
Teaching Four-Track Skiers

What is Four-track Skiing?

In four-track skiing, the skier stands on two skis and uses hand-held outriggers to maintain balance. There are two very distinct types of four-trackers:

- Those who lack lateral control (the majority) and cannot hold a wedge. For these skiers, adapt the lesson plans to follow the parallel progressions.
- Those with some lateral control. For these skiers, follow the wedge progression, adapting to the amount of wedging they can do.

Common Disabilities associated with 4-Trackers	Common Medications to Consider
<ul style="list-style-type: none">• Amputation• Brain Injury• Cerebral Palsy (CP)• Multiple Sclerosis (MS)• Muscular Dystrophy (MD)• Paralytic poliomyelitis (polio)• Spina Bifida• Hydrocephalus	<ul style="list-style-type: none">• Anticonvulsant (seizures)• Analgesic (pain)• Antibiotics (infection)• Antiemetic (nausea, motion sickness)

❖ NOTE: The exercises in this handbook are geared toward the highest-functioning four-track skier. Adapt each exercise as needed to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Student Assessment and Equipment Fitting

Some key things to consider when assessing a four-tracker:

- Assess the student's physical condition and the extent of the disability. What is the lowest joint that the skier can use for rotary motion?
- What additional support does the skier need? Does the student normally use a walking aid, such as a cane or walker? For best results, start with as little equipment as possible and add devices as needed.
- Check for other physical limitations: balance, ability to rotate the torso, arm strength. Any deficiencies may need to be compensated for. Are there any hidden or secondary disabilities that could impact skiing performance?

Skis

The skis are normal alpine skis. Use ski shop recommendations for able-body skiers as a guide for similar size adaptive skiers.

Boots

Should be snug but not too tight. Objective is to get an athletic stance over a flat ski. You may need to cant with lifts or wedges inside the boots to obtain this. (one-half inch max)

❖ If the skier normally wears leg braces, a larger boot may be needed.

Outriggers

Stand-up crutch outriggers with a flip-up ski. The outriggers should be measured to provide appropriate aid in balancing. Generally the outrigger ski should be 1 inch off the snow when student is standing on the ski. The grip should be around the skier's hip-level when standing. Adjust the brake — more brake for beginners, less for more advanced skiers.

❖ For beginners, heavier, longer outriggers can provide additional balance.

Slant Boards

Slant boards are boards with bindings attached that can be adjusted to different angles to balance a skier over the ski. It may be necessary to use slant boards or other adaptive equipment to help the skier achieve a flat ski. Bindings can only be adjusted by a certified technician.

❖ Note: When raising the toes, lengthen the outriggers.

Walkers

Hospital-style walkers attached to skis. These provide additional balance and stability. Use special care when loading a skier on a chairlift with a walker.

Reins/Tethers

Reins connect to the skier's ski bra and allow the instructor to control speed and shape turns. See "Tethering a Four-Track Skier" later in this section for more information.

Ski Bra/Spacer Bars

A ski bra is a device that connects the ski tips to stabilize the tips of the skis. Reins can be connected to the rings on the ski bra to provide additional support. A spacer bar is used between the skier's feet for lateral support. Never allow a skier to slide backward while wearing tip stabilizers!

Harness

Use a harness to secure the skier to the chairlift. Always use a harness on skiers who experience seizures. Check medical form to see if a harness is required.

Helmets

Check the skier's medical form to see if head protection is required.

Four-Track-Specific Teaching Techniques

Teaching four-track skiing follows the basic ATS progressions. All four-track exercises described in this handbook must be adjusted to accommodate the capabilities of the individual skier. Do not ask a student to perform any exercises that might not be appropriate for the student.

❖ Never let a four-tracker using a ski bra to slide backward. Serious injury could result.

Tethering a Four-Track Skier

Through the use of tethers, the instructor can have complete control over the four-tracker's skiing. For less-active students, you can safely ski them down the hill with little or no participation from the student. For students capable of initiating turns on their own, the tether provides speed control and corrections during a turn. Most often, a student can start a turn and needs assistance coming out of the turn.

- Use two tether lines with four-track skiers, one attached to each tip of skis on the ski bra.

❖ **NOTE:** Wrap the tether line securely around one wrist. In many cases, you are the last thing that will stop the skier.

- **To Steer the Student using Reins** — To turn right, pull on the right rein. To turn left, pull on the left rein.
- Be sure to remove the reins before loading the chairlift.

Chairlift Loading and Unloading

Safety is the key!! If needed, ask the lift operator to slow down or stop the chair. For more information about chairlift procedures, including emergency procedures, see Chapter 2, "Safety Procedures and Policies" in the Outdoors for All Volunteer Manual.

Keys to success:

- Explain to the student what will happen and what you need the student to do. Typically, outriggers should be in skiing position when the chair comes to avoid catching the brake on the snow.
- Communicate with the lift operators at both the top and the bottom of the lifts. Never assume they know or remember what you need. Report any problems with lift ops to your Lead Volunteer.
- When load unloading, the outriggers should be in skiing position. Have the skier stand up and lean forward on the outriggers to unload.
- If the skier has leg braces, make sure they are unlatched when loading a chair so the skier can sit down.
- The first time the student rides the chairlift, slow down or stop the lift when loading and ask the lift operator to warn the operator at the top of the lift. Stop the lift for unload.



Lesson Plan: Introduction to Equipment

Goals

- Introduce the equipment. Explain functional aspects and safety features.
- Teach appropriate body position — neutral athletic stance:
- Outriggers forward of boot center, hands relaxed, elbows bent and by hips, shoulders relaxed, head up, eyes forward.
- Show how outriggers work: walking position, skiing position, braking position.
- Explain the safety code.

Teaching Tips

- Note any adjustments to the equipment on the skier's progress report.

❖ Never let a four-tracker slide backward. Serious injury could result.

- Heavier, longer outriggers provide additional balance to beginning skiers.
- For best results, start with less equipment and add devices as needed. Do not assume that just because the person is a four-tracker that he/she needs all of the support devices. Sometimes just outriggers are enough for success. Don't be afraid to experiment.

Exercises

- Demonstrate the appropriate body position and balance.
- Demonstrate use of outriggers. Have student practice switching outriggers from crutch to skiing position.
- Experiment with balance: slowly rock forward and back, with outriggers on the ground and with outriggers in the air (if possible).
- Take time to set up equipment properly to ensure that student is balanced over a flat ski.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Skills Concept (BERP) Review

- ◆ **Balancing movements** — Maintain balance while moving torso fore/aft and outriggers up/down/out.
- ◆ **Edge-control movements** — Maintain a flat ski.
- ◆ **Rotary movements** — Turn head and upper body.
- ◆ **Pressure-control movements** — Move torso fore/aft.



Lesson Plan: Flatland Drills

Goals

- Become familiar with the equipment on flat terrain.
- Focus on developing good balance, good body position.
- Learn how to move around on flats using outriggers.
- Learn importance of a flat ski.
- Learn side step.

❖ NOTE: Never let a four-tracker slide backward. Serious injury could result.

Teaching Tips

- **Don't be afraid to spend extra time on the flats!** Run through all of the movement patterns in the safe environment before moving to the chair lift.
- Have the skier do as much of the work as possible, but be careful not to wear them out too soon. **Watch for fatigue.**
- Pick terrain for safety.
- Introduce the safety code.
- For students who cannot perform sequential movements, experiment with range of motion the flats.
- For students who cannot initiate movement on their own use a tether to move them first and then use a slight hill after a comfort level has been reached.

Exercises

- Pushing on flats with flipski up propelling forward like crutches.
- Pushing on flats with flipski down at a 45-degree angle to ski.
- Side step (imagine going up stairs sideways).
- Follow the leader in a circle right and left.
- Explain what to do during a fall. Emphasize the importance of avoiding the outriggers. Show the student how to get up from a fall. Teach this when it happens.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Skills Concept (BERP) Review

- ◆ **Balancing movements** — Tall, yet relaxed stance.
- ◆ **Edge-control movements** — Emphasize for side step and for pushing with outriggers, minimize for straight run and turning on a flat ski.
- ◆ **Rotary movements** — Walking in circles. Rotary comes from the lowest point possible.
- ◆ **Pressure-control movements** — As related to maintaining balance while standing and moving.



Lesson Plan: Straight Run

Goals

- Add movement to flatland drills by having skier do a straight run.
- Challenge the skier's balance while focusing on maintaining correct body positioning and athletic stance.

❖ NOTE: Never let a four-tracker slide backward. Serious injury could result.

Teaching Tips

- Outriggers slightly ahead of boot, shoulder-width apart. Use the outriggers for balance, not weight bearing.
- Encourage athletic stance. Emphasize head up looking forward.
- Most four-trackers are not able to make a wedge. Adapt as necessary. Use outriggers to compensate for lack of balance.
- Use terrain that allows for a natural stop.
- As student becomes more comfortable, increase speed and length of the straight run.
- Review how equipment is fitting now that the student has spent some time in it.

Exercises

- Gliding wedge-equivalent.
- Straight run to a stop using outrigger brakes.
- Straight run change ups: lifting outriggers off snow, braking and releasing. Experiment with balance.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Skills Concept (BERP) Review

- ◆ **Balance movements** — Tall relaxed stance, not leaning too much on outriggers.
- ◆ **Edge-control movements** — Minimal at this stage. Maintain a flat ski.
- ◆ **Rotary movements** — Minimal rotary adjustments to maintain straight run.
- ◆ **Pressure-control movements** — Maintain equal pressure on outriggers.



Lesson Plan: Beginning Wedge Turn Equivalent (on the flats)

Goals

- Learn how to use turns to change direction, control speed and to stop.
- Learn to ride the chair lift.
- Work on turn initiation with increased outrigger involvement.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers.

Teaching Tips

- Do not move to the chairlift until the student can comfortably make turns and stop.
- Some four-trackers benefit from a ski bra and tetherer. Provide whatever assistance is necessary, but be sure to let the student do as much as possible. **Watch out for fatigue.** Never allow a skier to slide backward while wearing tip stabilizers!
- While it may be necessary to use upper body rotation to initiate first turns, it will be helpful to promote foot/leg steering as soon as possible — if at all possible. Work with whatever the student is capable of doing.
- Have the student create the rotary movements from the best working joint lowest to the snow. This may be different for each student. Some students can turn their ankles or knees, others will have to use their hips or shoulders to initiate the turn.
- Outriggers in skiing position to load and offload chair.

Exercises

- From straight run, add small turns in both directions. Begin by looking in direction of the turn and pointing outriggers. Increase turn radius as it becomes more comfortable.
- From a straight run turn to stop.
- Mock practice loading chair lift. Explain what to do with the outriggers. (Be sure locking braces are unlocked for loading!)
- Fan progressions — allow student to become comfortable with turning uphill to slow down and stop (on a gentle slope).
- Garlands — focus on either turn initiation or finishing the turn.

❖ NOTE: Never let a four-tracker slide backward. Serious injury could result.

Skills Concept (BERP) Review

- ◆ **Balancing movements** — Maintain balance while moving.
- ◆ **Edge-control movements** — Maintain flat ski, until speed and pitch require increased edge angle.
- ◆ **Rotary movements** — Use turning forces closest to the snow.
- ◆ **Pressure-control movements** — Pressure on cuff of boot to aid turn (or last point of feeling).



Lesson Plan: Wedge Christie Turn Equivalent

Goals

- Control speed using turn shape and terrain instead of outrigger braking. Increase size and variety of turns on beginner terrain.
- Introduce opening-the-door concepts for turning. Practice statically first.
- Initiate turns faster, switching between medium- and short-radius turns.
- Increase fore/aft pressure movements and countering during turns for more active crossover.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Teaching Tips

- When introducing a new skill choose terrain for success.
- Slight rise to initiate and sink to steer.
- Some of these drills are difficult if done too slowly.
- Work on more active outrigger use as well as more dynamic body movement. Encourage matching of outriggers throughout turn, but keep the open-the-door technique simple. Do not introduce countering or reaching downhill.
- Make sure student is using rotation of the body to turn instead of leaning.
- Follow basic ATS progressions as much as possible.

Exercises

- MILEAGE!! Practice variety of turn shapes.
- Open-the-door — work on one arm at a time and with outriggers in different positions. Have student feel the differences.
- Fan progressions — experiment with body positions on gentle slope.
- Side slipping (if appropriate) — begin experiments with edging. The body stays down the hill.
- Garlands — experiment with opening the door during garlands.

❖ NOTE: Never let a four-tracker slide backward. Serious injury could result.

Skills Concept (BERP) Review

- ◆ **Balancing movements** — Quiet upper body aids in balance recovery.
- ◆ **Edge-control movements** — Create edge angles with foot, knee, hip.
- ◆ **Rotary movements** — Steering with the foot.
- ◆ **Pressure-control movements** — Leg contact with boot cuff. Start to experiment with rise and sink and how that affects turn initiation and completion.



Lesson Plan: Parallel Turns and Beyond

Goals

- Skiing any run, including black diamonds, in control with more active and controlled turning.
- Ski all snow conditions.
- More active outrigger use, reaching down the fall line with outriggers.
- Greater upper and lower body separation.
- Carving turns.

Teaching Tips

- Explore the rest of the mountain, but keep to appropriate terrain for the skier's ability.
- Emphasize a countered stance.
- Promote “open door” to move the center of mass into the new turn.
- Review the safety code.

Exercises

- Traverse a bump run inside a “box.”
- Turn on top of bump and slide down back.
- Turn between bumps.
- Ski in and out of powder along a groomed run.
- Ski in a race course.

❖ NOTE: Adapt the exercises to the ability of the student. Not all exercises are appropriate for all four-track skiers. Use common sense.

Skills Concept (BERP) Review

- ◆ **Balancing movements** — Quiet controlled movements make balance recovery much easier.
- ◆ **Edge-control movements** — Look for edge angles created with feet knees and hips.
- ◆ **Rotary movements** — Upper-lower body separation aids in low body steering.
- ◆ **Pressure-control movements** — Flexion and extension will aid in appropriate ski to snow pressure.

Notes

