Cross Country Ski School

Cross Country Skiing is not just shuffling around the local flat golf course or Metro Park. It consists of a variety of techniques for different terrains. All to enhance your XC experience, here are some how-to's.

These lessons are not designed to teach you to ski if you have never done so. Rather, the purpose is to teach you the fine points of technique that will transform you from a pathetic shuffler into poetry in motion.

You can't just read them and improve, you have to get out and practice. These are exercises, not bathroom reading.

So get going, practice and soon you too will look like a Nordic god.

Weight Shift

Proper weight shift produces good glide, the secret to effective and enjoyable cross-country skiing. To learn proper weight shift, practice the following exercises in some ski tracks that are about shoulder width wide and at least 100 feet long – or whatever you have to work with.

Exercise one consists of learning the proper body position. Stand with your feet in the tracks. Lower your body into a half-sitting position. Bend your knees, just like you are going to sit down in a chair, but keep your back straight, your torso inclined slightly forward, and your head and eyes up. Practice shuffling your skis back and forward beneath you in this position and alternatively lifting one ski 6 inches off the snow.

Exercise two introduces dynamic weight shifting, and the basic "kick". Begin by moving the left ski about a foot ahead of the right ski. Keep the knees slightly bent. Next, put almost all your weight on the rear, or right, ski. Then, HOP forward from the right ski all the way onto the left ski. Two things will happen: 1) your weight will shift to the left ski, and 2) you will glide along in the left track. When you stop gliding, hop to the right ski. Continue to the end of the track, turn around and keep practicing. Don't worry about using your poles. Just try to achieve the longest glide possible. Make sure to transfer ALL your weight to the gliding ski when you hop.

Exercise three is also performed without poles. Begin by standing in the tracks and then move forward using the shuffling motion learned in exercise one. Keep the skis on the snow. Shuffle slowly and with extra-long steps. Make sure that your knees are well flexed. After you get comfortable moving like this, begin to move the upper part of the body from side to side as you shuffle forward. The upper part of the body should be moved so that the head is directly over the leading ski and about a foot ahead of the tip of

the toe of the boot on that ski. As you move forward, the position of the body and head will shift from one side to the other, but always with the head ending up over the forward ski. Continue doing this in a regular rhythm, gradually increasing the flex your knees, until you can feel it in your quads.

The last exercise is similar to exercise number three, but the kicking ski is now allowed to rise off of the snow. Although this looks like you are lifting the tail of the kicking ski, when done right there is no conscious rising of the rear ski. In a proper kick, force is directed DOWN onto the track, after which the kicking leg just relaxes and straightens out as you glide forward, which produces the appearance of the trailing ski being lifted. Time your kicks so that you hop from one ski to the other just before you stop gliding.

Lastly, as you practice and become more proficient you will notice: 1) the shoulder over the gliding ski will drop a few inches with each kick, and 2) the hip which is over the gliding ski has moved down and slightly forward with each kick, producing a slight inward rotation.

The Advanced Kick

This lesson focuses on developing a powerful kick for your diagonal stride technique. The diagonal stride is the most commonly used method of cross-country skiing. Begin by making yourself a practice track at least a quarter mile long, or go to a ski touring center with prepared tracks. Review the basic exercises covered in last month's lesson. Then, when thoroughly warmed up try the exercises described below.

Without using your poles, begin by doing the "speed shuffle" described in the first lesson for 10 to 20 yards. As you get into the rhythm of the shuffle you should notice that you start to "coil up" at the end of the glide in preparation for springing onto the other foot. What's happening is that you are starting to bend the knee of the gliding foot slightly more and you are also shifting your upper body laterally over the gliding foot. Essentially, you are "loading" yourself up to increase the force of your "hop" onto the other ski.

When you actually execute the hop three different things occur: 1) you stamp down and push back (aka "kick") on the gliding ski as hard as you can; 2) you shift your upper body and head laterally and forward over the other (rear) ski, which is now moving forward; and 3) you begin to glide as far as you can on the new forward ski. The timing of the kick is critical. It should begin as the feet are coming back together after the previous kick while the gliding foot is still 3-4 inches ahead of the foot on the trailing ski.

As you get the hang of the advanced kick you will notice that your rear leg will start to fully extend and be momentarily carried in this position. This occurs because the body position of the advanced skier is more dynamic. What happens is that an advanced skier's body finishes a kick in a slightly arched, forward leaning position, with the hips

rotated inward at an angle of 45 degrees to the track. (Failure to rotate the hips is called "blocking" and will kill your glide.)

When the advanced kick is done properly, only the tip of the rear "carried" ski remains on the snow, guided by the track. If you hear a slap as the rear ski comes down it is because it is coming down too early. The problem is that you are not beginning your kick early enough.

Don't forget to swing your arms vigorously, both forward and backward. Good arm swing is essential for good glide. In fact, a good exercise you can practice anywhere involves rhythmically swinging your arms back and forth in a poling motion, timing each arm swing with a bending of the knees that simulates the kicking motion. The knee bending should approximate the motion of doing about half of a deep knee bend. Don't forget to sing the head slightly from side to side in time with the arm swing to simulate the weight swift onto the gliding ski.

Once you get the basic motions down, work on your rhythm. Try to ski around your practice course as smoothly as you can, still not using your poles. This is a classic training exercise for all advanced skiers, even Olympians. If you have waxable skis, experiment with the timing of your kick versus the amount of grip your wax offers. Less grip can be compensated for by an earlier, softer kick.

Basic Uphill Technique

One of the coolest things about cross-country skiing is being able to go uphill. This capability makes it possible to explore the entire winter countryside.

There are five uphill ski techniques: 1) straight climbing; 2) the uphill traverse; 3) the side step; the herringbone; and 5) the traverse side step. The method you should use is a function of the steepness of the hill, the type of snow, and the width of the trail. Generally, a skier will try to get up a hill using straight climbing, since it is the fastest technique. The other techniques are slower, but surer, and will be discussed in later lessons.

The key to successful straight climbing is to get the ski to firmly grip the snow and not slip backwards. The skier's body position plays a very significant role in maximizing grip. Most importantly, the skier must assume an overall lower body position. The best way to accomplish this is to lower one's self into a position very similar to that of sitting down (i.e., legs bent at the knees, back straight, head up). The position is actually very similar to the position naturally used by many skiers when they go downhill. The only differences being there should be more bend in the knees and the back kept straighter when going uphill. The secret is to just sit "half-sit down," not to lean forward. Practice by getting into the "half-sitting" position in your living room and walking around for a minute. Do this several times to get the feel for this position.

The leg motion for straight uphill climbing is sort of like "goose stepping." Extend one leg and ski forward until the foot is slightly ahead of the knee. The forward moving ski will lift off the snow slightly before it settles back down in the track. When the ski settles back two important things naturally happen: 1) the ski suddenly presses down on the snow in the track; and 2) after the ski has been slapped or set down in the track the skier's weight is automatically transferred to the heel. The combination of these two events forces the whole length of the ski against the track with considerable force. The net result is that the snow crystals in the track are pushed into the wax or pattern on the bottom of the ski, locking the ski to the snow and giving a secure surface against which to push off for the next step.

The way you use your poles when going uphill is also important. You should use them to help push yourself up the hill -- not to pull. As a result, the baskets of your poles should always be behind you. This means that the poles will always be lower and further back then the way they are when skiing on flat ground.

Maintain a normal diagonal stride rhythm up slight hills. Try to roll your weight up and over the forward foot to help set the wax. Then quickly spring onto the other foot. The longer you stay on one foot, the more likely you are to lean forward. This creates a problem because, when you lean forward you take some of your weight off of the ski and it will start to slip. Understanding this may make it more obvious why you "sit down" rather than lean forward when climbing. By "sitting down" you are actually keeping your body weight more closely perpendicular to the surface of the hill. This is important because a body position perpendicular to the hill is the position that allows you exert the most force on your skis, and more force equals better grip.

Basic Downhill Technique

At least half of the fun of cross-country skiing is going downhill. Good skiers are not afraid of hills and actually go looking for them. Like all other aspects of cross-county skiing, however, good technique contributes to enjoyment and safety.

Basic downhill running is quite simple. Beginning at the top of a hill, stand with you feet about a foot apart. Shuffle your feet back and forward (one foot at a time) to get a feel for the snow and to scrape off any snow that may have accumulated on the bottom of your skis. Then, assume a half-sitting position by bending your knees. This motion should lower your butt (and center of gravity) about 6-8 inches. Note: it’s important to keep your back straight and your head up; don’t hunch over. It's also crucial that your feet remain flat on the skis and that your weight is evenly distributed the whole length of your foot. In this position, rock back and forward slightly to find the location where you feel must balanced. This is your "sweet" spot for downhill running.

Drop your hands to thigh level, but keep them well out in front of you. Hold the pole shafts back and down, but off the snow. (Don't tuck them under your arms, with the

baskets up over your head; nothing looks geekier). Begin your run by gently shuffling forward until gravity starts to pull you down the slope. Alternatively, you can give yourself a little push with your poles; but make sure you push evenly on each pole so you start parallel to the fall line. As you go downhill you should keep one ski slightly ahead of the other (6-8 inches). This position affords more fore and aft balance then if your skis are parallel. If the slope drops away at all to one side, advance the ski on that side. This will give you the ability to resist drifting in that direction. Also, steer around gentle bends by advancing the ski on the side opposite to the direction of the bend (bend to the right = left ski forward).

Use this technique whenever the trail runs straight downhill or has only gentle bends and you do not want to or need to brake. The steeper the hill, the lower you get, until you are in a crouch just like the downhill racers you see on television. As you get lower, continue to extend your arms out further in front of you. In the extreme, your knees are almost in your armpits and arms are almost straight out in front of you. You will be amazed how fast you can go with stability in this position; plus, if you fall it's only two feet to the ground. Practice this position in your living room.

The snowplow is used to control speed. To snowplow, move your skis into a wedge position by pushing their tails out. Keep the tips about 6 inches apart. Keep your feet flat on the skis and press down hard on your heels. Make sure to bend your knees and assume the same half-sitting position described earlier. Whatever you do, don't lock your knees. Next comes the most important part. To get you skis to dig in, you must rotate your ankles inward. Remember to keep your hands low and out in front of you. Also make sure to keep your head up; this will keep your back arched, which is the secret to keeping your butt down. Keeping your butt down lowers your center of gravity and gives you more stability.

Double Poling

Double poling is a fun technique that adds variety to your skiing and gives you the chance to use different muscles for awhile. It is also a key element of more advanced classic techniques, like double pole with a kick, and many of the basic skating techniques. It’s also surprisingly fast. Although a good skier can complete two diagonal strides in the time it takes to complete one double pole, the double pole actually produces 4 to 7 meters more glide per cycle. Another interesting aspect of the double pole is that only 40% of the motion is active (pushing on the poles), while 60% is recovery (straightening back up). This makes double poling seem relaxing compared to the diagonal stride, where one always seems in active motion.

Double poling is a simple maneuver. It begins by swinging your arms out in front of your body and letting your poles hang almost vertically before planting them in the snow. As you plant the poles, with slightly bent elbows, you push down and back simultaneously on both poles. The main source of the pull is from your abdominal

muscles, which will bend the upper part of your body down. For maximum thrust, keep your arms extended and pull down until your back is horizontal. Your hands should sweep by your ankles. Don't forget to follow through as far as you can by continuing to push your arms back until your poles are horizontal. Then straighten up and bring your arms forward for another thrust.

For best results, the entire weight of your body should be applied to your poles. As you push down and back on your poles, keep your hands relatively high and close to your body by bending your elbows. Bending your elbows allows you to use your triceps to push on the poles, which is helpful since they are the strongest muscles in your arm. Only straighten your arms out again after your hands have passed your legs. The knees should be kept slightly bent all the time, with the feet in front of the hips. For best results, inhale as you straighten up and exhale as you lean forward.

Use double poling on slight down hills to pick up speed or whenever you want to accelerate.

A favorite variation on double poling is double poling with a kick. This technique is excellent for flat or rolling terrain and is much less tiring than the diagonal stride. Double poling with a kick is a combination of the arms motion of double poling with the leg motion of the diagonal stride. You begin it by moving one foot forward of the other as you finish a double pole. Then, as you are straightening up, you kick just like in the diagonal stride with the leg that is slightly forward. The kick should be a forceful stamp on the ground, delivered by a quick flexing of the knee, ankle and foot. Complete the kick just before you plant your poles again. A further variation that you might try is to alternate kicking legs. The rhythm in this case is double pole, kick right, double pole, kick left, double pole, kick right, etc.

Double poling with a kick is not the easiest technique to describe, but it is easy to pick up by watching a good skier or an instructional videotape.

Step Turns

The step or skate turn is one of the most useful maneuvers in cross-country skiing. It is used for turning while coming downhill or changing direction on level terrain.

It's easiest to learn step turns on a well-packed, smooth, gradual slope. Begin at the top of the hill and push with the poles just enough to get moving straight down the slope. Once moving, lower the torso into a half-sitting position. Keep the arms low and out to the front for balance. Make sure the skis are flat on the snow with a slight pressure on the tails. For a left turn, slide the right ski slightly forward. Next, lift the tip of the left ski about six inches up off of the snow. Follow this motion immediately with slight push on the right hand pole that initiates a small step to the left. As your upper body begins to move to the left, roll your right ankle inward and use your right leg to push off

your edged right ski. As you push off your edged right ski swing the tip of the left ski in the direction of the turn. When the left ski has moved far enough (e.g., 6-8 inches), set it back down on the snow. As the left ski contacts the snow, bring the arms forward, and followed by the right ski. Set the right ski down parallel to the left ski, weight both skis equally, double pole with the arms and the step turn is completed.

This set of actions should have changed the angle of your trajectory with respect to the fall line, so that you are still moving downhill but now at a slight angle to the left away from the fall line. This drill should be repeated several times until you are comfortable with it. Vary the size of the steps to see how fast and far you can easily turn at different speeds. Also practice turning both directions, making an equal number of turns to the right and left.

The next activity consists of increasing the number of steps per turn. Gradually add steps to the turn until you are traversing the slope perpendicular to the fall line. When you do this you will notice that your speed decreases. If the slope is shallow enough, you may even stop. To avoid this, as soon as you slow down begin a skate turn to the opposite direction. This sequence of activities is known as "linking" turns, and it is a key skill.

When you get comfortable turning in both directions and linking turns you can play a little game to sharpen your skills. Place some poles or sticks on the slope in the fall line about 40 feet apart. Then, try to skill down the hill going on one side of the first pole and the opposite side of the second pole. This is "slalom" skiing and a valuable skill to have for dodging trees and other skiers.

Step turns on the flats are done the same way. With practice you can develop a double-pole lead-in and finish to the step turn that will help you maintain momentum.

Step turns are handy for negotiating twisty trails or for reducing speed on wide-open slopes. Remember, always keep the tails of your skis low and your ski tips raised (about 6 inches) when turning. For stability change directions with many small steps, rather then one large one

Traversing Up Hills

Traversing is performed much the same as climbing straight up a hill. The main difference in traversing up hill is the sides of the skis are "edged" into the hill. Traversing is used on hills that are too steep to climb straight up. Instead, a series of straight climbs are made at shallower angles across the face of the slope, punctuated with kick-turns or uphill step turns at the end of each straight line segment. Effective traversing depends on good planning. The turns are done easiest where the slope flattens out for a bit. A kick turn on a hill is performed the same was as on flat ground, with the following two exceptions: 1) the skis should start and end perpendicular to the fall line to prevent sliding; and 2) the skis should be "edged" into the hill to prevent slipping.

Uphill step turns are executed differently. From the lowered-body, bent-kneed uphill climbing position, first move the ski pole out and downhill on the side of your body in the direction you want to turn. Then, lift up and swing the ski on the same side of your body out to the side and set it down in the direction you want to go. Meanwhile, keep your weight on the other ski for support and edge it slightly so that the inside edge of the supporting ski acts as a brace. Make sure that the toe of the ski that you have moved out to the side is ahead of the knee and slap the ski down sharply to set the wax or help the no-wax pattern to grip. Also, make sure that the basket of the pole is behind the foot and the hand and grip are beyond the basket on the uphill side. This will allow using the pole as additional support when it comes time to transfer all the weight to the ski heading in the new direction.

Now, with all the weight on the re-aligned ski and your body still in a lowered position, lift and slide the ski that is headed in the original direction slightly forward so that the ball of the foot is ahead of the knee. Then, swing the lifted ski around parallel to the supporting ski, and set it down so that the foot of the lifted ski is behind the foot of the supporting ski. At this point you should be in the same body position as when straight climbing on the previous segment of the trail, but heading in a new direction back across the slope.

It will help to maintain a lowered body position and avoid bending over at the waist. Also, keep the uphill edges of the skis angled into the hill to avoid slipping.

If you feel yourself slipping backwards when you try to make an uphill step turn, then the hill is to steep. In this case, it is better to use a kick turn. It is important to not try to traverse too steeply. Traversing works best in open terrain and, long steep slopes. It's the way down hill skiers used to get to the top of ski slopes before ski lifts were invented.

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More Techniques for Climbing Hills

Sidestepping is used mainly on steep, wide slopes. Begin with the skis about a foot apart and across the face of the hill. Plant the baskets of your poles just in front of your toes. Move and plant the uphill pole directly up the slope about a foot and a half. Then lift the uphill ski and, keeping it parallel to the ground, move it up the hill, set it down, and press the upper or outside edge of the ski into the snow by rolling the ankle slightly outwards. After you edge the uphill ski, continue to shift your weight onto it. After most of your weight is on the uphill ski, lift up the downhill ski, move it uphill the same distance and set it down parallel to the uphill ski and edge it into the hill. Lastly, pick up the downhill pole and plant it in front of the re-positioned downhill ski. To avoid slipping, only move one limb at a time. Develop a rhythm: pole-leg-leg-pole, repeat.

The herringbone technique for climbing uphill is so called because of the pattern of tracks it leaves. To begin the herringbone, move the tips of the skis to the side when you take a

step so that the tails of the skis form a "v". Maintain the "v" by keeping the toes of your feet angled out to the side as you take additional steps. As you place your foot on the ground, roll your ankle in so that the inside edge of the ski bites into the snow.

As the angle of the slope increases, spread your ski tips farther apart so that the mouth of the "v" is more open. Don't bend forward at the waist when you are herringboning up a hill. It will only cause you to slip. To avoid this bad habit, take only a few steps at a time and stop, rest and look around. The position your body assumes as you look around is the correct one for climbing. In other words, keep your back straight and your head up!

The placement of the ski poles is very important. The baskets should be planted well behind, i.e., downhill of your feet. The hands should be kept below the waist and angled out to the side, so that the pole plants are behind your body, not off to the side. Remember your poles are used for pushing, not just balance, so they need to be strategically placed to provide effective resistance.

To avoid slipping and to maximize the amount of slope climbed per step, develop a rhythm and make sure to always maintain a three-point stance. In other words, only move one leg or one arm at a time. This way you are always in a braced position and can't backslide. With practice you can develop a nice rhythm that alternates arm and leg and will eat the hills with little effort.

If you find yourself slipping or sliding backwards, you have probably made one or more of these mistakes: 1) you have taken too large a step; 2) your poles are not properly positioned behind your body; and 3) the angle of the herringbone is not wide enough.