Chapter 22

Ski Touring and Snowshoeing

"In the end, to ski is to travel fast and free—free over untouched snow country . . . to follow the lure of peaks which tempt on the horizon and to be alone for a few days or even hours in clear, mysterious surroundings."

—Hans Gmoser, Canadian mountain guide and a founder of heli-skiing

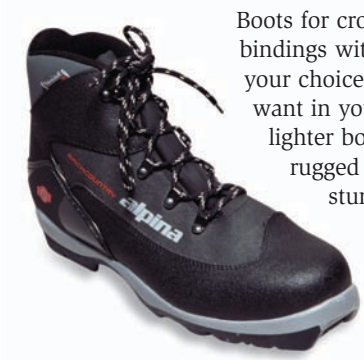
The tracks of snowshoes and skis can be traced over the snows of thousands of years of human history. Modern skis and snowshoes are durable and easy to use, and the challenge of getting outdoors in winter is every bit as inviting. Combining vigorous exercise with agility and endurance, cross-country skiing and snowshoeing can be ideal additions to your physical fitness routine. Once you have mastered the basics, skis and snowshoes might become an essential part of your cold-weather camping gear, launching you into some of the best winter treks of your life.

Cross-Country Skiing

Cross-country skiing is a magnificent means of winter travel. In recent years, skis for traveling cross-country have evolved dramatically. Many are intended for specific conditions of snow and terrain—groomed tracks, for example, or deep powder. Variations in length, width, shape, base, edge, and flexibility can make ski selection bewildering for a beginner. Fortunately, just about every ski shop will have people who can help you find the right skis in the correct size to match your activities and level of expertise.

You can learn a great deal about what you need by renting cross-country skis, poles, and footwear. It won't take very many trips for you to discover the advantages of various styles of gear, and to narrow down your choices to the equipment that is just right for you.

Boots



Boots for cross-country skiing must be matched to the bindings with which they will be used. Beyond that, your choices depend on the weight and warmth you want in your footwear. For most recreational skiing, lighter boots are just the thing, while treks into rugged mountain country demand the security of sturdy, insulated boots. Check the fit of ski boots as you would hiking boots. Break them in on short trips before attempting any extensive touring, and wear gaiters to keep out the snow.

Bindings

Despite their differences, something that all skis have in common is a binding to hold a ski boot in place.

Three-Pin Binding

This traditional cross-country ski binding consists of a movable bail and three pins protruding upward from a metal plate attached to the ski. Holes in the sole of a boot made to fit the binding slip over the pins, and the bail snaps down to hold the boot toe against the ski. The heel of the boot is free to move up and down as the skier kicks and glides across the snow.

Nordic Binding

The Nordic binding features a horizontal bar rather than pins. A fitting molded into the toe of a Nordic boot clips around the bar. As with three-pin bindings, boot heels are free to rise and fall with the skier's movements.

Nordic binding

Cable Binding

A cable binding holds the toe of a skier's boot with a three-pin or Nordic binding, and includes a cable tensioned around the heel of the boot. The cable increases a skier's lateral stability for making turns on downhill runs.

Cable binding

Alpine Touring Binding

An alpine touring binding employs a rigid, hinged plate designed to accommodate a stiff leather or plastic mountaineering boot. The heel is free to rise and fall while a skier is on flat terrain or going uphill, and many are fitted with *heel lifts*—braces that can be positioned to allow better foot position and more comfort on steep ascents. Alpine bindings also can be locked to the skis so that touring skiers can use the same descent techniques as downhill skiers.

Alpine touring binding

Berwin Binding

The Berwin binding will accommodate mukluks, shoepacs, and just about any other sort of winter footwear. Toe cups and straps position the skis and hold boots in place. Berwin bindings are a good choice for travelers crossing gentle terrain, especially if they are pulling sleds loaded with gear.

Berwin binding

How Cross-Country Skis Work

Perhaps you've seen a good cross-country skier skimming over the snow. The traveler kicks forward on one ski, glides on it a moment, then kicks the other ski ahead. One motion flows into the next, and soon the skier is out of sight.

How can a ski that slides forward also provide the traction a skier needs to kick along a track? The problem has two solutions—*waxless* and *waxable* skis.

Waxless Skis

Look at the underside, or *base,* of a waxless ski and you probably will discover that the middle third of the length has a molded pattern that resembles overlapping fish scales, diamonds, half-moons, or ripples. Notice that the raised edges of the pattern face the tail of the ski. It is much easier to run your hand over the ski base from tip to tail than it is to go the other way.

Now place the ski flat on the floor and look at it from the side. It's slightly bent, a characteristic known as *camber.* With no weight on the ski, the patterned portion of the base doesn't touch the floor. However, when someone stands squarely in the binding, the ski flattens until nearly all the pattern is in contact with the floor. On snow, the weight of a skier pushing off on a ski flattens it, pressing the pattern down where it can grip the snow. When the skier glides, there is less pressure on the ski, allowing it to flex upward and lift the pattern clear of the snow. The ski coasts forward on the smooth areas of the base.

Waxless skis can be noisy on downhill runs and a bit slow, but they are great for beginners, for skiing in variable temperatures and snow conditions, and for any skier who doesn't want to deal with waxes.

Base of a waxless ski

Waxable Skis

The base of a waxable ski has no molded pattern. Instead, a skier applies a thin layer of special wax to the middle third of the base. As the skier's weight presses the ski down, microscopic crystals of snow dig into the wax and hold the ski steady. As the skier's weight shifts to the other ski, the waxed portion of the base rises a little above the snow, allowing the tip and tail of the ski to glide.

Waxable skis can be swifter and quieter than waxless models, but using wax effectively takes experience. Different snow conditions require different waxes for maximum efficiency, and you'll need to know the approximate temperature of the snow in order to choose the right wax. Packed in tubes or sticks marked with effective temperature ranges, waxes can be rubbed directly onto the base and then smoothed with a block of cork.

Typical Ski Waxes and Temperature Ranges

WAX	TEMPERATURES
Universal	*Variable wet snow conditions*
Yellow	*34 to 39 degrees Fahrenheit*
Red	*32 to 36 degrees Fahrenheit*
Purple	*32 degrees Fahrenheit*
Orange	*21 to 31 degrees Fahrenheit*
Blue	*14 to 23 degrees Fahrenheit*
Green	*–22 to 14 degrees Fahrenheit*

The Kanik snow camping program offered by Philmont Scout Ranch is a premier cold-weather camping experience featuring ski touring, snow shelter building, snow camping, and winter ecology. Philmont awards a distinctive patch to each youth and adult participant who successfully completes the Kanik program. *Kanik* (pronounced *CAN-ick*) is from the Eskimo word for "snowflake."

Track Skiing

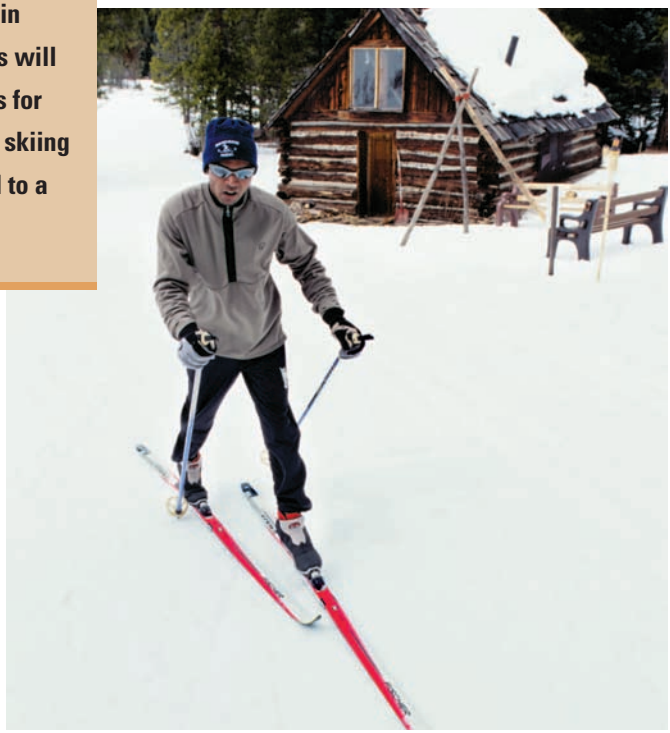
A good way to learn to ski is to follow the tracks of other skiers over rolling terrain. The tracks will help guide your skis while you practice the skills you'll use later for backcountry treks. Low hills will give you a chance to try gradual ascents, easy downhill runs, and plenty of kicking and gliding.

Getting Started

Begin by striding forward, putting your weight on your left ski while you slide the right one out in front. Shift your weight to your right foot as if you were taking a step and, as the right ski grips the snow, slide the left ski ahead of it. Repeat the sequence in steady rhythm—kick and glide, kick and glide—using your skis as platforms from which you propel yourself along.

Improve your balance and control by leaning forward as you ski. Check the way you use your poles; rather than gripping the handles, let your wrists press against the straps. As the left ski moves forward, plant the right pole ahead of yourself and push off with it. Do the same with the left pole as the right ski glides ahead. The motion of your arms will be much the same as when you swing them while walking, though a bit more exaggerated. The power of your arm and shoulder muscles will enhance your speed, and the smooth use of the poles will help you perfect the forward motion of cross-country skiing.

The right length of skis depends on the skier's weight, the width of the skis, and the ways in which the skis will be used. Poles for cross-country skiing should extend to a skier's chest.



Double Poling

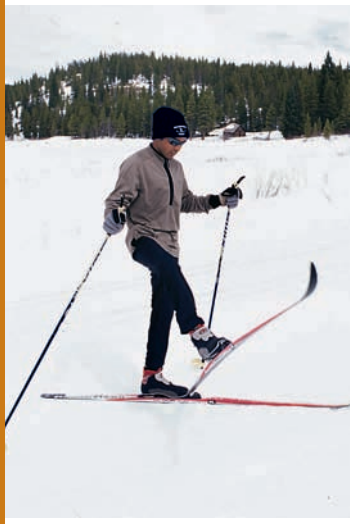
Another way to make headway on flat routes is *double poling*—that is, using both poles in unison to push yourself along. Leaning forward at the waist with your knees flexed and feet together, plant your poles a little ahead of your boots. With a light grasp on the handles, push against the wrist straps and let your skis slide forward. Recover the poles by swinging your arms like pendulums, and plant the poles again, repeating the sequence with a relaxed, steady rhythm.

Turning

If you are skiing in a track, the track itself usually will guide the ski through gradual turns. Step out of the tracks, though, or set out across pristine snow, and turning is up to you. Several techniques can be used to change direction.

Step Turn

Make small route changes while you are in motion with the *step turn.* Lift one ski and turn the tip in the direction you wish to travel. As you put your weight onto that ski, lift and turn the other ski. For larger changes in direction, you might need to make a series of step turns.



Kick Turn

Reverse your direction while standing still by using the *kick turn.* Lift one ski above the snow, raise its tip, and carefully rotate your leg until you can put the tip down beside the tail of your other ski. Shift your weight off that ski, then lift it and twist around to place it in the normal position alongside the first ski.

Snowplow Turn

Influence the direction and speed of your descents with *snowplow turns.* Position the skis in the shape of a V—the snowplow—and lean on the skis' inside edges. More pressure on the right ski will cause you to turn left, while pressure on the left ski will take you to the right. Equal pressure on the skis can slow your progress or bring you to a full stop.

Telemark Turn

As your skiing skills increase, you might want to learn to *telemark.* It will give you more versatility and control while you make your descents. The best way to learn is by having an experienced telemarker coach you, though you might be able to ease into the telemark turn from a snowplow turn. The primary difference between the two turns is one of position. In a snowplow turn, the skis form a V shape; in a telemark, the skis are parallel and one is a bit ahead of the other.

As you make a series of turns, gradually adjust the position of your skis from the V of the snowplow to the single line of the telemark. Put your weight on the forward ski, twist it to the outside with your ankle to begin the turn, and as the forward ski carves an arc in the snow, shift your weight to the back ski. To turn the other direction, slide the back ski forward, twist it with your ankle, and let the inside edge of the ski lead you where you want to go.

You'll find you can balance best if you keep your hips turned downhill. That means you'll twist your torso to the right as you turn left, and to the left as you turn right. Lean downhill, too; leaning backward might cause your skis to slide out from under you.

Sidestep

Climbing

The pattern or wax on the base of your skis should grip the snow well enough for you to kick and glide up gradual slopes. For moderate slopes, switch to the *herringbone step*. Spread the tips of your skis until they form a 90-degree angle, plant your poles behind the skis with each step, and walk up the snow.

On ascents too steep to herringbone, turn your skis sideways to the hill and either *zigzag* (making switchbacks as you go) or *sidestep* (stepping up with the uphill ski, then bringing the downhill ski close to it). If a climb will be long, you might want to attach *climbing skins* to your skis.

Herringbone step

Climbing Skins

As a winter route becomes steeper, waxes and molded bases lose their ability to give a skier enough traction to proceed. One answer is to attach a *climbing skin* to each ski. Once made of animal hides, the best modern climbing skins feature mohair or nylon fibers secured to a tough, narrow strap about as long as a ski. A loop on one end slips over the ski tip, and a sticky adhesive holds the skin on the base of the ski. The fibers are angled toward the tail of the ski, providing a maximum of traction on kicks while still allowing a skier a bit of forward glide. Remove the skins before a descent, roll up each one with the sticky surface adhering to itself, pack them up, and head down the slope.

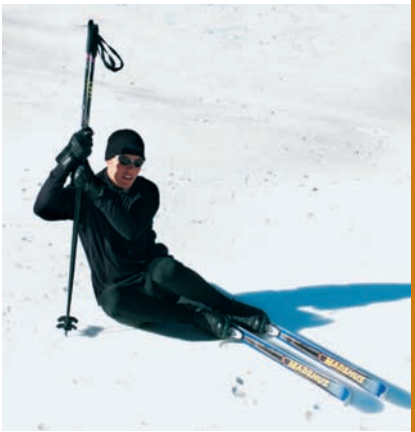
A more economical option is the *snakeskin,* a flexible plastic skin that can be strapped to a ski. The snakeskin works very well for climbing; it allows no forward glide, effectively turning a ski into a very long snowshoe.

Falling and Getting Up From a Fall

Every skier falls, and beginning skiers fall often. It's important to know how to fall without injury and, when you do go down, how to untangle yourself from your skis and get back on your feet.

First of all, don't fall if you can avoid it. Size up the terrain ahead. Is there room for you to make your way? Are there trees or drop-offs to avoid? Rocks or logs you would rather not hit? Is the snow soft and forgiving, or will an icy surface make turns difficult and stopping all but impossible? Where falling is likely, consider changing your route.

Rest a moment after a tumble to gather your wits. Slip out of your pack and, if there is a chance the pack might slide, anchor it to the slope with a ski pole. Twist around until your skis are on your downhill side and sideways to the hill. Plant your poles next to your hip and pull yourself onto your knees, then brace yourself by pushing downward on the poles as you regain your feet. Brush yourself off, swing your pack onto your shoulders, and you'll be ready to go.



Breaking Trail

When the snow is relatively settled, kicking and gliding, double poling, and downhill running will get you where you want to go. However, when you sink into fresh powder with every step, the track in the snow made by the first skier can be used by those who follow. Breaking trail can be exhausting, so group members will want to take turns; the lead skier simply steps to the side of the track, waits for the line to go by, then falls in at the rear. Rotate every few minutes to give each skier opportunities to lead and to rest.

Skiing With a Pack

On day trips, a small pack on your shoulders or a fanny pack strapped around your waist can hold the food, water, and extra clothing you'll need, but it shouldn't interfere with your skiing. You might need a backpack for overnight trips. For skiing, those with internal frames are easier to manage than ones with frames on the outside. Load the pack so that the center of gravity is a little lower than usual and adjust the straps so that the pack fits securely against your back and can't sway from side to side.

Skiing With a Sled

Pulling your gear in a sled takes less effort than supporting the same weight in a pack on your back. You might want to carry a small pack with water, food, and other items you will need during the day, then stash the rest of your load in the sled.

Caring for Ski Gear

If something goes wrong with your skis miles from civilization, you could be in for a long, weary trudge home. Avoid that possibility by carrying an emergency kit containing a pair of pliers, a small roll of duct tape, a screwdriver that will fit the screws on your bindings, an emergency ski tip that can be slipped over the end of a broken ski, and any other items that could come in handy for making repairs.

Pay attention to the surfaces over which you ski. Beware of rocks and sticks poking through the snow; they can gouge the bases of your skis and cause them to become sluggish. Keep your speed under control, especially as you ski through forests. Go around ditches, drops, and other sharp depressions that could excessively bend your skis.

Store your skis upright in camp by leaning them against a tree or by sticking the tails into the snow, so they will not be covered by falling or drifting snow. Face the bases east before you bed down; the morning sun might warm them and make waxing easier.

When you get home, let your gear dry at room temperature and use a metal scraper and/or a wax remover to clean the bases of waxable skis. Recondition ski boots as you would any outdoor footwear, and stow your equipment where you can get at it quickly. It won't be long before you glance out the window on a cold day and give in to the joy of clipping into your skis and pushing off for another winter adventure.

"There is only one way to learn to walk on snowshoes, and that is to put them on and try."

—Daniel Carter Beard, 1925 (Beard served as the first national Scout commissioner.)

Snowshoeing

Snowshoes might well have been around every bit as long as skis. By the time European settlers arrived in North America, American Indians of the northern woodlands had developed snowshoe making into a high art, shaping wood and rawhide into snowshoes that were as beautiful as they were efficient. Since then, wanderers of the winter wilderness have found snowshoes to be an invaluable part of their gear, allowing them to move over snow that otherwise would be impassable. With a little practice, you, too, can enjoy the quiet, rhythmic stride of snowshoeing.

How Snowshoes Work

When you hike in snow with only boots on your feet, all of your weight presses down on a relatively small surface area, causing your feet to punch into the drifts. Snowshoes put a larger platform beneath your soles, spreading your weight over a much greater surface area. If they are the right size for the snow conditions and the amount of weight put on them, your snowshoes will float near the top of the snow, and you will be able to travel about with ease.

Kinds of Snowshoes

The gorgeous wood and rawhide snowshoes of generations past have almost all been replaced by snowshoes featuring lightweight metal frames and flotation decks made of plastic, neoprene, rubberized fabric, and other durable materials. Today's snowshoes are specialized for certain kinds of adventures, too. Those used for short jaunts near a cabin or by fitness runners can be very light and just slightly longer and wider than running shoes. At the other end of the scale are expedition snowshoes—up to 4 feet long—that provide enough flotation to support a wilderness traveler carrying a backpack loaded with camping gear. Some snowshoes have traction bars secured to their bases and crampons built into their bindings to give snowshoers a secure grip on steep slopes, while snowshoes with smooth bases can be used to slide down hillsides.

Local experts might be able to provide the best guidance for choosing the right snowshoes in the correct size. Check with outing clubs in your area and with winter sports equipment stores for advice. If you can, rent snowshoes before you buy and see what you think of them in the field.

From expedition snowshoes to those used for fast dashes over the drifts, modern snowshoes are tough, lightweight, and easy to use.

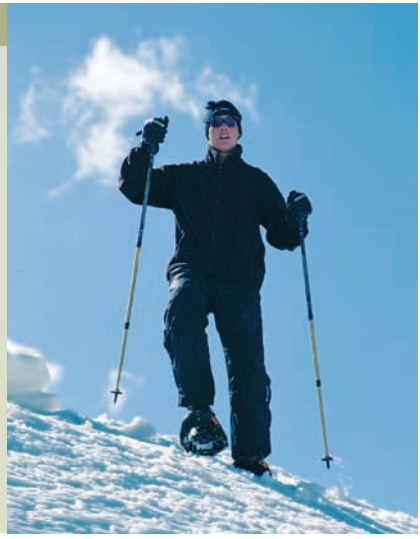
Bindings

Bindings do just what the word implies—they bind your footgear to your snowshoes. All bindings are similar in that they can be used with almost any boots, mukluks, or other winter wear. They allow the easy up-and-down motion of your heels, and are balanced so that the toe of each snowshoe rises and the tail drags on the snow.

Ski Poles and Ice-Ax Baskets

Many snowshoers use one or two ski poles to help them maintain their balance. You'll find that poles can be especially helpful as you make turns and get up from falls.

Some mountain travelers attach a special basket to the end of an ice ax and use it for balance in much the same manner as they would a ski pole. The ax can be a lifesaver in stopping a fall on a steep slope.



Using Snowshoes

"If you can walk, you can snowshoe." That bit of traditional advice for beginning snowshoers is most of what you need to know to get started. Put on your snowshoes, head out across snowy terrain, and your body mechanics will do the rest.

As you step forward, let the inside edge of the snowshoe in motion pass over the inside edge of the stationary snowshoe. Swing your foot just far enough forward so that the snowshoes don't touch when you step down. Firmly plant the leading snowshoe to create a stable platform on which to place your weight, and pause an instant after each step. That will allow the snow to consolidate beneath the snowshoe and will give you a momentary rest. Lift each shoe just high enough to make forward progress, allowing the snowshoe tail to drag on the snow.

The BSA's Northern Tier National High Adventure Program offers the perfect setting for cold-weather camping, cross-country skiing, and snowshoeing. Visitors to the Charles L. Sommers High Adventure Base in Ely, Minnesota, are treated to a winter wonderland and allowed a chance to hone winter camping and sports skills with such activities as dog sledding, ice fishing, and shelter building.

Turning

The easiest way to change your direction of travel is by using the *arc turn.* Simply turn your snowshoes a little with each step, gradually curving around until you're lined up on your new course.

A *step turn* alters your direction more quickly. While standing in one spot, lift and turn your snowshoes one after the other, repeating the motion until the toes are facing the direction you want to go. Your movements should be smooth and precise, with your legs spread apart far enough to prevent the tail of one snowshoe from being pinned beneath the edge of the other.

For a fast 180-degree reversal, use the *kick turn.* Leaning on a ski pole for balance, lift one snowshoe, twist around until you are facing the opposite direction, and plant the shoe firmly beside the stationary one. Lift the second snowshoe, rotate around, and then plant it beside the first.

Traveling Uphill

Many snowshoes are equipped with traction bars or with crampons on their bindings that allow snowshoers to make their way directly up steep hills. When the snow is soft, travel technique is much the same as on flat ground. On harder snow, kick the toes of your boots into the slope, forcing the crampon teeth to grip the crust. Lean forward a bit and take shorter steps.

Traveling Downhill

Downhill travel can be surprisingly difficult on snowshoes. Bindings must be snug to handle the increased pressure on your feet, and you'll need to alter your stride to keep your snowshoes flat on the snow. You can do that on gradual grades by leaning back enough to put extra weight on the tails of your snowshoes. On steeper slopes, tie a cord to the tip of each snowshoe; pulling up on the cords as you plant your snowshoes can keep them ideally positioned.

Breaking Trail

As you snowshoe you'll soon discover what cross-country skiers know—travel is much easier if you have a track to follow. The tracks of other snowshoers will pack down the snow ahead, allowing you to make good time.

Break your own trail where there are no tracks, shortening your steps and keeping the tips of your snowshoes high to prevent them from becoming loaded with snow. Trail breaking can be tiring work, especially in deep snow, so organize your group to allow lead changes every few minutes.

Ski and Snowshoe Within Your Level of Skill

In flat or gently rolling regions of the country, skis and snowshoes can allow you to explore wintry landscapes that would prove difficult or impossible to reach on foot. Snowshoes and skis also are terrific for travel in steeper terrain. Stay within your skill level as you plan journeys into snowy areas. If avalanches are a possibility, go somewhere else until you have gained the training and experience you need to size up avalanche potential and to carry out rescues if avalanches do occur.

For more on winter safety, equipment, and concerns, see the chapters titled "Managing Risk," "Gearing Up," "Cold-Weather Travel and Camping," and "Mountain Travel."

Snowshoe Care and Storage

Inspect snowshoes after every outing for signs of wear. Frames might become dented or bent, and the webbing can be nicked or cut. Repair minor damage before it can become severe, and your snowshoes will be in top condition whenever you're ready to head for the hills.

"The goal of all blind skiers is more freedom. You don't have to see where you are going, as long as you go. In skiing, you ski with your legs and not with your eyes. In life, you experience things with your mind and your body. And if you're lacking one of the five senses, you adapt."

—Lorita Bertraun, blind American skier