

**The Professional Ski Instructors of America  
American Association of Snowboard Instructors  
Eastern Division**



**Adaptive  
Exam Guide**

# PSIA-E/AASI ADAPTIVE EXAM GUIDE

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## **INTRODUCTION**

It is only through determination, dedication and experience that one can gather enough knowledge of disabilities to learn what is necessary to competently teach adaptive skiing. Specific resources concerning adaptive ski teaching are limited, scattered, and virtually unknown. Except for a few college texts, a basic overview of major disabilities is not available. Most of the time, it is necessary to wade through technical/medical disability texts to obtain even a general understanding. Only then can this hard-to-come-by knowledge be applied to ski teaching and skill development.

To independently assemble all of the written materials needed to become an adaptive ski teacher is not feasible. The sheer volume of materials needed and keeping that medical information updated and timely is prohibitive. This guide is meant to provide an overview of information and resources to assist our members in their pursuit of knowledge.

This Exam Guide is designed to provide the most elementary, introductory information plus specific recommendations for further research materials. This guide provides:

- \* Information on commonly found disabilities and their effects on skill performance
- \* Definitions of adaptive equipment
- \* Information on commonly found medications and their side effects

In addition, this guide provides information and references about the American Ski Teaching System (ATS), skill development, necessary modifications, and Adaptive Certification Exam information.

We emphasize that this guide is only a framework on which to begin building knowledge of Adaptive Ski Teaching. The recommended reading list is the next step and then, individual exploration of specific disabilities/adaptive skiing categories is encouraged. The last page of this manual is only the beginning!

Many have contributed greatly to this guide. The Eastern Adaptive Board of Examiners has contributed its time, energies, efforts and expertise to offer the most comprehensive Adaptive Ski Teaching educational programs available. Each member has, either in person or through written materials, contributed to the contents of this manual. A special acknowledgment and thank you must go to Gwen Allard for spearheading the creation of this guide and her involvement in adaptive skiing in the east since its inception.

A special welcome to all who begin to explore Adaptive Teaching. Each student, with his or her individual disabilities, brings a special challenge for you to design a student-specific lesson to best meet their needs. You will discover new meanings for the term “student-centered” and “outcome-based”. An exciting, challenging chapter of your ski teaching career awaits you in the pages ahead. Welcome!

Kathy Chandler  
PSIA-E Adaptive Coordinator

## **EVALUATING YOUR KNOWLEDGE - PREPARING FOR CERTIFICATION**

Acquiring skills and knowledge are often accomplished in many different ways such as: observing, experiencing, researching/investigating, and discovering. We purposely expose ourselves to many different situations and environments to become better prepared to "per-form". For example, when we finish high school, we go on to college. When we obtain a bachelor's degree, we may seek a MA or Ph.D. Then we climb the corporate ladder. When, finally, retirement comes, pleasurable adventures expand our knowledge in a variety of interest areas. Both academic and physical development is a never ending process keeping us motivated, plus mentally and physically fit!

As we develop our knowledge and skill base, we typically focus our attention on either developing our minds (academic studies) OR our bodies (physical development and endurance). We are accustomed to having our progress monitored so we can insure successful completion of our particular task. Developing ourselves in one area at a time enables us to rely upon the solid foundation already established in other areas. For example, if we know we excel in sports we are better able to accept our weak mathematical or language skills. Seldom do we simultaneously monitor or evaluate both our mental and physical abilities at the same time, except... when you take a professional ski teaching exam! Awareness of what it encompasses will greatly assist you in preparing for this educational experience.

Adaptive ski teaching is ATS plus more! Alpine based principles and information are the foundation from which you will expand your knowledge. Adaptive ski teaching focuses on skill development, regardless of where the movement originates. This takes creativity, skill and experience. The required information, standards, and exam process all parallel the Alpine sector. In addition to all the knowledge, professional components and physical requirements of the Alpine certification exams, the Adaptive exam includes knowledge relative to common disabilities, their causes and effects upon the cognitive processing and voluntary motor movement, medications and their side effects, plus adaptive equipment.

Unlike the Alpine educational system, the Adaptive sector is still developing its reference manual materials. You will need to research, and then assimilate your findings to develop a comprehensive understanding of adaptive ski teaching. This manual can only guide you in this search; it will not provide all of the answers. Disabilities-related information may be found in college texts, medical journals, publications, pamphlets, association materials, or legal documents (i.e. The Americans with Disabilities Act). One example of required knowledge is the five titles of the ADA, which are: Title I - Equal employment opportunities, Title II - Public Services (state and local government including public school districts and public transportation), Title III - Public accommodations and services operated by private entities, Title IV - Access to telecommunications, and Title V - Miscellaneous provisions (this title addresses such issues as the ADA's relationship to other laws).

Participation at an Adaptive educational event will assist in your adaptive educational development. The adaptive examiners are a ready resource for you; as are other professionals within the disabled sports field. Involvement with adaptive sports groups such as Disabled Sports/USA, Special Olympics or community-based groups can provide a "hands-on" experience. As you pursue the development of adaptive ski teaching skills, remember to encompass both the academic and physical components. Monitor your development, reinforce areas of weakness, and when ready, participate in an adaptive ski teaching exam.

## CERTIFIED LEVEL I ADAPTIVE

*(Modeled after PSIA-E Education / Certification Standards with adaptive modifications)*

### CANDIDATE PREREQUISITES:

A candidate for Adaptive Level I Certification must:

- \* Be a PSIA member, or become one by paying current dues with an application for membership.
- \* Be 16 years of age or older.
- \* Be an employee of a recognized ski school, agency or adaptive program and have completed a minimum of 50 hours of combined in-house training and actual on-hill adaptive teaching, as attested to by the ski school director, program or agency director.
- \* Attend a PSIA Level I Adaptive exam and meet the outcome criteria stated on the following pages.

### INFORMATION CRITERIA:

- \* All references to ATS refer to *PSIA Alpine Technical Manual, Skiing and Teaching Skills, 2<sup>nd</sup> Edition and the PSIA/AASI Core Concepts for Snowsports Instructors*.
- \* All references to progressions for different disciplines may be found in this guide.
- \* All references to skill blending refer to balancing movements, rotary movements, edge control movements and pressure control movements.
- \* The variety of turn shapes refers to short, medium and long.
- \* All references to class levels refer to ATS Levels 1-9.
- \* References to the Teaching Model refer to the Adaptive Teaching Model on page 29.
- \* Learning styles (preferences) refer to Doer, Thinker, Watcher, and Feeler.
- \* All references to "Your Responsibility Code" refer to the National Ski Areas Association (NSAA) Responsibility Code.

***IMPORTANT NOTE: In all of the following categories; if an exam candidate has a disability; his/her capability to demonstrate skills and perform tasks will be evaluated relative to the extent/nature of that disability. The instructor is expected to demonstrate the appropriate skill element that equates to an able-body skier's demonstration of that specific task or demonstration. The instructor is required to communicate, analyze, direct and lead.***

### **Exam Format:**

The Adaptive Level I is a two-day exam. It is designed to be a learning/sharing experience for all candidates as well as an assessment and verification of the candidate's skills and knowledge. A Level I candidate must choose a specialty category in which to be tested. The categories are: Two-Track Skiing (Blind/DD), Three/Four Track Skiing or Sit Down Skiing (Mono/Bi).

Applications for the Level I Adaptive Certification exam are available in the PSIA-E/AASI newsletter, the SnowPro or are downloadable at the PSIA-E/AASI website, [www.psia-e.org](http://www.psia-e.org). Completed applications (including Directors Signature) must be postmarked at least three weeks prior to the start date of the exam.

The candidate will be with one examiner for both days. The Examiner will coach and test a candidate's personal skiing skills, teaching skills and professional knowledge (encompassing technical and mechanical knowledge, customer service, safety and risk management, disability understanding-causes and effects, medicines, various populations such as children, seniors and adults and understanding and use of adaptive equipment). The examiner will give a pass or fail score in 1) Personal Skiing, 2) Teaching for each discipline and 3) Professional Knowledge for each discipline. A candidate must receive a passing evaluation in Personal Skiing as well as the Teaching and Professional Knowledge components to become a Level I member.

## ***PSIA-E/AASI Adaptive Exam Guide***

Candidates for the Sit Down Skiing (Mono/Bi) Exam will be expected to tether the bi-ski with fixed outriggers on groomed green terrain. Candidates will not be expected to ski proficiently in a mono-ski.

Candidates for the Three/Four Track Skiing Exam should make every attempt to bring their own outriggers to the Exam.

There will also be a written exam. There will be 10 questions relative to Alpine skill development, movement patterns, mechanics, PSIA history and organizational structure, the snow sports industry and safety. Additionally, there will be 10 questions on the candidate's chosen specialty category. The written portion of the adaptive exam is designed to increase the awareness of candidates to written materials and information available to adaptive snowsports instructors. After being corrected the candidates will discuss the questions as a group with the examiner.

Should the candidate fail any portion (the Personal Skiing, Written Exam or the Teaching and Professional Knowledge components), they must retake the entire exam.

Registration for an exam is through the PSIA-E office in Albany three weeks before the desired event. Sign in at the host area begins at 7:30 AM. On the first day, time will be allocated for the groups to complete the written portion of the Level I exam. This will most likely be done at the end of the first day, or possibly before going out on the snow, depending on the exam format, weather or other factors. The on snow portion will begin as soon as possible after the lifts open and registration is complete. At the end of the two-day exam period, the candidates will receive written evaluations and examiners will be available to discuss the results.

### **OUTCOME CRITERIA**

#### **CATEGORY A: PERSONAL SKIING**

- I. **FREE SKIING** - The instructor will be able to perform the following criteria and tasks in his/her personal skiing.
  - A. General "The instructor will be able to..."
    1. Ski open track parallel turns with appropriate pole use on groomed blue terrain.
    2. Show sustained rhythm, consistent speed and a balanced stance throughout a series of 8-12 turns with no major flaws on groomed blue terrain.
  - B. Bumps (not applicable)
  - C. Versatility "The instructor will be able to..."
    1. Vary the turn shape in a series of turns on groomed blue terrain while maintaining consistent speed.
  
- II. **DEMONSTRATIONS** - The instructor will be able to perform the appropriate maneuver in each stage of the progression in his/her personal skiing and in the chosen specialty.
  - A. Straight Run "The instructor will be able to..."
    1. Ski a straight run in a balanced, athletic stance on terrain suitable for first time beginning skiers.
  - B. Wedge "The instructor will be able to..."
    1. Demonstrate a gliding wedge and a braking wedge on groomed green terrain.
  - C. Wedge Turns "The instructor will be able to..."
    1. Demonstrate a consistent wedge and/or appropriate skill blend throughout a series of 6-8 turns on groomed green terrain.
    2. Demonstrate steering with legs to create turn shape and speed control.

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- D. Spontaneous Christie Turns "The instructor will be able to..."
  - 1. Demonstrate consistent spontaneous christie turns and appropriate skill blend throughout a series of turns on groomed blue terrain.
  - 2. Demonstrate matching with active steering of the inside leg.
  - 3. Demonstrate shaping of the control phase of the turn by blending appropriate skills.

### **CATEGORY B: TEACHING**

- I. **KNOWLEDGE** "*The instructor will be able to...*"
  - A. Identify the components of the Adaptive Teaching Model and the Skiing Model.
  - B. Discuss how to use the models when teaching Levels 1-4.
  - C. Understand the concept of learning styles (preferences). Discuss the different styles and be able to give examples of how to recognize a student's learning style.
  - D. Identify six styles of teaching.
  - E. Demonstrate the use of command and task style of teaching and explain or show how to use them during a lesson.
  - F. Compare student profiles of adults and children and describe similarities and differences in teaching both groups through Level 4.
    - 1. Demonstrate knowledge that children think differently from adults and other children of different ages.
    - 2. Demonstrate knowledge that children of different ages are motivated and behave differently in learning situations.
    - 3. Demonstrate knowledge that children grow and develop physically in ways that can affect skiing performance.
    - 4. Describe the different disabilities commonly encountered in ski teaching.
    - 5. Be able to teach lift usage.
- II. **APPLICATION** "*The instructor will be able to...*"
  - A. Teach a disabled student through Level 4 in the specialty selected.
  - B. Show effective use of each key component of the Adaptive Teaching Model.
  - C. Describe the skier services and activities at the home area.
  - D. Create and maintain an environment which not only fosters a comfortable learning pace but also accommodates special needs of the student.

### **CATEGORY C: PROFESSIONAL KNOWLEDGE**

- I. **TERMINOLOGY** "*The instructor will be able to...*"
  - A. Define and explain basic terminology as described in ATS manuals.
  - B. Define and explain basic terminology commonly associated with adaptive ski teaching (including medical terms) in the chosen specialty.
- II. **EQUIPMENT** "*The instructor will be able to...*"
  - A. Describe different adaptive equipment and how each piece functions within the chosen specialty.
  - B. Describe options, solutions and benefits of shaped skis and new adaptive equipment
- III. **SKIING MOVEMENTS/SKILL DEVELOPMENT** "*The instructor will be able to...*"
  - A. Describe basic movement patters (Level 1-4) and how they relate to the chosen specialty.

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- B. Describe cause and effect relationships of movements and equipment usage commonly found in Level 1-4 and in the chosen specialty.
- C. Identify situational variations or stepping stones of skill application and how they relate to the chosen specialty.
- D. Relate how a skier in the specialty uses the available muscles to effect changes in skill development.

### **IV. DISABILITY UNDERSTANDING** *"The instructor will be able to..."*

- A. Evaluate any student in the chosen specialty.
- B. Define physical abilities, mental disorders, and cognitive abilities.
- C. Create and maintain an environment which allows the student to make the most of their abilities.
- D. Describe the medical background of common disabilities.
- E. Relate how the most common medications will affect students in the chosen specialty.

### **V. MOVEMENT ANALYSIS** *"The instructor will be able to..."*

- A. Describe the basic movement patterns in his/her own skiing and the chosen specialty through Level 4 skiers.
- B. Determine a cause-and-effect relationship as related to fundamental skills through Level 4 skiers.
- C. Discuss appropriate "stepping stone" progressions that are efficient and effectively use the student's abilities, equipment, terrain and snow conditions.
- D. Describe developmental skill needs by priority for each Level, 1-4.
- E. Prescribe a corrective exercise or task for a situation at each Level, 1-4, where performance is observed to be inconsistent with effective skill application and blending.

### **VI. BIOMECHANICS** *"The instructor will be able to..."*

- A. Understand basic biomechanics as it relates to the four basic skills and the disabilities involved with the specialty discipline.

**LEVEL I ADAPTIVE SNOWBOARD CERTIFICATION**  
(MODELED AFTER PSIA-E/AASI EDUCATION/CERTIFICATION STANDARDS  
WITH ADAPTIVE MODIFICATIONS)

**Exam Preparation**

What Should Take Place Before You Attend An Exam?

Prior to attending any certification exam the following general criteria should be met:

- Through practical experience, the candidate has gained understanding of and the ability to apply accepted teaching methods to a variety of disabilities and levels of riding.
- The candidate has progressed in his/her personal and professional development through educational programs conducted by AASI and the snowsports school or agency.
- The candidate demonstrates a high level of professionalism and an understanding of what it means to be a professional adaptive teacher.
- The candidate has prepared specifically for the exam through conscientious training that focuses on the required Adaptive Snowboarding Exam Standards.
- The snowsports school director confirms that the exam candidate has properly prepared for the exam and has put in the recommended number of teaching hours. The director believes, without reservation, that the candidate is ready to represent the school as a legitimate candidate to be examined.
- The candidate understands and has taught using a variety of adaptive snowboarding equipment suitable for a range of disabilities, tasks, and activities.

## **The Level I Adaptive Snowboard Standards**

The Level I Adaptive Snowboard Certification Standards provide a list of the exact things that a candidate is expected to do and know to meet certification requirements. The standards have been written so that they give the member a picture of the riding, teaching, and professional knowledge expectations of the examiner(s) conducting the exam. The standards are what examiners use to determine whether or not a candidate meets all criteria for the desired level of certification.

The Level I Adaptive Snowboard Certification Standards are referenced to the AASI Snowboard Manual, the PSIA/AASI Core Concepts Manual and PSIA's Adaptive Manual. Terminology consistent with these manuals is used throughout this document. The standards provide a training focus, and represent a minimum competency for this level of certification.

All references to skills and skill blending refer to pressure, twisting, tipping, and pivoting movements. The variety of turn shapes refers to short, medium, and long-radius turns. While specific trail difficulty designations are stated in these standards, it is important to note that trail difficulty is often designated relative to the other trails at a given area. Riding activities during certification exams will be performed on terrain that is deemed appropriate for the task being evaluated. All references to "Your Responsibility Code" refer to the National Ski Areas Association (NSAA) Responsibility Code.

**NOTE:** In all of the following categories, an exam candidate with a disability is evaluated relative to the extent/nature of the disability and his/her ability to demonstrate skills and perform tasks. The candidate will be expected to effectively communicate and give a picture of appropriate skill blends equating to able-bodied rider's demonstrations for specific tasks and movements.

### **Membership Level: Adaptive Snowboard Certified Level I**

The Certified Level I Adaptive Snowboard exam is where members demonstrate a solid foundation of information and experience necessary to be an effective, skilled adaptive snowboard teacher. The following prerequisites must be met in order to become a Certified Level I snowboard member:

- Be a PSIA-E/AASI member or become one by paying current dues at the time of application
- Be 16 years of age or older
- Be an employee of a recognized snowsports school, agency or adaptive program and have completed a minimum of 50 hours of combined in-house training and actual on-hill adaptive teaching, as attested to by the snowsports school director, or program or agency director
- Attend a PSIA-E/AASI Level I Adaptive Snowboard certification exam and pass the assessment criteria stated in this document

## The Level I Adaptive Snowboard Exam Process

The Certified Level I process consists of an assessment of *basic* riding skills, teaching skills and professional knowledge (which refers to technical and mechanical knowledge as well as to knowledge of guest service, safety and risk management, understanding of the disabilities, medications, various populations such as children, seniors and adults and understanding and use of adaptive snowboarding equipment). It is designed to be a learning/sharing experience for all candidates as well as an assessment and verification of the candidate's skills and knowledge. The Adaptive Snowboard Level I is a two day exam. At the time of application, a Level I Adaptive Snowboard candidate chooses a specialty category in which to be tested. The categories are Stand-up Snowboarding, Outrigger Snowboarding, or Sit-down Snowboarding. The Stand-up category encompasses the VI/DD disabilities associated with Two Track Skiing as outlined in this Exam Guide beginning on page 31. The Outrigger category encompasses the disabilities associated with 3 Track and 4 Track Skiing as outlined in this Exam Guide beginning on page 37. The Sit-down category encompasses the disabilities associated with Sit-down Skiing as outlined in this Exam Guide beginning on page 42.

The candidates will be with two examiners (one AASI and one ABOE) for both days. The examiners will coach and test a candidate's personal riding skills, teaching skills and professional knowledge. The examiners will give a pass or fail score in 1) Personal Riding, 2) Teaching for each discipline and 3) Professional Knowledge for each discipline. A candidate must receive a passing evaluation in Personal Riding as well as the Teaching and Professional Knowledge components to become a Level I member. There will also be an open book written exam. Should the candidate fail any portion (the Personal Riding, Written Exam or the Teaching and Professional Knowledge components), they must retake the entire exam.

### **Registration begins promptly at 8:00 A.M. Please be on time!**

Each examiner will coach and score a candidate's personal riding skills, teaching skills and professional knowledge as a pass or fail. The candidate must receive a passing evaluation from both examiners in all three scoring areas to become a Level I Adaptive member. If the candidate is unsuccessful in any section of the exam, the exam must be retaken.

Applications for the Level I Adaptive Snowboarding Certification exam are available in the PSIA-E/AASI newsletter, the SnowPro or are downloadable at the PSIA-E/AASI website, [www.psia-e.org](http://www.psia-e.org). Completed applications (including Directors Signature) must be postmarked at least three weeks prior to the start date of the exam.

Results will be announced at the end of the exam. An awards ceremony will be held for all groups, at which course conductors will hand out Level I pins to successful participants. After the conclusion of the exam, all candidates will receive a written evaluation. Examiners will be available to discuss individual results.

# The Level I Adaptive Snowboard Assessment: What to Expect

## Riding

Riding activities should be performed as if the candidate were leading a student down a slope and enjoying the terrain. You should practice and master the following activities before coming to the Level I event. The activities will be evaluated on the basis of correct mechanics and movements that demonstrate appropriate skill blending.

### Level I Riding:

Determine stance and board set-up including stance angle and width

Flats – walking, skating, sliding, turning

Heel and toe slips

Directional changes

Linked traverses

Garlands

Basic switch turns

Skidded turns on green and blue terrain

Vary turn shape in a series of turns on groomed blue terrain

Bumps (not applicable)

## The Level I Adaptive Snowboard Standards

### I. Category A: Riding

Level I certified teachers must be able to ride all green and groomed blue terrain demonstrating consistent balance and control of speed through turn shape. Demonstrations must display an “understandable picture” of the technical elements of adaptive snowboarding in the specialty being tested. The turn dynamics are limited by the speeds and terrain appropriate for Beginner/Novice level riding and tasks.

*“The instructor is able to...”*

#### 1. General Characteristics

- a. Consistently link turns with sustained rhythm
- b. Maintain consistent speed by controlling the shape of a turn
- c. Maintain a balanced stance throughout a series of turns
- d. Demonstrate an appropriate blend of skills (considerate of snow conditions, equipment, terrain, etc.)
- e. Ride a variety of turn sizes in a series of turns while maintaining speed control

#### 2. Movement Concepts

- a. Demonstrate leg rotation, twisting and pivoting
- b. Demonstrate flexion and extension
- c. Demonstrate basic switch turns
- d. Maintain an upright body position

#### 3. Performance Concepts

- a. Promote a combination of rotation and torsional flex in the board
- b. Twist the snowboard to adjust edge angle near the tip
- c. Pivot the snowboard through a series of turns
- d. Demonstrate the application and use of equipment appropriate to the disabilities being tested.

## **II. Category B: Teaching**

Level I Certified teachers demonstrate a solid foundation of information and experience necessary to be an effective teacher of Beginner/Novice riders. A basic understanding of how to manage the learning environment for different age and gender situations is required.

*“The instructor is able to...”*

### **1. Awareness, Understanding, and Knowledge**

- a. Identify the components of the Adaptive Teaching Model and the Snowboard Y Model
- b. Discuss the use of both models when teaching levels 1-4
- c. Discuss learning styles
- d. Identify six teaching styles. Understand the command and task teaching styles of teaching and explain and demonstrate how to use them during a lesson
- e. Compare student profiles of adults and children and describe similarities and differences in teaching both groups through Level 4

### **2. Application**

- a. Demonstrate knowledge of the disabilities being tested and the type of snowboard equipment used to teach students with these disabilities.
- b. Demonstrate lift usage appropriate to the disability and ability of different students. Teach a disabled student through Level 4 in the specialty selected
- c. Show effective use of the Adaptive Teaching Model
- d. Describe the services and activities at the home area
- e. Create a learning environment that fosters a comfortable learning pace and accommodates the special needs of a disabled student

## **III. Category C: Professional Knowledge**

*“The instructor will be able to...”*

### **1. Terminology**

- a. Define and explain basic snowboard terminology
- b. Define and explain basic Adaptive snowboarding terminology (including medical terms) in the chosen specialty
- c. Demonstrate an understanding of the AASI riding performances and fundamental movements

### **2. Equipment**

- a. Describe adaptive snowboarding equipment used for the chosen specialties
- b. Discuss adaptive snowboard equipment options and their use as solutions for the selected disabilities

### **3. Riding Movements and Skill Development**

- a. Describe basic movement patterns (Level 1-4) of different disabilities
- b. Describe cause and effect relationships between disabilities, movement patterns and equipment commonly used for each disability
- c. Relate how a rider in the chosen specialty uses the muscles available to him to effect a change in movement and skill development

**4. Disability Understanding**

- a. Evaluate a student with the chosen disability. Define physical abilities, mental disorders, and cognitive abilities
- b. Create a learning environment that allows the student to make the most of their abilities
- c. Describe the medical aspects of common disabilities

**5. Movement Analysis**

- a. Recognize general movement patterns relative to skill categories and disabilities in Beginner/Novice riders
- b. Identify desired skill and movement outcomes in various types of Beginner/Novice riders
- c. List exercises and tasks that address a student's needs, the equipment being used, terrain options, etc.

**6. Biomechanics**

- a. Understand basic biomechanics as they relate to the four riding performances (edge angle, torsional flex, rotation, and pressure distribution) and the disabilities involved with the disability area chosen

## **LEVEL II ADAPTIVE SNOWBOARD CERTIFICATION**

*(Modeled after AASI-E Education/Certification Standards with adaptive modifications)*

### **CANDIDATE PREREQUISITES:**

A candidate for Adaptive Snowboard Level II Certification must:

- \* Be an AASI member.
- \* Be 18 years of age or older.
- \* Be an employee of a recognized Snow Sports school, agency or adaptive program and have a minimum of 150 hours of Adaptive Snowboard teaching, as attested by the Snow Sports School program or agency director.
- \* Be able to meet the Adaptive Snowboard Level I outcomes, in addition to the Level II outcomes stated below.

### **INFORMATION CRITERIA:**

- \* All references to Riding Standards come from the AASI-E Level II & III Exam Guide, *PSIA/AASI Core Concepts for Snowsports Instructors and the AASI Snowboard Instructors Manual*

***IMPORTANT NOTE: In all of the following categories; if an exam candidate has a disability; his/her capability to demonstrate skills and perform tasks will be evaluated relative to the extent/nature of that disability. The instructor is expected to demonstrate the appropriate skill element that equates to an able-bodied rider's demonstration of that specific task or demonstration. The instructor is required to communicate, analyze, direct and lead.***

### **Exam Format:**

There are 4 one-day modules in the Adaptive Snowboard Level II exam. These modules are:

- 1) Personal riding competence and knowledge of AASI Level II standards;
- 2) Teaching and professional knowledge in visual impairments and cognitive or developmental disabilities;
- 3) Teaching and professional knowledge in standup outrigger usage and;
- 4) Teaching and professional knowledge in Sit Down (mono-ski/bi-ski).

Candidates take one module per day.

The Personal Riding Module (see #1 above) will be conducted by an AASI examiner. This will be a full day with a written exam.

The three Teaching and Professional Knowledge Modules (see #s 2, 3, and 4 above) will be conducted by both an AASI and Adaptive Examiner. These will each be a full day with both examiners for the full day and with a written exam. The two examiners will submit one (combined) score per candidate at the end of each day.

There will be no "partial passes". Registration for an event is through the Albany office three weeks in advance of the desired event. Beginning at 8:15 am, a written exam will be given for each discipline.

## ***PSIA-E/AASI Adaptive Exam Guide***

Sign in at the event host area begins at 7:30 am. The on-snow portion of the exam will begin promptly at 9:00 am. The candidate has three seasons, from the season of their first passed module, in which to pass all four modules to complete the Level II or Level III certification process.

If the candidate is staying for a second or third testing day, results from the first day and/or any subsequent days, will be announced in the afternoon of the last day. Candidates will receive the score cards from their examiners. Certificates and pin will be awarded on the last day of the successful completion of the fourth module. Candidates must successfully complete all four modules before testing for any Level III specialty.

Group size will be a minimum of three to a maximum of 10, dependent upon the discipline and number of candidates registered. Group activity will include, but is not limited to, demonstrations, tasks, teaching, individual and group discussions, exploration, and an exchange of ideas as they all relate to adaptive snow sport education. Candidates are encouraged to communicate and actively participate during this process because often testing is in an experiential environment that might appear to be more of a clinic than an evaluation.

**AASI Level II and III Certification Exception** – If an exam candidate has passed the AASI Level II or III Exam then he/she does not need to take the Adaptive Snowboard Level II Personal Riding Competence module if:

- 1) The candidate passes the other three adaptive modules within four seasons, AND
- 2) The passing of the AASI exam was within the preceding six years of passing the final adaptive module.

**Written Exam** – A written exam will be given in the morning of each module and will consist of at least twenty questions. For the personal riding module they will be questions based on AASI Level II standards. For the three disability modules there will be ten questions on each of the two disabilities pursuant to the exam be given that day. A passing score of 70% must be obtained.

**Written Retake** – A member can continue to retake the written portion of the Level II or Level III exam as often as necessary to complete the module they are attempting. All written retake reservations and details must be arranged through the PSIA-E/AASI office with approximately three weeks notice. On an exception basis, written retakes may, if it is possible to be arranged, take place at another scheduled event or at the PSIA-E/AASI office. A small fee for a retake may be necessary based on the final agreed exam location and if there is a cost to the organization i.e. travel for the staff member, etc. While reattempting the written exam, the candidate must remain as a member in good standing and must fulfill the educational credit requirements of membership. If the candidate's membership lapses at anytime prior to passing all required portions of any certification level, the member must begin the certification process from its beginning, including fulfilling prerequisites. Taking or passing a written retake does not count as an educational credit.

**OUTCOME CRITERIA**

**PERSONAL RIDING MODULE**

**Adaptive Level Two Riding Standards**

The adaptive level two riding standards are, and will be analogous to the riding standards for the AASI level two exam riding portion. The evaluation criteria will be as follows:

- ❖ Versatility – Having the ability to adapt to changes in terrain, task, conditions and styles of riding.
- ❖ Stability – Timing and subtlety of adjustments to movements and performance necessary to stay in control.
- ❖ Movement: Rotation – Effectiveness of rotational movements of various joints.
- ❖ Movement: Flexion/Extension – Effectiveness of flexing/extending movements of various joints.
- ❖ Performance: Tilt – Refers to use and precision of snowboard edge angle.
- ❖ Performance: Pivot – Refers to use and precision of snowboard rotation.
- ❖ Performance: Twist – Refers to use and precision of torsional flex.
- ❖ Performance: Pressure distribution – Refers to pressure distribution between the board and snow.

Here are a few ‘indicators’ that show when a rider is at the Level II or Level III standards. Be sure to reference the Y model in the AASI Level II/III Study Guide and AASI Manual.

**Level II**

- The new turning edge of the board is either engaged or pressured prior to lateral (skidding) movement of the board. This is evident in all types of turns: carved, skidded, basic and dynamic. In other words, the rider should be able to tip or twist the board onto the new edge prior to pivoting the board.
- Ankle and knee movements are evident during turns, and are effective in the board performance that the rider is utilizing.
- The rider has the ability to shorten the joints in the legs smoothly at the turn finish to a flat board between turns.
- Rider can change the timing, intensity, and duration of leg length during all turns to affect size and shape of turns.
- Rider has the ability to move the lower body independently of the upper body.
- Rider can lengthen and shorten legs simultaneously or sequentially to suit the conditions, terrain, or type of turn.
- Rider can spin upper and lower body with or against each other in either direction (Specific maneuvers or amount of air not required).
- Rider can run a flat board on approach, offer the appropriate amount of pop or resistance for the take-off, and land stable (Maneuver or amount of air not required).

**Freestyle: Level II** - Park and pipe knowledge and use are required appropriate to average intermediate resort guest. Conditions, terrain availability and available time will determine how much time will be spent on these tasks. Let it be understood that the candidate must possess the skills to be able to ride freestyle terrain, though does not have to demonstrate these skills on an actual freestyle feature.

Possible Tasks- Riders should possess the necessary skills to be able to accomplish the following tasks and possibly others not listed here within a reasonable amount of time; even if they have never ridden a particular feature.

## ***PSIA-E/AASI Adaptive Exam Guide***

- Rider has the ability to ollie and nollie off of a flat board or either edge (flex and extend all lower body joints in sequence regardless of board tilt).
- Rider can demonstrate frontside and backside 180s both regular and switch (air not required).
- Rider should be prepared to do a rollover or straight air over a small (5-10ft) tabletop. (air not required).
- Rider should be able to demonstrate the skills to be able to 50-50 a learning park style jib feature. Example of a learning park feature: 8' long by 2' wide flat box feature, ride-on approach, box less than 18" off the snow, or an analogous man made feature.
- Rider should have the ability to demonstrate pressure tricks in combination. Example: Ollie to nose press on the snow. Nollie to tail press on the snow. Nose roll 180.
- Rider has the skills to negotiate the half pipe, riding any edge or a flat board on both walls to the point of the half pipe turns to vert.

### **DISCIPLINE MODULES (VI/Cognitive; Standup-Outriggers; AND Sit-Down MONO/BI)**

#### **Teaching Methodology**

- ❖ Professionalism – Looks and behaves as a professional
- ❖ Group Safety – Risk management as it applies to the candidate, group and other guests.
- ❖ Creates a positive learning environment – Stress free, non-judgmental and respectful of others feelings.
- ❖ Communicates ideas and concepts – Includes both verbal and non-verbal communications.
- ❖ Presents ideas in a logical sequence – Applies to a logical order of lesson content for the intended audience.
- ❖ Organizes group; keeps group on task – Refers to ways of organizing the group to provide variety, clarity and choice when learning; focusing activities to the task.
- ❖ Demonstrates different forms of feedback – Includes both verbal and non-verbal communications.
- ❖ Pace; talk vs. action – Appropriate balance of talking and riding based on the makeup of the lesson; makes learning enjoyable.
- ❖ Adapt the lesson content and or communications based on the student's abilities.

#### **Professional Knowledge**

- ❖ Movement Concepts – Relate body movements to snowboarding and to the student's disability.
- ❖ Performance Concepts – Relate snowboard performance to snowboard teaching. Performance may need to be modified due to a student's physical disability.
- ❖ Movement Analysis – This refers to the progress of watching a rider, describing some of the observed movements and understanding the relevance and effects of those movements.
- ❖ Movement Analysis of the disabled student – This refers to watching a student with a physical disability and how it will relate to equipment selection if needed, board performance and overall success of the lesson.
- ❖ Teaching and Learning Concepts – Refers to the knowledge of current education theory.
- ❖ The CAP model – Refers to the use of this educational model describing cognitive, affective and physical issues of human development to make the lesson content more appropriate to different students. The ATS: Children's Instruction Manual for Information about the CAP Model.

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- ❖ Lesson Content – Refers to the relevance, effectiveness and correctness of information used to teach snowboarding.
- ❖ Equipment – Refers to knowledge of past and present snowboard equipment technology and its influence and application to teaching, learning and riding.
- ❖ Adaptive Equipment – Refers to knowledge of all adaptive equipment that may be used to teach snowboarding to a student with a disability. It also relates to the mono ski and bi ski that may be taught to a student that is unable to ride in a stand up mode.

Examples of Adaptive Snowboard equipment that may be used in an exam may include the following:

Outriggers	Snow Wing	Tethering clamps
VI Guide Bibs	Tethers	Riderbar
Bi Ski	Mono Ski	Shredder Plate

In addition to the above the Level II candidate should be able to perform the following tasks as it pertains to each module.

Teach, guide, demo and ride on blue and easy black terrain.

Proper use and setup of Adaptive equipment

Disability knowledge to the same level as Level II Adaptive Skiing (Refer to the PSIA-E Adaptive Education and Exam Manual)

Adaptive Snowboard Level II certification is AASI Level II standards with the addition of disability knowledge, understanding, teaching, and equipment usage relevant to teaching a student with a disability.

## CERTIFIED LEVEL II ADAPTIVE

*(Modeled after PSIA-E Education / Certification Standards with adaptive modifications)*

### CANDIDATE PREREQUISITES:

A candidate for Adaptive Level II Certification must:

- \* Be a PSIA member.
- \* Be 18 years of age or older.
- \* Be an employee of a recognized ski school, agency or adaptive program and have a minimum of 150 hours of Adaptive ski teaching, as attested to by the ski school, program or agency director.
- \* Be able to meet the Adaptive Level I outcomes, in addition to the Level II outcomes stated below.

### INFORMATION CRITERIA:

- \* All references to ATS refer to *PSIA Alpine Technical Manual, Skiing and Teaching Skills, 2nd Edition and the PSIA/AASI Core Concepts for Snowsports Instructors*.
- \* All references to progressions for different disciplines may be found in this guide.
- \* All references to skill blending refer to balancing movements, rotary movements, edge control movements and pressure control movements.
- \* The variety of turn shapes refer to short, medium and long.
- \* All references to class levels refer to ATS Levels 1-9.
- \* References to the Teaching Model refer to the Adaptive Teaching Model on page 29.
- \* Learning styles (preferences) refer to Doer, Thinker, Watcher, and Feeler.
- \* All references to "Your Responsibility Code" refer to the National Ski Areas Association (NSAA) Responsibility Code.

***IMPORTANT NOTE: In all of the following categories; if an exam candidate has a disability; his/her capability to demonstrate skills and perform tasks will be evaluated relative to the extent/nature of that disability. The instructor is expected to demonstrate the appropriate skill element that equates to an able-body skier's demonstration of that specific task or demonstration. The instructor is required to communicate, analyze, direct and lead.***

### **Exam Format:**

There are 4 one-day modules in the Adaptive Level II exam. These modules are: 1) Personal skiing competence and knowledge of ATS principles, 2) Teaching and professional knowledge in visual impairments and developmental disabilities (VI/DD), 3) Teaching and professional knowledge in three-track/four track (3-4 TRACK), and 4) Teaching and professional knowledge in mono-ski/bi-ski (MONO-BI). Candidates take one module a day. One examiner will evaluate the candidate in the morning, and a different examiner will evaluate the candidate in the afternoon. For the Teaching and Professional Knowledge modules each examiner will evaluate one of the two disciplines (e.g. Mono-Ski in the morning and Bi-Ski in the afternoon). Candidates need to receive passing scores from both examiners to be successful. There will be no "partial passes". Registration for an event is through the Albany office three weeks in advance of your desired event.

**Alpine Certification Exception** – If an exam candidate has passed the Alpine Level II or III Part 1 Skiing Exam then he/she does not need to take the Adaptive skiing module if:

- 1) The candidate passes the other three adaptive modules within four seasons, AND
- 2) The passing score of the Alpine skiing exam was within the preceding six years of passing the final adaptive module.

The Alpine Level II Part 1 Skiing pass will apply towards the Adaptive Level II Exam.

The Alpine Level III Part 1 Skiing pass will apply towards the Adaptive Level II or III Exam.

## ***PSIA-E/AASI Adaptive Exam Guide***

There will also be an online written exam. There will be 10 questions relative to Alpine skill development, movement patterns, mechanics, PSIA history and organizational structure, the snow sports industry and safety. Additionally, there will be 10 questions on the candidate's chosen specialty category. The written portion of the adaptive exam is designed to increase the awareness of candidates to written materials and information available to adaptive snowsports instructors. After being corrected the candidates will discuss the questions as a group with the examiner.

Should the candidate fail any portion (the Personal Skiing, Online Written Exam or the Teaching and Professional Knowledge components), they must retake the entire exam.

Registration for an exam is through the PSIA-E office in Albany at least three weeks before the desired event. If a candidate wishes to receive their pin at the event, the online exam must be completed at least two weeks prior to the exam.

Sign in at the event's host area begins at 7:30 am. The on-snow portion of the exam will begin promptly at 9:00 am. The candidate has three seasons, from the season of their first passed module, in which to pass all four modules to complete the Level II or Level III certification process.

If the candidate is staying for a second or third testing day, results from the first day and/or any subsequent days, will be announced in the afternoon of the last day. Candidates will receive the score cards from their examiners. Certificates and pin will be awarded on the last day of the successful completion of the fourth module. Candidates must successfully complete all four modules before testing for any Level III specialty.

On the events calendar, there are two and four day events. You may sign up for one, all four modules or any combination you wish.

### Two day events:

Day 1: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

Day 2: Three-track/Four-track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

### Four day events:

Day 1: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

Day 2: Three-track/Four track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

Day 3: Three-track/Four track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

Day 4: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

This schedule is subject to change, please be sure to carefully check the event listings in the PSIA-E SnowPro Newsletter.

Group size will be a minimum of three to a maximum of 10, dependent upon the discipline and number of candidates registered. There may be a mix of Level II and Level III candidates within the discipline group. Group activity will include, but is not limited to, demonstrations, tasks, teaching, individual and group discussions, exploration, and an exchange of ideas as they all relate to adaptive snow sport education. Candidates are encouraged to communicate and actively participate during this process because often testing is in an experiential environment that might appear to be more of a clinic than an evaluation.

## **OUTCOME CRITERIA**

**PERSONAL SKIING MODULE**

I. **FREE SKIING** - The instructor will be able to perform the following criteria and tasks in his/her personal skiing.

A. **General** *"The instructor will be able to..."*

1. Ski parallel turns on groomed blue and easy black terrain. Turns should show dynamics appropriate to the terrain.
2. Demonstrate appropriate skill blending as dictated by terrain and assigned tasks.
3. Maintain a balanced stance and speed control by adjusting turn shape throughout a series of 8-12 turns on groomed blue and easy black terrain.
4. Link turns of consistent rhythm and shape, such as a series of short or long turns.

B. **Bumps** *"The instructor will be able to..."*

1. Ski blue and easy black bumps that are typical of what students through Level 7 would ski.
2. Link turns in or near the fall line for the entire length of the run. Some line change is expected, but no major traverses.

C. **Versatility** *"The instructor will be able to..."*

1. Demonstrate a variety of turn shapes on groomed blue or easy black terrain.
2. Apply appropriate tactics and vary skill application in a variety of conditions (e.g. powder, hard snow, crud) on blue and easy black terrain.
3. Demonstrate the ability to brake or glide in a series of turns, dictated by pitch, snow conditions or intent.

II. **DEMONSTRATIONS** - The instructor will be able to perform the appropriate maneuver in each

stage of the progression in his/her personal skiing.

A. **Wedge Turns** *"The instructor will be able to..."*

1. Demonstrate on the easiest groomed green terrain.
2. Demonstrate steering consistent with appropriate blending of skills throughout a series of turns.

B. **Spontaneous Christie Turns** *"The instructor will be able to..."*

1. Demonstrate on groomed blue terrain.
2. Demonstrate matching of skis in a variety of places in the turn (beginning, middle and end) and the appropriate blending of appropriate skills depending on speed, terrain, or intention. Matching should be accomplished by active steering of the inside leg.
3. Link skidded turns with some anticipation and upper/lower body separation.
4. Maintain consistent spontaneous christies for the entire series of 6-10 turns.

C. **Open Parallel Turns** *"The instructor will be able to..."*

1. Demonstrate on groomed or recently groomed (not necessarily smooth) terrain.
2. Maintain an accurate blending of skills to perform a series of 8-12 consistent turns be they short, medium or long radius turns while maintaining speed control.
3. Demonstrate consistently a simultaneous edge change throughout a series of 8-12 turns.
4. Bumps: Candidates should be able to ski small to intermediate bumps on easy black terrain.
5. Demonstrate the following (but not limited to) maneuvers: stepping/tracking and skating maneuvers, falling leaf, ski on one ski on gentle terrain making small directional changes, parallel turns with no poles.

**DISCIPLINE MODULES (VI/DD, 3-4 TRACK AND MONO/BI)**

**CATEGORY A: TEACHING**

- I. **KNOWLEDGE** *"The instructor will be able to..."*
- A. Identify the components of the Adaptive Teaching Model and Skiing Model, ATS Teaching Model and Skiing Model.
  - B. Discuss how to integrate Your Responsibility Code into lessons through Level 7.
  - C. Identify command, task, reciprocal, and small group teaching styles and be able to use them during a lesson.
  - D. Identify learning styles (preferences) and adjust your teacher behavior to accommodate different learning styles.
  - E. Identify cognitive, affective, and physical development of students.
  - F. Describe the different disabilities commonly encountered in adaptive ski teaching.
- II. **APPLICATION** *"The instructor will be able to..."*
- A. Teach any disabled student through Level 7.
  - B. Demonstrate a working knowledge of the Adaptive Teaching Model by effectively applying it to meet the needs of students through Level 7.
  - C. Describe several examples of skier services and activities at the home area, which enhance student enjoyment.
  - D. Create and maintain an environment which not only fosters a comfortable learning pace but also accommodates special needs of the student.
  - E. Modify the lesson content to meet the needs of children at various stages of development including individuals with different learning and physical abilities.
    - 1. Present information, appropriate to age and disability, through Level 7.
    - 2. Demonstrate through a teaching presentation, knowledge of what motivates children of different ages, or students with different disabilities, and what to expect of them.
    - 3. Demonstrate an understanding of developmental principles by showing what to expect with children of different ages or special needs students in teaching situations through Level 7.

**CATEGORY B: PROFESSIONAL KNOWLEDGE**

- I. **TERMINOLOGY** *"The instructor will be able to..."*
- A. Define and interpret terminology as described in the ATS and Adaptive manuals, applying it to analyzing, understanding, and teaching skiers through Level 7.
  - B. Define and interpret terminology in a simple manner which is commonly associated with adaptive needs including medical terms in all specialties.
- II. **EQUIPMENT** *"The instructor will be able to..."*
- A. Describe different adaptive equipment and how each piece functions through Level 7.
  - B. Describe what equipment is appropriate and how each piece will be set up for students in all disabilities.
  - C. Describe the benefits and drawbacks of short shaped skis compared to older "straight" and longer skis. Be prepared to apply this knowledge to the discipline and describe the benefits to special needs students.
  - D. Describe changing equipment needs as student's progress in ability.

**III. SKIING MOVEMENT/SKILL DEVELOPMENT AND MOVEMENT**

**ANALYSIS** *"The instructor will be able to..."*

- A. Describe the Steeping Stones concept and how it relates to the discipline.
- B. Describe the movement patterns of the ATS Skiing Model and how application of the skills relates to all disabilities.
- C. Describe the forces acting on a skier in a turn, relating them to the phases of a turn.
- D. Describe the cause and effect relationships of movements and equipment usage commonly found in Level 4-7 and in each discipline.
- E. Discuss appropriate "Steeping Stones" progressions that represent efficient and effective use of a student's abilities, equipment, terrain and snow conditions (Level 4-7).
- F. Relate how a skier in each discipline uses muscular ability to effect changes in skill development.
- G. Describe developmental skill needs by priority for all disciplines through Level 7.
- H. Prescribe exercises and tasks that target the student's needs and potentially improve their performance in each discipline through Level 7.

**IV. DISABILITY UNDERSTANDING** *"The instructor will be able to..."*

- A. Evaluate any student with any disability. Define physical abilities, mental disorders, and cognitive abilities.
- B. Create and maintain an environment which allows the student to use the most of their abilities.
- C. Describe the medical background of common disabilities within each discipline.
- D. Relate how the most common medications will affect students within each discipline.

**V. MOVEMENT ANALYSIS** *"The instructor will be able to..."*

- A. Describe the basic movement patterns in his/her own skiing and any discipline through Level 7.
- B. Describe developmental skill needs by priority for each discipline through Level 7.

## CERTIFIED LEVEL III ADAPTIVE

*(Modeled after PSIA-E Education / Certification Standards with adaptive modifications)*

### CANDIDATE PREREQUISITES:

A candidate for Adaptive Level III Certification must:

- \* Be a PSIA member.
- \* Be 18 years of age or older.
- \* Be an employee of a recognized ski school, agency or adaptive program and have a minimum of 300 hours of Adaptive ski teaching, as attested to by the ski school director.
- \* Be able to meet the Adaptive Level II outcomes, in addition to the Level III outcomes stated below.

### INFORMATION CRITERIA:

- \* All references to ATS refer to *PSIA Alpine Technical Manual, Skiing and Teaching Skills, 2<sup>nd</sup> Edition and the PSIA/AASI Core Concepts for Snowsports Instructors,*.
- \* All references to progressions for different disciplines may be found in this guide.
- \* All references to skill blending refer to balancing movements, rotary movements, edge control movements and pressure control movements.
- \* The variety of turn shapes refer to short, medium and long.
- \* All references to class levels refer to ATS Levels 1-9.
- \* References to the Teaching Model refer to the Adaptive Teaching Model on page 29.
- \* Learning styles (preferences) refer to Doer, Thinker, Watcher, and Feeler.
- \* All references to "Your Responsibility Code" refer to the National Ski Areas Association (NSAA) Responsibility Code.

***IMPORTANT NOTE: In all of the following categories; if an exam candidate has a disability; his/her capability to demonstrate skills and perform tasks will be evaluated relative to the extent/nature of that disability. The instructor is expected to demonstrate the appropriate skill element that equates to an able-body skier's demonstration of that specific task or demonstration. The instructor is required to communicate, analyze, direct and lead.***

### **Exam Format:**

There are 4 one-day modules in the Adaptive Level II exam. These modules are: 1) Personal skiing competence and knowledge of ATS principles, 2) Teaching and professional knowledge in visual impairments and developmental disabilities (VI/DD), 3) Teaching and professional knowledge in three-track/four track (3-4 TRACK), and 4) Teaching and professional knowledge in mono-ski/bi-ski (MONO-BI). Candidates take one module a day. One examiner will evaluate the candidate in the morning, and a different examiner will evaluate the candidate in the afternoon. For the Teaching and Professional Knowledge modules each examiner will evaluate one of the two disciplines (e.g. Mono-Ski in the morning and Bi-Ski in the afternoon). Candidates need to receive passing scores from both examiners to be successful. There will be no "partial passes". Registration for an event is through the Albany office three weeks in advance of your desired event.

**Alpine Certification Exception** – If an exam candidate has passed the Alpine Level II or III Part 1 Skiing Exam then he/she does not need to take the Adaptive skiing module if:

1. The candidate passes the other three adaptive modules within four seasons, AND
2. The passing score of the Alpine skiing exam was within the preceding six years of passing the final adaptive module.

The Alpine Level II Part 1 Skiing pass will apply towards the Adaptive Level II Exam.

The Alpine Level III Part 1 Skiing pass will apply towards the Adaptive Level II or III Exam.

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There will also be an online written exam. There will be 10 questions relative to Alpine skill development, movement patterns, mechanics, PSIA history and organizational structure, the snow sports industry and safety. Additionally, there will be 10 questions on the candidate's chosen specialty category. The written portion of the adaptive exam is designed to increase the awareness of candidates to written materials and information available to adaptive snowsports instructors. After being corrected the candidates will discuss the questions as a group with the examiner.

Should the candidate fail any portion (the Personal Skiing, Online Written Exam or the Teaching and Professional Knowledge components), they must retake the entire exam.

Registration for an exam is through the PSIA-E office in Albany at least three weeks before the desired event. If a candidate wishes to receive their pin at the event, the online exam must be completed at least two weeks prior to the exam.

Sign in at the event's host area begins at 7:30 am and at 9:00 am, you will commence the on-snow portion of the exam. The candidate has three seasons, from the season of their first passed module, in which to pass all four modules to complete the Level II or III certification process.

If the candidate is staying for a second or third testing day, results from the first day and/or any subsequent days, will be announced in the afternoon of the last day. Candidates will receive the scorecards from their examiners. Certificates and pin will be awarded on the last day of the successful completion of the fourth module.

On the events calendar, there are two and four day events. You may sign up for one, all four modules or any combination you wish.

### Two-day events:

Day 1: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

Day 2: Three-track/Four-track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

### Four-day events:

Day 1: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

Day 2: Three-track/Four track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

Day 3: Three-track/Four track (3/4 TRACK) OR Mono-ski/Bi-ski (MONO-BI)

Day 4: Personal skiing OR Visually Impaired/Developmental Delayed (VI/DD)

This exact schedule is subject to change. Please be sure to carefully check the event listings in the PSIA-E SnowPro Newsletter.

Group size will be a minimum of three to a maximum of 10, dependent upon the discipline and number of candidates registered. There may be a mix of Level II and Level III candidates within the discipline group. Group activity will include, but is not limited to, demonstrations, tasks, teaching, individual and group discussions, exploration, and exchange of ideas as they all relate to adaptive snow sport education. Candidates are encouraged to communicate and actively participate during this process because often testing is in an experiential environment that might appear to be more of a clinic than an evaluation.

OUTCOME CRITERIA

**PERSONAL SKIING MODULE**

- I. **FREE SKIING** - The instructor will be able to perform the following criteria and tasks in his/her personal skiing.
- A. **General** "*The instructor will be able to...*"
1. Ski dynamic parallel turns on all mountain terrain in all conditions.
  2. Show appropriate skill blending on all mountain terrain except for the most extreme.
  3. Reduce, generate or maintain speed without interrupting overall rhythm and flow.
  4. Maintain a consistent balanced stance.
  5. Demonstrate a variety of turn exercises, tasks and skill blends upon request.
- B. **Bumps** "*The instructor will be able to...*"
1. Ski all but the most extreme bumps on the mountain.
  2. Link turns in the fall line for the entire length of the selected run.
  3. Maintain turning within a line and change lines with intent during the run (no significant traverses).
  4. Change speed as needed, or intended, while maintaining overall rhythm and flow.
  5. Demonstrate appropriate tactical choices as dictated by the terrain.
- C. **Versatility** "*The instructor will be able to...*"
1. Ski a variety of turn radii on all mountain terrain (except the most extreme) and apply them appropriately to different situations and conditions.
  2. Demonstrate different types of skill blends upon request, in specific exercises, maneuvers, and tasks, as required in different mountain situations.
  3. Ski all snow conditions (except the most extreme) such as powder, crud, and ice, demonstrating appropriate skill blend, speed control, balance, turn shape and tactics.
- II. **DEMONSTRATIONS** - The instructor will be able to perform the appropriate maneuver in each stage of the progression in his/her personal skiing.
- A. **Wedge Turns** "*The instructor will be able to...*"
1. Demonstrate on any green terrain.
  2. Use and blend the appropriate skills necessary to ski consistently throughout a series of turns.
  3. Demonstrate a balanced stance.
- B. **Spontaneous Christie Turns** "*The instructor will be able to...*"
1. Demonstrate on any green and blue terrain.
  2. Demonstrate steering of inside ski to facilitate matching.
  2. Demonstrate matching of skis in a variety of places in the turn (beginning, middle and end) and the blending of appropriate skills depending on speed, terrain, or intention.
  3. Link skidded turns with some anticipation and upper/lower body separation.
  4. Maintain a consistent series of spontaneous christies showing appropriate use and blending of all necessary skills.
- C. **Open Parallel Turns** "*The instructor will be able to...*"
1. Demonstrate accurate, consistent, open parallel turns throughout a series of 10-15 turns, showing appropriate use and blending of all necessary skills.
  2. Demonstrate consistent simultaneous edge change with an effective pole swing that facilitates extension and edge change at turn initiation.
  3. Demonstrates active steering of both legs throughout turn resulting in shape and speed control.
- D. **Dynamic Parallel Turns** "*The instructor will be able to...*"
1. Demonstrate on any groomed or recently groomed black terrain (may not be per-

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- fectly smooth).
2. Demonstrate dynamic parallel turns or the adaptive equivalent any place on the mountain in any snow conditions (except the most extreme), showing appropriate skill use and blending in response to speed, turn radius, tactics, conditions, or intent.
  3. Link 10-15 dynamic parallel turns with continuous flow, rhythm, and accuracy of movements.
  4. Maintain pressure on the outside ski with dynamic balancing movements.

### **DISCIPLINE MODULES (VI/DD, 3-4 TRACK AND MONO/BI)**

#### **CATEGORY A: TEACHING**

- I. **KNOWLEDGE** "*The instructor will be able to...*"
  - A. Describe how to use a variety of teaching styles in a lesson and how to identify and address different learning styles (preferences) in a group lesson.
  - B. Discuss how to integrate Your Responsibility Code into lessons through Level 9.
  - C. Discuss the following elements pertaining to teaching and learning and how each element may affect a student's learning experience: parameters for effective teaching, teaching for transfer, feedback, pacing and lesson content.
  - D. Describe the different disabilities commonly encountered in your discipline and effects the disability may have on learning.
- II. **APPLICATION** "*The instructor will be able to...*"
  - A. Do an in-depth evaluation of any adaptive skier, including an assessment of strength, mobility, range of motion, and communication.
  - B. Teach any disabled student through Level 9.
  - C. Effectively utilize all parts of the Adaptive Teaching Model in lessons through Level 9.
  - D. Demonstrate strong guiding, tethering, and communication techniques on any appropriate terrain on the mountain.
  - E. Individualize all lessons by utilizing a variety of teaching styles, methodologies and strategies.
  - F. Use the concept of lateral learning at all class levels and disability classes to enhance skill development and skill applications and to improve performance and versatility.
  - G. Use various forms of reinforcement, practice, and feedback to create an optimal learning environment.
  - H. Describe in depth the skier services and activities at the home area which enhance student enjoyment.
  - I. Create and maintain an environment which not only fosters a comfortable learning pace but also accommodates any special requirements of the student.

#### **CATEGORY B: PROFESSIONAL KNOWLEDGE**

- I. **TERMINOLOGY** "*The instructor will be able to...*"
  - A. Discuss all terminology and skiing related concepts from the ATS and Adaptive manuals and demonstrate understanding through skiing performance.
  - B. Relate specific skiing terminology to students through use of simple language and by relating the terminology to feelings and achievable movements.
  - C. Discuss all medications, what they are used for, and their potential side effects.
  - D. Discuss types and severity of disabilities, including multiple disabilities, and their effect on the student's performance.

**II. EQUIPMENT** *"The instructor will be able to..."*

- A. Describe in detail all adaptive equipment, analyze how each functions, and prescribe appropriate modifications for different disabilities, including multiple disabilities through Level 9.

**III. SKIING MOVEMENTS/SKILL DEVELOPMENT AND MOVEMENT ANALYSIS**

*"The instructor will be able to..."*

- A. Describe skill blending in skiing, how it relates to different situations, terrain, snow conditions, and the Stepping Stones concept. Discuss the similarities and differences in teaching in each discipline.
- B. Describe how skill blending relates to different situations and conditions. Relate skill blending to the different populations and ability levels of skiers.
- C. Relate skill blending to various internal and external forces generated in a variety of skiing situations.
- D. Describe the basic movement patterns in your own skiing and discipline through Level 9.
- E. Describe cause-and-effect relationships as related to skill usage, in different phases of the turn, in skiers in the discipline through Level 9.
- F. Describe developmental skill needs, by priority, for each discipline through Level 9.
- D. Prescribe exercises and tasks that target students' needs and which should improve their performance in the discipline.

**IV. DISABILITY UNDERSTANDING** *"The instructor will be able to..."*

- A. Thoroughly discuss and analyze any disability, including physical, cognitive, communicative, and mental disorders.
- B. Describe medications in depth and their side effects on students while skiing.

## PSIA ADAPTIVE TEACHING MODEL

### INTRODUCTION AND EVALUATION *"The instructor should..."*.

1. Create a supportive environment with the adaptive skier.
2. Do a thorough evaluation of the adaptive skier's disability (including strength, coordination, cognitive ability, adaptive equipment, medications, potential medical problems, and other sports or physical activities).
3. Explain to the skier what will happen in the lesson.

### SET GOALS FOR THE LESSON *"The instructor should..."*:

1. Understand the skier's expectations for the lesson.
2. Set lesson goals based on the skier's potential, disabilities, and expectations.
3. Assess the skier's level of skiing ability.

### PLANNING THE LESSON *"The instructor should..."*:

1. Select and fit appropriate adaptive equipment.
2. Select appropriate terrain and snow conditions.
3. Present a logical progression of the adaptive technique specific to the skier's needs.
4. Determine the pacing of information and practice.

### PRESENTING INFORMATION *"The instructor should..."*:

1. Teach clearly and simply.
2. Recognize the skier's learning style and teach in the appropriate teaching style for that skier and disability.

### DEMONSTRATIONS *"The instructor should..."*:

1. Demonstrate the appropriate adaptive technique and skill level for the skier.
2. Focus the skier's attention on the appropriate area of the demonstration.
3. Convey the appropriate skill development utilizing visual, kinesthetic, and verbal or hands on teaching.

### PRACTICE *"The instructor should..."*:

1. Set the task to be practiced.
2. Allow sufficient time for practice.
3. Facilitate practice with appropriate guiding, tethering, and hands-on assistance, feedback, as necessary for adaptive technique.
4. Reinforce success and correct problems.

### CHECK FOR UNDERSTANDING *"The instructor should..."*:

1. Check skier's understanding based on how the skier is skiing.
2. Check skier's understanding based on verbal communication.

### SUMMARIZING THE LESSON *"The instructor should..."*:

1. Review goals and achievements in the lesson.
2. Outline what the next lesson will cover.
3. Outline what the skier should practice after the lesson.

## ADAPTIVE STUDENT EVALUATION

### I. MEDICAL INFORMATION

- \* General physical condition
- \* Fitness level
- \* Medications
- \* Extent and effect(s) of disability
- \* Mental/Emotional/Learning preference

### II. BODY FUNCTION

- \* Balance: fore, aft and laterally
- \* Mobility: arms, legs, trunk and hips.
- \* Upper body strength: laterally, fore, aft and arms.
- \* Lower body strength: laterally, fore, aft and legs.

### III. EQUIPMENT NEEDS

- \* Mono-Ski, Bi-Ski, two skis, one ski
- \* Outriggers
- \* Ski-Bra/Trombone (lateral stability device)
- \* Poles
- \* Ski Boot(s)
- \* Cants, wedges, slant boards, etc.
- \* Adaptation needed for orthotic or prosthetic devices.

### IV. EQUIPMENT FAMILIARIZATION

- \* Description of parts and inspection
- \* Safety features
- \* Use of adaptive equipment and stationary (indoor as appropriate) balance practice.
- \* Proper clothing
- \* Special considerations for disability while in skiing environment.

### V. IMPORTANT TO EMPHASIZE AT ALL LEVELS

- \* Safety and "*Skiers' Responsibility Code*".
- \* Fun
- \* Success
- \* Mileage (practice)

## ADAPTIVE TWO-TRACK TEACHING OVERVIEW

Two-track skiing is for any skier that stands, skis on two skis and does not use outriggers. Additional adaptive equipment such as ski bras, and/or tethers may be utilized to enhance leg strength. However, the student has the ability to stand and maintain balance while in motion.

Many disabilities, various degrees of disability, and/or combinations of disabilities are included in this two-track classification. Some disabilities included in this classification are: developmental, cognitive, blind and visually impaired, mild Cerebral Palsy, Multiple Sclerosis, Muscular Dystrophy and other muscular involvements, deaf and hearing impaired, acquired brain injury/traumatic brain Injury, and possibly Spina Bifida.

A complete and detailed student analysis is needed to determine if the student is a two-track skier. A review of physical strengths (range of motion, strength of limbs, ability to balance, move right/left etc.) as well as a determination of cognitive strengths/weaknesses (do they comprehend left/right, can they follow commands, is there a delay in processing information?) all assist in making this determination. This evaluation will determine the equipment needed to create a successful learning environment. Analysis should also determine their learning preferences and abilities, which will dictate your teaching style. Current medications and/or other disability involvements are discussed during this evaluation.

After becoming aware of your student's abilities, you will be able to construct a lesson plan to best meet their needs. The lesson plan should be based on the "Teaching Model" with emphasized awareness of teaching styles. These include: concise verbal instructions (auditory), kinesthetic awareness (kinesthetic), or increased demonstrations (visual) to best match your student's learning modalities. Your lesson plan will follow the ATS skill progression, with only slight modifications, to facilitate learning and achieving mutual goals.

### BLIND/VISUALLY IMPAIRED

Blind and visually impaired skiers are usually two track skiers. A kinesthetic and concise, focused verbal approach to the ATS skill progression is utilized. Do not confuse this with learning style preferences of students. Due to the visual difficulties, the Visually Impaired/blind student must utilize his/her other sensors (auditory-kinesthetic-tactile etc.) to process information. For example, when teaching the "gliding wedge" the instructor may need to draw a wedge or V with his/her fingers on the palm or back of his/her student's hand. Another example is that the instructor may have to physically place the student's skis side by side when instructing the totally blind student how to "match their skis".

The instructor has the responsibility of acting as a guide, and compensating for the student's decreased visual acuity. Multiple ranges of visual acuity are possible, from limited depth perception, peripheral or tunnel vision, to legally blind or total loss of vision.

**Causes of Visual Impairments:** The leading causes of visual impairments and blindness are: Glaucoma, followed very closely by Diabetes. Some additional causes are (but not limited to):

Cataracts	Retinitis Pigmentosa	Detached Retina
Myopia	Friedreich's Ataxia	Central Nervous System (Multiple Sclerosis)
Surgery	Corneal Diseases	Congenital Nystagmus
Tumors	Light Damage (welding)	Traumatic Brain Injury (left aversion)
Chemical Burns	Vascular Diseases	Macular Degeneration

**Student Evaluation/Guiding Overview:** The first focus of the indoor discussion is the student's:

- 1) Visual abilities,
- 2) Cause of visual impairment,
- 3) Medication and medical precautions,
- 4) Hearing and other sensory abilities.

The second part of the indoor discussion relates to the student's guiding preference (indoor and on-snow). Some facts to consider are:

- 1) Range of vision,
- 2) Ability to hear,
- 3) Skiing skill level,
- 4) Terrain and conditions.

The focus in guiding is to provide clear, concise instructions that will enable the student to ski. Verbal, as well as kinesthetic descriptions, are utilized to establish a solid communication base between student and instructor. Most important, is an agreed upon word between student and instructor meaning imminent danger. This word needs to be established before the first lesson. This word, when spoken, will immediately result in the student falling to the ground and covering himself/herself the best way possible.

Some popular guiding methods are:

*Simple-directional commands:* This method includes such commands as: "Stop, go, right, left, slower, faster, hold", etc. and can be used with beginning skiers. These commands are universally understood, and are clear and concise. Simple, basic commands can serve as the basis for communicating on and off the slope with students, regardless of their skill level.

*Clock System:* Complimenting the simple-directional command system is the Clock system. A commonly utilized system with the visually impaired/blind population, the *student* is always facing 12 o'clock. If you desire the student to complete a 90-degree turn to the right, your instructions would be to turn to 3 o'clock. Once completed, the student is again at the 12 o'clock position and is ready to receive new instructions (i.e. turn to 9 o'clock (make a 90 degree turn to the left.) This command system is utilized inside, in corrals and on the slope. It is very useful in intermediate/advanced ski guiding and in racing.

*Grid/Graph System:* The Grid system enables an *intermediate/advanced* blind skiers to be aware of their location within the confines of the present skiing terrain. The Grid system should never be utilized simultaneously with the clock system. One side of the trail is "0", the other side is "10", the center of the slope is "5", etc. Utilizing the Simple-Directional Command System (or a modification thereof) plus the Grid system, students can be kept well informed of their position on the slope.

As the student progresses, the need for an agreed upon abbreviated/concise command system greatly increases, because timing is of the essence in upper level, blind ski teaching/guiding.

## DEVELOPMENTALLY DISABLED

Students in this classification comprise a widely diverse population, representing many different disabilities, which may encompass physical weaknesses and/or cognitive processing difficulties. Their commonality in this diverse specialty is that they all stand on two skis. 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/weakness of the student.* A thorough check of present medications will provide important information relative to stamina and sensitivity to the environment, as well as attentiveness, and interpersonal relations.

The ATS skill progression needs to be modified to comply with the physical and cognitive skills 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/accomplishments provide positive feedback to maintain motivation and interest of the student.

### ***Common Disabilities included in D/D***

Mentally Retarded	Down Syndrome	Traumatic Brain Injury (TBI)
Cerebral Palsy (CP)	Autism Spectrum Disorder (ASD)	Fragile "X" Syndrome
Epilepsy	Stroke	Friedreich's Ataxia
Deaf	Dyslexia	Neurologically Impaired
Spina Bifida	Cystic Fibrosis	Attention Deficit Disorder
Arthritis	Seizure Disorder	Asperger Syndrome
Pervasive Development Disorder (PDD)		

*Note: Some of the above disabilities may have no effect on an individual's cognitive ability or ability to learn new skills. EVALUATE!!!*

### ***A Student Evaluation focus:***

A thorough review of primary and secondary abilities, their cause and effect upon skill performance and cognitive processing, should be made. D/D students frequently have other involvements, some apparent some hidden a thorough evaluation will indicate this. Often there will be medical problems that are not evident. For example:

- 1) Past surgical procedures - Cerebral Palsy students frequently have orthopedic surgery to reduce spasticity by lengthening muscle/tendons.
- 2) Secondary or hidden disabilities – A person with Down syndrome may have heart complications, and/or hearing problems.
- 3) A person with Multiple Sclerosis may have no feeling in their legs or feet and often have hearing or visual problems.
- 4) A person with Diabetes may have fluctuating blood sugar levels and circulatory problems. He/she may be missing a toe or toes.
- 5) A person with an acquired or traumatic brain injury may have lost their ability to judge distances and may not be aware of their left sides.

Medications may cause side effects and need to be reviewed. Side effects of medications can, for example, make a student listless, slow to respond, nervous, sensitive to the sun, and/or muscularly weak. Medication timing is important because adverse reactions to lack of medication, or low medication level, are common. Cancer patients, due to chemotherapy and radiation treatments, may be prone to hemorrhage upon impact and/or may have brittle bones.

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Much information can be gained by asking your student 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 their daily schedule can help you to access both physical and cognitive abilities.

### ***Equipment and Physical Assists:***

Balance and fine muscle coordination difficulties are commonly found within the D/D classification. Ski-bras, edgie-wedgies, klip-skis, hula-hoops, tethers, and walkers assists are utilized to increase balance and coordination. The two-point hold is often used. Some frequently used bamboo 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; called horse and buggy.
4. Clam Shell - two heavy/strong poles (or two poles taped together) held by *two* instructors; one pole being placed under the buttocks, the other placed waist-chest height for students hands.

## **Two-Track Progression for Blind and Developmentally Disabled**

The following is based on the PSIA Alpine National Standards and has been adapted for blind and developmentally disabled skiing. It should be used in conjunction with the PSIA Alpine National Standards as stated in the PSIA-E Alpine Exam and Study Guide for two track skiing.

### **Beginner / Novice Zone Objectives**

#### **Adaptive Level I**

- Level 1:**     Welcome to Skiing / Build the Foundation  
Student assessment  
Medical history  
Equipment selection, introduction and set up  
Static balance exercises, indoor  
Student / instructor communication, safety, guiding, and emergency stop
- Level 2:**     Introduction to Flats  
Mobility on skis and snow  
Understand the fall line and be aware of terrain changes  
Falling and getting up  
Straight runs  
Develop skills for skating and climbing  
Refine stepping and twisting skills to turn out of the fall line  
Stopping and slowing

## *PSIA-E/AASI Adaptive Exam Guide*

**Level 3:** Introduction to Turning  
Turn left and right  
Vary turn shape, size and speed control  
Skating  
Fan progression  
Linking turns  
Explore different equipment and uses for hands on guiding and teaching  
Master beginner area

**Level 4:** Introduction to Chair Lift and Green Terrain  
Chair lift loading and unloading procedures  
Equipment and safety concerns for riding chair lift  
Develop greater skill blending  
Vary turn shape for the terrain situation  
Explore a variety of snow conditions  
Ski the easiest beginner terrain on the mountain  
Refine turning

### **Intermediate Zone Objectives**

#### **Adaptive Level II**

**Level 5:** Develop and Enhance Intermediate Movement Options  
Refine proper body movements and positions  
Develop long to medium and medium to long radius turns  
Carry and use poles more efficiently  
Maintain an open parallel through the turn on smooth blue slopes  
Develop various ways to control speed and turn shape on all green and some blue terrain

**Level 6:** Anchor Intermediate Skills and Movements  
Medium to short radius turns  
Link open parallel on easy blue terrain  
Ski varying snow conditions  
Feel carving sensations  
Explore various hands off guiding and or teaching methods  
Develop greater confidence and skill blending

**Level 7:** Explore Movements and Skills for Upper Level Skiing  
Bump skiing on blue terrain  
Short radius turns  
Total independence (keep safety in mind)  
Increase and decrease speed in turns on blue and black terrain  
Explore disciplined skiing  
Linked parallel turns

**Advanced Zone Objectives**  
**Adaptive Level III**

**Level 8:** Refine Advanced Movement Patterns  
Carving medium and long radius turns  
Ski short turns on the steeps  
Ski blue and easy black bumps  
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 movement patterns for varying speed control and conditions  
Develop optional movements and tactics for advanced bump skiing

**Beyond Black Specialist**

Bumps, racing, off-piste, terrain parks and pipe

## **Three-Track and Four-Track Teaching Overview**

This classification includes skiers who use outriggers, one or two skis, and stand up when skiing. Outriggers are used to compensate for balance issues, due to weakness or involvement of a disability and to enhance dynamic skiing movements

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: Cerebral Palsy, Muscular Dystrophy, Multiple Sclerosis, Post Polio, Leg Amputations (above knee [AK], below knee- [BK], and bi-lateral), Arthritis, Spina Bifida, Spinal Cord Injury (SCI), and possibly Traumatic Brain Injury (TBI). This is just a sampling.

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 a review of physical strengths (range of motion, strength of limbs, ability to balance, and/or move right/left). A review of current medications and/or other disability involvements are discussed during this evaluation. The evaluation will indicate the equipment needed to create a successful learning environment. Even after this evaluation is completed, adjustments may need to be made, due to student abilities demonstrated during the lesson.

In addition to the physical analysis, a personal evaluation should also take place to determine other activities, likes, and dislikes, motivation, goals and fears. This provides a platform from which to design the lesson plan. Determination of learning preference is ongoing during this process.

Finally, it is very important that this group of skiers have an appropriate athletic stance to develop sound fundamentals skills. A common problem is "paper-clipping". This occurs when the skier bends forward at the waist and relies excessively on the outriggers. Seen more often in a 3-Track skier than the 4-Track skier. Equipment issues such as outrigger length and/or boot alignment can also cause the "paper clipping". Do not confuse this with the normal stance of a CP 4-Track skier because of muscle/tendon strength/ surgery.

Common traits of a "paper-clip" skier:

- A. Underdeveloped balancing ability:
  - 1. Little or no dynamic balance on leg(s).
  - 2. Relies on outriggers to remain in balance.
- B. Underdeveloped ability to control rotary movements:
  - 1. Lack of controlled rotary movements to initiate and control a turn.
- C. Underdeveloped ability to control pressure movements:
  - 1. Uses little or no flexion/extension.
  - 2. Pressures only front of the ski.
- D. Underdeveloped ability to control edging movements:
  - 1. Poor upper/lower body separation.
  - 2. Little or no angulation.

The student's learning preference can be matched with a complementary teaching style and an acceptable pace established, which is based upon the physical analysis and personal interview. The lesson plan will follow 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!

## **THREE-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 student's disability and include a thorough physical evaluation. 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 are:

- 1) When the amputation occurred.
- 2) The present condition of the stump.
- 3) Is the stump properly wrapped and padded.

If they have 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, and radiation are some commonly encountered in this three-track specialty. Some medications increase fatigue levels; others increase sensitivity to sun. Exploration and research of present medications currently in use provides some insight into their effects upon the student.

**Equipment** - Outriggers provide a three-point balance system. Outrigger length and brake adjustment are individual to the student. A general rule of thumb is that beginners will have their outrigger brakes adjusted for more brake. Outrigger length should be adjusted to allow for an upright comfortable athletic stance. As their skills develop, dependency on this balance system decreases and outrigger length may be adjusted for personal preference and the brake adjustment is usually reduced. This ensures an easy flow of motion throughout a turn. Equipment adjustments, physical assists and terrain selection all enhance flow of movements and maintenance of balance in motion.

## **FOUR-TRACK**

This specialty includes any people who can stand/ski on both legs and utilize outriggers, a snow slider, ski legs or a walker to assist balance while in motion. 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 concerns 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 wedges or slant-boards?
- 4) Will the student use outriggers or a walker or a snow slider?
- 5) Additional physical, emotional or motivation problems may also be present and need to be explored.

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The student evaluation should include a review of medications. Insulin, anticonvulsives, antibacterials, 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 provide insight into their effects upon the student.

**Equipment** - Outriggers provide a four-point balance system. Length and brake adjustment are individual to the student. Ongoing student assessment is necessary in order to determine whether outrigger length and/or brakes need adjusting. As the student develops skiing skills, movement options over the skis may increase, necessitating a review of outrigger settings.

Equipment adjustments, physical assists and terrain selection all enhance flow of movements and maintenance of balance in motion. Walkers offer more support than outriggers but may limit the student's ability to become an independent skier. Ski Legs and the Snow Slider offer a very stable base of support for the skier, are easily adjustable for any skier and allow the skier to move with the unit, while being tethered by the instructor. Ski-bras, klip-skis, or bungee cords are often used to enhance lateral strength and to keep the skis from spreading apart. Tethers are often used to assist in the development of rotary movements and they assist with flat land crossings. Ski Legs and Snow Sliders are always tethered and generally used on green and moderate terrain. Equipment adjustments, physical assists and terrain selection all enhance flow of movements and maintenance of balance in motion.

### **Adaptive Three and Four-Track Progression**

The following is based on the PSIA Alpine National Standards and has been adapted for three and four track skiing.

#### **Beginner / Novice Zone Objectives** **Adaptive Level I**

- Level 1:** Welcome to Skiing / Build the Foundation  
Student assessment  
Medical history  
Equipment selection, introduction and set up  
Static balance exercises indoors, introduction of the 4 skills  
Student / instructor communication, safety and emergency stop
- Level 2:** Introduction to Flats  
Getting in and out of equipment  
Pushing, turning, pivoting on flats  
Falling and getting up  
Straight runs  
Outrigger and body position while moving  
Stopping and slowing
- Level 3:** Introduction to Turning  
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  
Fan progression  
Linked turns  
Master beginner area

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- Level 4:** Introduction to Chairlift and Green Terrain  
Chair lift loading and unloading procedures  
Equipment and safety concerns for riding lift  
Student / Instructor assisted chair lift loading and unloading  
Outrigger position and timing during loading and unloading  
Develop greater skill blending and confidence  
Vary turn shape and size for terrain and condition  
Explore a variety of snow conditions

### **Intermediate Zone Objectives**

#### **Adaptive Level II**

- Level 5:** Develop and Enhance Intermediate Movement Options  
Develop proper independent outrigger movements (outrigger lead change)  
Refine proper body movements and position  
Develop long to medium and medium to long radius turns  
Edge and rotary control exercises
- 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  
Independent lift loading and unloading  
Hockey stops  
Develop single outrigger exercises (ex: only use uphill/downhill outrigger, flying outrigger.)
- 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 thru turns  
Total Independence

### **The Advanced Zone Objectives**

#### **Adaptive Level III**

- Level 8:** Refine Advanced Movement Patterns  
Carving medium and long radius turns  
Ski short turns on the steeps  
Boot top powder  
Braking and 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

### **Beyond Black / Specialist**

Bumps, racing, off-piste, terrain parks and pipe

## **MONO-SKI / BI-SKI TEACHING OVERVIEW**

The mono and bi-skis are two types of adaptive equipment that are designed for any skier who has significant problems standing and balancing while in motion. These problems could be caused by physical trauma or neurological muscular impairments.

The types of disabilities associated with mono/bi-skiing are extremely diverse. Some examples are: spinal cord injuries, brain trauma, cerebral palsy, double amputee, neuromuscular diseases, post polio, multiple sclerosis, muscular dystrophy, Spina Bifida, dwarfism, quadruple amputee, severe balance impairments, severe epilepsy, stroke, cancer, and Friedreich's Ataxia.

In addition there are some skiers who have a progressive or degenerative type of disability. They may have started skiing as a two or four-tracker but will eventually become a sit down skier due to the progressive nature of their disease.

### **Evaluation**

Treat every student as an individual; the effects of an injury or disability can vary from student to student. A complete and detailed student analysis is needed to determine which piece of equipment is best suited for the student. Determining factors are their physical strength, mobility, ability to maintain balance, level of injury and whether or not the spinal cord break is a complete or incomplete break. Only through a thorough student evaluation can one determine proper equipment selection. A quick rule of thumb is a T-6 and lower level of injury will use a mono-ski. Higher levels of injuries usually use a bi-ski. Each injury is somewhat different. The effects of a T-6 injury in one individual may vary from the same level of injury in another individual.

Medications can also be a source of concern. Verify any side effects a student may be experiencing as a result of medications. Additionally, you can obtain valuable information by knowing what other activities your student may be involved in. Much of this information can be obtained from the student, parent or guardian along with the information provided in the student's application or evaluation.

Some medical concerns associated with mono and bi-skiers include; bladder management devices (i.e.: leg bag, catheter, etc.), pressure sores, temperature sensitivity and poor circulation problems.

Another point of concern is autonomic dysreflexia (AD). This is a potentially life threatening hypertensive occurrence produced by the body's inability to sense and react to specific stimuli. Symptoms include a feeling of impending doom, flushing of the skin, sweating, blurred vision and/or a sudden change in the ability to comprehend or communicate. Common causes include bladder or bowel distension, pressure sores, severe cold and heat, or severe blows to the body or head. If an instructor suspects AD take immediate action to eliminate the cause. Keep the skier upright, loosening the straps, and readjusting the skier or take the student to the rest room or inside a warm building to help resolve the problem. (PSIA Adaptive Manual)

### **Equipment and Set Up**

There are differences and similarities between mono and bi skis. The most noticeable difference is in their visual appearance. Take time to initially set up and evaluate a student to determine which type of equipment is best for them. Do not rush the set up for the first time skier. Proper time spent during the initial set up will equal success for the student in the long term and a better return and enjoyment of the sport for the participant.

## **MONO-SKI**

The mono-ski is a single ski unit, which includes a seating system (the boot) mounted on a suspension/shock absorption system. Most of today's mono-skis have a device that assists the ski to be loaded onto chairlifts (self loading devices). Often mono-skiers develop the ability to push him/herself up onto the chair (self loading). This allows for independent skiing. Mono-skiers use outriggers to assist with balance and loading the chairlift. The "boot" acts as a two tracker's ski boot. The boot should have a snug fit with no major air spaces, so that forces from the mono-skier's body is easily transferred to the ski. A good way to accomplish this is to fill all air pockets with foam/padding.

The mono-skier must also be properly balanced. This is achieved through a "dowel test." With the mono-skier sitting in the boot, move the boot forward or aft on the ski until it is balanced over the center balance point of the mono-ski. A good rule of thumb to see if a mono-skier is balanced is that mono-skier should be able to "teeter totter" on the dowel with minimal or no body moment.

**NOTE:** With the advent of step-in binding systems for monoskiers, the dowel test is negated as the binding is mounted at the ski's boot center. Some skiers may have less or no mass in front of the binding (such as bilateral amputees). For these skiers, mounted the binding slightly forward of boot center may be necessary.

The majority of the skiers who use a mono-ski have spinal cord injuries, double leg amputation, muscular dystrophy, multiple sclerosis, or spina bifida. Good strength, balance and agility are helpful in becoming a successful mono-skier.

## **BI-SKI**

Like the mono-ski, the bi-ski has a boot that is mounted to a suspension system. However, the bi-ski is mounted on two short skis with a radical side cut. Most-bi skis have fixed outriggers that can be mounted on the frame of the ski. These outriggers can be adjusted as needed or removed. Bi-skis have a tethering system that allows the instructor to assist the skier in turning, speed control or in emergency situations. If fixed outriggers are used, it is mandatory to also use a tether strap to assist the student and control the bi-ski.

If the skier possess the necessary strength, balance and agility, hand held outriggers maybe used in place of fixed outriggers and the skier may be able to ski independently. However, it is suggested for someone using handheld outriggers to remain on tethers until they have become an upper level immediate/advanced skier. Some bi-skis have a self-loading device that allows some bi-skiers to become independent skiers. However, most bi-skiers still need one or two lifting/loading assistants.

A complete physical evaluation will help determine how the bi-ski should be adjusted. As with the mono-ski, the bi-ski must be properly balanced and the skier must be properly fitted to the boot.

The majority of disabilities utilizing the bi-ski are spinal cord injuries, multiple sclerosis, muscular dystrophy, cerebral palsy, severe epilepsy, severe balance impairments, traumatic brain injuries.

## **Lift Loading Procedures – General Overview**

The following are general procedures for an instructor-assisted chair loading and unloading of mono and bi-skis.

- Lead instructor calls a count or cadence (example: Ready, 3, 2, 1, Lift Up and Back) when in the loading zone of the chair lift. It is a good idea to practice a lift with the assistant instructor and/or student out of lift lines and before the first load of the day for timing and safety concerns.
- Once on the chair lift, first put safety bar down and then attach safety strap and carabineer to the chair.
- Keep safety bar down during entire ride. It is a good idea for the instructors not to lean on the safety bar.
- Disconnect the safety carabineer and strap once you have passed the final lift tower before the unloading platform. Do not lift the safety bar until the chair is over the netting of the unloading ramp.
- When at unloading area, lead instructor calls a count or cadence (example: Ready, 3, 2, 1, lift up and down) and the lead instructor continues to guide/bucket assist the student off to the side out of the unloading area.

### **Safety Issues and Lift Evacuations**

The NSAA Your Responsibility Code applies to all mono-skiers and bi-skiers. All instructors should understand the hand signals for communication with lift operators (i.e.: slow, stop, and maintain speed). Some hand signals may differ from ski area to ski area. The National Ski Patrol recommended procedure for a mono or bi ski lift evacuation is termed a double carabineer with opposing gates. Evacuation carabineers should only be mounted to a manufacturer suggested evacuation strap (i.e.: single or three point strap system). The evacuation system should be always ready for evacuation and NOT intertwined with the bucket straps of the skier.

## **Adaptive Mono and Bi-Ski Progression**

The following is based on the PSIA Alpine National Standards and has been adapted for mono and bi-skiing.

### **Beginner / Novice Zone Objectives** **Adaptive Level I**

- Level 1:** Welcome to skiing / Build the foundation  
Student assessment  
Medical history  
Equipment selection, introduction and set up  
Static balance exercises, indoors  
Student/instructor communication, safety and emergency stop
- Level 2:** Introduction to Flats  
Pushing, turning, pivoting on flats  
Static balance exercises, outdoors on flats  
Falling and getting up  
Straight runs  
Outrigger and body position while moving  
Stopping and slowing
- Level 3:** Introduction to Turning  
Turning left and right  
    Mono-ski – through balance and rotary control movements  
    Bi-ski – through balance and edge control movements  
Vary turn shape and size  
Speed control  
Turning to a stop  
Fan progression  
Linked turns  
Master beginner area
- Level 4:** Introduction to Chair Lift and Green Terrain  
Chair lift loading and unloading procedures  
Review lift evacuation procedures  
Student assisted/instructor assisted chair lift loading and unloading  
Outrigger position and timing during loading and unloading  
Develop greater skill blending  
Vary turn shape and size for terrain and condition  
Explore a variety of snow conditions

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**Intermediate Zone Objectives**  
**Adaptive Level II**

- Level 5:** Develop and Enhance Intermediate Movement Options  
Proper outrigger movements (outrigger lead change)  
Refine proper body movement and position  
Develop long to medium and medium to long radius turns  
Edge control exercises for mono-ski  
Rotary control exercises for bi-ski
- 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 lower body angulation  
Independent lift loading and unloading  
Hockey stops for mono-skis  
Hip drops for bi-skis
- Level 7:** Exploring Movements and Skills for Upper Level Skiing  
Bump skiing on easy blue terrain  
Short radius turns  
Explore carving sensations  
Spinal cord extension at turn initiation  
Total independence  
Rebound turns for mono-skis  
Hip check turns for bi-skis

**The Advanced Zone Objectives**  
**Adaptive Level III**

- Level 8:** Refining Advanced Movement Patterns  
Carving medium and long radius turns  
Ski short turns on the steeps  
Ski blue and easy black bumps  
Boot top powder  
Braking, gliding control movements on steep terrain
- Level 9:** Develop Movement Options for Steep Terrain  
Refine movements in short radius turns  
Develop optional movement patterns for varying speed control and conditions  
Develop optional movements and skiing tactics for advanced bump skiing

**Beyond Black/ Specialist**

Bumps, racing, off-piste, terrain parks and pipes

## **HIGHLIGHTS OF ALPINE SKIING MANEUVERS**

### **Wedge Turns**

- \* A slight rising motion toward the new turn facilitates turn initiation as both skis are steered into the fall line.
- \* Forces in the turn, and directing the skis across the hill, increase pressure and edging on the outside ski, and it becomes the dominant ski.
- \* Although the hips remain basically centered, the center of mass will move slightly to the inside of the turn.
- \* The skis and lower body are allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the skis.
- \* Application of skills and reaction to forces contributes to a gradual flexion in the ankles, knees and hips.
- \* Emphasis is on producing a rounded, deliberate turn shape, and maintaining a relatively constant wedge width throughout the turn.
- \* The Wedge Turn shows the Fundamental Skills in a slow moving situation, emphasizing the rotary movements of the feet and legs and light control of edge and pressure movements to maintain constant speed and radius of the turn.
- \* A desired outcome is to achieve a sense of rhythm, flow, and control from turn to turn.

### **Spontaneous Christie**

- \* Speed is greater than that of a wedge turn.
- \* From a Christie turn completion, turn is initiated with a slight rising motion in the direction of the new turn. The tips of both skis are steered toward the fall line; the outside ski turning somewhat more, resulting in a narrow wedge.
- \* Edge angle, and pressure on the outside ski, is slightly greater and occurs earlier than in a wedge turn. This results in the inside ski becoming quite light and flat, making it easy to guide into a parallel relationship with the outside ski. This "matching" occurs at or about the fall line, resulting in the christie phase of the turn.
- \* Both skis continue to be guided toward the completion of the turn, with the simultaneous steering of both legs, though the outside ski remains dominant. Skier demonstrates dynamic balance. Ankle and knee flexion contribute to controlling edge angle and pressure.
- \* A progressive increase of edging and pressure in the turn reduces the amount of skid and helps shape the arc of the turn, which should be fairly consistent throughout.

### **Open Parallel**

- \* Speed is greater than that of a wedge christie. Stance is open throughout with the skis never touching.
- \* Nearing the completion of a prior turn the skier, slightly flexed with pressure predominately on the outside ski, begins to swing the outside pole basket toward the next turn.
- \* As the skier starts extending toward the new turn, a change in pressure dominance begins from the old outside ski to the new one.
- \* Continuation of the above movements results in pole touch and a flattening of the skis, which combined with the guidance of both skis toward the fall line, assists turn initiation.
- \* The inside leg and ski complement the actions of the dominant outside leg and ski. Progressive steering combined with flexion down and inward regulates edging and pressure, which are progressive throughout the turn. The goal is to produce a round, skidded arc.

## **Dynamic Parallel**

- \* There is refinement of the Fundamental Skills of open parallel and they are performed at greater speed with more precision.
- \* Ski is used as a tool and turns are carved, but not railed. Stance is functional for the speed, radius and terrain being utilized.
- \* Pressure transfer at turn initiation is very deliberate, and commitment of the center of mass toward the new turn is very active. All movements contribute toward carrying the energy from one turn to the next.
- \* The inside leg is very active and contributes to turn dynamics.
- \* Edge/pressure engagement is taking place before the fall line.
- \* Intensity, duration, and timing of movements determine the size, shape, and speed of the turn, i.e. short, medium, long, gliding, and braking.

## **SAMPLE EXAM QUESTIONS**

1. Which of the below disabilities would be more likely to have an allergic reaction to latex?
  - a. Down Syndrome
  - b. Post Polio
  - c. Spina Bifida
  - d. Cerebral Palsy
  - e. Muscular Dystrophy

2. Which of the below is the largest group of mental retardation?
  - a. Mild
  - b. Moderate
  - c. Severe
  - d. Profound

Refer to this manual, Appendix #1 Common Disabilities under Mental Retardation.

3. In Adaptive Ski Teaching a pro should look for what each student can do, instead of what he or she can't  
True or False

Refer to Core Concepts page 82.

4. Autonomic Dysreflexia should be considered an emergency condition.  
True or False

5. There are two types of Attention Deficit Disorder. The first type is ADHD (attention deficit hyperactivity disorder; the second type is
  - a. Attention Deficit Non Hyperactivity Disorder (ADNHD)
  - b. Undifferentiated Attention Deficit Disorder (UADD)
  - c. Variable Attention Deficit Disorder (VADD)
  - d. Sublesion Attention Deficit Disorder (SADD)
  - e. Progressive Attention Deficit Disorder (PADD)

Refer to this manual; Appendix #1 Common Disabilities, under Attention Deficit Disorders.

6. Paper-clipping is most often a problem associated with which of the following types of adaptive skiing?
  - a. Mono-Skiing
  - b. Bi-Skiing
  - c. Four-Track skiing
  - d. Two-Track skiing
  - e. Three-Track skiing

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Refer to this manual, 3-Track & 4-Track Teaching Overview.

7. Hypoglycemia is a term used to describe a low blood sugar.

True or False

Refer to this manual; Appendix #1 Common Disabilities, under Diabetes

8. An individual who is said to be mildly retarded would most likely have an IQ in which of the below ranges?

- a. 72-85
- b. 55-70
- c. 40-55
- d. Below 40

Refer to this manual; Appendix #1 Common Disabilities, under Mental Retardation

9. How many vertebrae are located in the Cervical Region of the spine?

- a. five
- b. seven
- c. ten
- d. twelve

Refer to this manual, Appendix #2, Spinal Cord Injuries.

10. Contracts, timeouts, and reward systems are examples of Behavior Management Techniques.

True or False

Refer to this manual, Appendix #7, Behavior Management

11. Leverage is

- a. The application of pressure fore or aft of the mid-foot balance point of the ski.
- b. flexion and extension movements for pressure control.
- c. the application of pressure to one ski by active weight transfer.
- d. the application of pressure opposite to the skier's direction of travel.

Refer to the PSIA Alpine Technical Manual.

12. It is important to establish trust and rapport with the student so that learning can occur. Real trust is built over the course of the entire experience and requires patience, thoughtfulness, and care.

True or False

Refer to Core Concepts page 24.

13. One student following another student and giving feedback would be known as the reciprocal style of teaching.

True or False

Refer to the PSIA Alpine Technical Manual.

14. Adaptive snowboarding is possible for both AK amputees and BK amputees.

True or False

Refer to the PSIA Adaptive Snowsports Instruction Manual - Snowboard Section

**APPENDIX #1**

**COMMON DISABILITIES**

AMPUTATIONS: Congenital, surgical or traumatic loss of a limb or part of a limb

**AK**

Above knee - usually skis without prosthesis.

**BK**

Below knee - An agreed upon guideline is if the stump is four inches or longer and the skin is in good condition, the individual may ski with prosthesis.

**AE**

Above elbow

**BE**

Below elbow

**Hip Disarticulation**

Amputation at the hip joint, this preserves the pelvis and the soft tissue to the buttocks - usually skis without prosthesis

**Syme's**

Amputation at the ankle.

**HP**

Hemipelvectomy - The most severe level of amputation. This amputation includes half of the pelvis and the limb leaving, only the soft tissue of the buttocks.

**Shoulder Disarticulation**

Amputation at the shoulder joint.

**Unilateral**

Amputations on the same side. Although obtaining and maintaining dynamic balance when skiing is difficult, unilateral amputees do ski. (i.e. a unilateral BK/BE could ski on both skis with one outrigger).

**Bilateral**

Amputations on both sides. This can include: 1) amputation of both legs, 2) amputation of both arms, 3) amputation of an arm on one side and leg on the other (arm and leg amputees usually ski on one ski with one outrigger).

Look for the hidden causes: if due to cancer, recent or current, chemotherapy may cause fatigue or impaired temperature control. If amputation is due to Diabetes, the individual may lack sensation in other areas (often hands or feet), plus may need to eat or take medication on a certain schedule. Injuries resulting in amputation may encompass other hidden disabilities for example, minimal brain damage, need for a bladder control device, or hearing impairment. The residual limb (stump) needs to be protected while skiing. An ace wrap should be applied to prevent swelling and/or the limb should be padded and covered to avoid damage from falls or cold. Skiing with a prosthesis is determined by the length of the residual limb plus advice from a prosthetist to be sure it is strong enough to withstand the stresses of skiing.

APHASIA:Aphasia is an acquired communication disorder that impairs a person's ability to process language, but does not affect intelligence. Aphasia impairs the ability to speak and understand others, and most people with aphasia experience difficulty reading and writing. The disorder ranges from having difficulty remembering words to being completely unable to speak, read, or write. Aphasia disorders usually develop quickly as a result of head injury or stroke, but can develop slowly from a brain tumor, infection, or dementia, or can be a learning disability. To communicate, give the person with

aphasia time to speak and do not finish the person's sentences unless asked. Be sensitive to background noise and turn off competing sounds such as radios or TVs where possible. Be open to means of communicating other than speech, eg., use drawing, gesturing. Confirm that you are communicating successfully.

**ARTHRITIS:** An inflammatory disease of the joints as well as other parts of the body. It causes pain and loss of movement. This disease is chronic.

**Ankylosing Spondylitis**

Chronic inflammation of the spine. Bones will often fuse together.

**Juvenile**

A general term that is used to define any arthritis that affects children.

**Osteoarthritis**

Degenerative joint disease common in seniors, the most common form of arthritis.

**Rheumatoid**

Total body inflammation of moving and weight bearing joints. Most disabling form of arthritis.

**ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD/ADD):** Many people use the generic term of ADD for all types of ADHD but ADHD is the official clinical diagnosis term. According to the Attention Deficit Disorder Association (ADDA, <http://www.add.org/>), approximately 4% to 6% of the U.S. population has ADHA which is 8 to 9 million people.

Children and adults who consistently display certain characteristic behaviors over a period of time are diagnosed with ADHD. The most common features include:

- Distractability/Inattention (poor sustained attention to tasks)
- Impulsivity (impaired impulse control and delay of gratification)
- Hyperactivity (excessive activity and physical restlessness)

The exact nature and severity of ADHD symptoms varies from person to person. Approximately one-third of people with ADHD do have the hyperactive or overactive behavior component.

There three subtypes of ADHD: Combined Type, Predominantly Inattentive Type, and Predominantly Hyperactive-Impulsive Type.

**PREDOMINANTLY HYPERACTIVE-IMPULSIVE**

Most of the person's symptoms are in the hyperactivity-impulsivity categories with fewer symptoms of inattention.

**PREDOMINANTLY INATTENTIVE TYPE**

The majority of symptoms are in the inattention category and fewer than six symptoms of hyperactivity-impulsivity.

**COMBINED**

Six or more symptoms of inattention and six or more symptoms of hyperactivity-impulsivity. Most people have the combined type.

*Hperactivity symptoms include:*

- Fidgeting, squirming when seated
- Getting up frequently to walk or run around
- Running or climbing excessively when it's inappropriate

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- Having difficulty playing quietly or engaging in quiet leisure activities
- Being always on the go
- Often talking excessively

### ***Impulsivity symptoms include:***

- Impatience
- Difficulty delaying responses
- Blurting out answers before questions have been completed
- Difficulty awaiting one's turn
- Frequently interrupting or intruding on others to the point of causing problems
- Initiating conversations at inappropriate times

### ***Inattention symptoms include:***

- Difficulty paying attention to details and tendency to make careless mistakes
- Producing work that is often messy and careless
- Easily distracted by irrelevant stimuli and frequently interrupting ongoing tasks to attend to trivial noises or events that are usually ignored by others
- Inability to sustain attention on tasks or activities
- Difficulty finishing paperwork or performing tasks that require concentration
- Frequent shifts from one uncompleted activity to another
- Procrastination
- Disorganized work habits
- Forgetfulness in daily activities (missing appointments, forgetting to bring lunch)
- Failure to complete tasks
- Frequent shifts in conversation, not listening to others, not keeping one's mind on conversations, and not following details or rules of activities in social situation.
- Have difficulty processing information as quickly and accurately as others.

## **Treatment of ADHD**

The most effective treatment for ADHD is a combination of medication (when necessary), therapy or counseling to learn coping skills and adaptive behaviors. Many adults receive ADHD coaching.

### ***Medications***

The most common type of medication used for treating ADHD is a stimulant which may have a calming effect on people with ADHD. The medications can reduce hyperactivity and impulsivity and improve the person's ability to focus, work and learn. Medication may also improve physical coordination. Common ADHD medications are: Adderall, Cncerta, Dexedrine, Focalin, Ritalin and Strattera.

### ***Teaching Tips***

Many children with ADHD may have a specific behavior management or therapy program. If possible ask the student or parents how the behavior program works so you can support the student. Additionally, Try to limit distracting stimuli; give one direction at a time; try to maintain eye contact; avoid complex instructions; and be clear and concise. Since these children are easily frustrated, maintain a calm attitude. Some students may exhibit inappropriate fear in new situations. Due to side effects of the medications, some students do not take their medication during the weekend or holiday periods.

### ***Sources:***

- *National Institute of Mental Health* (<http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder/complete-index.shtml>) T
- *Attention Deficit Disorder Association* ([http://www.add.org/?page=ADHD\\_Fact\\_Sheet](http://www.add.org/?page=ADHD_Fact_Sheet))

- WebMD (<http://www.webmd.com/add-adhd/guide/adhd-symptoms>)

**AUTISM SPECTRUM DISORDERS:** ASDs are a group of developmental disabilities that can cause significant social, communication and behavioral challenges.

There are three different types of ASDs:

**Autistic Disorder** (also called “classic” autism): This is what most people think of when hearing the word “autism.” People with autistic disorder usually have significant language delays, social and communication challenges, and unusual behaviors and interests. Many people with autistic disorder also have intellectual disability. Characteristics can include impaired social interaction, impaired communication, and restricted and repetitive behavior

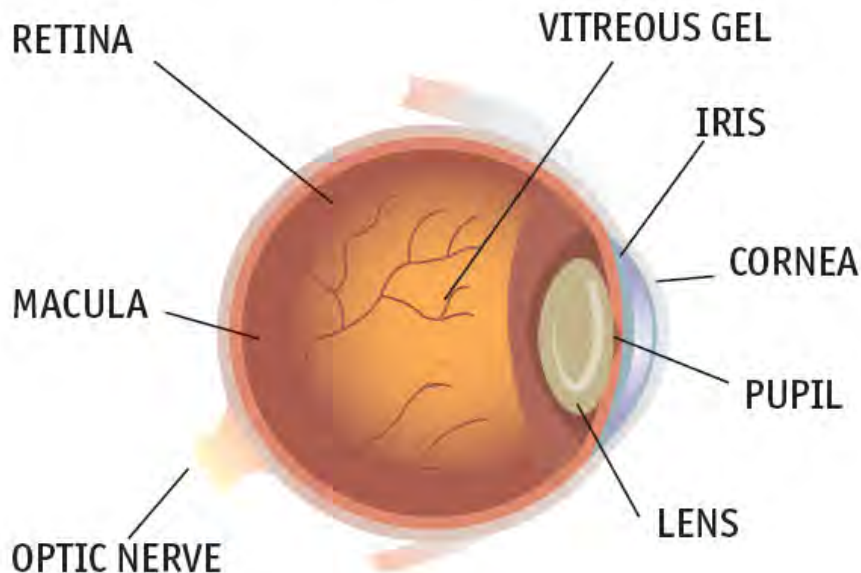
**Asperger Syndrome:** People with Asperger syndrome usually have some milder symptoms of autistic disorder. They might have social challenges and unusual behaviors and interests. However, they typically do not have problems with language or intellectual disability.

**Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS; also called “atypical autism”):** People who meet some of the criteria for autistic disorder or Asperger syndrome, but not all, may be diagnosed with PDD-NOS. People with PDD-NOS usually have fewer and milder symptoms than those with autistic disorder. The symptoms might cause only social and communication challenges.

**BLIND / VISUALLY IMPAIRED:** Partial or total loss of vision which may include, but not be limited to: tunnel vision, peripheral vision, myopia, or loss of depth or distance perception. Some causes include: Diabetes, Glaucoma, Detached Retina, Eye Injury, Multiple Sclerosis, Brain Tumor or Head Injury. Ask specific questions and define the student’s range of vision.

## PARTS OF THE EYE

To understand eye problems, it helps to know the different parts that make up the eye and the functions of these parts.



Source -

[http://www.nei.nih.gov/nehep/programs/visionandaging/materials/EyeHandout\\_508.pdf](http://www.nei.nih.gov/nehep/programs/visionandaging/materials/EyeHandout_508.pdf)

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Here are descriptions of some of the main parts of the eye:

- **Cornea:** The cornea is the clear outer part of the eye's focusing system located at the front of the eye.
- **Iris:** The iris is the colored part of the eye that regulates the amount of light entering the eye.
- **Lens:** The lens is a clear part of the eye behind the iris that helps to focus light, or an image, on the retina.
- **Macula:** The macula is the small, sensitive area of the retina that gives central vision. It is located in the center of the retina.
- **Optic nerve:** The optic nerve is the largest sensory nerve of the eye. It carries impulses for sight from the retina to the brain.
- **Pupil:** The pupil is the opening at the center of the iris. The iris adjusts the size of the pupil and controls the amount of light that can enter the eye.
- **Retina:** The retina is the light-sensitive tissue at the back of the eye. The retina converts light into electrical impulses that are sent to the brain through the optic nerve.
- **Vitreous gel:** The vitreous gel is a transparent, colorless mass that fills the rear two-thirds of the eyeball, between the lens and the retina.
- **See Well for a Lifetime: An Educational Series on Vision and Aging**

### **Myopia:**

Also known as nearsightedness. Common type of refractive error where close objects appear clearly and distant objects appear blurry. Images are focused in front of the retina rather than on it.

### **Glaucoma:**

A group of diseases that can damage the eye's optic nerve and result in vision loss and blindness. It is one of the main causes of blindness in the United States. Eye disease in which the normal fluid pressure within the eye rises slowly. The increased pressure may damage the optic nerve causing partial or total blindness.

### **Cataracts:**

Clouding of the lens that affects vision and is mostly related to aging. The lens is a clear part of the eye that helps to focus light, or an image on the retina. Light passes through the transparent lens to the retina. The lens must be clear for the retina to receive a sharp image. If the lens is cloudy from a cataract the image is blurry. If bad enough, vision can be improved by surgery where the cloudy lens is replaced with an artificial lens.

### **Diabetic Retinopathy:**

Is a complication of diabetes and is a leading cause of blindness. It occurs when diabetes damages the tiny blood vessels inside the retina, the light sensitive tissue at the back of the eye. As the condition worsens it causes eye damage. It usually affects both eyes. The retinal blood vessels may (1) swell; (2) become blocked which signals the body to grow new blood vessels; (3) advanced stage (proliferative retinopathy) when new blood vessels grow; (4) new vessels are fragile and leak causing severe vision loss and even blindness.

### **Retinitis Pigmentosa (RP):**

Group of inherited retinal diseases that cause progressive deterioration of specialized light-absorbing cells in the retina. RP damages the retina's light-sensitive photoreceptor cells that connect other nerve cells to transmit visual information to the brain. As the cells slowly degenerate, the rod photoreceptors that control night vision are impacted most often so the person develops night blindness and gradual loss of peripheral vision. By about age 40, most have tunnel vision but may retain good central vision. Between the ages of 50 and 80, they typically lose their remaining sight.

### **Age-Related Macular Degeneration (AMD):**

Disease associated with aging that gradually destroys sharp, central vision (the macula) because of damage to the retina. It affects the macula, the part of the eye that provides vision of fine details for reading, writing, driving and central vision. AMD occurs in two forms “dry” and “wet.”

**Wet AMD:**

When abnormal blood vessels behind the retina start to grow under the macula. The new blood vessels are fragile and leak blood and fluid raising the macula from its normal place at the back of the eye. The damage occurs rapidly so the loss of central vision can occur quickly. It is also known as advanced AMD and does not have stages like dry AMD.

**Dry AMD**

The light-sensitive cells in the macula slowly break down, gradually blurring central vision. As it worsens, a blurred spot in the center of vision may develop. Over time, as less of the macula function, central vision is gradually lost in the affected eye.

**Retinal Detachment:**

The retina is lifted or pulled from its normal position. If not treated promptly it can cause permanent vision loss. In some cases small areas of the retina are torn (retinal tears or retinal breaks) which can lead to retinal detachment. There are three types of retinal detachment.

**Rhegmatogenous:**

A tear or break in the retina that allows fluid to get under the retina and separate it. These types are the most common.

**Tractional:**

Scar tissue on the retina's surface contracts and cause the retina to separate. (Less common)

**Exudative:**

Frequently caused by retinal diseases, including inflammatory disorders and injury/trauma to the eye. Fluid leaks into the area underneath the retina without any tears or breaks in the retina.

**Tunnel Vision:**

Loss of peripheral vision with retention of central vision resulting in severely constricted visual field. [http://en.wikipedia.org/wiki/Tunnel\\_vision](http://en.wikipedia.org/wiki/Tunnel_vision).

**Congenital Nystagmus:**

Constant involuntary, cyclical movement of the eyeball. There are many causes for this disease. Congenital nystagmus is a condition that begins at birth or early infancy where the eyes oscillate continuously and uncontrollably.

**Ophthalmoplegia or Ophthalmoparesis:**

Paralysis of one or more of the extraocular muscles responsible for eye movement.

**Diplopia:**

Double vision (Simultaneous perception of two images of a single object occurring in one or both eyes. Usually the result of impaired function of the extraocular muscles, where both eyes are still being used, just not in focus. It can be one of the first signs of a systemic disease and may disrupt a person's balance, movement, and/or reading abilities.

(<http://en.wikipedia.org/wiki/Diplopia>) Seen in diseases of the eyeballs, cranial nerve affections, and disease of the cerebellum, cerebrum, and meninges.

**CEREBRAL PALSY:** A non-progressive disorder caused by brain damage before, during or after birth. It is characterized by abnormalities of muscle tone and difficulties with voluntary motor control. It usually results in delayed motor development. The individual may have one type or a mixture of types. Individuals with cerebral palsy may or may not have cognitive impairment. Medical associations and text varies as to types and numbers of classifications. The below list are common definition of CP classifications.

**Spastic (hypertonic)**

Increased muscle tension and difficulty with relaxation, may have lack of full mobility at some joints.

*Tense contracted muscles.*

**Low Tone (hypotonic) (FLACCID)**

Decreased muscle tension, may appear floppy, often have joint hyper-mobility (double joint-ed).

*Diminished muscle tone.*

**Athetoid**

Muscle tone fluctuates from high to low therefore motor control is inconsistent.

*Extraneous uncontrolled movements.*

**Ataxic**

Muscle tension often appears okay but control of movement and balance is impaired so that the individual may appear drunk.

*Jerky uncontrolled movements*

**Rigid**

Muscle tension often is very tense.

*Stiff uncontrolled movements.*

**DEAF/HEARING IMPAIRED:** Hearing Impairments refer to a reduction in sensitivity to sound. This may also be accompanied by some loss in the ability to correctly interpret auditory stimuli even after amplification. The deaf/hearing impaired population is often noted as being the largest of all chronic physical disabilities. Hearing loss occurring after 19 years generally does not affect speech. Hearing losses occurring from birth to three years are referred to as *pre-lingual deafness*. Deafness occurring from three years to 19 years is termed as *prevocational deafness*.

Hearing Impairments fall into three categories:

**Conductive Impairments:**

Defects in the auditory system. Which interfere with sound waves reaching the cochlea.

Damage or lesion lies in the middle or outer ear (i.e. ruptured ear drum). Generally, conductive losses are often lesser in degree not exceeding moderate impairment.

**Sensorineural Impairments:**

Defects to the auditory pathway beginning with the cochlea and auditory nerve, brain stem and cerebral cortex. Damage here prevents or disrupts interpretation of the signal (i.e. maternal rubella and noise).

**Mixed Impairments:**

Defects involve both Conductive and Sensorineural impairments (middle ear infections).

**DIABETES:** A disease in which the body cannot properly metabolize glucose. In Type I diabetes the pancreas cannot produce insulin. In Type II diabetes, cells are resistant to insulin and/or the pancreas does not produce enough insulin. Two possible concerns with diabetes are:

**Hyperglycemia:**

High blood sugar level.

**Hypoglycemia:**

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Low blood sugar level. Hypoglycemia is a major concern, as it can be triggered by exercise (skiing), and delays in meals. Sugar is needed immediately if it occurs.

**DOWN SYNDROME:** A birth defect, which causes mental retardation. Down Syndrome is caused by a chromosomal abnormality, usually chromosome #21. Down Syndrome may sometimes be referred to as Trisomy 21. Individuals with Down Syndrome often have loose joints and low muscle tone. Additionally, there may be a predisposition for cervical subluxation, whereby a cervical vertebrae dislocates and can cause a spinal cord compression. This can easily be detected by X-Ray. Surgical repair may be necessary to prevent injury.

**EPILEPSY / SEIZURE DISORDER:** A seizure is an abnormal electrical impulse in the brain. Seizures may consist of a brief suspension of activity (focal or petit mal) where an individual stares into space, or may be generalized tonic clonic (grand mal) with full body involvement. There are many types of seizures that range between focal and tonic clonic in appearance. Most seizure disorders are controlled by medication. If a seizure occurs, try to protect student from injury. Discontinue skiing as the individual may be disoriented.

### **Tonic Clonic (Grand Mal)**

Seizures are generalized and affect the entire brain. An aura (strange feeling, taste, vision or smell) may indicate the start of a seizure. The seizure proceeds with loss of consciousness and movements alternating between contraction and relaxation of the muscles. Incontinence may occur. Seizures may last from seconds to minutes.

### **Focal (Petit Mal):**

Seizure with loss of consciousness, eye or muscle fluttering, and sometimes loss of muscle tone. There may be a period of unconsciousness so brief that neither the individual nor observers would be aware of it.

### **Psychomotor Seizures:**

Seizures characterized by a loss of contact with surroundings. The individual is mentally confused, may stagger, perform purposeless movements, and make unintelligible sounds. Possibly individuals do not understand what is said and may refuse aid. These seizures can develop at any age and are usually associated with structural lesions in the temporal lobe.

**LEARNING DISORDERS:** An abnormality in cognitive processing (deficits in vision, perception, linguistic processes, attention or memory, or combination thereof) resulting in a substantially below standard achievement in academic skill testing (i.e. reading and math). These individuals have difficulties processing messages to the brain making it difficult for the individual to learn in one or more areas. However, normal or above normal intelligence is not uncommon. It is conservatively estimated that approximately 1.8 million children between the ages of 3 to 21 in the United States have learning disabilities severe enough to warrant special education services. The prevalence of learning disabilities is far greater among boys than girls. The ratio seems to range from 15:1 to 25:1.

NOTE: Move to "I"

**INTELLECTUAL DISABILITIES:** According to the Centers for Disease Control and Prevention, "Intellectual disability is characterized by a significantly below-average score on a test of mental ability or intelligence and by limitations in the ability to function in areas of daily life, such as communication, self-care, and getting along in social situations and school activities. Intellectual disability is sometimes referred to as a cognitive disability or mental retardation."

There are different degrees of intellectual disability, ranging from mild to profound. A person's level of intellectual disability can be defined by their intelligence quotient (IQ) or by the types and amount of support they need.

**Degrees of Intellectual Disability (NOTE need to confirm % of population)**

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<u>Degree</u>	<u>IQ Level</u>	<u>Population %</u>
Mild	50-55 to 70	85
Moderate	35-40 to 50-58	10
Severe	20-25 to 35-40	3-4
Profound	20 to 25	1-2

Intellectual disability can start anytime before a child reaches the age of 18 years. It can be caused by injury, disease or a brain abnormality. For many the cause of their intellectual disability is not known. Some of the most common causes are Down Syndrome, fetal alcohol syndrome, and fragile X syndrome, all of which occur before birth.

**MULTIPLE SCLEROSIS (MS):** A progressive disease that causes the myelin sheath around nerve cells to disappear so that they no longer transmit the necessary signals. The disease may go into remission, but generally worsens over time (varies from individual to individual). It occurs more often in women than men; initial onset is usually in the late twenties or early thirties. Fatigue and heat tends to make the symptoms worse. Muscle paralysis may be partial or full in any limb and loss of sensation may also be partial or full in any area. Visual problems are very common.

**MUSCULAR DYSTROPHY (MD):** A progressive degeneration of muscles. Caused by a defective gene that is passed from parent to child. MD is more prevalent in boys.

**Duchenne Type:**

The most common and most severe form of MD. Onset is usually between ages 3 - 10. Males are affected more than females. Generally a delay in learning to walk with frequent falls. A waddling gait is usually apparent by 6 years of age.

**Facio-Scapular-Humeral Type:**

The most common form of MD in adults. Symptoms do not appear until adolescence and are not recognized until adulthood. Prognosis is good. The disease may arrest itself at any stage. Effects facial, shoulder, and arm muscles.

**Limb Girdle Type:**

This type may occur at anytime from age 10 or after. The onset usually occurs during the second decade. Both genders are equally affected. Effects movement in upper/lower extremities including ability to move.

**Mixed Type:**

Rapidly progressing and usually fatal within five years. Affects all voluntary muscles.

**NEUROMUSCULAR DISEASES:** A group of central nervous system diseases affecting the motor system, causing weakness or clumsiness with voluntary motion and involuntary movement. These diseases include: Huntington's Disease, Parkinson's Disease, Friedreich's Ataxia, Amyotrophic Lateral Sclerosis (ALS), Guillain-Barre Syndrome, and Myasthenia Gravis.

**POLIO:** Muscle weakness or paralysis in any specific muscle or muscle groups caused by the polio virus. The involvement is specific to each person.

**POST POLIO SYNDROME:** A progressive, degenerative disease impacting nervous and skeletal systems. The disease can be disabling since resulting problems are added to preexisting damage that occurred at the initial polio infection. There is no cure. Symptoms include: fatigue, muscle atrophy, muscle spasms, disc disease, and nerve damage resulting in muscle weakness, scoliosis, and other symp-

toms.

STROKE (Cerebrovascular accident [CVA]): Interruption in circulation to the brain that diminishes oxygen supply and commonly causes serious brain damage. Typically individuals will suffer from hemiplegia (one sided paralysis) of either upper or lower extremities or both. Balance may also be an issue. Some stroke victims have difficulty speaking or processing auditory input.

SPINA BIFIDA: A birth defect resulting in abnormal development of the spinal column during the early stages of pregnancy. The covering over the spinal column forms a sac-like pouch; the vertebrate fail to enclose the spinal cord which may affect the connection between the brain and the spinal cord. Damage may occur anywhere along the spinal canal. Disability may range from weakness in the legs to full paraplegia with trunk weakness.

SPINAL CORD INJURY: Spinal cord damage due to some type of insult to the spinal cord, such as trauma, infection or tumor. Individuals are classified as complete or incomplete based on preservation of function in the S4/5 spinal segment.

**Paraparesis:**

Partial paralysis affecting the lower limbs.

**Paraplegia:**

Paralysis of lower portion of the body and of both legs.

**Quadriplegia: (Also called Tetraplegia)**

Paralysis of all four extremities and usually the trunk

TRAUMATIC BRAIN INJURY (TBI): Acquired brain damage caused by some type of insult to the brain. There are three categories:

**Closed head injury: (Diffused injury)**

This is caused by trauma to the head that does not cause a fracture to the skull.

**Focal injury:**

Part of the skull is forced into the brain.

**Hypoxia:**

Injury caused by the lack of oxygen.

**The above information is a general overview of some common physical disabilities in students of skiing. In all cases, ask questions to learn as much as you can about the individual. Each student is an individual and each individual will be affected differently by his/her disability.**

APPENDIX #2

## SPINAL CORD DIAGRAM AND INJURIES

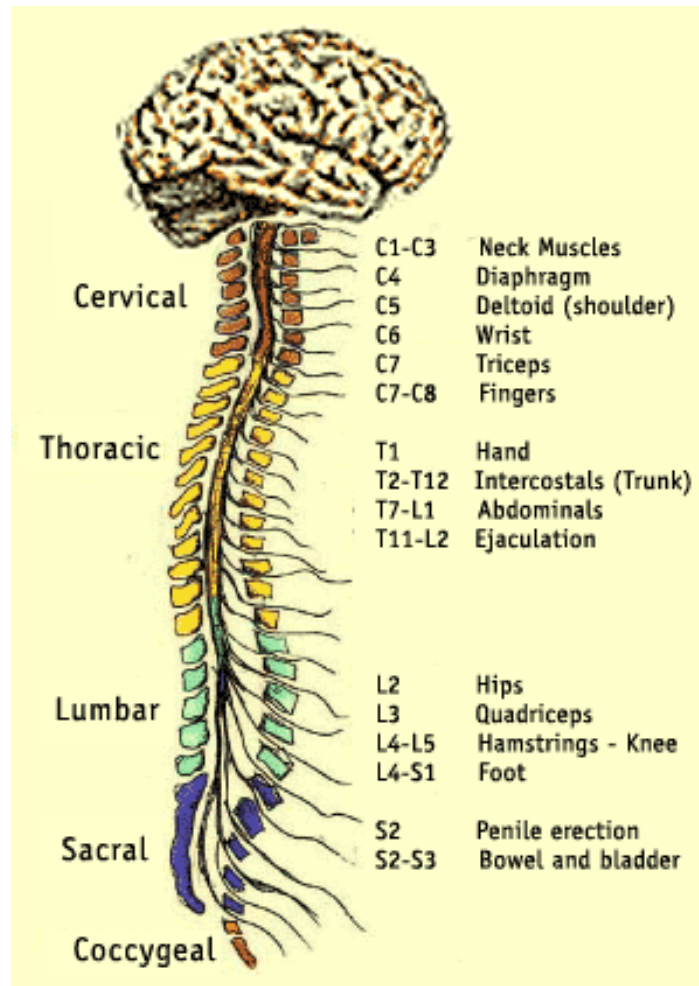
The Spinal Column is divided into five regions:

- 1- **Cervical Region** (Neck):  
This region contains the first seven vertebrae and the first eight spinal nerves.
- 2- **Thoracic Region** (Chest):  
This region contains the next twelve vertebrae and the next twelve spinal nerves.
- 3- **Lumbar Region** (Lower Back):  
This region contains the next five vertebrae and the next five spinal nerves.
- 4- **Sacral Region** (Tail Bone):  
This region contains the next five vertebrae fused into one and the last six spinal nerves.
- 5- **Coccyx**:  
This region contains four vertebrae fused into one and no spinal nerves.

Damage that occurs in the cervical region is described as quadriplegia. Damage in either the thoracic, lumbar or sacral region is considered paraplegia. Approximately 50% of all spinal injuries cause quadriplegia.

Individuals are classified as complete or incomplete based on preservation of function in the S4/5 spinal segment. However, the function of each individual will vary depending on the level and severity of the injury and the spinal segment where it occurs.

Some of the most common levels of injury are C5-C6, T6-T7 and T12-L1.



**APPENDIX #3**

**MEDICATIONS**

Disabled skiers may take medications for a variety of reasons. Any medication has the potential to cause a side effect. Some of these side effects may impact skier performance. As an adaptive instructor, a basic understanding of medications, their use and the side effects is important. The following is not a complete list. Several resources for information on medications are available, including the “Physician’s Desk Reference” (PDR), Nursing drug guides, the internet.

**A word about medication side effects:** When you look up a drug, all side effects will be listed. Researchers are required to list ALL side effects that occur, whether one person or one hundred people had the side effect. Your student may have none of the side effects or several. Check with the student or their guardian about the response to medications.

As you read through the medication section, recognize that ANY medication has the potential to cause nausea, vomiting or diarrhea. Therefore, these three side effects will not be listed.

**ANALGESICS: PAIN RELIEF** (two categories, narcotic and non-narcotic)

Tylenol Aspirin	Non-narcotic:
Codeine Oxycontin Demerol	Narcotic: Sedation, lethargy, dizziness, confusion, increased sweating

**ANTIBIOTICS: TREATMENT OF INFECTION**

This drug category has a wide array of medications that fall into a variety of classes. Generally, the side effects are nausea, vomiting, diarrhea or sensitivity to sun. Examples of common antibiotics include:

Amoxicillin, Augmentin, Levaquin, Zithromax, Bactrim, Keflex, Cipro, Pen V K.

**ANTICHOLINERGIC: TREATMENT OF BLADDER SPASM**

Ditropan	Decreased sweating, dizziness, rapid heart rate, constipation, dry mouth
Detrol	Dry mouth, headache, constipation, abdominal pain

**ANTICOAGULANTS: PREVENTION OF BLOOD CLOT FORMATION**

Coumadin	Easy bruising, excessive bleeding (nose bleeds, cuts)
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**ANTIEMETIC: CONTROL OF NAUSEA AND VOMITING**

Compazine Phenegan Zofran	Drowsiness, lethargy, dry mouth, blurred vision
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**ANTICONVULSIVE: TREATMENT OF SEIZURE DISORDERS**

Side effects for anticonvulsives are very similar. Many anticonvulsives are used in conjunction with each other. Also, some anticonvulsives are used for non-seizure problems, so be sure to check why your student is taking the medication: Examples of anticonvulsives are:

Dilantin, Depakote, Tegretol, Clonopin, Phenobarbital, Neurontin, Keppra and Gabitril.

**ANTI-INFLAMMATORY: PREVENTION OR REDUCTION OF INFLAMMATION**

Ibuprofen	Non-steroidal: headache, dizziness
Decadron	Steroids: Dizziness, headache, fluid retention
Prednisone	

**ANTISPASMODIC: REDUCTION OF MUSCLE SPASM**

Dantrium	Drowsiness, dizziness, fatigue, dry mouth
Lioresal	
Valium	

**ANTI-HYPERTENSIVE: CONTROL OF HIGH BLOOD PRESSURE**

Norvasc	Dizziness, headache, fatigue, lethargy
Toprol	
Tenormin	

**SEDATIVES: REDUCTION OF ANXIETY**

Ativan	Drowsiness, sedation, fatigue
Xanax	

**ANTIPSYCHOTICS: MANAGEMENT OF SYMPTOMS FOR PSYCHOTIC DISORDERS**

Haldol	Drowsiness, dry mouth, tremors
Thorazine	Drowsiness, vertigo, dry mouth, nausea, urinary retention
Clozaril	

**ANTIDEPRESSANTS: TREATMENT OF DEPRESSION**

Zoloft	Headache, drowsiness, dizziness, sweating
Paxil	
Prozac	
Effexor	

**CNS STIMULANTS: BEHAVIORAL CONTROL**

Dexidrine	Over-stimulation, restlessness, dizziness, dry mouth, high blood pressure
Ritalin	

**Prepared by:** Adaptive Sports Foundation, 2004

Additional Information sources: Many new drugs are being introduced annually. Drugs not found in this guide can be referenced through the “*Physician's Desk Reference*”, any nursing drug guide or web sites such as [www.webmd.com](http://www.webmd.com).

## **APPENDIX #4**

### **ADAPTIVE EQUIPMENT**

The equipment listed below is the adaptive equipment, which is currently available. All equipment should be checked before and after use to insure that it is in working order.

#### **SIT-DOWN SKIING:**

Two pieces of equipment are available for this type of skiing: The Mono-Ski and the Bi-Ski. Students with a spinal cord injury, involved states of MS, MD, C.P., spina bifida, double leg amputees, etc. will sit in some type of specially made apparatus to ski.

BI-SKI: A seat (called a "boot" or a "bucket") is mounted to a tubular frame that is attached to two short and wide, radically side cut skis. The attachment device for the skis allows them to be set on edge by just tipping the seat and tubular frame. Fixed outriggers and/or handle bars can be attached to assist the skier. The bi-ski is usually tethered with a dual tether line and always tethered if fixed outriggers are used. Some advanced skiers may use individual hand held outriggers (not fixed), self load, and ski untethered.

MONO-SKI: The molded seat and foot support are mounted on tubular frame and which is connected to a shock absorber attached to a single ski. The Dual Ski and the Twin Ski are units that make use of a device similar to the bi-ski to allow the attachment of two skis. These units perform most like a mono-ski and require good balancing skills. Outriggers are used by the student to maintain balance. Skiers can self load by raising the bucket to chairlift height.

Note: The bi-ski has a medium base of support. The mono-ski has the smallest support base, requiring good balance and independent skiing skill development.

#### **STAND UP-SKIING:**

Additional equipment is available for those students who are able to support their weight while standing.

OUTRIGGERS: "Canadian" style crutches with a ski tip mounted at the base. Regular or light weight ski tips may be used for the skis. A string/spring mechanism allows the ski to flip up for a more stable crutch position for walking, or to lay flat for sliding. They come in many different sizes and are adjustable.

WALKERS: Adjustable hospital walkers with skis attached are utilized for students with severe balance problems and who can not totally support themselves. Recommended height selection is approximately hip high. Usually two instructors are required to assist students.

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**SKI-BRA:** A clamp type device with a hook and eye assembly, which screws to the tips of the skis. The device will not damage the skis. It prevents the tips from crossing or separating but it allows the skis to be parallel and in a wedge position. This item is generally used if the skier has decreased lateral control of one or both legs. Care should be taken to prevent the skier from sliding backwards.

**SKI-BRA/TROMBONE:** This version of a ski-bra enables the student to move the skis forward and backwards, which allows a small amount of shuffling. It is much heavier than a regular ski-bra.

**EDGIE WEDGIE:** A lightweight (6") piece of rubber tubing with a small clamp and a thumb screw at each end. It does not prevent the ski tips from crossing, but loosely holds the tips together.

**BLOCKS & BUNGIES:** A permanent type of ski-bra system where holes are drilled through the tip of the ski, and they are held together by means of a chain or heavy bungee cord. Blocks can be installed on skis to prevent crossing.

**TETHERS/REINS:** Twenty foot long straps with carabiners or steel triangles that can be attached to the ski-bra to control the turn shape and speed of the student.

**HARNESS:** A strapping device that goes around the hips or waist of the student with tethers coming off each side for the instructor to control turn shape and speed.

**BLIND SKIER/GUIDE BIBS:** Bibs to be worn by blind/visually impaired skiers and their guides.

**WALKIE-TALKIES:** Used by guides for the blind/visually impaired for communication.

**SAFETY HELMETS:** A fiberglass head piece used to protect student while skiing.

**SKI LEGS/ SNOW SLIDER:** Originating from the concept of a walker with skis. These devices utilize a tubular frame for trunk and forearm support. Height and width are totally adjustable and all joints articulate. The units have adjustable edge angle and ski orientation (wedge or parallel) adjustment between the ski and the snow. It is totally adjustable for height and width of the student.

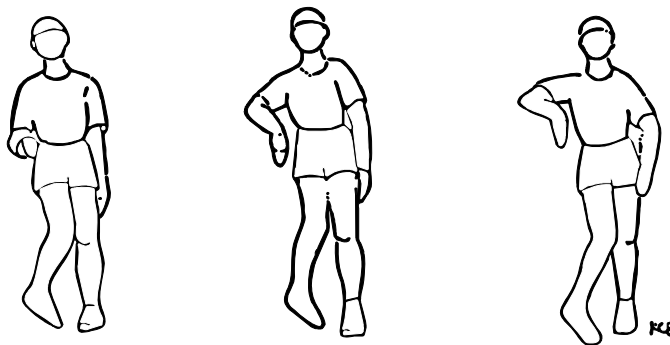
APPENDIX #5

COMMON GAITS FOUND IN ADAPTIVE SKI STUDENTS

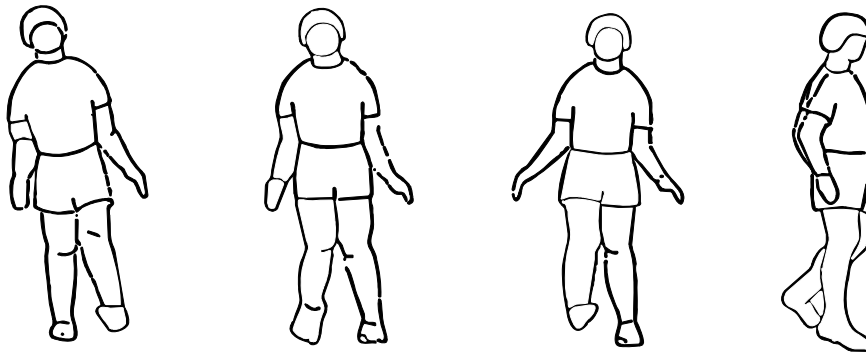
**Gait** - Manner of walking

Careful observation of the student as they walk into the ski lodge can reveal what muscles are affected and what the degree of impairment is. Sometimes impairment of gait may be caused by mechanical factors, such as disease of bones, tendons, joints or muscles. Damage or lesions at different levels of the nervous system are very important causes of gait abnormalities. A few of the most common gaits are listed and illustrated below:

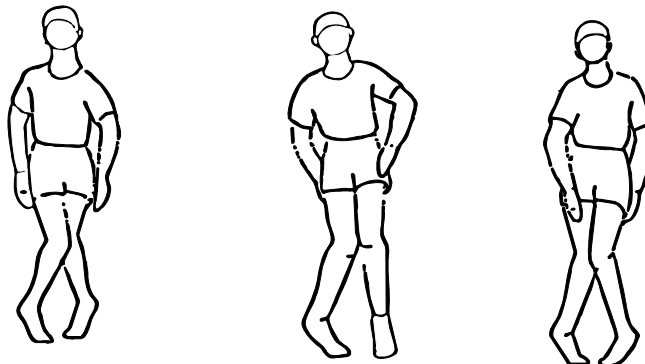
**Hemiplegic gait.** Both arm and leg on the same side are involved. Individuals lean to the affected side, may use alternate muscle groups to move into the next step and the arm on that side is held in a rigid, semi flexed position.



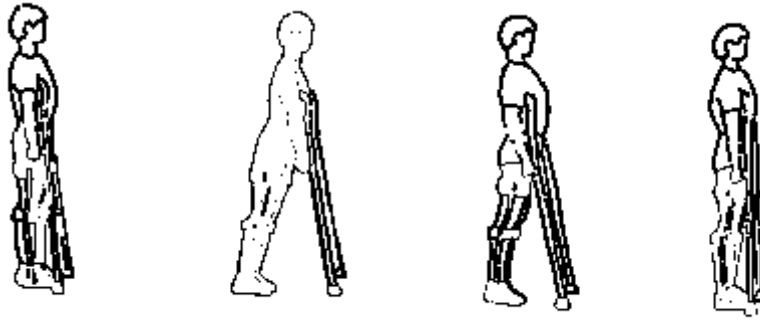
**Cerebellar gait.** Irregularity of steps, unsteadiness, and tendency to reel to one side. Problems are increased when the ground is uneven. Individual will often lean to the weighted side in order to move the opposite side through to the next step.



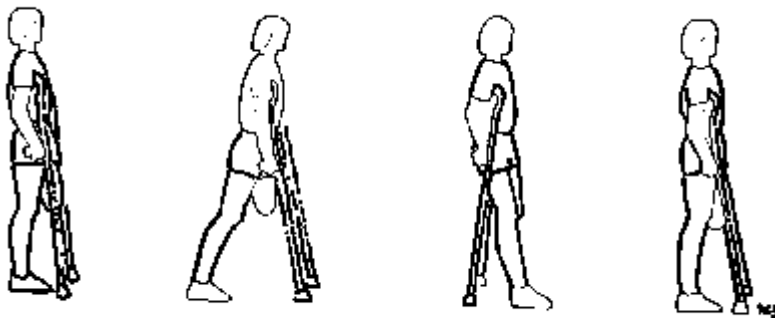
**Scissors gait.** The legs are flexed and abducted at the hip joint causing them to cross alternately in front of each other with the knees scraping together.



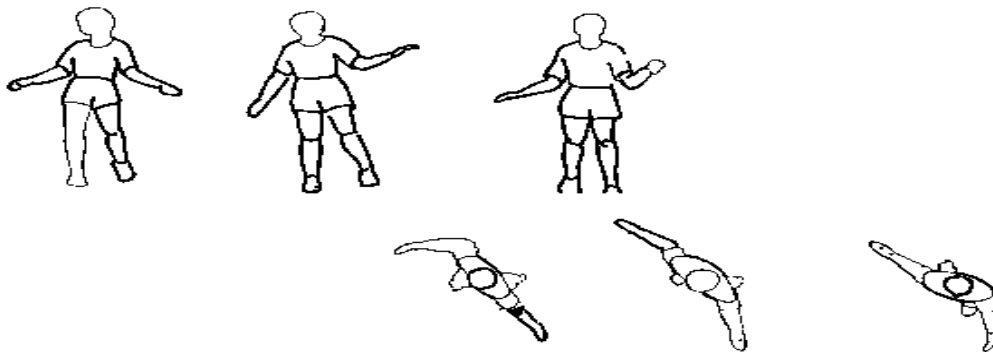
**Step to, swing to, or drag to gait.** All the weight is taken by the arms while the legs are lifted and swung or dragged forward. The pattern is lift and drop, lift and drop. A good example would be a person with spina bifida in long leg braces.



**Swing through gait.** The body is swung through the crutches so that the good foot lands in front of the crutches. Then the crutches are brought forward and the sequence is repeated. This gait is used by most leg amputees.



**Waddling gait.** This gait is very similar to the muscular dystrophy gait. Characterized by an awkward side to side waddle, the muscles are often used to initiate stepping.



**Illustrations by Kathryn Bevier**

## **APPENDIX #6**

# **BEHAVIOR MANAGEMENT**

Behavior management is used frequently in special education, particularly with some adaptive students. It is essential that the adaptive ski instructor be familiar with some of the common procedures. The first step is to discuss with the parent/guardian which techniques they use with the student. When possible, the instructor should utilize the same technique.

### **DEFINITIONS:**

#### **Behavior:**

The manner in which one acts; the actions or reactions of individuals under specific circumstances.

#### **Behaviorism:**

A theory of conduct that regards normal and abnormal behavior as the result of learned responses (conditioned reflexes) For example, behaviors learned as a response can be re-learned to respond in another, more effective/or acceptable way.

#### **Behavior Management:**

The use of behavioral teaching techniques in order to decrease instances of inappropriate behavior and to replace them with appropriate behavior.

#### **Behavior management is based on the concept of cues & consequences.**

- 1) Cue is the term for a signal, condition, command or instruction that elicits the desired response.

The following are three recommended rules to follow when giving cues:

- Make the cue as clear/brief as possible.
  - Use the same cue each time. (i.e. come, go, stay, or "ready, ski").
  - Do not repeat the cue until the student makes some kind of response. If correct response is made reinforce. If no response or incorrect action is demonstrated use a correction procedure (i.e. No, do it this way - demonstrate again).
- 2) Consequence is immediate feedback or information relative to a behavior that increases or decreases that behavior or response.
    - Aggressive behavior (i.e. hitting, scratching kicking, etc.) may require negative feedback followed immediately by positive feedback relative to desired outcomes. It may also require removing the student from the environment and activity.
    - Noncompliant behavior (i.e. I can't, I won't, I'm scared etc.) ignoring, diverting their attention, or engaging in an activity that is comfortable for them.
  - 3) The following are recommendations to be followed when enacting consequences:
    - Give immediate feedback for the student's actions.
    - Accompany nonverbal (food, tokens, hugs, etc.) with words.
    - Ignore noncompliant behavior.
    - Address/punish aggressive behavior by emphasizing positive behavior and desired result (non-physical).

#### **Behavior Management Steps:**

- 1) Determine/specify desired behavior.
- 2) Establish baseline.
- 3) Apply intervention (intervention can be as simple as praising desired behavior and ignoring other types or as complex as punishment).
- 4) Evaluate if intervention is effective (i.e. desired behavior increases).

#### **Behavior Modification and Teaching Strategies:**

Behavior modification teaching strategies are numerous and vary in their applied techniques.

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Some commonly used in teaching, they are: Operant Conditioning, Reinforcement, Punishment, Contracts and Token Economy.

- **Operant Conditioning:** Producing desired responses identified by the results rather than the stimuli. Key element in this theory is reinforcement.
- **Reinforcement:** Anything that reinforces the desired behavior or response is called reinforcement.
- **Reinforcements** come in the form of physical, verbal, visual, edible, rewards, positive, negative, immediate, delayed, group, and individual.
  - **Physical:** A pat on the back, hi-five etc.
  - **Verbal:** "That was a great demo-excellent!"
  - **Visual:** Giving the "thumbs-up" sign.
  - **Edible:** A piece of candy.
  - **Rewards:** "You have done so well, now let's take a free run".
  - **Positive:** All the above and more that reinforces the positive desired response.
  - **Negative:** The removal of non-desired action. Outlining unmet goals ("you did not do xxx) or unacceptable behavior.
  - **Immediate:** Spotlighting movements, actions while they happen, most likely verbally.
  - **Delayed:** Noting movement or desired behavior after it happens.
  - **Group:** Including the entire group for combined efforts or team work.
  - **Individual:** Working with individual to reinforce desired reaction.
- **Punishment:** A consequence that is not pleasing given in response to undesirable behavior. Anything (non-physical) that decreases the frequency of an undesired behavior. Punishment can include but not limited to the removal of a desired event or removal for desired or present environment (time out) Potential problems with punishment:
  - Punishment demands the instructor's constant attention.
  - There are ethical (and legal) constraints on its use.
  - The instructor may be viewed as a negative reinforcer.
  - The student may experience behavioral paralysis or may react emotionally or aggressively.
  - The student may attempt to avoid the instructor or program.
  - Punishment may lead to learned helplessness.

**Contracts:** An understanding/agreement between student and teacher clearly stating what is to be learned (behavior required) and consequences of both learning (behavior required) or not learning.

**Reward:** A token/point system where the student is rewarded tokens/points for appropriate behavior. The tokens/points should be meaningful to the student and should be traded in at the end of the day for a reward or privilege (i.e. hot chocolate, play instructor for the last run etc.).

**Token Economy:** Secondary reinforcers that are earned, collected and then redeemed for other reinforcer such as trinkets, pins, food etc.

**Timeout:** Removal from activity to a predetermined quiet place if activity becomes so stimulating that a student cannot control negative behavior.

### **Concluding comments about behavior management:**

- 1) Reinforce desired behavior.
- 2) Praise student when student attempts or does a task correctly (Catch them being good).
- 3) Aggressive behavior needs firm action followed by information and positive reinforcement of desired behavior/outcomes.
- 4) Discuss techniques with parent/guardian that other instructors have used with student.
- 5) If a system that works well, tell the parent/guardian so they can tell the instructor next time.

**APPENDIX #7**

**ADAPTIVE RECOMMENDED READING LIST**

PSIA (2003) **PSIA Adaptive Snowsports Instruction Manual**  
PSIA (2007) **PSIA Alpine Technical Manual** (2nd ed)  
Linda J. Crockett (2001) **Core Concepts For Snowsports Instructors**, PSIA  
O'Leary, Hal (1994). **Bold Tracks** (3rd ed.), Colorado, Cordillera Press  
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PSIA (1996) **PSIA Children's Instruction Manual**  
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Nat'l. Ctr. for Health Statistics (1998). **Professional Guide to Diseases** (6th ed.) Springhouse  
Venes, Donald (2001). **Taber's Cyclopedic Medical Dictionary**, F.A. Davis Co.  
Sherrill, Claudine (1986). **Adapted Physical Education and Recreation** (3rd ed.) Time Mirror Higher Education Group  
Stolov & Clowers (1981). **Handbook of Severe Disability U.S. Department of Education Rehabilitation Services Administration**  
Weisberg, Strub & Garcia (1983). **Essentials of Clinical Neurology University Park Press Chairperson of Reporting Task Force**  
Frances, Allen (MD) (1994) **Diagnostic & Statistical Manual of Mental Disorders** (4th ed.) (DSM-IV) American Psychiatric Association  
Campbell, Claire RN (2002) **Illustrated Manual of Nursing Practice** Springhouse Corp.

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