

ADAPTIVE EXAM GUIDE

for

3-TRACK / 4-TRACK

The information in this document is provided only as a guideline. Although every effort has been made in preparing and assembling this guideline, with a goal of providing timely, complete, and accurate information, PSIA makes no claims, promises, or guarantees about the timeliness, accuracy, completeness, or adequacy of the contents of this guideline, and PSIA assumes no liability or responsibility and expressly disclaims liability for any errors and omissions in its contents

Local regulations and safety guidelines take precedence over this information. It is in your best interest to exercise due diligence in determining the appropriateness of the information for your particular circumstances. In addition, please take into account any and all factors that may affect your lesson. This includes but is not limited to: the health, well-being and fitness of the student; weather conditions; terrain; other people on the slope; your own abilities, as well as those of your student and anyone who may accompany you.

This guideline provides diagrams from third party sources. The content of any such third-party diagrams are not within our control, and we cannot and will not take responsibility for the information in them, nor should any references to them be considered any endorsement by PSIA.

This classification includes stand-up skiers who use outriggers while skiing on one or two skis. Outriggers are used to compensate for weakness or a disability in the lower extremities and/or balance problems. Instead of outriggers, some 4-track skiers use walkers or a Snow Slider. For more information about these other 4-track options, see the *Adaptive Exam Guide for Slider*.

Types of Disabilities Common to Skiers 3- & 4-Track Skiing

As in other adaptive skiing classifications, this category includes a varied and vast population; sometimes their only commonality is the use of outriggers. Some examples of disabilities included in this 3/4-track classification are:

- Amputation
- Balance impairments
- Brain injury
- Cancer
- Cerebral palsy (CP)
- Cerebrovascular accident (CVA or stroke)
- Congenital anomaly of hip/leg/foot
- Epilepsy
- Multiple sclerosis (MS)
- Muscular dystrophy (MD)
- Paralysis & Paresis
- Poliomyelitis
- Post-polio syndrome
- Spina bifida
- Spinal cord injury (SCI)

Evaluation of Student

A complete and detailed student analysis is needed to determine if the student is a 3- or a 4-track skier. A primary concern with people with these disabilities is the physical assessment (range of motion; strength of limbs; balance; ability to rotate legs; amount of ankle flexion). A review of current medications and/or other disability involvements should be discussed during the evaluation. The evaluation indicates the equipment needed to create a successful learning environment. Even after this evaluation is completed, adjustments may need to be made, due to student's abilities demonstrated during the lesson.

In addition to the physical analysis, a personal evaluation should also take place to determine other activities, likes, dislikes, motivations, goals and fears. This provides a platform from which to design the lesson plan. Determination of learning preference is ongoing throughout the assessment process and during the lesson. The student's learning preference can be matched with a complementary teaching style and an acceptable pace, which is based upon the physical analysis and personal interview.

Finally, it is very important that this group of skiers develop sound fundamentals skills. The lesson plan follows the alpine skill development progression with obvious modifications to accommodate physical limitations. The focus is the development of the three skills supported by the five fundamentals, regardless of where the movements originate.

An example of this development of the three skills can be seen in a “**paper-clip**” skier. This occurs when the skier bends forward at the waist and relies excessively on the outriggers. Do not confuse this with the normal stance of a CP 4-track skier because of muscle/tendon strength/ surgery. In the case of this “paper-clip” skier, the analysis of skill might look like this:

- Underdeveloped skill blend to support static and dynamic balance:
 - Little or no dynamic balance on leg(s).
 - Relies on outriggers to remain in balance.
- Underdeveloped ability to control **edging** movements:
 - Poor upper/lower body separation.
 - Little or no angulation.
- Underdeveloped ability to control **rotary** movements:
 - Lack of controlled rotary movements with leg(s) or outrigger(s) to initiate and control a turn.
- Underdeveloped ability to control **pressure** movements:
 - Uses little or no flexion/extension to control magnitude of pressure.
 - Pressures only front or back of the ski.
 - Little or no foot to foot pressure when using two skis.

3-TRACK

This specialty includes any person who can stand/ski on one leg and utilize outriggers to assist balance while in motion. Some advanced 3-track skiers develop such good balance that they can eliminate the outriggers and ski with poles.

The student evaluation should explore the causes of the disability. Amputations are commonly the result of cancer, diabetes, blood clots, or accidents. Loss of function in ability to use one leg is frequently caused by strokes, brain injury, or polio. Additional physical or motivational problems may also be present and need to be explored.

During the student evaluation, some key considerations for amputees:

1. When the amputation occurred.
2. The present condition of the residual limb.
3. Whether or not the residual limb is properly wrapped and padded.

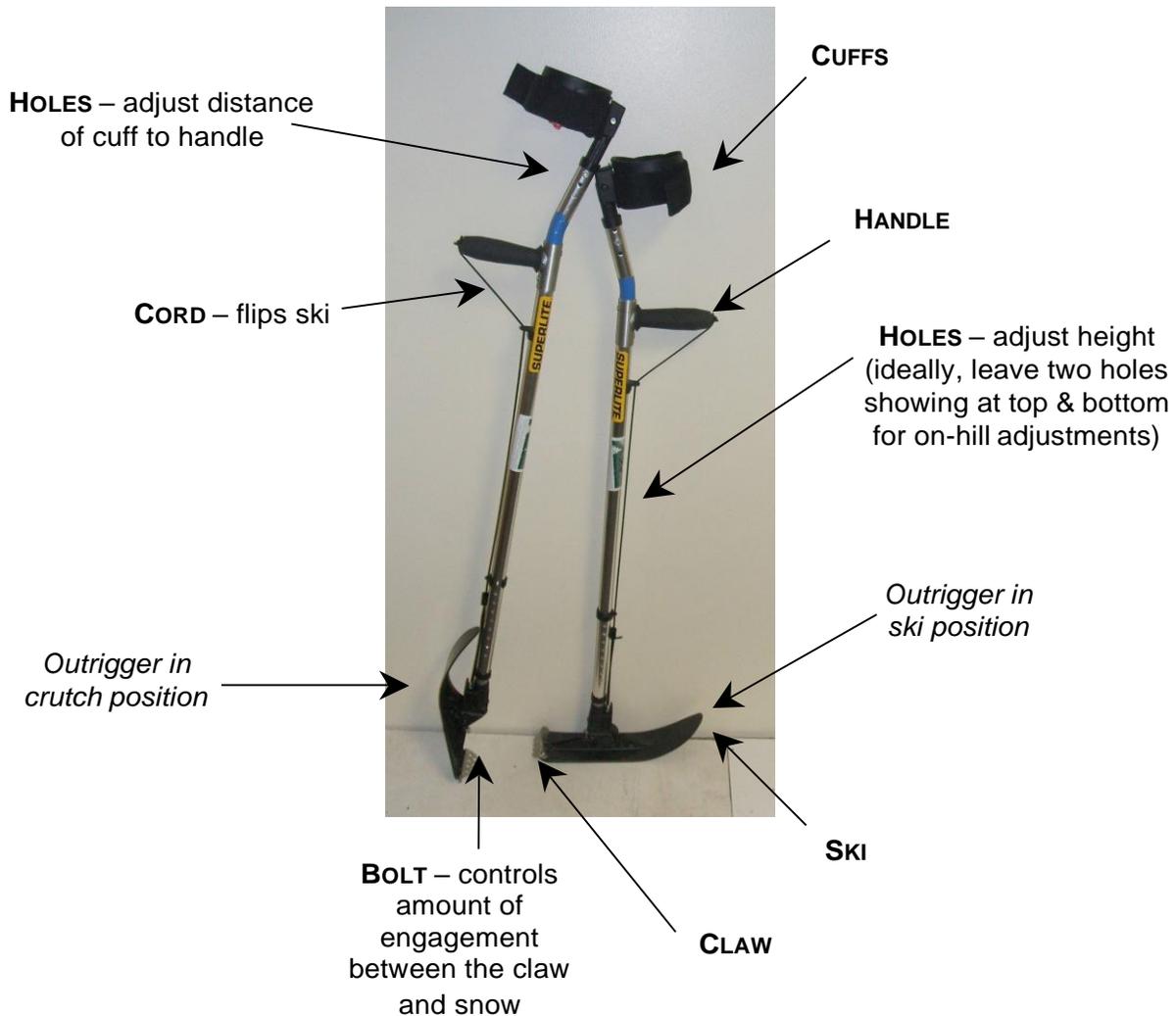
If the student has an atrophied leg upon which s/he is skiing, questions relative to circulation, feeling, and ability to control movements need to be asked.

The student evaluation should also include a review of medications. Insulin, chemotherapy, radiation, anticoagulants, and analgesics are some commonly encountered medications in the three-track specialty. Some medications increase fatigue levels; others increase sensitivity to sun. Exploration and research of medications currently in use provides some insight into their effects upon the student. Also, be aware that the side effects from chemotherapy and radiation drugs can linger long after the drug therapy is complete.

Since standing is a much more strenuous activity for a person with one leg instead of two, extra care should be taken not to fatigue your 3-track student. Whenever possible, do not stop to rest on flat terrain—it is much easier for the 3-tracker to get up from a slope rather than a flat spot. For your beginning 3-track student, keep a chair close by to use when a break is needed. And for more advanced students, consider saving your feedback for the chairlift instead of giving it while your student is standing.

Equipment and Set Up

Outriggers provide a three- or four-point balance system. Outrigger height and bolt adjustment are individual to the student. Outrigger height is adjusted to allow for an upright comfortable stance. As a student's comfort with sliding increases and skills develop, s/he may reduce the length of the outriggers slightly but should keep them at a height effective for use on flats and the downhill side of steeper terrain.



If the student is unable to maintain a flat ski on the snow, canting may provide additional help.

4-TRACK

This specialty includes any person who can stand/ski on both legs and utilize outriggers, a Snow Slider, or a walker to assist balance while in motion. For more information about the Snow Slider and walker, refer to the *Adaptive Exam Guide for Slider*. Some 4-track skiers develop such good balance that they eliminate the outriggers, ski with poles and become two-track skiers.

The student evaluation explores the causes of the disability. Balance problems or a general weakness in the lower extremities are frequently caused by strokes, traumatic brain injury, polio or spinal cord injuries. The student's gait and stance should be closely observed. Some key considerations include:

1. Will the student's stance be parallel or in a wedge?
2. Can the student balance without assistance?
3. Will the student be capable of keeping the skis flat without canting?
4. Will the student use outriggers or a walker or a Snow Slider?
5. Are there additional physical, emotional or motivational problems?

The student evaluation should include a review of medications. Insulin, anticonvulsive, antibacterial, antispasmodics, antibiotics and analgesics are commonly encountered in this four-track specialty. Some medications increase fatigue levels, interfere with the ability to balance, or increase sensitivity to sun. Exploration and research of currently used medications can provide insight into their effects upon the student.

Equipment and Set Up

Equipment selection and adjustments, physical assists, and terrain selection all enhance flow of movements and maintenance of balance in motion.

The Snow Slider offers a very stable base of support and is extremely adjustable for any skier. It allows the skier to move with the unit, while being tethered by the instructor, but does not allow use independent of a tetherer. For more information about walkers and the Snow Slider, refer to the *Adaptive Exam Guide for Slider*.

Adaptive equipment, such as metal fixed tip stabilizers, spacer bars, or bungee cords can be used to enhance lateral strength and to keep the skis from spreading apart or crossing. Tethers may be used to assist students 4-tracking in the development of rotary movements. They can also assist with flat-land crossings and safety. Tethers may be removed as the student progresses but only if the skier can turn, control equipment and speed, and stop safely on his/her own.

Stand-Up Tethering

Stand-up tethering is an important assist technique that utilizes a tip retention device and tethers. Practice this before trying it with students as it takes skill and finesse to ensure safety and enjoyment for the student.

As the tetherer, you have the ability to:

- **Control speed** - by utilizing the slope and through turn shape. (Be careful not to jerk the tethers, as this could cause the student to fall.)
- **Assist with turns and turn shape** - with active tethering in different parts of the turn

By doing all of this, you may also help a student create muscle memory and with enough practice, this newly developed muscle memory may allow the student to eventually ski independently.

Remember that for safety, a student with a tip retention device (with or without tethers) should not ski backwards or could risk injury. As a general rule, stand-up tethering is only appropriate on easy terrain (typically greens and easy blues).

If the student is capable, the tethers can eventually be removed for greater independence.

Adaptive 3- and 4-Track Objectives

The following is based on the *Adaptive Alpine Technical Manual* (PSIA-AASI). Local regulations and safety guidelines take precedence over this information. It is in your best interest to exercise due diligence in determining the appropriateness of the information for your particular circumstances. In addition, please take into account any and all factors that may affect your lesson. This includes but is not limited to: the health, well-being and fitness of the student; weather conditions; terrain; other people on the slope; your own abilities, as well as those of your student and anyone who may accompany you.

Beginner / Novice Zone Objectives

Level 1: Welcome to skiing / Build the foundation

- Perform **student assessment**.
- Discuss **medical history**.
- Determine and share **goals**.
- Select, introduce and set up **equipment**.
- Agree on student / instructor **communication and safety**.
- Perform **static balance exercises** and develop **athletic stance**, indoors.
- Perform **pushing, turning, pivoting and balancing drills** on flats.
- **Begin** to understand the **fall line** and **terrain changes**.
- Learn how to safely **fall and get up**.
- Learn to **slide** at slow speed.
- **Glide and slide across the slope**.
- Perform a **straight run** to a terrain-assisted stop.
- Develop effective **outrigger and body position while moving**.

Level 2: Introduction to Turning

Note: Turning at this level achieved through balance and a primary skill of rotary along with a blend of edging and pressure control skills..

- Develop **stopping and slowing** skills.
- **Turn left and right to a stop**.
- Perform **linked turns**.
- Begin to **vary shape and size of turns**.
- Develop effective **outrigger and body position for turning**.
- Perform **outrigger-equivalent braking wedge**.
- Learn how to **ride chairlift**.
- Learn safe **outrigger position and timing** while **loading and unloading**.
- Introduce **sideslip** skills in the beginner area.

Level 3: Introduction to Green Terrain

- **Explore terrain** – go for lots of quality mileage!
- Actively **skid** the skis for turn shape and speed control.
- **Begin** to use terrain-assisted **edging and edge release movements** to initiate a turn.

Intermediate Zone Objectives

Level 4: Mastering Green Terrain

- Refine the ability to control the skis by **turning and tipping** the appropriate body parts.
- Perform **edge and rotary control** exercises.
- Explore **all green terrain in a variety of snow conditions**.
- Experiment with **turn shape and size**.
- Develop an understanding of **how changes in stance affect the skis**.
- Solidify a **release move to initiate a turn**.
- Use **hockey stops**.

Level 5: Developing Skills to Enhance Parallel Skiing

- Use **independent outrigger action**.
- Improve **dynamic balance**, increase **range of motion**, and feel the **edges**.
- Gain an understanding of **upper and lower body independence**.
- Develop **simultaneous edge release for parallel turns** on blue terrain.
- **Control speed** on green and groomed blue **terrain by blending skills and using tactics and turn shape**.
- Develop **long- to medium- and medium- to long-radius turns**.
- Ski a **“green line” in the bumps**.
- Freestyle: Learn how to **jump**, using **natural terrain features** and **beginner terrain parks**.

Level 6: Anchor Parallel Skiing & Learning Tactics for bumps and Variable Conditions on Blue Terrain

- **Link open parallel turns** with emphasis on **simultaneous rotation and edging**.
- Perform **medium- to short-radius turns**.
- Ski **varying snow conditions**.
- **Carve uphill arcs**.
- **Refine tipping movements** to become more dynamic.
- Perform **short-radius turns while developing upper and lower body independence**.
- Create body **angulation**.
- Explore using **skidded and carved short turns as tactics for speed control on steeper terrain**.
- Explore **powder, crud and cut-up snow** conditions.
- Ski a **“blue line” in the bumps**.
- Freestyle: **Straight slide a funbox**.

Advanced Zone Objectives

Level 7: Linking Parallel Turns on All Blue and Some Black Terrain, and Increasing Confidence in Variable Terrain and Conditions

- Perform carved **railroad track turns**.
- Continue to **refine skill blending** for parallel turns on all blue and some black terrain.
- Explore a **variety of turn shapes** on groomed and variable terrain.
- Explore **tactics** for skiing all terrains.
- Freestyle: **Perform a rail slide** on a bamboo pole or PVC practice rail.

Level 8: Mastering the Mountain and Exploring the Latest Ski Designs

- Continue to enhance **upper and lower body separation**.
- **Carve medium- and long-radius turns**.
- **Refine edge engagement and release movements**, changing line, turn shape, and speed to adapt to challenging terrain and snow conditions.
- **Refine flexion and extension movements** to maintain balance, manage uneven terrain, and allow the efficient blending of all other movements.
- **Perform short-radius turns using upper and lower body independence** in variable conditions to develop more speed control and manage terrain more efficiently.
- Ski the **“black line” in the bumps**.
- Become comfortable skiing all of the mountain’s **most difficult terrain**.
- Freestyle: **Introduce the halfpipe**.
- Freestyle: **Perform a rail slide on a funbox**.

Level 9: Skiing Any Turn, Anytime, Anywhere in Any Snow Condition

- Increase confidence in **ski design and speed** in a safe environment (especially useful for the skier interested in racing).
- **Refine flexion and extension movements** to enhance turn mechanics.
- **Use timing and tempo to enhance the release of the old edges**, tipping both skis simultaneously from turn to turn while reducing anxiety and fatigue to allow for more enjoyable skiing on challenging terrain.
- **Refine movements and options in short-radius turns**, adjusting tactics at will.
- Explore **alternative movement blends and tactics** for variable conditions, **skiing the entire mountain efficiently**.
- Freestyle: **Perform a 360 off a jump**.
- Freestyle: **Perform a rail slide on a metal rail**.