



PSIA-Rocky Mountain-AASI ADAPTIVE EXAM GUIDE for **3-TRACK / 4-TRACK**



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 3- & 4-Trackers

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
- Cancer
- Cerebral Palsy (CP)
- Cerebrovascular Accident (CVA/stroke)
- Congenital anomalies of hip/leg/foot
- Epilepsy
- Limb Deficiency
- Multiple Sclerosis (MS)
- Muscular Dystrophy (MD)
- Paralysis & Paresis
- Polio
- Post Polio Syndrome
- Spina Bifida
- Spinal Cord Injury
- Traumatic Brain Injury (TBI)

Evaluation of Student

A complete and detailed student analysis is needed to determine if the student is a 3-track or a 4-track skier. A primary concern 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 this 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 ATS skill development progression with obvious modifications to accommodate physical limitations. The focus is the development of the four skills, regardless of where the movements originate.

An example of this development of the four 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 **balancing** ability.
 - 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 angulations.
- Underdeveloped ability to control **rotary** movements.
 - Lack of controlled rotary movements to initiate and control a turn.
- Underdeveloped ability to control **pressure** movements.
 - Uses little or no flexion/extension.
 - Pressures only front of the ski.

3-TRACK

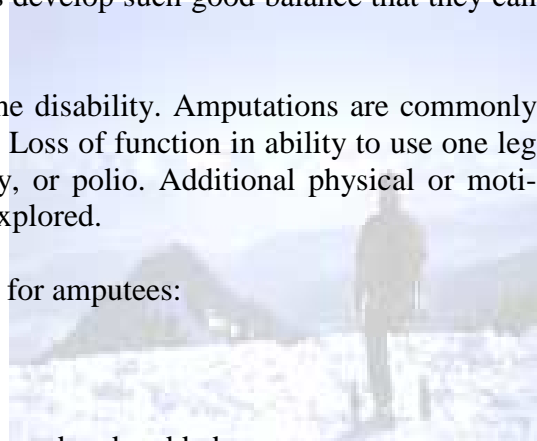
This specialty includes any person who can stand/ski on one leg and utilize outriggers to assist balance while in motion. Some advanced 3-track skiers develop such good balance that they can eliminate the outriggers and ski with poles.

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, traumatic 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, 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.

Equipment and Set Up

Outriggers provide a three-point balance system. Outrigger height and brake adjustment are individual to the student. Beginners usually have the outrigger bolt longer (more brake). Outrigger height is adjusted to allow for an upright comfortable stance. As the student's skills develop, dependency on this balance system decreases and outrigger height may be shortened and the bolt reduced (less brake).



If the student is unable to maintain a flat ski on the snow, canting or the use of a slant board 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 or slant-boards?
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.

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Walkers offer more support than outriggers but may limit the student's ability to become an independent skier. The Snow Slider offers a very stable base of support for the skier and is extremely adjustable for any skier. It allows the skier to move with the unit, while being tethered by the instructor. For more information about walkers and the Snow Slider, refer to the *Adaptive Exam Guide for Slider*.

Adaptive equipment, such as ski-bras, spacer bars or bungee cords can be used to enhance lateral strength and to keep the skis from spreading apart or crossing. Tethers are often used to assist 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
- **Assist with edge use** - by guiding the tipping movements of the skis

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 Progression

The following is based on the PSIA Alpine National Standards and has been adapted for 3- and 4-track skiing.

Beginner / Novice Zone Objectives

Level 1: Welcome to Skiing / Build the Foundation

- Student assessment
- Medical history
- Equipment selection, introduction and set up (canting, heel lift or toe lift)
- Static balance exercises indoors

Level 2: Introduction to Flats

- Pushing, turning, pivoting on flats
- Getting in and out of equipment
- Falling and getting up
- Straight runs
- Outrigger and body position while moving
- Stopping and slowing

Level 3: Introduction to Turning

- Chairlift loading and unloading procedures
- Introduction to chairlift and green terrain
- Equipment and safety concerns for riding lift
- Student / Instructor assisted chairlift loading and unloading
- Outrigger position and timing during loading and unloading
- Turning left and right
- Proper outrigger use and skill blending for turn shape, size and speed control
- Introduction of skills and fundamental movement patterns
- Turning to a stop
- Skidding/slipping
- Fan progression
- Linked turns
- Master beginner area

Level 4: Explore the Beginner Mountain Experience

- Develop greater skill blending and confidence
- Vary turn shape and size for terrain and condition
- Outrigger position and timing to introduce crossover and direction of travel for a new turn
- Independent lift loading & unloading
- Hockey stops

Intermediate Zone Objectives

Level 5: Develop and Enhance Intermediate Movement Options

- Develop proper independent outrigger movements (outrigger lead change)
- Refine proper body movements and position, fore, aft, lateral, absorption, extension
- Develop long- to medium- and medium- to long-radius turns
- Edge and rotary control exercises
- Explore a variety of snow conditions

Level 6: Anchor Intermediate Skills and Movements

- Medium to short radius turns
- Ski varying snow conditions
- Proper body movements
- Upper / lower body separation
- Hip and/ or lower body angulations- squaring up to the ski
- Develop single outrigger exercises (e.g., only use uphill / downhill outrigger; flying outrigger)
- Edge control drills

Level 7: Explore Movements and Skills for Upper Level Skiing

- Bump skiing on easy blue terrain
- Short radius turns
- Explore carving sensation
- Explore extension and retraction at turn initiation
- Increase and decrease speed through turns
- Total Independence

The Advanced Zone Objectives

Level 8: Refine Advanced Movement Patterns

- Carving medium and long radius turns
- Ski short turns on the steeps
- Boot-top powder
- Breaking, gliding control movements on steep terrain

Level 9: Develop Movement Options for Steep Terrain

- Refine movements in short radius turns
- Develop option movement patterns for varying speed control and conditions
- Develop option movements and skiing tactics for advanced bump skiing
- Bumps, racing, off-piste, terrain parks and pipe