

## E

Senior Alpine  
Terms and Exercises

The *Ski and Toboggan Training Manual* outlines the generally accepted training standards and procedures for the NSP alpine toboggan training program. This manual should be used as the reference for further detail on training activities and exercises.

## Basic Skiing and Snowboarding Definitions

The following basic skiing and snowboarding terminology may be used in clinics and evaluations.

**Stance and balance.** A functional relationship of the legs that is not forced or contrived while skiing or snowboarding. A slightly flexed, upright stance allows for muscular/skeletal efficiency and accuracy of movements. The individual balances on the whole foot with the ability to work the entire ski or snowboard.

- For the skier, the body is in a slightly countered relationship with the skis. The upper body must be disciplined and should have a dynamic relationship with the skis.
- For the snowboarder, the body is countered with the snowboard and bindings, based on the setting and angulation of the bindings to the snowboard. The upper body must be disciplined and should have a dynamic relationship with the snowboard.

**Rotary movements.** Movements that reorient the direction of travel of the skis or snowboard through muscular effort coupled with the forces generated by the interaction of the edged skis/snowboard and the snow. An active guidance of the skis/snowboard exists throughout the turn.

- For the skier, rotary movements of the inside leg enhance the action of the outside leg. Generally there is a stronger application of rotary movements in gliding turns.

- For the snowboarder, rotary movement of the rear foot/leg enhances the action of the forward leg. Generally there is a stronger application of rotary movements in gliding turns.

**Edging movements.** Adjustments of the angle between the running surface of the skis/snowboard and the slope. Guiding the skis/snowboard onto an edge and using progressive edging throughout the turn creates the desired turn shape. Edging movements start from the center of mass. Fine-tuning adjustments are made with the knees, ankles, and feet.

**Pressuring movements.** Movements that regulate the pressure on the skis/snowboard to suit the situation.

- For the skier, this concept includes pressure adjustments from ski to ski (also called weight transfer), increasing or decreasing the pressure applied to one or both skis (also called weighting or unweighting), and pressure adjustments made along the length of the skis (also called leverage). The transfer of pressure to the outside ski is smooth and progressive. Flexion and extension movements are used to maintain and control the desired turn shape.
- For the snowboarder, this concept includes much the same format as for the skier, except the weight transfer from edge to edge on the snowboard is a toe-to-heel weight transfer, in addition to the use of pressure adjustments along the length of the snowboard.

**Rhythm and flow movements.**

Movements that link turns with a continuous flow of the center of mass to produce and maintain rhythm. At the turn initiation, the center of mass rises toward the new turn. During turn initiation, active guiding of the inside ski greatly enhances the flow of the turn.

Training progressions can be developed for each movement or for a specific weakness by isolating each of these skills and then varying them independently. For example, an exercise on isolation progression might begin with edging movements and then add rotary movement.

NSP's *Ski Patrol Magazine* and PSIA's *The Professional Skier* magazine contain many articles with exercises that patrollers can use to enhance their skiing/snowboarding and toboggan-handling skills.

## Skiing/Snowboarding Exercises

Skiers and snowboarders can improve their skill proficiency by practicing a variety of exercises developed by PSIA. (PSIA instructors can suggest many other exercises in addition to the ones described as follows.) This skill enhancement is beneficial to patrollers, who must maintain a stable position and control speed when maneuvering a toboggan down a slope.

### Warm-up Skiing/Snowboarding

The training clinic should start with a few warm-up exercises; those that emphasize rotary, edging, and pressuring movements are most important.

The exercises described in the following sections incorporate basic movement patterns related to skill development. They also emphasize the shape of the turn, balance, stability, and control of speed and direction. Proper application will produce

consistent, rounded, linked, and controlled turns, a quiet upper body, and the appearance of ease and control regardless of terrain and conditions.

The skiing/snowboarding component also includes skiing/riding unpacked snow or icy terrain (conditions permitting) and skiing/riding while carrying equipment.

### Wedging the Fall Line

Ski in a gliding wedge straight down the fall line while centered over the skis. While making no rotary or pressuring movements, increase then decrease the edging on both skis at the same time. Note the results as the angle increases the ability of the ski to hold, causing a braking action. Next, vary the edge angle on one ski at a time, again noting the results.

Snowboarders may modify this exercise by sideslipping straight down the fall line while applying pressure to the hillside edge of the snowboard. Note the results as the angle increases the board's ability to hold, causing a braking action.

### Pressure Changes

Repeat the wedge exercise above, but move the pressuring edge forward on the skis/snowboard and note the results. Next, move the pressure to the tail(s) and note the results. The next step of the progression might involve pressuring the skis independently and then adding rotary motion. In the case of a snowboard, add rotary motion.

### Flatland Skate

Skate on flat or very gentle terrain to develop edging and pressuring skills. When done in a straight line (point to point), edging skills can be isolated from rotary movements and also can develop weight transfer awareness through side-to-side and fore-and-aft movements. Skating also helps develop independent leg action and

flexing/extending movements. (This exercise does not apply to snowboarding.)

### Skate Turns

Execute turns by skating through them rather than by using a more conventional turn approach. Focus on making a complete weight transfer for each skate and skating onto the new ski before entering the fall line. When done on a more difficult slope, this exercise can expand on the basics learned from the flatland skate. Rotary movements are emphasized by stepping or skating in a path to change direction and control speed.

Notice that pressuring movements and steering play a bigger role in this exercise because of the natural edging that occurs on a slope. (This exercise does not apply to snowboarding.)

### Crab Walk

The crab walk demonstrates direction change as a result of hard edging. Ski downhill in a wedge, edging one ski without rotary movements while flattening the other ski. This will force you to proceed in an angular direction. Repeat the process by edging the other ski. Proceed down the slope by alternating from ski to ski, producing a zigzag pattern. (This exercise does not apply to snowboarding.)

### Sideslips

Perform sideslips down or across the fall line. Experiment with edge angles and weight transfer from side to side, as well as fore and aft, to develop a wide range of results from the skis' or the snowboard's interaction with the slope.

### Emergency (Hockey) Stops

This variation of the sideslip requires the addition of rotary skills as well as a keen awareness of pressuring skills.

From a straight run down the fall line, pivot the skis or the snowboard across the fall line. Then increase the edge angle while controlling the direction of the slide down the fall line until forward momentum is stopped.

### 360-Degree Turns

Make 360-degree turns to practice rotary motion, edge control, and pressure skills. Carry the turn past the point where it is normally completed. When momentum stops, slip backward down the hill. Flatten the edges and pull the ski tips or nose of the snowboard downhill to complete the 360-degree turn. (The turn will not be a complete circle.) The 360-degree turn requires changes in edging and rotary movements.

### Long-Radius Turn Exercises

Instructors should select one or two training exercises from the following examples and have the senior candidates follow the stated directions.

### Carved and Skidded Turns

Perform both carved and skidded turns to increase the awareness of the difference between the two and the different skills used for each. Hold each turn for four seconds.

To carve the turn, balance on the inside edge of the outside ski or on the toe or heel edge of the snowboard and pressure the middle of the skis/snowboard, maintaining a slightly countered stance (upper body faces slightly downhill, lead with uphill hip and shoulder).

Too much pressure forward on the skis/snowboard during the last half of the turn will cause the tails to skid. Too much pressure backward generally causes increased speed and lack of control. Experiment with putting pressure at different points on the skis/snowboard, and note the sensations and results.



## Weighting Middle of Ski

Experiment with weighting the middle of the skis/snowboard, and note the effect on the turn. Generally, the skidded turn involves more rotary force and less edging. Skidded turns also may result from over-edging, lack of flexing, or the center of mass being outside the line of action.

## Alternate Weighting

Alternately weight the outside ski, both skis, and the inside ski, and describe the effect. Continuous fluid vertical motion (angular as well as up and down) of the body is required for properly pressured turns. The upper body follows the direction of the skis.

Experiment with static vertical positioning, and compare that feeling with continuous fluid vertical motion. (This exercise does not apply to snowboarding.)

## Medium-Radius Turn Exercises

Instructors should select one or two training exercises from the following examples and have the senior candidates follow the stated directions.

### Flat Terrain Balance

Stand on flat terrain without skis on, and balance against ski poles. Move the left ski boot in an arc. Rest your body weight on the inside edge of the boot. Try to have the boot slice through the snow, with the heel following the track of the toe, and note the sensation. Repeat the exercise with the right foot. Then repeat with skis on while making carved medium-radius turns (with *both* feet moving in the same arc).

Snowboarders will do this same exercise but change the stance in relation to the snowboard/binding setup.

### Flat Terrain Flex

Stand with weight evenly distributed over both feet on flat terrain without skis or snowboard on, using ski poles for balance. Twist your boots to the left and then to the right, and describe the sensation. Try the exercise without flexing, with flexing, with a hop and no flex, and with a hop and flexing. Repeat the exercise with the skis/snowboard on to make skidded turns (little or no edging). Add edging to transform the turns into carved turns. Note that flexing initially assists the rotary or turning movements, then aids in edging.

### Leapers

This exercise is designed to help move the body in the direction of the new turn. Flex at the end of one turn. Follow the flex by a leaping extension (unfolding) of the body into the air in the direction of the center of the next turn. Use the uphill or outside leg extension to direct the body toward the center of the new turn. Leap off the snow. Land on the edges of the skis and absorb by flexing the ankles, knees, and hips.

Leap on smooth terrain first, then on small moguls. Leap up on the front side of one mogul, over the trough between moguls, and land on the far side of the second mogul. Decrease the size of the leaps until the skis remain in contact with the snow, all the while making the same type of body movement. (This exercise does not apply to snowboarders.)

### Moguls

To ski or snowboard moguls, concentrate on establishing a rhythm, weighting the outside ski or snowboard fully on its inside edge, and maintaining continuous fluid vertical motion. At the initiation of each turn, remember to project the body down the hill in

the direction of the new turn. To unweight, try turning on the tops of the moguls. Let the moguls do the unweighting. Approach the mogul, keeping the knees loose and flexing to absorb the mogul.

- For the skier, touch the inside pole to the snow slightly forward and downhill when cresting the mogul, steer the skis around the pole, and press the skis down against the backside of the mogul to complete the turn in the trough.
- For the snowboarder, use a reaching motion with the inside arm slightly forward and downhill when cresting the mogul, steering the snowboard around the point, as if rotating around a pole, and press the snowboard down against the backside of the mogul to complete the turn in the trough.

Vary the edge angle to make carved or skidded turns. Practice absorbing moguls between turns while maintaining a constant speed.

## Short-Radius Turn Exercises

Instructors should remember to work with senior candidates on more difficult and most difficult terrain and to include both smooth slopes and moguls since the skiing techniques will vary with the condition.

### Crossed Arms

With arms crossed (without poles) and hands lightly touching your shoulders, make short-radius turns down the fall line. Keep the cross formed with your arms facing downhill. Concentrate on complete weight transfer onto the inside edge of the outside ski or snowboard, a strong turning action of the skis or snowboard, and continuous motion from one turn to the next. Start with a slower rhythm and then speed it up. Avoid turning the upper body (rotation), leaning the upper body

into the turn (banking), and bending forward at the waist, which will weight the tips too much, causing the tail(s) to skid out.

### **Tuck Turns**

Make short-radius turns from a high tuck position. Aim the hands down the hill to direct the upper body. Start by slightly turning in and out of the fall line, transferring weight from outside ski to outside ski. For snowboarders, this entails transferring weight from the heel to toe edge or visa versa.

Next, complete the turns across the hill, keeping the upper body facing downhill. Try the same exercise from a low tuck position, linking round, short-radius turns. Alternate tuck turns with regular turns. Keep the upper body stable; let the lower body create the turn.

### **Diagonals**

Make short-radius turns while traveling diagonally down the hill. Emphasize turn initiation and completion. For initiation, focus on steering the skis or snowboard into and across the fall line as they are tipped on edge with transfer of weight to the outside ski, or, for a snowboard, to the outside edge. For completion, focus on fully weighting the inside edge of the outside ski or snowboard by flexing the knees, ankles, and hips to transfer weight to that edge.

### **Moguls**

Practice the same exercise for moguls described in the section on medium-radius turns, except establish a smaller turning arc and a faster rhythm. Do not absorb any moguls between turns.

### **Unpacked Snow or Icy Condition Exercises**

Instructors should select training exercises from the following exam-

ples and have the senior candidates follow the stated directions.

### **Powder Exercise**

Weight both skis more or less equally (perhaps a little more weight on the outside ski). Too much weight on one ski may cause it to dive deeper while the unweighted ski floats to the surface. Weight the middle of the skis or snowboard—do not sit back.

Turning in powder is a slower process than turning on packed snow. Start with a strong up-unweighting at the beginning of the turn. Actively steer the inside edge of the inside ski or snowboard to help initiate the turn. Extend (unfold) and use a twisting/pushing motion with both feet to guide the ski tip(s) or snowboard toward and across the fall line. Flex to absorb and finish the turn.

Start with long- and medium-radius turns, then progress to short-radius turns. On short-radius turns, when you feel resistance of the snow against the skis/snowboard at the end of one turn, relax and let the snow push your feet, skis/snowboard, and knees upward (unweighting). Then push, twist, and steer the ski tip(s) or snowboard toward and across the fall line and the tail(s) of the skis/snowboard sideways. On steep slopes, push the skis/snowboard down into the snow at the end of the turn to control speed.

### **Icy Conditions**

Maintain sharp edges. Keep the skis/snowboard in constant contact with the snow. Focus on edge control, weight distribution, and fluid, smooth movements.

For edge control, move the skis/snowboard forward along its inside edge instead of skidding sideways. Carve the turns. (Try the boot arc exercise described in the section on medium-radius turns.)

For weight distribution, concentrate on fully weighting the inside

edge of the outside skis/snowboard, keeping the weight centered fore and aft on that ski or the snowboard. Icy conditions require maximum edge bite. Too much weight forward or backward will cause a loss of edging. Experiment with shifting the weight fore and aft along the skis/snowboard.

For skiers, try picking up the inside ski of the turn to fully weight the outside ski. To increase angulation, roll the knees and ankles more into the hill. Over-edging will also result in loss of edge control. Experiment with different degrees of edging and notice the difference in control. On steep slopes, lean the upper body over the downhill ski to increase edge bite. Avoid jerky movements, and concentrate on being smooth and fluid.

### **Crud Snow**

Exaggerate the lengthening and shortening movements of the body, otherwise relying on the fundamental turning techniques. Start short by flexing the legs. Extend the body up, out, and across into the center of the turn to unweight and change edges. Commit the upper body across the skis/snowboard toward the fall line to help change edges and pull the skis/snowboard into the turn. Stay balanced over the middle of the skis/snowboard.

Immediately after extending, changing edges, and guiding the tips into the fall line, get short by flexing the knees in the direction of the turn. Sink forcefully and smoothly in the center of the skis/snowboard. Extend off the new downhill ski or snowboard edge to begin the next turn.

### **Equipment Carry Exercises**

Instructors should design training exercises that enable candidates to practice the skills needed to meet the stated objectives.



## Progressions

For the skier, the training progression should begin by skiing without the use of poles. The next step is to ski or snowboard while carrying light loads, progressing to heavier and/or bulkier loads.

## Toboggan Exercises

When toboggan-handling activities combine skiing and snowboarding, it is extremely important to emphasize communication at all times—verbal and physical. Unexpected direction changes, for example, may create a situation that is detrimental to the individuals involved.

### Warm-up Toboggan Exercises

The toboggan training clinic should start with a few warm-up exercises, and these exercises may also be useful as actual training exercises during the toboggan clinic. Instructors may use the following “phantom” toboggan exercises in training the senior candidates.

### Phantom Toboggan Exercises

These phantom exercises enable patrollers to simulate toboggan skills without the aid of an actual toboggan.

### Bamboo Pole Drills

Two patrollers skis/snowboard while holding two sets of poles to simulate a toboggan. Each set consists of two side-by-side bamboo poles taped together; this makes each simulated “toboggan handle” less likely to break. Rather than act as a rear operator, the person in back uses his or her weight to push the front person to create the effect of a loaded toboggan. The front operator is responsible for direction and speed.

## Rope-a-Goat

This drill should help the rear operator develop an understanding of his or her personal limitations in controlling a toboggan. The lead skier/snowboarder goes to the fall line on easier or more difficult terrain in a gliding wedge or sideslip with unset edge(s) imitating a toboggan. The rear operator controls and guides the phantom toboggan down and across the hill, using edge control and skiing/snowboarding techniques appropriate for the terrain and conditions.

## Wedge Skills Exercises

Senior candidates should practice wedge skills exercises either with or without a toboggan on easier and more difficult terrain. Experiment with both skidded and carved wedge turns through varying degrees of edge angle and body position. Initiate the turn by shifting or transferring weight and applying a rotary force to the outside ski. Complete the turn by shifting the weight to the opposite ski.

(See the Skiing/Snowboarding Exercise examples at the beginning of this appendix for discussions on exercise options for snowboarding patrollers; these apply to toboggan handling also.)

### Skidded and Carved Wedge Turns

Use less edge angle and pressure for skidded turns. Use more edge angle and pressure on the inside edge of the outside ski or snowboard for carved turns. Assure a balanced stance with weight centered fore and aft on the outside ski or snowboard of the turn. Maintain a comfortably high, stable stance with hips centered and knees bent. Turn your feet in the desired direction, and use pressure and rotary motion.

## Braking Wedge

With hips centered, brush the tails of the skis out far enough to create significant edge angle between the ski and snow. The more the edge angle of the skis is increased, the more dramatic the braking action. Keep your hands on your hips or comfortably at your sides or on the toboggan handles. The ski tips should stay together, with body weight on the inside edge of feet and skis, centered fore and aft. Keep your body facing down fall line, with knees bent. Stress stability and control. Come to a stop with the ski tips in the fall line on easier terrain and with the ski tips in the fall line or off to one side on more difficult terrain.

In this exercise, a snowboarding patroller uses the sideslip, with edging. An increase in pressure on the hillside edge causes more dramatic braking action. Keep the hands on the hips or comfortable at the sides or on the toboggan handles, with body weight on the heel or toe (side being used for control), centered fore and aft. Keep the body facing down the fall line, with the knees bent. Stress stability and control. Come to a stop with the board off the fall line to one side in all terrain.

## Gliding Wedge

Maintain a comfortably high stance with the hips centered and the body supported by the skeletal structure instead of by muscular effort. Keep the ski tips together, pressing them slightly apart. There should be little, if any, edge between the ski and the snow. Keep the knees bent. Apply pressure/balance to the middle of the skis, with weight evenly distributed between the skis. Keep the hands on the hips or comfortably at the sides or on the toboggan handles. The whole body should be facing down the fall line. Travel down the fall line, stressing stability and control. (This

exercise does not apply to snowboarding.)

When done in team format on toboggans, the snowboarding patroller may use the sideslip skill with little or no edging except to control speed.

### **Straight Run, Glide, Straight Run**

Start from a straight-running parallel stance facing down the fall line. Go to a gliding wedge and back to a straight-running position. Repeat three to four times. Concentrate on the key points mentioned in the description of the gliding wedge, especially applying equal pressure on skis and little, if any, on the edge angle. (This exercise does not apply to snowboarding.)

When done in team format on toboggans, the snowboarding patroller may place the snowboard nose into the fall line, then rotate across the fall line, and back, using necessary pressure (edging) to control speed.

### **Glide and Brake**

Alternate back and forth between the gliding wedge and the braking wedge. Notice the difference in the distance between the tails of the skis and the edge angle.

With the instructor, assign a number rating to the size of wedges. (Skis parallel = 0, maximum wedge = 4; gradients of 1, 2, and 3 in between.) When the instructor calls out the numbers, change the shape of the wedge accordingly. Discuss the relationship between edging, speed, wedge size, and terrain.

When done in team format on toboggans, the snowboarding patroller may place the snowboard nose into the fall line, then rotate across the fall line and back, using necessary pressure (edging) to control speed.

### **Skidded Wedge Turns**

Make a series of skidded wedge turns (skiers) or three left and right skidded (snowboard), followed by a series of three left and right carved wedge turns, emphasizing similarities and differences between each type of turn. Describe the differences, and repeat the exercise.

Visualize smashing a wad of sticky gum underneath the outside turning foot for a feeling of rotary motion. Discuss extending into the fall line at turn initiation to help flatten the skis or snowboard and make them easier to steer into the turn. Discuss flexing the knees and ankles in the second half of the turn to increase edge angle and complete the turn. Then alternate with one series of left and right carved wedge turns and one series of left and right skidded (snowboard) or skidded wedge turns (skiers).

### **Glide and Wedge**

Alternate gliding wedge and wedge turns followed by a braking wedge to a stop. On easier terrain, stop with the ski tips in the fall line. On more difficult terrain, stop with ski tips in the fall line or off to one side of the fall line.

For snowboarders, alternate sideslip and skidded turns, followed by a hockey stop.

### **Sideslip Skills Exercises**

Sideslip exercises can be practiced with or without a toboggan. Include sideslipping straight down the fall line as well as sideslipping in a "falling leaf" pattern (forward and backward). Practice the exercises on smooth, packed, more difficult terrain, and moguled terrain, if possible.

- For skiers, use the left and right ski alternately as the downhill ski. Do a kick turn to change direction.
- For snowboarders, use the heel-side and toe-side edges alternately,

making quick transition turns to change from each edge.

### **Downhill (Straight) Sideslips**

Begin this section with a simple downhill sideslip. Experiment with varying degrees of edging. The skier's feet should be comfortably apart—at about shoulder width. Avoid a closed stance (feet together), as this provides minimal stability. One foot may be farther forward than the other but should not lead by enough to affect balance or stability. Gently rise, roll the knees and ankles downhill to release the edges, and slip on the bases. Gently sink, roll the knees and ankles uphill to set the edges, and slow or stop. Demonstrate balance, stability, control, constant speed, and edge set and release.

For snowboarders, use the heel-side and toe-side edges alternately, making quick transition turns to change from each edge.

### **Falling Leaf Lateral Movement**

Move the point where the body weight acts on the ski or snowboard forward and backward. (When performed correctly, forward and backward travel are of approximately equal distance.) Change from a forward to a backward sideslip smoothly with no traverse or edge set.

Tracks left in the snow should be rounded and brush like. Sideslip rather than traverse. Discuss and experiment with different methods of adding lateral motion (both forward and backward) to the sideslip.

### **Weight Shifts**

Experiment with extreme weight shifts (leaning the entire body forward and backward) to subtle weight shifts (moving the pressure from the balls of the feet to the heels). Avoid excessive rotary force, i.e., too much twisting of the lower leg, which initiates turns.



## Transitions Exercises

Transitions can be defined as the maneuvers a senior candidate uses in front or behind a toboggan to go from a wedge (skier) to a sideslip or from a sideslip facing one way to a sideslip facing the other way. This skill is applied to toboggan handling and should not be confused with drills to improve turn initiation. Transitions allow changing the direction of the skis or snowboard while keeping the toboggan in the fall line. They should be done while maintaining a straight descent without acceleration. Use easier and more difficult, smooth, packed terrain. Transitions may be practiced with or without a toboggan.

### Wedge Transitions

From a wedge position pointing straight down the fall line, pivot or turn the skis across the slope 90 degrees without moving more than five feet across the slope. (This exercise does not apply to snowboarding.)

### Sideslip Transitions

From a sideslip position facing across the hill, pivot or turn the skis 180 degrees to face across the hill in the opposite direction. Limit boot movement across the slope to no more than a few feet. Use wedge (skier), stem (skier), skidded turns (skiers or snowboarders), or parallel maneuvers (skiers or snowboarders).

To perform the maneuver, rise up on the skis/snowboard to release the edges, flatten the skis/snowboard onto their base(s), turn or pivot the feet and skis/snowboard on their base(s) in the new direction, and sink back down more on the bases than on the edges of the skis/snowboard.

### Corridor Skiing

To execute transition maneuvers, keep the skis/snowboard within a

pre-established corridor approximately two ski-lengths wide. Another approach is to maneuver while keeping the boots (skiers) between two parallel lines that have been drawn approximately five feet apart. Focus on a point down the slope will help maintain a straight descent.

## Unloaded Toboggan—Front Exercises

Refer to *The Ski and Toboggan Training Manual* for guidance in designing unloaded toboggan training exercises. Some examples follow.

### Route Selection

Visually inspect the hill. Discuss possible routes and practice to see if the selected route is appropriate. Look for alternatives on the same slope.

### Follow the Leader

Use toboggans over varied terrain. Discuss and simulate proper position on a static and moving toboggan in various terrain and conditions.

### Chopsticks Drill

Have two patrollers simulate a toboggan by holding two bamboo or wooden poles. The front patroller places a pole under each arm and cups his or her hands over the pole ends. When the team begins to move, the rear operator leans on the poles to create the effect of a loaded toboggan.

## Skiling/Snowboarding Skills with Toboggans

Demonstrate sideslips, turns, and transitions.

### Recovery Techniques

Practice wheelbarrow, rear run, and 360-degree maneuvers.

## Loaded Toboggan—Front Exercises

Refer to *The Ski and Toboggan Training Manual* for guidance in designing unloaded toboggan training exercises. Some examples follow.

### Route Selections

Tour the mountain and review route choices using various trails and accident scenarios.

### Ride the Walls

There are steep inclines along many cat tracks. Use these to practice traverse stance and toboggan tracking by skiing or snowboarding up on them and working to maintain a stable line with the toboggan.

### Long Traverses

Do long traverses on varied terrain. Spend enough time on the edges to gain the feel of the traverse position.

### Difficult Terrain Practice

Choose uneven or icy terrain to practice balance and edge control.

### Progressive Exercises

Practice making as many turns as possible, progressing from an unloaded to a loaded toboggan. Use bamboo or rope drills in pairs to simulate turns with the toboggan.

### Traverses on Varied Terrain

Traverse with and without active assistance from the rear operator on

- easier, more difficult, and most difficult terrain;
- smooth and moguled terrain; and
- packed powder, powder, crud, and icy conditions.

## Moguls

Practice techniques to descend smoothly through moguls with a toboggan, including selecting the route; controlling the toboggan's contact with the surface; using the brake chain; positioning in the handles, and lifting and lowering the toboggan handles.

## Kick Turns

Practice kick turns in a variety of conditions and terrain, with and without a toboggan and with and without poles.

It is important for skiers and snowboarders to communicate between each other when kick turns are necessary. Snowboarding patrolers may maneuver the mountain with forward and fakie (reverse) motions, not having to make transition changes. However if a skier and snowboarder are operating a toboggan as a team, they must come to a complete stop so the skier has a safe area to perform the maneuver.

## Loaded Toboggan—Rear Operator Exercises

Refer to *The Ski and Toboggan Training Manual* for guidance in designing unloaded toboggan training exercises. Some examples follow.

## Rope-a-Goat

Practice rear operating techniques by skiing or snowboarding straight down the fall line and controlling turns with the help of another candidate who is simulating the toboggan. Attach a section of rope around the waist of the front person and proceed down the hill.

## Traversing

Practice traversing left and right with a loaded toboggan, keeping the toboggan from slipping sideways.

## Tail Rope Length

Practice lengthening and shortening the distance along the tail rope according to toboggan speed, snow conditions, and terrain.

## Braking

Practice applying increased braking power until effectively braking the entire weight of the loaded toboggan.

## Front Commands

Practice responding to the front operator's movement in an effort to lessen the impact of the moguls and dips.

## Rear Turning

Practice coordinating left and right turns on smooth slopes and on moguled slopes.



## F

## Senior Nordic Exercises

The *Nordic Training Manual* outlines the generally accepted training standards and procedures for the NSP nordic training program. This manual should be used as the reference for further detail on training activities and exercises.

## Prepared Track Exercises

Select and design training exercises for the senior candidates that meet stated objectives.

(PSIA instructors can suggest many other warm-up exercises in addition to those described in this appendix.)

### Diagonal Stride

Ski in a straight line between two points without poles. Count the number of strides between the points. Try to reduce the number of strides each time. Experiment with push-off, glide length, and body position. This exercise is designed to help develop weight transfer, pushing off, and gliding on one ski.

### Poling

Use alternate poling to propel yourself forward in a track. Experiment with shaft angle and arm extension. Vary the pole angle and arm extension to achieve maximum glide and power. Use this exercise to develop arm extension and upper body strength.

### Double Pole

On a gentle slope, use both poles to propel yourself downhill. As you stand up, move your hips forward to project the upper body. Use upper body compression, then pole push. This exercise is primarily designed to maintain or increase speed while going downhill.

### One-Step Double Pole With Kick

On rolling or bumpy terrain use this maneuver at the crest of a rise. Feel the difference in leg force needed to power the push-off at higher and lower speeds. This exercise is designed to develop sliding, pole push, and push-off.

### Step Turn

On a gradual downhill slope, change directions by taking small divergent steps. Lift up on the tips while stepping to keep the tail in the snow and the ski under control. This exercise is designed to develop balance, edging, rotary, and pressure-control movements.

### Skate

On flat terrain or a gentle slope, skate in a straight line. Align your toe, knee, and nose over the gliding ski for proper body position. This exercise is designed to develop weight transfer and edging, and it promotes an upright body position.

### Skate Turn

On flat terrain ski a figure eight. Vary the size of the figure, and experiment with double and diagonal poling. Start slow, and gradually increase your speed and power. This exercise is designed to develop edging, push-off, pole push, and weight transfer.

### Straight Run

Begin with the basic body position: skis comfortably apart and parallel, knees slightly bent, and hands at sides. Use a double-pole push to start the skis sliding. Distribute body weight as evenly as possible over both feet. Transfer weight from foot to foot while in a straight run. Shuffle skis back and forth while in a straight run. This exercise is designed to help develop a balanced stance.

### Pole Drag

Remove pole straps and grip poles on the shafts and handles. Drag baskets in the snow to reduce speed. Rest the shafts or your forearm against your knee or thigh to increase leverage and braking power. The pole drag is best used to control speed on steep, narrow, icy trails.

### Gliding and Braking Wedge

Let your skis glide downhill in a wedge position while using minimal edging. At a designated point (A), begin a braking wedge, and stop at a designated point (B). Repeat the exercise, gradually decreasing the distance between A and B (and increasing braking power). Note changes in body position and edging. This exercise is designed to develop edging, sliding, and steering.

### Crab Walk

Ski downhill in a wedge and edge one ski without rotary (steering) movements, while flattening the other ski. Repeat the process by edging the opposite ski. Proceed down the slope by alternating from ski to ski, producing a zigzag pattern. Crab walking demonstrates direction change as a result of hard edging. This exercise is designed to develop edging and pressure control.

## Parallel Turn

Skiers control speed by completing the turn. Concentrate on steering through the arc of the turn rather than pivoting and setting edges at the end of the turn. Experiment with edge control and rotary movements to vary the shape of the turn.

## Off-Track Exercise Examples

Conditions in the backcountry vary from prepared track. Consequently, senior candidates must be able to demonstrate skills in varied terrain. The following examples are designed to help candidates prepare to ski off-track conditions.

### Herringbone/Half Herringbone

Climb the hill using the herringbone technique, switch to the half herringbone technique on the right, return to the full herringbone, then switch to the half herringbone on the left and back to a full herringbone. Vary the width of the "V" shape and the amount of edging. Keep your weight over your feet. Use this exercise to develop edging, weight transfer, and pole push.

### Stem Turn

From a traverse, stem the uphill ski while maintaining the edge of the downhill ski in the traverse. Initiate the turn with a smooth and continuous pressure to the stemmed ski while steering both feet in the direction of the turn. To resume the traverse, steer the uphill ski parallel to the downhill ski. This exercise consists of a steering turn used to change directions and control speed.

### Stem Christie

From a traverse, stem the uphill ski with an up and forward motion.

Transfer weight to the outside ski and begin edging. Complete the turn as skidding stops and the skis enter a new traverse. This exercise is useful in toboggan handling and as a downhill turning progression to the parallel and telemark turns.

### Wedge Christie

From a traverse, open both skis into a small wedge and steer them into the fall line. The edge change on the inside ski and weight transfer to the outside ski should be as smooth as possible. You may steer the skis parallel before or after the fall line, as needed. This maneuver is useful in nordic toboggan handling and as a downhill turning progression to the parallel and telemark turns.

### Traverse (Uphill)

Point your skis at an upward angle to the fall line, and use the uphill diagonal stride. As the hill gets steeper, maintain the upward angle, adjust poling for balance, and edge the skis into the hill to prevent sideslipping.

### Traverse (Downhill)

Point your skis at a downward angle to the fall line, and use the downhill diagonal stride. As the hill gets steeper, maintain the downward angle, adjust poling for balance, and edge the skis into the hill to prevent sideslipping.

### Traverse with Kick Turn

This exercise involves a stationary turn of 180 degrees to change direction when other techniques are undesirable or ineffective. Place your skis across the fall line, edged if necessary, and face downhill. Plant your poles behind you (uphill) for stability. Your body weight should be on the uphill ski. Kick your downhill ski forward and up, and pivot it around on its trail to the opposite direction, bringing the

feet together, but facing opposite directions. Transfer your weight to the downhill ski, and bring the uphill ski around to point in the same direction. Bring your poles to your sides. On steep terrain, it may be easier to do the kick turn facing uphill.

### Sidestep

Position your skis directly across the fall line in an edged position. Then pick up the uphill ski and step laterally uphill. Move the downhill ski alongside the uphill ski (matched). You may also wish to experiment with forward sidestepping, which is a combination of uphill traverse and uphill sidestep. Practice sidestepping downhill, then downhill and forward, downhill and backward, etc. This is a necessary maneuver when belaying or entering steep terrain.

### Telemark Position

On rolling terrain, absorb bumps by sinking into the telemark position. After cresting the bump, push down with your legs to maintain snow contact, and sink into the telemark position again at the transition. Experiment with fore-and-aft positions to develop balance. This exercise is designed to develop sliding and balance.

### Telemark Turn

As you move from one telemark position to the other, allow your center of mass to create a constant flow of motion. Rise during initiation to release edges, then sink into the telemark position, actively steering both skis. Control speed by completing the turn. Achieve rounded turn shaped by blending edging, pressure control, and rotary motion throughout the arc of the turn. Experiment with varying the shape of the turn and with fore and aft weighting.