



ROCKY MOUNTAIN DIVISION
Professional Ski Instructors of America
American Association of Snowboard Instructors

ADAPTIVE EXAM GUIDE for **COGNITIVE DISABILITIES**

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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.

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Students in this classification comprise a widely diverse population with many different disabilities, which may encompass physical weaknesses and/or cognitive processing difficulties.

In general, a **developmental disability** is a condition resulting from congenital abnormalities, trauma, disease, or deprivation. It interrupts or delays normal fetal, infantile, or juvenile growth and development. The onset of a developmental disability occurs before age 18 and it then persists throughout the remainder of the individual's life. Some common developmental disabilities include autism, cerebral palsy, Down syndrome, epilepsy, and intellectual disability (mental retardation).

A **cognitive disability**, on the other hand, is caused by damage to, or deterioration of any portion of the brain. It may affect the individual's ability to process information, coordinate and control the body or move in space. A cognitive disability may be caused by trauma (e.g., a traumatic brain injury) or disease (e.g., a brain tumor, a cerebrovascular accident (stroke), Alzheimer's, Huntington's, or Parkinson's).

Common Cognitive and Developmental Disabilities

These are some of the most common cognitive and developmental disabilities. Note that some of these disabilities may have no effect on an individual's cognitive ability or ability to learn new skills.

- Alzheimer's disease (AD)
- Attention deficit/hyperactivity disorder (ADD/ADHD)
- Autism spectrum disorder
- Brain injury
- Cerebral palsy (CP)
- Cerebrovascular accident (CVA or stroke)
- Cognitive disability
- Developmental disability (DD)
- Down syndrome
- Epilepsy
- Fetal alcohol syndrome (FAS)
- Fragile X syndrome
- Hemiplegia
- Intellectual disability
- Learning disability
- Posttraumatic stress disorder (PTSD)
- Sensory processing disorder

Evaluation of Student

The complexity of this classification requires knowledge of the many disabilities, their causes and effects upon skiing performance, plus commonly used medications. *A complete and detailed student analysis is imperative to determine the physical, cognitive, and emotional strengths and weaknesses of the student.* A thorough check of present medications provides important information relative to stamina and sensitivity to the environment, as well as attentiveness and interpersonal skills.

Skill development needs to be modified to comply with the physical and cognitive abilities of the student. Matching learning preferences with teaching styles enhances the learning environment for the student. Frequent demonstrations and a focus on small, obtainable goals and accomplishments is one of the most successful teaching strategies. Providing individual positive feedback along the way helps to maintain the student's motivation and interest. Students who have a cognitive or developmental disability benefit from an individual assessment and tailored lessons.

A thorough review of primary and secondary abilities, along with their cause and effect upon skill performance and cognitive processing, should be made. Students who have a cognitive or developmental disability frequently have other involvements, some apparent, some hidden. A thorough evaluation reveals this. Often there are medical problems which are not evident. For example:

- **Past surgical procedures** can have a long-term impact on the student. Students with cerebral palsy frequently have orthopedic surgery to reduce spasticity by lengthening muscles and tendons.
- **Secondary disabilities or conditions** are common. A person with Down syndrome may have heart complications, hearing problems, cervical weakness, hypothyroidism, or even have an early onset of Alzheimer's disease.
- **Behavioral and emotional difficulties** are often the direct result of a cognitive or developmental disability. A person with Alzheimer's disease or a posttraumatic stress disorder may be susceptible to mood swings or sudden outbursts.
- **Poor judgment** is associated with some cognitive and developmental disabilities. A person with Down syndrome may be inappropriately friendly, even to strangers; a person with sensory processing disorder may have difficulty assessing risks.
- **Cognitive difficulties** are present with some cognitive and developmental disabilities. A cerebrovascular accident may cause short- or long-term memory problems; a brain injury can make it difficult for a person to make decisions, process information, or understand abstract concepts.
- **Perceptual difficulties** are present with some cognitive and developmental disabilities. Multiple sclerosis, Down syndrome and cerebrovascular accidents can sometimes cause difficulties seeing or hearing; a brain injury can affect any of the senses, depending on the location of the injury.

This list goes on and on. Never assume anything!

Medications can also have an impact and need to be reviewed. Side effects of medications can, for example, make a student listless, slow to respond, nervous, sensitive to the sun or muscularly weak. Medication timing is important because adverse reactions to lack of medication, or low medication levels, are common.

Much information can be gained by asking students about other sports and activities in which they participate. Bicycle riding indicates some balance and independent leg action; ball activities indicate eye-hand coordination and some spatial judgment. Knowledge of sports activities and interests, plus information about the student's daily schedule can help you access both physical and cognitive abilities. This may also be used for teaching for transfer of skills.

In addition to students, other resources may offer valuable insights. Parents, spouses, or other caregivers can provide the most detailed information regarding students cognitive processing strengths and needs. Many schools have a Special Education Team that creates an individualized education program (IEP) for school and parents of children with special needs. This information may assist with your initial assessment of students. Just be sure not to ignore students as you are gathering additional information.

One-on-one phone conversations are extremely valuable prior to the actual lesson. The more communication and assessment that can be done up front, the better!

Equipment and Physical Assists

Students who have cognitive or developmental disabilities often have difficulty with motor planning, balance, and fine muscle or gross motor coordination. Adaptive equipment such as metal fixed tip stabilizers, Edgie Wedgies[®]¹, bamboo poles, and tethers may be utilized to increase balance and coordination.

Tip and heel stabilizers

Tip stabilizers come in various forms. Most allow the skier to maintain skis in a wedge or parallel position. **Edgie Wedgies**, **Easy Wedges**, and **c-clamps held together with cord** offer very light tip control. They keep the ski tips in close proximity but do not prevent them from crossing. A **slider/trombone** offers more tip stability while still allowing the student some fore/aft movement of the skis. A **metal fixed tip stabilizer** prevents the tips from crossing or separating and it limits fore/aft movement. The sliders/trombones and fixed tip stabilizers have rings to which you can easily attach tethers.

A **spacer bar** attaches under the ski boots at the heels and helps the skier keep his/her skis from crossing or getting too far apart. When using a spacer bar, you should ALWAYS use a tip stabilizer, such as a tip stabilizer, fixed tip stabilizer, or slider/trombone.

Physical assists

Physical assists are useful methods to for a student to experience how a turn should feel. You can also use them in a situation where unexpectedly advanced terrain or fear can prohibit your student from skiing down on his/her own. Remember to always ask your student's permission before making physical contact.

The **two-point hold** is often used to assist the student in turning and stopping. It is also an effective way to kinesthetically teach a new movement to a student with a cognitive or developmental disability. To perform the two-point hold, ski behind your student with one ski between the student's skis and the other ski outside of the student's ski.

The following instructions are written for your left ski between your student's skis. Reverse the

instructions if you are skiing with your right ski between the student's skis.

1. Ask your student's permission to make physical contact.
2. Position yourself behind your student with your left ski between your student's skis and your right ski to the right of your student's right ski.
3. Using your hands, rotate the student's hip and tip the knee as necessary to generate turns.

¹EDGIE WEDGIE[®] is a registered trademark and copyright of Vernon Miller.

Another simple assist is to hold the student's hands (**palm on palm**) as you ski backwards in front of the student. In either case, remember that by skiing together, you increase your mass, which naturally increases your speed. It is critical that you keep your speed slow enough to maintain control at all times!

A **tip hold** is another easy way to direct your student's turns. Simply ski backwards in front of your student while holding and guiding the student's ski tips. This method works best if you have an assistant instructor who can warn you of upcoming people and obstacles. However, even if you have an assistant instructor to do this, you should still check often for such potential hazards. Be aware some ski areas do not allow instructors to ski backwards.

Stand-up tethering

Stand-up tethering is a technique that utilizes a tip retention device and tethers which can be useful when you have tried other methods of teaching independent movements. Once your student can achieve some balance on the skis, this assist can be useful for students who:

- Lack the cognitive ability to understand directions (e.g., intellectual disability, Down syndrome).
- Have no fear of dangers such as speed or obstacles (e.g., sensory processing disorder, autism).
- Are easily distracted and over-stimulated in a "magic carpet" type environment where other students would normally learn to turn and stop (e.g., autism, ADD/ADHD).
- May have the cognitive ability to understand concepts but not the strength or capability to make appropriate movements (e.g., cerebral palsy, traumatic brain injury).
- Learn best with a kinesthetic approach that can develop muscle memory.

Practice stand-up tethering 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

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 should eventually be removed for greater independence

Bamboo pole assists

Bamboo poles (or lengths of PVC pipe) offer many options for physically assisting an adaptive ski student. Some frequently used bamboo pole assists are:

1. Single pole held horizontally at waist or shoulder height by both instructor and student, with instructor skiing backwards.
2. A *long* single pole held horizontally at waist to chest level by both student and instructor, skiing side by side.
3. Two poles, one in each hand of student and instructor, held at hip height with one person skiing in front, the other immediately in back (also called a **horse and buggy**).

Hula Hoops^{®2}, Ski-Pals^{®3} and Sno-Wings^{™4}

Hula Hoops, Ski-Pals, and Sno-Wings offer great flexibility for teaching adaptive students. The student can be positioned inside of these devices with you skiing directly behind. You can then guide turns in a manner similar to tethering. Another option is to ski with an assistant instructor and position the student inside the device and between the two of you. In this case, the technique is similar to a side-by-side bamboo pole assist. Yet another choice is for you to ski backwards in front of the student with the hula-hoop or Ski-Pal between the two of you. This allows you to lightly guide the student's turns and give him/her the sense of security that comes from being able to hold onto something.

Using other adaptive equipment

Some students may require the use of more involved adaptive equipment, such as sit-down skis, outriggers or the slider. See the other PSIA-RM-AASI Adaptive Exam guides for information on this equipment.

² Hula Hoop[®] is a registered trademark of Wham-O, Inc. ³

Ski-Pal[®] is a registered trademark of Ski-Pal, LLC.

⁴ Sno-Wing[™] is a trademark of Johnny Boy Enterprises, Inc.

Two-Track Objectives for Skiers with Cognitive or Developmental Disabilities

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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.
- **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.

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**.
- Perform **braking wedge**.
- Learn how to **ride chairlift**.
- 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.
- 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

- **Carry and use poles** more efficiently.
- Learn how to **use a pole swing, touch, and/or plant** to help with torso stabilization, rhythm, and timing.
- 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.
- Explore various **hands-off guiding and/or teaching methods**.
- 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: **Land switch off a jump**.
- 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**.