanches have been noted on the south slopes.

Although this data has been distributed and relied upon, the fact is in winter months avalanches can occur in the most unexpected places. Slopes containing any deep snowpack can be unstable. If you are in an earthquake area, any shifting of the ground can also contribute to avalanche conditions. The Earth is constantly contracting and expanding and, combined with a small tremor, avalanche danger increases.

One sign of instability is overnight temperatures that stay above freezing. Another contributing factor which should be watched is any rainfall in the area along with higher than normal temperatures. These conditions make

the snow unstable and this includes the cement base. Even a small rise in temperature can thaw the cement ever so slightly and make slide conditions high.

If faced with an avalanche what should you do?

The fact is that avalanches have no rules. In fact, the most important rule to remember is that there aren't any rules. Prevention is your best survival guide.

If you are on the mountain and faced with an avalanche can you survive?

Survival is probable if you know how to react.

Your judgment is your best defense. It can make the difference between survival and tragedy. Keep your head and even though you will only have seconds to react, keeping a clear head is another survival skill that you cannot do without.

Do not get under a rock ledge. Never climb into a cave. Either way you could be trapped or smothered.

The avalanche moves with great force and weight so you cannot outrun it. Even the fastest skier cannot outrun an avalanche coming down the mountain at fifty to seventy miles per hour. If you should see the avalanche coming, you should first SHOUT out to other party members. This will not only alert them to the onslaught about to happen, but will alert them to your position.

After you have shouted out and alerted other people be sure to close your mouth tightly. Closing your mouth will not keep excess snow from entering, but will keep you from choking on excess water once the snow melts in your mouth.

Turn away from the avalanche and try to keep your backside to it.

Remove any and all cumbersome items such as your backpack, skis, and ski poles. The extra weight of these items is not only cumbersome but can also weigh you down when trying to swim and stay above the snow. If you are traveling on a snowmobile, try to maneuver to the side of the slide. This is where the force of the avalanche is less powerful. Remain upright and if you are knocked off your snowmobile be sure to let go of the snowmobile.

Once you are caught in the avalanche try to swim to the side with the flow of the snow. Moving snow has the same characteristics as the flow of a river or stream. Any swimming motion is just as good as the other, just keep swimming. If you feel as if you are being pulled under, thrust up with your swimming motions. This will help you stay above the snow. The closer you stay to the surface, the better your chances of survival.

Try to stabilize yourself. If at all possible, grab a tree or bush. Even a large rock will do, although they are sometimes harder to hang onto. Every foot of snow that passes by you means a few more feet of snow that cannot bury you. Hang on for dear life and for as long as you can.

If you are unable to stabilize yourself there are several things you should do when you begin to slow down in your movement with the snow. You should curl into a fetal position protecting as much as your body as possible. Cup your hands over your face allowing several inches of space between your hands and face. This space could be

your air space if covered in snow and will also keep the snow on top of you out of your face and mouth. Be sure to hold your breath until the snow around you settles down.

If you become covered with snow you should move your head vigorously side to side. This will allow an air space for you to breathe. If you can maneuver your body, roll it from side to side. The greater amount of free space the better, not only for the air space but also movement in case you should have to dig out.

As you begin to come to a full stop, reach upwards with one hand. Try to leave one hand above the snow. By leaving one hand above the snow you have marked the area where you are making your rescue easier. You will then be able to wave your hand or even fingers to signal for help.

Never try to dig your way out unless you can detect light from the above snow. The light will give the snow a brighter appearance. Sometimes the light above will make the snow take on a reddish hue. If you detect light force your hand through the snow above and if you cannot reach outside air in an arm's length, then do not attempt to dig out. To try to dig out would only waste precious air and energy. Once buried you have approximately twenty-five minutes to be unburied before your air supply would run out, and less time than that if you are expending energy on digging for nothing.

Try to remain calm as possible through all this. Remember your shout has notified anyone who was on the mountain that you were there also. Help should arrive very soon. Every mountaineer rescue team knows how to quickly locate people buried in an avalanche. Most teams work with dogs that have been specially trained to sniff out human scent. This means that the rescue team has a hand up on finding people buried under tons of snow.

It cannot be emphasize enough about being prepared before you're faced with a situation like this. Remaining calm and remembering the steps you need to take to ensure your safety can not only save your life, but the lives of others.

Hypothermia

(Adapted from the Mountain Rescue Council)

Cold kills in two distinct steps:

Step one: Exposure and Exhaustion

The moment your body begins to lose heat faster than it produces it, you are undergoing exposure. Two things happen: (1) you voluntarily exercise to stay warm, and (2) your body makes involuntary adjustments to preserve normal temperatures in the vital organs. Either response drains your energy reserves.

The only way to stop the drain is to reduce the degree of exposure. Part of the involuntary response is shivering. This is a warning to you by your body that you are losing too much body heat. By responding to this warning and following the guidelines below, you can prevent becoming dangerously hypothermic.

Step two: Hypothermia

If exposure continues until your energy reserves are exhausted, the process continues with two more observable responses: (1) cold will reach the brain, depriving you of judgment and reasoning power, and (2) you will lose the ability to move in a coordinated fashion, first losing control of your hands so that fine movements are difficult.

This is hypothermia: the rapid, progressive mental and physical collapse accompanying the chilling of the inner core of the human body. It is caused by exposure to cold and aggravated by wet, wind and exhaustion. Without treatment, it leads to death.

Prevention

Avoid Exposure: Avoiding exposure is your first line of defense against hypothermia. This does not mean you should not go out “into the elements.” It does mean that when you do go out, you should be prepared with the proper clothing and equipment.

Stay warm: Dress in and carry clothes you can use in layers. Several lightweight layers you can adjust to temperature and activity are more useful than one “all or nothing” heavy layer. Wear a hat to prevent significant heat loss from your head. Don’t tie your bootlaces so tightly that you cut off circulation and your feet get cold. During an outing, put on heavier layers of clothing as soon as you stop for a break. Don’t wait until you are shivering.

Stay Dry: When clothes are wet, they lose about 90% of their insulating value. Wool and synthetics lose less. Cotton and down lose more, so do not depend on these. Wear clothes that will retain their insulation, especially in the very wet Northwest. Always carry good rain gear, jacket and pants, with well-sealed seams. When the weather turns nasty, put on your rain gear right away. Don’t wait until your insulating clothes are soaked.

Be Mindful of the Wind: A slight breeze carries away heat from bare skin much faster than still air. Wind drives cold air under and through clothing. Wind refrigerates wet clothing by evaporating moisture from the surface. Lightweight, wind resistant clothing can minimize the wind-chill factor. Avoid windy ridges and exposed areas when possible. Sometimes moving just a few feet down or closer to trees can make a significant difference in the degree of exposure.

Understand Cold: Most hypothermia cases occur in air temperatures between 30 and 50° F. Many individuals simply can't believe such temperatures can be dangerous. They fatally underestimate the danger of being wet and tired in even moderate temperatures. Water or sweat running down the neck and legs or cold water held against the body by cotton clothing suck away body heat.

Eat and Drink Properly: Although this does not help you avoid exposure, it helps you to deal with it. You are more susceptible to problems if your body does not have the appropriate fuel. Carry sufficient water and drink regularly to avoid dehydration. Carry extra food in case you do have to stay out in the cold longer than expected.

Terminate Exposure: If you cannot stay warm and dry in existing weather conditions, terminate your exposure. Sometimes this simply means putting on more clothes and getting off the windy ridge for a while. In other cases, this may mean changing your destination, stopping to make camp or simply heading home. Making good decisions and recognizing potential problems before you get cold can save your life. Once exposure gets extreme and hypothermia sets in, you and other in your party may not be mentally or physically capable of taking appropriate action.

Detection

If your party is out in the cold and wet, think about hypothermia and stay alert for its signs. Watch yourself and others for the following symptoms:

- Uncontrollable fits of shivering
- Memory lapses and incoherence
- Vague, slow, slurred speech
- Immobile, fumbling hands
- Frequent stumbling, lurching gait
- Drowsiness (to sleep may mean to die)
- Apparent exhaustion

Treatment

Although the victim may deny any problem, he/she is in trouble. Believe the symptoms, not the patient. Mild symptoms should be treated immediately, before you have a life-threatening situation.

- Get the victim out of the wind and rain.
- Strip off all wet clothes.
- Get the victim into warm, dry clothes and a sleeping bag.
- Give the victim warm drinks.

If the victim is semi-conscious or worse, further measures must be taken immediately. At this point the body is not able to generate its own heat, so heat must be supplied from an outside source. Without treatment, the temperature will continue to fall until the organs cannot function and death will occur.

- Try to keep the victim awake.
- Get the victim into shelter, preferable a warm building. Make camp and build a fire.
- Use skin-to-skin contact for rewarming. Have another person get into the sleeping bag with the victim. Both need to be stripped of clothing.
- Do not give the victim anything to eat or drink if semi-conscious. Do not give anything until at least partial warming has occurred and the victim is coherent.
- Seek medical attention as soon as possible.

Summary

If you're outdoors for recreation, you don't intend to jeopardize your life. The concept of hypothermia may be new to you, but its dangers are all too real. When you hear of a person dying of "exposure," it means they died of hypothermia. It's the number one killer of outdoor recreationists.

- Choose equipment with hypothermia in mind.
- Take heed of the weather.
- Watch for warning signs in yourself and others.
- Enjoy the outdoors with the confidence

Frostbite

(Adapted from the Mountain Rescue Council)

Frostbite is the freezing of water around cells in the body. It occurs with rapid constriction of surface blood vessels that limit the blood supply to the area, causing rapid cooling.

Superficial Frostbite: involves small patches of surface tissue on exposed body parts. Most frequently affected are the fingers, tip of the nose, earlobes and toes.

Deep Frostbite: is a more serious problem that can result in extensive tissue death. After prolonged exposure, if superficial frostbite is not taken care of and the causes removed, larger areas and deeper tissues become involved.

Prevention

Stay Warm: Protect the most susceptible areas. Use a hat, headband or neck tube to cover the earlobes. A facemask may be needed in extreme conditions. Mittens are better than gloves to keep hands warm. Use extra socks only if they will not constrict feet within boots. Keep legs well covered to prevent loss of heat in blood circulating to the feet.

Avoid the Wind: The wind accelerates loss of heat from the surface of the body. Stay off windy ridges unless well protected. Wear windproof clothing.

Observe Others in Your Party: Watch for noses or earlobes that look white or shiny.

Insulate Yourself from Cold Surfaces: Use mittens or gloves to handle metal. Wrap metal surfaces with tape. Do not touch gasoline, which evaporates quickly, leaving behind frozen tissue.

Avoid Smoking Before or After Exposure: Smoking constricts blood vessels.

Do Not Drink Alcohol Before or After Exposure: Alcohol may make you feel warm, but it dilates the peripheral blood vessels, cooling the blood rapidly, which in turn cools the body's core as it circulates.

Detection

Be alert to frostbite. Observe others in your party. It may be a good idea to use a buddy system. Watch exposed areas of skin. These signs and symptoms indicate frostbite:

- Skin appears white, perhaps shiny
- Skin is hard to the touch; tissue underneath feels solid
- Acute pain, followed by numbness and loss of feeling
- Restricted movement of joints

Treatment

Once frostbite is detected, the utmost care must be taken to avoid further damage.

- Do not rub the injured area
- Terminate exposure to prevent further freezing
- Attempt to thaw the body part only if the frostbite is quite superficial and refreezing can be prevented. Once the area has thawed, it will be very painful. Encourage wiggling of thawed fingers and toes. Place sterile gauze between them and rest hand or foot on sterile cloth

- Do not break blisters
- Seek medical attention as soon as possible

For deep frostbite:

- Keep the frozen part frozen
- Prevent further injury. Do not rub and do protect from further freezing
- Give fluids if victim can swallow
- Do not allow a thawed part to refreeze (freezing, thawing and refreezing increases tissue damage and increases the chance of amputation and permanent disability)
- A victim with thawed feet must be carried out
- Seek medical treatment as soon as possible

Summary

Frostbite occurs frequently, but, like hypothermia, is preventable in most cases by staying warm, keeping out of the wind and avoiding exposure to susceptible areas. Stop and treat minor frostbite before it becomes more serious.

Once frostbite has occurred the affected body part is more susceptible to freezing in the future. Persons who have experienced frostbite must take great care to protect from reoccurrence.

Other Hazards

Although accidents are not always preventable and illness usually seems to come unbidden at the least opportune time, there are usually a number of steps you can take to lessen the chance of having them ruin your trip.

Carry a reasonable first aid kit and know how to use it. Make a point to take a Mountaineer Oriented First Aid (MOFA) course.

If you are subject to a chronic disabling ailment, plan or limit your trip accordingly and make sure someone knows about it and what action, if any, to take.

Stay in good physical condition and know your physical limitations. Sign up only for those trips you know you can handle. You should always ski within your ability to lessen the risk of injury. If you become ill or suffer an injury, let the leader know about it.

Wear and carry adequate clothing, which does not restrict movement or blood circulation. Watch for signs of hypothermia, frostbite, chill or illness in others as well as yourself.

Weather

Weather is an especially important consideration in winter. Storms are more frequent and can appear suddenly. White outs and heavy snowfall can reduce visibility to near zero.

Make it a point to obtain weather forecasts ahead of time and postpone or plan your trip accordingly.

Know where you are at all times to reduce chances of becoming lost or disoriented due to poor visibility.

Don't be afraid of canceling or altering a trip in progress if bad weather catches you unaware.

Equipment Failure

Ski touring equipment is quite simple and does not require much in the way of maintenance, but since failure of some items could leave you struggling to get back to your car without skis in very deep snow, it is a good idea to treat your equipment with respect and be prepared for repairs.

Check binding, boots, poles and skis before each trip and make sure all screws are tight, poles and skis are intact and boot laces, poles and binding plates are secure.

Carry a few parts and tools and learn how to use them. Some items to consider are: screws to suit your bindings, an extra binding bail or cable, duct tape, wire, screwdriver, small pliers, zip ties and a repair ski tip. Some items carried jointly can serve several people in a group.

Have a safety string tied to the bail to prevent loss.

Terrain Difficulties

The winter landscape presents a number of hazards and potential pitfalls, some of them not readily apparent.

Winter Winds: Strong breezes build drifts of snow, called cornices, on the lee side of ridges and peaks. These cornices are hazardous in two ways. (1) They can fall onto the slope below, burying the unwary traveler or initiating an avalanche, and (2) they can collapse under the weight of a skier traveling on top of them, dropping him/her onto the slope below. Since cornices are not always evident from above, all exposed edges and ridges are suspect and should be approached with caution.

Tree Wells: The bases of trees are surrounded by very soft snow. These wells of snow are usually found around partly buried evergreen trees. These can trip up a skier and make a dangerous trap from which it is difficult to escape when encumbered by skis, poles and pack. Skiers can become buried in tree wells and risk serious injury and death. Buried streams also create hazards; the snow over them may easily collapse and trip up an unaware skier.

Tree Snow: Masses of snow often accumulate in the branches of trees. This snow drops off in significant clumps as the weather warms or the wind blows and can often fall on unaware skiers leaving them cold, wet and miserable. The colloquial term for these well-frosted trees is “idiot maker”.

Getting Lost or Becoming Benighted (e.g. “Losing It”)

Getting lost or finding yourself three or four miles from your car with darkness coming on are serious problems in any season, but the problems become even more serious when they lead to having to spend a cold, snowy winter night outside.

Carry a map and compass and know how to use them. Refer to them as you go along so you know where you are at all times. Even though you are in a group following a leader, check your location independently. It will give you practice and keep you thinking if nothing else.

Preview your route and note landmarks and the lay of the land in your mind. Check yourself as you go along.

Have a timetable in mind and allow yourself time to get back. Don't be afraid to alter your objectives if time seems to be running short. Allow some time for breaks, adjustments, and emergencies.

Leave a description of your trip plan with someone. Include route, destination and expected time of return. Ideally, leave map of your route as well as the name and number of the authorities to be notified if you do not return.

Carry emergency equipment to suit the trip. Remember, at a minimum, you must carry enough food and clothing to survive a night out in the harshest conditions. It is a good idea to carry at least one shovel per party.

Plan ahead what you would do if you had to spend the night out. In addition to extra clothes and extra food, one of the most important considerations for survival is shelter from the wind and elements. Carry an emergency shelter in the form of a tube tent, bivy sac or large garbage bag. Learn about emergency snow shelters (snow caves, tree wells, trench igloos, etc.)

If, in spite of all your planning, you find yourself benighted, don't panic. Make the most of your situation and think positively. Work together as a group. Pool your resources and put to good use all that emergency equipment you have carried around for so long!

This list does not pretend to cover all the hazards which might be encountered on ski tours. The main objective is to alert you to the fact that there are hazards, to point some of them out, and to convince you to use appropriate safeguards while having fun.

You are encouraged to read further on the subjects of first aid, hypothermia, avalanches, weather and winter survival, among others. For recommended reading, please refer to the course bibliography. Please also note that the Mountaineers offers more in-depth training in first aid, navigation and avalanche awareness and consider taking these as you move beyond the level of novice skier.

Maximize your winter enjoyment by following the Winter Code of Ethics:

1. I will respect all public and private property and the rights of all winter recreationists to enjoy the beauty.
2. I will park considerately without blocking vehicles or impeding access to trails.
3. I will keep to the right when meeting other winter recreationists and yield the right of way to downhill traffic.
4. I will slow down and use cautions when approaching or overtaking another.
5. I will respect designated areas, trail use signs, and established ski tracks.
6. While stopping, I will not block the trail.
7. I will not disturb wildlife and will avoid areas posted for its protection or feeding.
8. I will not litter and I will pack out everything I pack in.
9. I realize that my destination and travel speed are determined by my equipment, ability and terrain, weather and traffic on the trail. In case of emergency, I will volunteer assistance.
10. I will not interfere with or harass others, recognizing that people judge all skiers by my actions.

Nordic Ski Equipment Rentals

Note: This is not a complete list and we cannot recommend one over the other as policies change year to year. It's up to you to call to confirm that stores listed still rent Nordic Equipment, and to confirm hours/costs.

REI Seattle

[Seattle flagship](#)

222 Yale Ave N
Seattle, WA 98109
(206) 223-1944

Classic x country ski package: Rent daily \$22.00 each additional night \$13

Back country x country ski package: Rent daily \$28.00 each additional night \$17

REI Issaquah -

<https://issaquah.rentals.rei.com/portal/>

735 Northwest Gilman Boulevard
Issaquah, WA98027
425-313-1660

Classic Package Rent daily: \$22.00 each night; each additional night: \$13.00

AscentOutdoors

<https://ascentoutdoors.com/pages/equipment-rentals>

5209 Ballard Ave NW
Seattle, WA 98107
(206) 545 - 8810

1-3 Days: \$48.00

4 Days: \$63.75

5 Days: \$79.50

6 Days: \$92.25

7 Days: \$111.00

Late FEE Per Day: \$48.00

Sturtevant's Ski Mart Bellevue

13219 NE 20th Street
Bellevue, WA, 98005
Phone: (425) 637-8958

Cross Country Ski Package-

Advance Reservation Day Rate - \$31.46

Walk-In Day Rate \$34.95 - You Save 10%

2 Day: \$59.99

3-4 Day: \$79.99

5-7 Day: \$99.99

Seasonal: \$199.99

Stevens Pass Snowboard Shop

<https://stevenspasssnowboardshop.com/rentals/rental-pricing>

617 Croft Avenue (Hwy 2)

Goldbar, WA, 98251

Retail: 360-793-0221 Rentals: 360-799-0613

Daily: \$32.00

Seasonal: \$150.00

Seattle Ski and Snowboard

<http://www.seattleski.com/rentals.htm>

14915 Aurora Avenue North

Shoreline, WA 98133

206.548.1000

Daily: \$35.00

2 Day: \$60.00

3 Day: \$90.00

4 Day: \$120.00

Weekly: \$150.00

Seasonal: \$179.95

Westra Sports

<http://westrasports.com/>

12SW Everett Mall Way

Everett, WA 98204

425-212-9539

Rent daily: \$35.00

Pro Ski and Mountain Service

<https://www.proskiservice.com/rentals.html?cat=402>

2nd St, P.O. BOX 856, North Bend, WA 98045 USA

MON-FRI 10AM-6PM, Sat-Sun 8AM-6PM

(425.888.6397 ext. 1)

Cross Country ski package: Daily: \$40.00; Each additional day: \$35.00; Season: \$169.00

Stevens Pass Resort Nordic Center

Classic entry level: \$35 full day season: \$225 Classic performance ski packages: \$45 full day; season: \$345

General info email info@stevenspass.com or call Guest Relations @ 206-812-4510

Miyar Adventures

135th Ave NE, Ste, #C-500

Woodinville, WA 98972

1-425-949-8634

Prices aren't posted, the site recently got sets of Nordic skis to rent, so please call to confirm hours and prices, but as of now: 3day rental \$80; 4day \$110; 5day \$145 and up

Sno-Park Permits

Non-motorized Sports Sno-Park permits (one-day permits, seasonal permits and special groomed trail permits) are available from a numbers of State Parks locations and vendors. One day permits can be purchased on-line. A partial list of State Park offices and vendors are listed below.

Permit Type	Purchased from State Parks	Retail vendor	Purchased online
One-day	\$20	\$22	\$20 (+\$2fee PER day)
Seasonal Non-Motorized	\$40	\$42	\$40
Special Groomed Trails	\$40	\$42	\$40

Sno-Park seasonal permit holders: You do not need a Discover Pass to use a designated Sno-Park between Nov 1 and March 31 for winter recreation activities. The Discover Pass is required only if you have a one-day snow park pass	
Sno-Park permits are available beginning November 1 through April 30 either online or by purchasing it from one of many permit vendors, including various retail locations; Washington State Parks region offices; Lake Easton, Lake Wenatchee, Mount Spokane, and Fields Spring state parks; Washington State Parks headquarters (1111 Israel Road SW, Olympia, WA 98504); or area U.S. Forest Services offices	
State Parks Permit Purchase Locations... more locations on-line	
Lake Easton State Park 1/4 mile on the south side of exit 70 on I-90 150 Lake Easton State Park Road PO Box 26 Easton, WA 98925	Lake Wenatchee State Park 21588-A Highway 207 Leavenworth, WA 98826 Ph 509-763-3101
State Parks Eastern Region Headquarters 270 Ninth St. NE Suite 200 East Wenatchee, WA 98802 Ph: 509-665-4319	Hyak Sno-Park 71 Keechless Boat Launch Road, Snoqualmie Pass, WA Ph 509-656-2230

Location	Vendor	Address	Phone Number
Issaquah	REI	735 NW Gilman Blvd	(425) 313-1675
Leavenworth	Lake Wenatchee State Park	21588 Highway 207	(509) 763-3101
Leavenworth	Der Sportsman, Inc	837 Front St.	509-548-5623
Leavenworth	Midway Village And Grocery	14193 Chiwawa Loop Rd.	(509) 763-3344
Leavenworth	Plain Hardware	18636 Beaver Valley Rd.	(509) 763-3836
Lynnwood	Rei – Alderwood	3000 184th Street Sw	(425) 640-6200
Mazama	Mazama Store/Goatsbeard Mt. Supplies	50 Lost River Road	(509) 996-2855
North Bend	G&S Services-Mt Si Chevron	745 S.W. Mt. Si Blvd	(425) 888-4393
North Bend	North Bend Shell	225 E. North Bend Way	(425) 888-4858
Seattle	REI	222 Yale Ave. N.	(206) 223-1944
Seattle	Second Ascent	5209 Ballard Ave. N.W.	(206) 545-8810
Seattle	The Mountaineers	7700 Sand Point Way, NE	(206) 521-6000

Personal Safety Notes

The Rules

Anywhere you ski; obeying these rules is just common sense.

1. Always stay in control, adapt the manner and speed of your skiing to your ability and to the general conditions on the mountain, and be able to stop or avoid other people or objects.
2. People ahead of you have the right of way. It is your responsibility to avoid them. Leave plenty of space when overtaking a slower skier.
3. You must not stop where you obstruct a trail, or are not visible from above, (i.e. base of jumps or knolls).
4. Whenever starting downhill or merging into a trail, look uphill and yield to others.
5. Observe all posted signs and warnings. Keep off closed trails and out of closed areas.

Ski Ranking

Ski slopes and trails are rated by difficulty. As a skier, it is your responsibility to use trails you can safely navigate.

1. Trails marked with a green circle are for novices and have gradual declines and small, easy turns.
2. Trails marked by a blue square are of intermediate difficulty. They have steeper drops and sharper turns.
3. Black diamond trails have the steepest drops and the tightest turns-try them only if you are an expert.

Code of Ethics

Maximize your winter enjoyment by following the Winter Code of Ethics:

1. I will respect all public and private property and the rights of all winter recreationists to enjoy the beauty.
2. I will park considerately without blocking vehicles or impeding access to trails.
3. I will keep to the right when meeting other winter recreationists and yield the right of way to downhill traffic.
4. I will slow down and use caution when approaching or overtaking another.
5. I will respect designated areas, trail use signs, and established ski tracks.
6. While stopping, I will not block the trail.
7. I will not disturb wildlife and will avoid areas posted for its protection or feeding.
8. I will not litter and I will pack out everything I pack in.
9. I realize that my destination and travel speed are determined by my equipment, ability and terrain, weather and traffic on the trail. In case of emergency, I will volunteer assistance, will not interfere with or harass others, recognizing that people judge all skiers by my actions.

Some Hazards

- Here's a partial list of the hazards and risks of cross-country skiing:
- Falling down onto the snow surface.
- Skiing or falling into an obstacle at speed.
- Skiing or falling over a drop-off or cliff.
- Getting tangled up with skis and poles in a fall or sudden maneuver: resulting in slight or serious damage to bones, joints, connective tissue, skin, bleeding, etc.
- Skiing into the handle of the pole when the tip is stuck.
- Getting hit by another skier.
- Getting hit by a motor vehicle.
- Hypothermia
- Frostbite

- Dehydration and Fatigue
- Getting lost.
- Strains of muscles, joints, connective tissue -- from use, not by hitting something.
- Health emergencies that occur because the skier was previously ill or injured or otherwise not in good health.
- Non-ski-related health emergencies that by chance occur while skiing.

Other Facts

- Most commonly skiers injure their legs and thumbs.
- The environment can cause many skiing dangers. Sunburns, frostbite and hypothermia, which are easily avoided with preparation.
- Don't go alone.
- Tree wells

Deep snow or tree well accident occurs when a rider or skier falls into an area of deep unconsolidated snow and becomes immobilized. The more the person struggles the more entrapped in the snow they become.

If a partner is not there for immediate rescue, the skier or rider may die very quickly from suffocation - in many cases, they can die as quickly as someone can drown in water.

Deaths resulting from these kinds of accidents are referred to as a NARSID or Non-Avalanche Related Snow Immersion Death.

The odds of surviving a deep snow immersion/NARSID accident are low; especially if you are not with a partner. In two experiments conducted in the U.S. and Canada in which volunteers were temporarily placed in a tree well, **90% COULD NOT rescue themselves.**



% of Tree Wells & Deep Snow involved in NARSID cases

<http://www.deepsnowsafety.org/index.php/>

<https://www.stevenspass.com/site/mountain/avalanche-safety/tree-well-safety>

Prepare for Winter Driving

Protect yourself and your passengers. Allow extra time to reach your destination during inclement weather. It takes only one unprepared or careless driver to slow or stop traffic. ([WSDOT](http://wSDOT))

Practice the following:

- Drive for conditions – slower speeds, slower acceleration.
- Check to see if you have traction tires.
- Know what the traction advisories mean.
- Watch a video to learn how to install tire chains.
- Do not use cruise control.
- Four-wheel and all-wheel vehicles do not stop or steer better on ice.
- Leave extra room between your vehicle and the vehicle in front of you. And remember, the larger the vehicle, the longer the stopping distance.
- Slow down when approaching intersections, off-ramps, bridges, or shady spots.
- If you find yourself behind a snowplow, slow down and give the plow a little extra room.

Slow down and be extra cautious near the chain-up and removal areas. There are often people out of their vehicles.



[What to Carry in Your Car](#) (pdf 189kb)

What would cause the pass to close?

- **Blocking Vehicles**
- **Avalanche Control**
Avalanche control work is scheduled at night when traffic volumes are low when possible. WSDOT attempts to provide advance notice, but in an emergency, it's not always possible.
- **Road Clearing**
If there is heavy snow in a short amount of time, road crews may close the pass to clear ice and snow from the travel lanes.

WSDOT

Winter Driving Supply Checklist

Accidents, pass closures and other winter events can mean unexpected time in your car. Be prepared. Pick up these items on your next shopping run and then pack them into your vehicle.

Pick up shopping	Packed in car	Pick up shopping	Packed in car
<input type="checkbox"/>	<input type="checkbox"/>	Flashlight	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Extra batteries	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Blanket	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Nonperishable food/snacks	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Gloves	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Boots	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	First aid kit	<input type="checkbox"/>
		Cell phone charger/battery booster	<input type="checkbox"/>
		Tire chains	<input type="checkbox"/>
		Ice scraper/snowbrush (a small shovel comes in handy too)	<input type="checkbox"/>
		Jumper cables	<input type="checkbox"/>
		Flares/warning triangle	<input type="checkbox"/>
		Kitty litter or sand to help with traction	<input type="checkbox"/>
		Whistle to signal for help	<input type="checkbox"/>

If you find yourself stuck or stranded, stay in your car, put on your flashers, call for help and wait until it arrives.

[Winter Driving Checklist](#) (pdf 214kb)

Trip Planning Tips

Decide where to go:

1. Read over available guidebooks. Websites such as <http://skimountaineers.blogspot.com/> have links to ski locations, weather & avalanche conditions.
2. Check highway conditions by contacting: <http://www.wsdot.wa.gov/>
3. Contact local rangers & park officials for current, specific information about trails in their respective areas. For ranger phone numbers, call the Outdoor Recreation Info Line at 206 470-4060. If skiing in groomed Sno-parks areas, go to: <https://parks.state.wa.us/130/Winter-recreation>
4. You'll have more fun & greater safety if you pick easier trips and avoid exceeding your ability or conditioning level.

Important things to know before you go:

1. What is the major road access & is it open?
2. What parking is available & what permit are required?
3. What is the level of difficulty of the outing?
4. What topographic map covers the area?
5. What are the specific hazards for that specific trip? (Always phone the local ranger for advice on this matter).

Prepare before you go:

1. Gather & organize your gear in advance of your outing so you can concentrate on getting a good night's sleep the evening before your outing.
2. Make sure your equipment is adequate to ensure your comfort & safety in the worst possible weather conditions.
3. Information should be left in writing with a responsible friend, indicating where, with whom, car description & license plate number, where parked & when & whom to contact for rescue in case of no return.

Things to remember during your outing:

1. Staying together is the responsibility of all-party members. Keep an eye on the person in front of and behind you. Let those ahead know if it appears the group is getting split up.
2. Keep your map & compass out. It is very important to know at all times where you are on the map and what direction you should go to get out in case of a sudden storm or white-out or in case windblown snow covers your tracks.
3. Remove a layer of cloths just before starting out to minimize sweating problems
4. Travel slowly. Avoid sweating as this will only lead to rapid chilling later on. Limiting breaks to no more than 5 minutes will also minimize chilling.
5. If feet or hands are cold, put on a hat. Additional warmth can be obtained by doing local isometric exercises with the affected extremity or by using a disposable hand warmer.
6. Be aware of changing weather conditions & turn back if weather or route conditions appear to be hazardous.
7. DON'T FORGET TO HAVE FUN!!!

Skiing Resources

Basic (classic) Nordic Skiing Video Resources

Learning styles vary greatly from person to person.

Having the same skill explained in a slightly different way and seeing a repeatable and good visual picture of how the different skiing movements are expected to be implemented can help many to improve their skiing. That leads to more fun on snow – and that is what we want for you!

Below is a list of instructional videos on YouTube (please turn off the occasional advertising there) that you can watch at your own pace and ambition. You can use them either to reinforce understanding of the course lessons or, if interested, learn about hints and tricks that help with personal skiing skills.

However, videos are not available for every skill or drill taught in this course. Please refer to the course syllabus when necessary or ask your instructor if you have questions.

Videos are mostly made with members of the PSIA (Professional Ski Instructors of America) National Team, Canadian Ski Instructor Association instructors and other highly rated national or international instructors or athletes.

The list of videos/links is provided by The Mountaineers as a courtesy. The Mountaineers do not claim to own any of the listed videos/links and all copyrights to videos/links are owned by their respective owners. Videos may disappear from YouTube at any time or links may not work any longer.

Other skiing courses offered by The Mountaineers: [The Mountaineers website](#)

Basic Nordic Skiing – Understanding Classic -vs- Skating [Nordic Skiing Equipment and Techniques - Classic vs. Skating](#)

In this course, we only teach the Classic Nordic Skiing style.

References to Classic Techniques and Skills As taught in this Course

Warming Up etc...

[15 Warm Up Movements & Exercises before Cross Country Skiing, Running...](#)

[Winter Ski Preparation](#)

[Balance Aids for Cross Country Skiers](#)

Diagonal Stride

[Basic athletic position and first movements without skis](#)

[How to get up from a fall](#)

[Classic Diagonal Stride](#)

[Classic Style – Diagonal Stride](#)

[Basics of Diagonal Stride](#)

[4 Tips for Beginner Diagonal Stride, Classic Skiing](#)

[Scooter drill and no-poles skiing](#)

[Adding poles](#)

[Scooter Drill for Diagonal Stride](#)

[Diagonal Stride: Skipping for Better Grip](#)

Double Poling

[Improve your 1 step double pole in cross country skiing](#)

[Improve your marathon or half skate step](#)

[Improve your snowplow/wedge turns](#)

[Skiing around objects in the classic track](#)

[Skiing Downhill](#)

[Downhill Skiing Drills - 360 or Twirly Birds](#)

[Balance exercises on downhills](#)

[Downhill Terrain Tips](#)

[Skiing Uphill: Get a Stronger Kick!](#)

[Skiing Uphill Tip: Step on Your 1 2 3](#)

[Learn the Step Turn](#)

[Step Turn at Speed](#)

[How to do a Kick Turn on skis](#) (instruction applies to cross country skis in the same way!)

Additional Info and/or advanced Techniques

[Fundamentals of cross country skiing technique](#)

[Improve your snowplow turns – advanced snowplow/parallel](#)

[Learn to make telemark turns-Part 1](#)

[Waxless XC Ski Preparation](#)

[Basic Cross Country Ski Waxing Principles \(explained mostly for waxed skis with a klistor kick zone\)](#)

[Swix XC Recreation Waxless skis Cleaning](#)

[Swix XC Recreation Waxless skis Maintenance](#)

BLOOPERS, Stunts and Trip videos

[Back Country Cross-country Skiing!](#)

[You still think that cross-country skiing is boring?](#)

[Alaska on cross country skis](#)

[Cross Country Ski Bloopers](#)

[Nordic skiing stunts](#)

[Vasaloppet 2012 crashes](#)

[No language skills required here](#)