

SKI INSTRUCTOR ADAPTIVE NOTES

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The following are notes regarding Alpine Adaptive Skiing. Sources include PSIA manuals, study guides from various PSIA Divisions, & internet sources. It is not intended to replace any professional document, but to provide a way to help an adaptive instructor better prepare for a certification exam or to become a better informed adaptive instructor.

Responsibility Code—Repeat often & at every opportunity; continually reinforce (Note: Use time on chairlift to reinforce elements of Responsibility Code); Point out issues w/snowboarders' inability to see when making heel side turns (because of how they are attached to board); Remind skiers to give boarders plenty of room on heel side &, if possible, call out "heel side" (related to skiers below have right of way)

- Stay in control
- Skiers below have right of way
- Stop in safe place
- Always look & yield when starting
- Follow rules & signs
- Use safety devices
- Know how to safely use lifts

BEHAVIOR MANAGEMENT. When people act out, they are looking for:

- Attention (Good or Bad)
- Access to Something
- Escape/Avoidance
- Sensory Overload

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

- **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).
- **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. The instructor should try to determine the cause of the behavior.
 - 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.
- Recommendations to be followed when enacting consequences:
 - Give immediate feedback for the students' 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. Some commonly used in teaching, they are: Operant Conditioning, Reinforcement, Punishment, Contracts and Token Economy.

- **Operant Conditioning:** Behavioral changes in a person's response to events or stimuli that occur. In different words, 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, high-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 reinforcers 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.
- 3) Aggressive behavior needs firm action followed by information and positive reinforcement of desired behavior/outcomes.
- 4) Discuss techniques with parent/guardian that can be used with student.
- 5) If you figure out a system that works well, tell the parent/guardian so they can tell the instructor next time.

Child Behavior Management

- Key component of children teaching is structure; Structure provides comfortable, secure environment that help kids gain sense of responsibility
- Four principle pillars of structure
 - Practice what you preach
 - Be a role model
 - Be a good listener
 - Be consistent
- Create group culture; Decide on team name
- Establish expectations
- Help students learn to be responsible
- Determine rules & consequences (rules in positive way)
- Specific consequences for misbehavior & follow up
- Praise appropriate behavior publicly
- Discuss inappropriate behavior (reprimand one-on-one away from group)
- Be fair & consistent
- Reprimand is over when it is over

SKIING LEVELS

Level 1 Skiing—Introduction to skiing. Become familiar with environment & equipment, develop mobility & skier movement pattern (boot drills), athletic stance, perform straight runs across gravity line & stop; learn how to get up; pinwheel turn to change direction, skating/herringbone, ride beginner terrain lift or magic Carpet. Objectives:

1. Become familiar w/the new skiing environment & equipment.
2. Develop mobility & skier movement patterns indoors & on snow; explore the gravity line.
3. Develop an athletic stance through mobility.
4. Perform straight runs across the gravity line & come to a stop; glide & traverse on an incline; stop on an incline.
5. Learn how to get up after fall.
6. Make a pinwheel turn to change direction.
7. Learn skating/herringbone movements.
8. Ride a beginner-terrain lift or magic carpet.
9. Ski in a group, then in a line w/speed control.

Level 2 Skiing—Introduction to Turning. Objectives:

1. Turn out of the Gravity Line and come to a stop.
2. Control speed while gliding w/varying wedge size.
3. Change direction w/linked turns.
4. Get up after fall.
5. Develop turn shape relative to terrain.
6. Apply a variety of stopping methods.
7. Ride a beginner terrain lift, magic carpet, or chairlift.
8. Master the beginner area.

Level 3 Skiing—Introduction to Green Terrain. Linking shaped turns w/open wedge &/or spontaneous parallel w/rhythm & confidence on beginner slopes. Objectives:

1. Match skis in a traverse.
2. Learn to control speed by turning & start linking turns.
3. Hone skills, develop rhythm, & build confidence.
4. Vary turn shapes & sizes.
5. Begin to manage speed & turn shape through skidding.
6. Become more proficient with sidesteps, herringbone, & skating.
7. Ski green trails.

Level 4 Skiing—Mastering Green Terrain. Skiers use a variety of parallel & wedge Christie turns on green slopes & are developing the ability to use turn shape & skidding for speed control.

1. Apply current skills to new terrain & conditions.
2. Enhance athletic stance.
3. Consistently manage speed & turn shape through skidding.
4. Match skis at the gravity line.
5. Vary turn shape according to terrain & situations.
6. Do hockey stops in both directions.

Level 5 Skiing—Skidded round turns on all green & easy blues & venturing into variable conditions. They may start turns w/parallel or wedge movements that match early in the turn (wedge Christies) & consistently stop in both directions w/parallel skis. Objectives:

1. Carry poles & begin to use them correctly.
2. Explore turn shape to control speed.
3. Achieve simultaneous edge release for parallel turns on blue terrain.
4. Perform basic parallel turns on blue terrain.
5. Introduction to powder & cut-up snow conditions on blue terrain.
6. Introduction to easy bumps.

Level 6 Skiing—Mastering blue terrain w/introduction to black terrain. The skier uses a parallel turn on all groomed, blue slopes but may still initiate the turn using a wedge Christie on more difficult terrain. Can safely explore all blue slopes. Carry poles for balance & are learning to use pole swing & touch to enhance their parallel turn in ungroomed terrain. Objectives:

1. Link open parallel turns on blue terrain.
2. Develop edging skills for carving.
3. Perform short-radius turns while developing upper-lower-body independence.
4. Ski blue bumps.
5. Explore powder, crud, & cut-up snow conditions.

Level 7 Skiing—Linking parallel turns on all blue & some black terrain w/speed control.

The skier is comfortable making parallel turns on all blue slopes; easier groomed black terrain; & skiing easier blue bumps in control. In short turns, the skier should have some upper- & lower-body independence w/speed control. Objectives:

1. Link parallel carved turns on groomed green & blue terrain.
2. Use poles to help w/rhythm & moving into the next turn.
3. Perform short-radius turns using upper- & lower-body independence in a variety of conditions.
4. Ski blue & easier (single-diamond) black bumps.
5. Explore powder, crud, & cut-up snow conditions.

Level 8 Skiing—Mastering the mountain. Skiers are comfortable on any blue and all single-diamond blacks. Terrain may be a bit intimidating & make them defensive. They are challenged, but want to explore double-diamond black terrain & variety of snow conditions.

Objectives:

1. Carve turns, leaving two lines in the snow on groomed blue & easier black terrain.
2. Perform turns w/speed control in the gravity line on variable black terrain.
3. Ski the gravity line w/speed control in double-diamond black bumps.
4. Ski boot-top powder on any slope.

Level 9 Skiing—Skiing any turn, anywhere, anytime, in any snow condition. The skier makes dynamic parallel turns on all smooth slopes. Subtle issues may need to be addressed. The skier is able to adapt skills to all situations. Objectives:

1. Carve medium- & long-radius turns on any trail w/consistent pitch.
2. Use dynamic skills in short-radius turns.
3. Explore different tactics for skiing bumps.

4. Explore different tactics for skiing variable snow conditions.

VISUAL IMPAIRMENT

Visual Impairment Classification

- V11 Totally Blind—Able to distinguish between light & dark, but not shapes
- V12 Partially Sighted—Best correctable vision up to 20/600 &/or a visual field of 5 degrees
- V13 Partially Sighted—Best correctable vision from 20/600 to 20/200 &/or a visual field from 5 to less than 20 degrees
- Legally Blind—Visual acuity of 20/200 or a peripheral field restriction of 20 degrees or less in the better eye

Visual Impairments (Leading cause of visual impairment—aging)

- **Albinism**—overly sensitive to light, abnormal eye movement (nystagmus) (Hereditary)
- **Amblyopia**—uncorrectable poor vision not due to any observable disease (Congenital?)
- **Astigmatism**—common vision condition due to improper curvature of the cornea, the lens or the retina. This results in blurred vision.
- **Cataracts**—protein in lens that clouds vision (hereditary, congenital, or chemical)
- **Color Blindness**—mostly in males (normally red-green); complete can result in black & white (hereditary, poisoning, retinal diseases, or damage to optic nerve)
- **Congenital Eye Defects**—Existing at or dating from birth (hereditary, disease, nutritional deficiency or chromosomal mutation). Glaucoma, abnormally small eyes, defects of iris, retina, cornea, lens or optic nerve
- **Corneal Disease**—Result of injury or disorder within the cornea and may cause blurred vision or blindness.
- **Detached Retina:** A painless condition in which retinal layers split and space fills with fluid. Usually caused by trauma. Symptoms depend on the location and extent of the detachment. May cause blindness or visual problems; eye floaters; hazy vision; loss of peripheral vision or loss of vision in one half of the visual field; perceived flashes of light. Central vision may become severely affected if the macula becomes detached.
- **Diabetic Retinopathy**—Progressive impairment of circulation in the eye. Diabetes damages the tiny blood vessels—Two types
 - Non-proliferative—milder & more common—damage to macula
 - Proliferative—severe & may cause total blindness, bleeding in back of eye, scar tissue, & retinal detachment
- **Diplopia (double vision):** The simultaneous view of two images of a single object. May occur in one or both eyes. Seen in diseases of the eyeballs, cranial nerve affections, and disease of the cerebellum, cerebrum, and meninges.
- **Dry Eye**—eye does not produce tears
- **Glaucoma**—failure of pressure regulation of eye; causes nerve damage, loss of vision
 - Chronic—gradual rise in pressure, progressive loss of peripheral vision & if not controlled loss of central vision & blindness
 - Acute—Sudden onset characterized by pain, Severe eye damage may occur quickly
- **Hemianopia:** loss of vision in either or both eyes, commonly caused by a CVA or brain injury.

- **Hyperopia:** Visual defect in which near objects appear blurred. Hypertension—can cause bleeding in eye
- **Macular Degeneration**—Leading cause of legal blindness in elderly. Progressive disease. Macular degeneration is caused by the deterioration of the central portion of the retina, the inside back layer of the eye that records the images we see and sends them via the optic nerve from the eye to the brain. The retina's central portion, known as the macula, is responsible for focusing central vision in the eye, and it controls our ability to read, drive a car, recognize faces or colors, and see objects in fine detail.
 - Wet—most severe & involves the growth of leaky blood vessels beneath the central retina
 - Dry—Flecks of yellow material (drusen) form on surface of retina & vision cells atrophy
- **Multiple Sclerosis**—Neurological disability affecting nerve fibers that degenerate & become scarred or sclerosed (cycles of good & bad days). MS is at least two to three times more common in women than in men, suggesting that hormones may also play a significant role in determining susceptibility to MS. And some recent studies have suggested that the female to male ratio may be as high as three or four to one. More prevalent in Caucasians.
- **Myopia**—near sightedness
- **Nystagmus**—both eyes oscillate (congenital or trauma or neurological disease)
- **Ophthalmoplegia:** Paralysis or weakness of ocular muscles which may cause double vision, nystagmus or muscular problems in the face.
- **Optic Nerve Disease**—mild loss of acuity to enlarged blind spot to total loss of vision (congenital, MS, tumors, glaucoma, high blood pressure, diabetes, nutritional deficiencies, chemical poisoning)
- **Retinal Breaks or Detachments**—Vision lost wherever retina becomes detached (symptoms dark or irregular floaters & bright flashes of light or blurred vision at edges)
- **Retinitis Pigmentosa**—night blindness. A rare, inherited disease in which the light-sensitive retina of the eye slowly and progressively degenerates. Eventually, blindness results. Degeneration of rods & cones of retina. Total blindness may result
- **Strabismus**—when both eyes don't face in same direction; Strabismus is a disorder in which the two eyes do not line up in the same direction, and therefore do not look at the same object at the same time. The condition is more commonly known as "crossed eyes." Imbalance of 12 muscles that control eye movement (congenital, disease, or trauma)
- **Traumatic Injuries**—Partial to complete vision loss (Inorganic)
- **Tunnel Vision**—visual field less than 20 degrees

Visually Impaired Directional Commands

- Clock System where 12 is always to skier's front
- Verbal Commands—Left turn, turn, turn, turn (continue turn), and (preparatory) right turn, turn, turn, turn, and stop turn
- Auditory Cues—Tap ski poles, ring bell (must be constant)
- Grid System—Run is divided into 10 sections from left to right with width being X yards (best for experienced skier w/some sight)
- Descriptive—Used to describe terrain (dip, washboard, flats, steeps, bumps, small mounds, etc.)

Visually Impaired Emergency Command—Word that requires the student to stop or drop immediately; (not stop); Suggestion—Drop; If they can't hear you—Stop!

Blind Guiding (Ask for their preferred way)

- Hold your arm
- If crowded, hand on shoulder & walk behind you
- On slopes
 - Front, skiing backwards
 - Guide from side
 - Guide from behind
 - Guide from front, skiing forwards (used w/advanced skiers) (best w/headsets)

COGNITIVE (DEVELOPMENTAL) DISABILITIES MEDICAL

- **Congenital**—Present at birth, inherited, acquired during pregnancy, or a result of birth process
- **Hereditary**—Genetic
- **Perinatal**—Occurring during birth process
- **Perservation**—Behavior person cannot stop once started even if they want to stop
- **Postnatal**—Occurring after birth
- **Prenatal**—Existing or occurring before birth

Neurodevelopmental Disorders—Any condition resulting from congenital abnormalities, trauma, disease, or deprivation that interrupts or delays normal growth & development including physical. Onset before 18 and indefinite duration. Mental retardation, cerebral palsy, autism, epilepsy, & Down Syndrome

- **Autism Spectrum Disorder (ASD)**—Lack of sensory filters as seen in Behavior, Self-Stimulation, Communication, and Social Interactions. Autism is a developmental disorder that is characterized by impaired development in communication, social interaction, and behavior. Statistics about autism include that it afflicts one out of every 88 children, a 78% increase in the past 10 years. The group of disorders that formerly included autism, pervasive developmental disorder, not otherwise specified (PDD-NOS), Asperger's syndrome, and sometimes Rett's disorder and childhood integrative disorder are now referred to as autism spectrum disorders. The range of these disorders varies from severely impaired individuals that were formerly described as suffering from autism to other, more high-functioning individuals who have abnormalities of social interaction but normal intelligence, who were described as having Asperger's syndrome. The ways in which autism spectrum disorders are exhibited can differ greatly. Additionally, autism can be found in association with other disorders such as mental retardation and certain medical conditions. The degree of autism can range from mild to severe. Mildly affected individuals may appear very close to normal. Severely afflicted individuals may have an extreme intellectual disability and be unable to function in almost any setting. The current Diagnosis and Statistical Manual of Mental Disorders, fifth edition (DSM-V) identifies two features that are associated with autism: impairment in social interaction and communication, and behavior. The most common types of autism are:
 - **Asperger's Syndrome**—the mildest form, marked by obsessive interest in an extremely narrow range of topics, impaired social skills and often a lack of physical coordination.
 - **PDD-NOS**—Pervasive Developmental Disorder, Not Otherwise Specified. Applies to most people with ASD. Impaired social interaction and language skills. Fewer repetitive behaviors than Asperger's Syndrome or Autistic Disorder.
 - **Autistic Disorder**—More severe impairments involving social and language functioning.
 - **Repetitive behaviors**—Often includes intellectual disability (mental retardation) and seizures.
 - **Childhood Disintegrative Disorder (CDD)**—Most severe and least common. After a period of normal development (usually 2-4 years), child rapidly loses

social and language skills and intellectual abilities. Lost function is not recovered. Often includes a seizure disorder.

- **Cerebral Palsy**—Usually have some forms of developmental disability due to injuries to brain (congenital or postnatal, i.e., oxygen debt or brain bleed).
- **Cognitive Disability**—Damage or deterioration of the brain that affects ability to process information, coordinate & control the body, &/or move in space. Physical, cognitive, & behavioral deficits of varying degrees
 - Progressive—continue to develop w/deteriorating effects
 - Static—no change
 - Remission—effects seem to decrease
 - Organic—related to disease, an acquired brain injury (Alzheimer’s, Parkinson’s, Huntington’s, cerebrovascular disease, brain tumor)
 - Non-organic—injury or trauma to brain (TBI)
- **Down Syndrome**—Down syndrome (also called Trisomy 21) is a genetic disorder that occurs in approximately 1 of 830 live births. It is the leading cause of cognitive impairment. Down syndrome is associated with mild to moderate learning disabilities, developmental delays, characteristic facial features, and low muscle tone in early infancy. Many individuals with Down syndrome also have heart defects, leukemia, early-onset Alzheimer's disease, gastro-intestinal problems, and other health issues. The symptoms of Down syndrome range from mild to severe. The most common condition associated with Down syndrome is cognitive impairment. Cognitive development is often delayed, and all individuals with Down syndrome have mild to severe learning difficulties that last throughout their lives. How the extra chromosome 21 leads to cognitive impairment is not entirely clear. The average brain size of a person with Down syndrome is small and scientists have found alterations in the structure and function of certain brain areas such as the hippocampus and cerebellum. Particularly affected is the hippocampus, which is responsible for learning and memory. Although the severity of Down syndrome ranges from mild to severe, most individuals with Down syndrome have widely recognizable physical characteristics. These include:
 - a flattened face and nose, a short neck, a small mouth sometimes with a large, protruding tongue, small ears, upward slanting eyes that may have small skin folds at the inner corner (epicanthus fold);
 - white spots (also known as Brushfield spots) may be present on the colored part of the eye (iris);
 - the hands are short and broad with short fingers, and with a single crease in the palm;
 - poor muscle tone and loose ligaments are also common; and
 - development and growth are usually delayed and often average height and developmental milestones are not reached.
- **Epilepsy**—Epilepsy is a brain disorder in which clusters of nerve cells, or neurons, in the brain sometimes signal abnormally. Neurons normally generate electrochemical impulses that act on other neurons, glands, and muscles to produce human thoughts, feelings, and actions. In epilepsy, the normal pattern of neuronal activity becomes disturbed, causing strange sensations, emotions, and behavior, or sometimes convulsions, muscle spasms, and loss of consciousness. Epilepsy is a disorder with many possible causes. Anything

that disturbs the normal pattern of neuron activity -- from illness to brain damage to abnormal brain development -- can lead to seizures.

- **Fetal Alcohol Syndrome (FASD)**—One of leading causes of mental retardation
 - Small size & weight before & after birth
 - Small head size
 - Small eyes &/or short eye openings
 - Underdeveloped upper lip
 - Impaired brain function. Some degree of brain damage
 - Extreme activity, easily distracted, impulsive, bad judgment, communication problems
- **Fragile X Syndrome**—Chromosomal abnormality (boys more severely affected than girls—80% of boys severe mental retardation to low). Results in mental retardation or autism. Leading cause of mental retardation (second only to Downs Syndrome). Responsible for 1 in 10 cases of autism.
 - Cognitive—mental impairment, attention deficit, hyperactivity, anxiety, unstable moods, poor eye contact, certain hand mannerisms (hand flapping & biting), violent outbursts, depression, learning disabilities (especially math)
 - Physical—slightly elongated faces, oversized or cupped eyes, flat feet, enlarged testicles, hyper-extensible joints
- **Mental Retardation** (Mild: 50-70 IQ (85%); Moderate: 25-50; Severe: 25 & below. The condition of having an IQ measured as below 70 to 75 and significant delays or lacks in at least two areas of adaptive skills. Mental retardation is present from childhood. Between 2 and 3 percent of the general population meet the criteria for mental retardation. Causes of mental retardation include fetal alcohol syndrome and fetal alcohol effect; brain damage caused by the use of prescription or illegal drugs during pregnancy; brain injury and disease; and genetic disorders, such as Down syndrome and fragile X syndrome. Treatment of mental retardation depends on the underlying cause. In some cases, such as phenylketonuria and congenital hypothyroidism, special diets or medical treatments can help. In all cases, special education starting as early in infancy as possible can help people with mental retardation maximize their abilities.
- **Pervasive Development Disorder (PDD)**—bio-neurological disorder that affects brain functions No known cause or cure. Usually diagnosed 18 to 36 months. 3rd most common form of DD
 - Shuns normal human interaction
 - Impaired ability to understand messages (slowness)
 - Problems w/senses
 - Hearing & language disorders (some non-talkative)
 - Inappropriate social response
 - Sleep disturbances
 - Seizures
 - Aggression
 - Repetitive actions
 - May injure self
 - Constantly moving body parts
 - Engage in destructive behavior
 - Shows insensitivity to pain

- o Completely isolates self from all others including parents
- **Rett's Syndrome**—A rare neurological genetic disorder that causes severe muscle movement disability. The commonly noted symptoms are as follows:
 - o Slowed growth like in microcephaly
 - o Repetitive jerky movement of limbs
 - o Delayed speech and loss of communication skills
 - o Agitation and irritability
 - o Seizures
 - o Irregular heartbeat and breathing
 - o Scoliosis
 - o Abnormal muscle stiffness
 - o Sleep disorders
 - o Gastrointestinal problems such as constipation
- **Specific Learning Disorders (SLD)**--A specific learning disability (SLD) is a neurological disorder that affects the ability to process information. It can affect how well a student does in school. It affects reading, writing, math, and speech. SLD can also affect attention span, organization, and memory skills.
 - o **ADH(hyperactivity)D**—includes hyperactivity
 - Always in trouble
 - Easily frustrated
 - Difficulty finishing tasks
 - Doesn't respond to normal discipline
 - Needs instant gratification
 - Impulsive & unpredictable
 - Destructive & aggressive
 - Difficulty concentrating & following directions
 - Easily confused if asked to do 2 things simultaneously
 - Difficulty sitting still
 - May engage in actions dangerous to self
 - May show excessive & inappropriate fear to new & changing situation
 - o **Attention Deficit Disorder**—Neurological (physical disease) deficiency in neurotransmitters, normal or better intelligence. Easily distracted, short attention span, impulsive behavior
 - o **Dyslexia**—A learning disability which affects skills involved in reading, spelling and writing. This can be caused by different things including genetics, a brain injury, illness, and a bad eye. Children with this condition will have normal intelligence and normal vision.
 - o **Dyscalculia**—A math disorder wherein a student has trouble with basic math skills.
 - o **UADD (Undifferential Attention Deficit)**
 - Passive in nature
 - Tends to be very inattentive
 - Problems w/organization & distractibility
 - Often under-diagnosed

Neurocognitive Disorders--In reality, nearly any type of insult (infection, head trauma, etc.) that causes dysfunction in the brain (a neurological disorder) results in alterations in thinking, emotions, perceptions and/or behavior patterns and the most recently coined term is neurocognitive disorder. We use this term because it offers a more complete description of what the issues are. 'Neurocognitive' is more specific, addressing the link between deregulated brain function and behavior/emotion/perception and/or cognition.

- **Alzheimer's Disease**—A type of brain disorder that causes problems with memory, thinking and behavior. This is a gradually progressive condition.
- **Aphasia**—Aphasia is a disorder that results from damage to portions of the brain that are responsible for language. For most people, these are areas on the left side (hemisphere) of the brain. Aphasia usually occurs suddenly, often as the result of a stroke or head injury, but it may also develop slowly, as in the case of a brain tumor, an infection, or dementia. The disorder impairs the expression and understanding of language as well as reading and writing. Aphasia may co-occur with speech disorders such as dysarthria or apraxia (A disorder of the nervous system in which the individual is unable to perform tasks or movements already learned, even though the muscles and senses work properly) of speech, which also result from brain damage. Someone with **Receptive Aphasia** has difficulty understanding or producing any form of language; what is read or heard may be meaningless. Those with **Expressive Aphasia** often cannot express a complete thought. When communicating to people with aphasia, use simple sentences and questions. Using gestures as well as words may also be helpful.
- **Cerebrovascular Accident (CVA)**—Occurs when the supply of blood to the brain is reduced or blocked completely, which prevents brain tissue from getting oxygen and nutrients, i.e., stroke.
- **Chronic Traumatic Encephalopathy (CTE)**—Chronic traumatic encephalopathy (CTE) is the term used to describe brain degeneration likely caused by repeated head traumas. CTE is a diagnosis made only at autopsy by studying sections of the brain. CTE is a rare disorder that is not yet well understood. CTE is not related to the immediate consequences of a late-life episode of head trauma. CTE has a complex relationship with head traumas such as persistent post-concussive symptoms and second impact syndrome that occur earlier in life.
- **Huntington's Disease**—A condition that leads to progressive degeneration of nerve cells in the brain that affects movement, cognitive functions, and emotions.
- **Parkinson's Disease**—A chronic and progressive movement disorder that initially causes tremor in one hand, stiffness or slowing of movement.
- **Traumatic Brain Injury (TBI)**—Traumatic brain injury usually results from a violent blow or jolt to the head or body. An object that goes through brain tissue, such as a bullet or shattered piece of skull, also can cause traumatic brain injury. Mild traumatic brain injury may affect your brain cells temporarily. More-serious traumatic brain injury can result in bruising, torn tissues, bleeding and other physical damage to the brain. These injuries can result in long-term complications or death.
- **Temple Grandin**—Defect in systems processing w/over or under reactions to stimulus. Often withdraws from environment & people. Stays in own inner world.

Trauma- and Stressor-Related Disorder—This includes post-traumatic stress disorder.

- **Post-Traumatic Stress Disorder (PTSD)**— Post-traumatic stress disorder (PTSD) is a mental health condition that's triggered by a terrifying event — either experiencing it or witnessing it. Symptoms may include flashbacks, nightmares and severe anxiety, as well as uncontrollable thoughts about the event. Most people who go through traumatic events may have temporary difficulty adjusting and coping, but with time and good self-care, they usually get better. If the symptoms get worse, last for months or even years, and interfere with your day-to-day functioning, you may have PTSD.

THREE-TRACK

Common disabilities: amputation (results of cancer, diabetes, blood clots, accident, trauma), congenital anomalies, limb deficiency (loss of function caused by strokes, TBI, polio)

- Disabilities requiring one ski and two outriggers: Above the knee amputation, Below the knee amputation w/less than 4” stump, Post Polio, Trauma, Hemipelvectomy, Hip disarticulation, Double amputee w/above the knee amputation and below the knee with more than 4” stump (requires prosthesis), atrophied leg
- Disabilities requiring one ski and one outrigger: Individuals with one arm and one leg.

Key assessments for amputees (Protect the stump from cold and possible impact):

- When amputation occurred
- Present condition of residual limb
- Whether the residual limb is properly wrapped & padded

Amputations. Look for the cause of the amputation. If due to cancer 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); they may need to eat or take medication on a certain schedule. (Some diabetics also have low vision or blindness.) 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. If the student’s prosthesis includes a hook, make sure it is covered to prevent injury. Be aware that falls can cause internal or external bleeding for those using a blood thinner.

- **AE:** Above elbow.
- **AK:** Above knee - usually skis without prosthesis.
- **BE:** Below elbow.
- **Bilateral:** Amputations on both sides. This can include: amputation of both legs, amputation of both arms, amputation of an arm on one side and leg on the other. (Arm and leg amputees usually ski on one ski with one outrigger).
- **BK:** Below knee – Generally, if the stump is four inches or longer and the skin is in good condition, the individual may ski with prosthesis.
- **Hemipelvectomy:** Amputation of half of the pelvis and the associated leg.
- **Hip disarticulation:** Amputation at the hip joint (this preserves the pelvis and the soft tissue to the buttocks); usually skis without prosthesis
- **Shoulder disarticulation:** amputation below the shoulder socket.
- **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. (e.g., a unilateral BK/BE could ski on both skis with one outrigger).

Atrophied leg—assess circulation, feeling, & ability to control movements

Ski length should be determined by height and weight of skier, but should be slightly longer to make up for absence on one ski. Ski may require canting (pronation or supination) in order to make the ski flat. If the skier is edging during a straight run it may indicate:

- Boot is too loose
- Need for canting
- Student finding difficult to balance
- Terrain is too steep
- Student is anxious and wants to slow down or stop

Outriggers should be about one inch above the ground while standing with the rigger in the ski position. They will be shortened as the student progresses. The four basic functions served by outriggers are: (1) Balance, (2) Propulsion, (3) Slowing, & (4) Turning.

3-Track Teaching Progression

- Body position w/riggers shoulder width apart approximately $\frac{1}{2}$ way between boot & tip
- Hop Turn—Change position in static position
- Getting Up after Fall—Position stump up hill, remove uphill rigger & push up
- Climbing—Side step up hill with stump uphill, hopping the ski uphill
- Straight Run—See body position
- Straight Run Stop—Use the outriggers as brakes by lowering the elbows to hips and push into the bottom of the outriggers
- Chair Lift—Always put riggers into ski position for loading to prevent breaking and possible injury. Outriggers should never be removed while riding the chair lift. Unload as straight run.
- Traverse—Use the edge of the ski to allow the ski to “turn uphill” and stop. Can add braking with outriggers. Add garlands by flattening the ski and allow the ski to drift downhill and then reengage the edge.

FOUR TRACK

Common disabilities: aneurisms, cerebral palsy, post polio, spina bifida, arthrogryposis, muscular dystrophy, multiple sclerosis, congenital defects, or traumatic accident that cause balance problems or general weakness in the lower extremities. Key considerations are:

- Will stance be parallel or wedge?
 - Can they balance without assistance?
 - Can they keep skis flat without canting or slant boards?
 - Will they use outriggers, walker, or Snow Slider?
 - Are there additional physical, emotional, or motivational problems?
-
- Disabilities using Outriggers plus ski bra or bungi cord: Lack lateral control; Inability to walk without assistance of crutches or cane; Atrophied leg
 - Disabilities using Outriggers plus slant board with toe raised: Tendency to fall forward, walk on toes or lean heavily on crutches or walker (lengthen outriggers accordingly)
 - Disabilities using Outriggers plus slant board with heel raised: Pronounced backward lean

Atrophied leg—assess circulation, feeling, & ability to control movements

You should not use heel stabilizers without a tip stabilizer

Ski length—If student is weak, a shorter ski should be considered. Those using slant boards should have slightly longer skis.

Three- and Four-Track Objectives

Beginner/Novice Zone Objectives

Level 1: Welcome to skiing / Build the foundations

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

Level 2: Introduction to Turning

*Note: Turning at this level is achieved through **balance** and **rotary skills**.*

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

Level 3: Introduction to Green Terrain

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

Intermediate Zone Objectives

Level 4: Mastering Green Terrain

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

Level 5: Developing Skills to Enhance Parallel Skiing

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

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

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

Advanced Zone Objectives

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

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

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

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

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

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

SLIDER

Designed to provide great stability for those having challenges standing up due to balance, strength, or endurance. Sliders may be used for 3-track/4-track, bi/mono, or dual ski candidates. It can be used as an entry-level apparatus to stand-up skiing as well as physical therapy for sit-skiers. It can also be used for those with diminished cognitive understanding or even psychological fear.

Sliders are restricted to BEGINNER Terrain ONLY (PSIA Adaptive Alpine Technical Manual, page 38).

Common disabilities: Amputation, balance impairments, cancer, cerebral palsy, cerebrovascular accident/stroke, congenital anomalies (hip, leg, foot), epilepsy, limb deficiency, MS, MD, paralysis & paresis, polio, post polio syndrome, spina bifida, spinal cord injury, TBI

Adjustments to the slider such as height, width, arm position, tipping angle, wedge angle, etc. Consideration should be made for tip and heel stabilization with the use of ski bras, spacer bar, pipes, edgie wedgies, etc.

Slider should be tethered if student cannot stop by themselves or cannot perform a sudden stop.

Chair Lift Operations. Slider can be sent up ahead or behind or loaded directly in front of an adult or carried by the instructor. It depends!

BI-SKI

Types of Disabilities Common to Bi-Skiers: These are some of the most common disabilities for which a bi-ski may be used:

- Amputation
- Balance Impairments
- Cerebral Palsy (CP)
- Cerebrovascular Accident (CVA/stroke)
- Epilepsy
- Limb Deficiency
- Mental Retardation
- Multiple Sclerosis (MS)
- Muscular Dystrophy (MD)
- Neuromuscular Diseases
- Paralysis & Paresis
- Polio
- Post Polio Syndrome
- Spina Bifida
- Spinal Cord Injury (SCI)
- Traumatic Brain Injury

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

For spinal cord injuries, a general rule of thumb is that a student with a T-6 and lower level of injury uses a mono-ski. Students with 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. In addition, a person may have an *incomplete spinal cord injury*. This means that there is some level of motor and/or sensory function below the level of injury. Some medical concerns associated with bi-skiers include bowel/bladder management program (e.g., leg bag, catheter, etc.), pressure sores, spinal fusion, spasticity, sensitivity to hot or cold, and poor circulation. Another point of concern is autonomic dysreflexia. This is a potentially life-threatening, hypertensive occurrence produced by the body's inability to sense and react to specific stimuli. Possible symptoms include a feeling of impending doom, flushing of the skin, sweating, blurred vision and 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 anyone suspects autonomic dysreflexia, immediate action must be taken to eliminate the cause. The student is kept upright, straps are loosened and he/she is taken to a warm place. Ski Patrol should be called immediately—this is a medical emergency. Medications taken by the student can also be a source of concern, so it is important to determine any side effects the student may be experiencing. Additionally, it is valuable to know other activities in which the student participates. Much of this information can be obtained from the student, parent or guardian, as well as from the student's application or evaluation.

Beginner / Novice Zone Objectives

Level 1: Welcome to skiing / Build the foundation

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

Level 2: Introduction to Turning

*Note: Turning at this level achieved through **balance and edging skills***

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

Level 3: Introduction to Green Terrain

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

Intermediate Zone Objectives

Level 4: Mastering Green Terrain

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

Level 5: Developing Skills to Enhance Parallel Skiing

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

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

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

Advanced Zone Objectives

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

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

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

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

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

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

Adaptive Demonstration Equivalencies

Demonstration Equivalencies for Mono-Ski

Gliding Wedge

- Quiet upper body balanced over the middle of the ski
- Skeletally stacked, upright (static) upper body
- Equal and constant pressure on both outriggers with the snow
- Outriggers remain in close proximity to the mono-ski (i.e., shoulder width apart making snow contact between binding toe and tip of ski)

Gliding Wedge to a Stop

- Quiet upper body balanced over the middle of the ski
- Outriggers remain in close proximity to the mono-ski (i.e., shoulder width apart making snow contact between binding toe and tip of ski)
- Equal, constant, and progressive pressure of both outriggers
- Outriggers create a slowing effect as the tail of the outrigger tips are progressively pushed forward into the snow (this movement is created by pushing the hands forward while dropping the shoulders and flexing/rounding the spine). This is the slowing technique described in the 2003 edition of the *Adaptive Snowsports Instruction* manual. An improved slowing technique has been developed since the writing of that manual and may be substituted for this demo. See Below:

-OR-

- Outriggers create a slowing effect as the outrigger tips are rotated outward creating a “diverging wedge.” Slowing can be increased or decreased by increasing or decreasing the angle of outward rotation and/or by increasing or decreasing the amount of outrigger pressure applied to the snow.

Wedge Turns

- Tall stance and balanced upper body over the midline of the ski.
- Symmetrical outrigger steering (at turn initiation both outrigger tips are pointed in the direction of the next turn and this movement is held throughout the shaping phase of the turn).
- Minimal countering movements of the upper body other than the head is always orientated downhill (in the direction of the “hub” of the next turn) and never across the hill.
- As rotary movements in the turn develop, the ski and outriggers are steered across the hill, increasing pressure by terrain dictated edging on the inside edge of ski and both riggers.
- Although the hips and upper body remain basically centered over the midline of the ski, the center of mass may move slightly to the inside of the turn on steeper terrain (“terrain dictated edging”). A slight amount of banking is acceptable in order to control the edge angle.
- Emphasis is on producing a rounded, deliberate turn shape, and throughout the turn maintaining the tips of both outriggers in close proximity to the tip of the ski (i.e., there is no “countering movements of the outrigger” or “reaching downhill”).
- The wedge turn shows the fundamental skills in a slow, moving situation, emphasizing the rotary movements created by the outriggers with limited 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, while maintaining a constant speed relative to the shape of the turn.

Wedge Christie

■ Speed is greater than that of a wedge turn and should be constant throughout the task relative to the shape of the turn.

■ The ski and lower body is allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the ski (i.e., head and shoulders slightly countered in the direction of the next turn). This increased upper body countering encourages angulated edging movements. However, angulation is minimal as related to the terrain appropriate for this demo.

■ Asymmetrical outrigger steering (at turn initiation one outrigger tip is pointed in the direction of the next turn) and “matched” or moved (toward the midline) back to the neutral position prior to or after the fall line the turn (similar to the “match” of the skis of a standup skier doing a wedge Christie). There is no active “reaching” of the outrigger downhill although the downhill outrigger will be farther away from the mono-ski than in the wedge turn because of the increased counter of the upper body).

■ As rotary movements are accomplished, there is a release of the ski’s edge and slight movement of center of mass into the new turn. Edge release is initiated by a minimal upper body extension in the direction of the new turn.

■ Edge angle and pressure on the inside edge of the ski, is slightly greater and occurs earlier than in a wedge turn. This results in the riggers becoming quite light and flat, making it easy to symmetrically guide into a parallel relationship with the ski. This "matching" occurs at or after the fall line, coinciding to the Christie phase of the turn. (Similar to what occurs with two skis.)

■ Throughout the turn, the skier demonstrates dynamic balance by maintaining a “tall athletic stance” with slightly rounded shoulders and flexed spinal column.

■ Progressive steering combined with increased speed and a relatively flat ski produce a round, skidded arc.

Basic Parallel

■ Speed is greater than that of a wedge Christie and should be constant throughout the task relative to the shape of the turn.

■ Nearing the completion of a prior turn, the skier’s upper body is slightly flexed and countered in the direction of the next turn. With pressure predominately on the inside edge of the ski, the outside rigger is in an arc away from the midline, pointed toward the “hub” of next turn. This asymmetrical outrigger steering movement (from the outside/downhill outrigger) corresponds with a countered upper body in the direction of the next turn (outrigger, arm, and shoulder all move together as the upper body finishes the old turn in a countered position).

■ Outrigger movements and upper body separation correspond to the turn size (i.e., long radius turns correspond to a 1 and 11 o’clock countering and short radius turns require a 3 and 9 o’clock movement much as a pole touch for a stand-up skier) and to the student’s movement range.

■ As the skier starts extending toward the new turn, a change in pressure dominance begins from the old outside edge to the new inside edge.

■ Continuation of the above movements results in a cross-over or lateral movement of the center of mass and a flattening of the skis, which combined with the guidance of both ski and

rigger toward the fall line. Edging movements are achieved by **angulation** of the spine/torso with shoulders level to the fall line relative to the student's movement range.

- The inside rigger and ski complement the actions of the dominant inside edge of ski. Progressive steering combined with flexion down and inward regulates edging and pressure, which are progressive throughout the turn.

The increased efficiency of rotary movements (caused by the increased distance between rigger tip and center of rotation) allows for a much earlier match of the inside/steering rigger and shorter duration of differential friction caused by rigger tip/snow contact.

- 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.

Dynamic Parallel

- There is refinement of all aspects of the fundamental skills of open parallel and they are performed at greater speed with more precision. Speed should remain constant throughout the task relative to the shape of the turn.

- Ski is used as a working component in the turn to achieve desired turn shape and type. Characteristics such as ski flex and side cut are considered. The other equipment, such as seat and shock/spring are also accounted for. Turns are carved, but not railed. Stance is functional for the speed, radius and terrain being utilized.

- At turn initiation the downhill outrigger is moved further away from the midline in a "reaching" movement. This "reach" with the outrigger is simultaneous with an active cross-over of the center of mass from the old inside edge to the new edge. 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 increased efficiency of rotary movements (caused by the increased distance between rigger tip and center of rotation because of the "reaching" movement toward the next turn) allows for a much earlier match of the inside/steering rigger and shorter duration of rigger tip/snow contact.

- 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., gliding, short, medium, and long.

Demonstration Equivalencies for Bi-Ski

Gliding Wedge to a Stop:

- Quiet upper body balanced over the middle of the skis.

- Skeletally stacked, upright (static) upper body.

- Equal, constant, and progressive pressure on both outriggers with the snow.

- Outriggers remain in close proximity to the bi-ski making snow contact in line with the skier's shoulders and hips. Skier's arms are slightly flexed (almost straight) allowing for strong balancing movements through outrigger use.

- Outriggers create a slowing effect as the tail of the outrigger tips are progressively pushed forward into the snow (this movement is created by pushing the hands forward while dropping the shoulders and flexing/rounding the spine). This is the slowing technique described in the latest edition of the *Adaptive Snowsports Instruction* manual. An improved slowing technique

has been developed since the writing of this manual and may be substituted for this demo. See Below:

-OR-

■ Outriggers create a slowing effect as the outrigger tips are rotated outward creating a “diverging wedge.” Slowing can be increased or decreased by increasing or decreasing the angle of outward rotation and/or by increasing or decreasing the amount of outrigger pressure applied to the snow.

If the skier is physically unable to perform a slowing maneuver utilizing outriggers, a single carved turn to a stop may be substituted. The turn is performed by increasing pressure on one outrigger and tipping the bi-ski onto its edges causing the bi-ski to carve in the direction of the tipping.

- The opposite outrigger is utilized to control balance and manage the extent of edging.
- Once initiated, the turn is held across the fall line to a gravity assisted stop.

Wedge Turns

- Tall stance with a balanced upper body over the midline of the skis.
- Maintain a constant speed throughout the turn.
- Utilize “push off, drop ‘n block” to create ski design turns. At turn initiation, pressure on the uphill outrigger is increased as the skier “pushes off” to create an active cross-over movement (skier’s center of mass is moved from inside of old turn to inside of new turn). The downhill outrigger is utilized to “block” the skier from over-edging, to assist with balance, and refine the amount of edging to correspond to the desired radius and speed of the turn.
- Minimal countering movements of the upper body other than the head is always orientated “downhill” (in the direction of the “hub” of the next turn) and never across the hill.
- A slight amount of banking is acceptable in order to control the edge angle.
- Emphasis is on producing a rounded, deliberate turn shape, and throughout the turn maintaining the tips of both outriggers in close proximity to the bi-ski (i.e., there is no “countering movements of the outrigger” or “reaching downhill”).
- The wedge turn shows the basic skills of skiing in a slow-moving situation, prioritizing edging movements over rotary, creating ski designed turns 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, while maintaining a constant speed relative to the shape of the turn.

Wedge Christie

- Speed is greater than that of a wedge turn resulting in a skid after the fall line relative to the shape and speed of the of the turn.
- Utilize “push off, drop ‘n block” to create ski design turns.
- The ski and lower body is allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the ski (i.e., head and, if physically possible, shoulders slightly countered in the direction of the next turn). This increased upper body countering combined with higher edge angles and strong blocking movements with the downhill outrigger encourages angulated edging movements.

▣ Edge angle and pressure on the inside edge of the downhill (outside) ski, is greater and occurs earlier than in a wedge turn. Combined with steeper terrain, increased speed, and varied turn radius, a spontaneous skid will occur after the skier passes through the fall line.

▣ To control the skid, the tip of the downhill outrigger is pointed in the direction of the next turn creating rotary forces equal to or slightly greater than the skid.

▣ Before the finish of the turn the downhill outrigger is “matched” or moved (toward the midline) back to the neutral position (similar to the “match” of the skis of a standup skier doing a wedge christie).

▣ Throughout the turn, the skier demonstrates dynamic balance by maintaining a “tall athletic stance” with slightly rounded shoulders and flexed spinal column.

▣ Amalgamate a combination of ski design turns with a slight displacement of the skis (skid) as centrifugal “forces” increase after the fall line.

Basic Parallel

▣ Speed is greater than that of a wedge christie turn and should be constant throughout the task relative to the shape of the turn.

▣ Outriggers have been lengthened making snow contact between binding toe and tip of ski with a significantly increased bend in the elbows compared to the wedge and wedge christie demonstration.

▣ Asymmetrical outrigger steering (at turn initiation one outrigger tip is pointed in the direction of the next turn) and “matched” or moved (toward the midline) back to the neutral position prior to or after the fall line of the turn. There is no active “reaching” of the outrigger downhill although the downhill outrigger will be farther away from the bi-ski than in the wedge christie turn because of the increased counter of the upper body.

▣ As rotary movements are accomplished, there is a release of the ski’s edge and slight movement of center of mass into the new turn. If physically possible, edge release is initiated by a minimal upper body extension in the direction of the new turn.

▣ Throughout the turn, the skier demonstrates dynamic balance by maintaining a “tall athletic stance” with slightly rounded shoulders and flexed spinal column.

▣ Progressive outrigger steering combined with increased speed and a relatively flat ski produce a round, skidded arc.

Dynamic Parallel

▣ Speed is greater than that of basic parallel and should be constant throughout the task relative to the shape of the turn.

▣ Nearing the completion of a prior turn, the skier’s upper body is slightly flexed and countered in the direction of the next turn. With pressure predominately on the inside edge of the ski, the outside rigger is in an arc away from the midline, pointed toward the “hub” of next turn. This asymmetrical outrigger steering movement (from the outside/downhill outrigger) corresponds with a countered upper body oriented in the direction of the next turn (outrigger, arm, shoulder and torso, if possible, all move together as the upper body finishes the old turn in a countered position).

▣ Outrigger movements and upper body separation correspond to the turn size (i.e., long radius turns correspond to a 1 and 11 o’clock countering, with 12 o’clock being aligned with the long axis of the ski toward the ski tip and short radius turns require a 3 and 9 o’clock orientation of

the upper body and downhill outrigger at the finish of the prior turn; much as a pole touch for a two-track skier) and to the student's physical ability and movement range.

- As the skier starts extending toward the new turn, a change in pressure dominance begins from the old outside edge to the new inside edge.

- Continuation of the above movements results in a cross-over or lateral movement of the center of mass and a flattening of the skis, which combined with the guidance of both ski and rigger toward the fall line. Edging movements are achieved by angulation of the spine/torso with shoulders level to the fall line relative to the student's physical ability and movement range.

- The inside rigger and ski complement the actions of the dominant inside edge of ski. Progressive steering combined with flexion down and inward regulates edging and pressure, which are progressive throughout the turn.

- The increased efficiency of rotary movements (caused by the increased distance between rigger tip and center of rotation) allows for a much earlier match of the inside/steering rigger and shorter duration of differential friction caused by rigger tip/snow contact.

- 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.

Demonstration Equivalencies for Three-Track

Gliding Wedge to a Stop:

- Quiet upper body balanced over the middle of the ski.

- Skeletally stacked, upright (static) upper body with a slight flex of the ankle, knee, hips, and spine.

- Equal, constant, and progressive pressure on both outriggers with the snow.

- Outriggers remain in close proximity to the ski (i.e., shoulder width apart making snow contact between binding toe and tip of ski).

- Outriggers create a slowing effect as the tail of the outrigger tips are progressively pushed forward into the snow (this movement is created by pushing the hands forward while dropping the shoulders and flexing/rounding the spine). This is the slowing technique described in the latest edition of the *Adaptive Snowsports Instruction* manual. An improved slowing technique has been developed since the writing of this manual and may be substituted for this demo. See Below:

-OR-

- Outriggers create a slowing effect as the outrigger tips are rotated outward creating a "diverging wedge." Slowing can be increased or decreased by increasing or decreasing the angle of outward rotation and/or by increasing or decreasing the amount of outrigger pressure applied to the snow.

Wedge Turns

- Tall stance with a balanced upper body over the midline of the ski.

- Maintain a constant speed throughout the turn.

- Emphasis is on leg steering (at turn initiation, steering with the leg throughout the shaping phase of the turn).

- Symmetrical outrigger steering may be used as a rotary enhancer (at turn initiation both outrigger tips are pointed in the direction of the next turn and this movement is held throughout

the shaping phase of the turn), but should only be used as a supplement to the primary rotary power of leg steering.

- Minimal countering movements of the upper body other than the head is always orientated “downhill” (in the direction of the “hub” of the next turn) and never across the hill.

- As rotary movements in the turn develop, the ski and outriggers are steered across the hill, increasing pressure by terrain dictated edging on the inside edge of ski and minimally, both riggers.

- Although the hips and upper body remain centered over the midline of the ski, the center of mass may move slightly to the inside of the turn on steeper terrain (“terrain dictated edging”). A slight amount of banking is acceptable in order to control the edge angle.

- Emphasis is on producing a rounded, deliberate turn shape, and throughout the turn maintaining the tips of both outriggers in close proximity to the tip of the ski (i.e., there is no “countering movements of the outrigger” or “reaching downhill”).

- The wedge turn shows the basic skills of skiing in a slow moving situation, emphasizing the rotary movements created by leg steering with limited 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, while maintaining a constant speed relative to the shape of the turn.

Wedge Christie

- Speed is greater than that of a wedge turn and should be constant throughout the task relative to the shape of the turn.

- The ski and lower body is allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the ski (i.e., head, shoulders, torso, and hips slightly countered in the direction of the next turn). This increased upper body countering encourages angulated edging movements. However, angulation is minimal as related to the terrain appropriate for this demo.

- Asymmetrical outrigger steering may be used as a rotary enhancer (at turn initiation one outrigger tip is pointed in the direction of the next turn) and “matched” or moved (toward the midline) back to the neutral position prior to or after the fall line of the turn (similar to the “match” of the skis of a standup skier doing a wedge christie). There is no active “reaching” of the outrigger downhill although the downhill outrigger will be farther away from the ski than in the wedge turn because of the increased counter of the upper body).

- As rotary movements are accomplished, there is a release of the ski’s edge and slight movement of center of mass into the new turn. Edge release is initiated by a minimal upper body extension in the direction of the new turn.

- Edge angle and pressure on the inside edge of the ski, is slightly greater and occurs earlier than in a wedge turn. This results in the riggers becoming quite light and flat, making it easy to symmetrically guide into a parallel relationship with the ski. This "matching" occurs at or after the fall line, coinciding to the christie phase of the turn. (Similar to what occurs with two skis.)

- Throughout the turn, the skier demonstrates dynamic balance by maintaining a “tall athletic stance” with slightly rounded shoulders and spinal column with flexed knee and ankle.

- Progressive leg steering combined with increased speed and a relatively flat ski produce a round, skidded arc.

Basic Parallel

■ Speed is greater than that of a wedge christie and should be constant throughout the task relative to the shape of the turn.

■ Nearing the completion of a prior turn, the skier's upper body and hips are slightly flexed and countered in the direction of the next turn. With pressure predominately on the inside edge of the ski, the outside rigger is in an arc away from the midline, pointed toward the "hub" of next turn. This asymmetrical outrigger steering movement (from the outside/downhill outrigger) corresponds with a countered upper body oriented in the direction of the next turn (outrigger, arm, shoulder, torso, and hips all move together as the upper body finishes the old turn in a countered position.)

■ Outrigger movements and upper body separation correspond to the turn size (i.e., long radius turns correspond to a 1 and 11 o'clock countering, with 12 o'clock being aligned with the long axis of the ski toward the ski tip and short radius turns require a 3 and 9 o'clock orientation of the upper body and hips at the finish of the prior turn; much as a pole touch for a two-track skier).

■ As the skier starts extending toward the new turn, a change in pressure dominance begins from the old outside edge to the new inside edge.

■ Continuation of the above movements results in a cross-over or lateral movement of the center of mass and a flattening of the skis, which combined with the guidance of both ski and rigger toward the fall line. Edging movements are achieved by **angulation** of the hips and knee with shoulders level to the fall line.

■ The inside rigger and ski complement the actions of the dominant inside edge of ski. Progressive leg steering combined with flexion down and inward regulates edging and pressure, which are progressive throughout the turn.

■ 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.

Dynamic Parallel

■ There is refinement of all aspects of the basic skills of skiing of open parallel and they are performed at greater speed with more precision. Speed should remain constant throughout the task relative to the shape of the turn.

■ Ski is used as a working component in the turn to achieve desired turn shape and type. Ski characteristics such as flex and side cut are considered. Turns are carved, but not railed. Stance is functional for the speed, radius and terrain being utilized.

■ At turn initiation, the downhill outrigger is moved farther away from the midline in a "reaching" movement. This "reach" with the outrigger is simultaneous with an active cross-over of the center of mass from the old inside edge to the new edge. 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.

■ 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., gliding, short, medium, and long.

Demonstration Equivalencies for Four-Track

(Please note: sections in *italics* are for skiers unable to create a wedge with their skis.)

Gliding Wedge to a Stop (for skiers capable of creating a wedge with their skis):

- Quiet upper body balanced over the skis. If Outriggers should be used as balance tools but if necessary, the skier may be supported (weight bearing) by the outriggers.
- Skeletally stacked, upright (static) upper body with a slight flex (if possible) of the ankles, knees, hips, and spine.
- Weight equally distributed over both skis.
- Equal, constant, and progressive pressure on both outriggers with the snow.
- Outriggers remain in close proximity to the ski (i.e., shoulder width apart making snow contact between binding toe and tip of ski).
- Creating a wedge through leg steering, pointing toes in and heels out.
- Progressively increasing the size of the wedge, creating a slowing effect (increasing edge angle and pressure on the skis)

Gliding Wedge to a Stop (for skiers unable to create a wedge with their skis):

- *Quiet upper body balanced over the skis. Outriggers should be used as balance tools but, if necessary, the skier may be supported (weight bearing) by the outriggers. Skis are maintained in a parallel relationship.*
- *Skeletally stacked, upright (static) upper body with a slight flex (if possible) of the ankles, knees, hips, and spine.*
- *Weight equally distributed over both skis.*
- *Equal, constant, and progressive pressure on both outriggers with the snow.*
- *Outriggers remain in close proximity to the ski (i.e., shoulder width apart making snow contact between binding toe and tip of ski).*
- *Outriggers create a slowing effect as the tail of the outrigger tips are progressively pushed forward into the snow (this movement is created by pushing the hands forward while dropping the shoulders and flexing/rounding the spine). This is the slowing technique described in the latest edition of*

Adaptive Snowsports Instructor manual. An alternative slowing technique has been developed since the writing of this manual and may be substituted for this demo. See below:

-OR-

- *Outriggers create a slowing effect as the outrigger tips are rotated outward creating a “diverging wedge”. Slowing can be increased or decreased by increasing or decreasing the angle of outward rotation and/or by increasing or decreasing the amount of outrigger pressure applied to the snow.*

Wedge Turns (for skiers capable of creating a wedge with their skis):

- Tall stance with a balanced upper body over the skis.
- Maintain a constant speed throughout the turn. Speed control is a result of turn shape rather than wedge size.
- Emphasis is on leg steering generated as low in the body as possible (at turn initiation steering with the legs throughout the shaping phase of the turn).

■ Symmetrical outrigger steering may be used as a rotary enhancer (at turn initiation both outrigger tips are pointed in the direction of the next turn and this movement is held throughout the shaping phase of the turn), but should only be used as a supplement to the primary rotary power of leg steering.

■ Minimal countering movements of the upper body other than the head is always orientated “downhill” (in the direction of the “hub” of the next turn) and never across the hill.

■ As rotary movements in the turn develop, the skis and outriggers are steered across the hill, increasing pressure to the outside ski by terrain dictated edging on the inside edge of the downhill ski and minimally, both riggers.

■ Although the hips and upper body remain centered over the skis, the center of mass may move slightly to the inside of the turn on steeper terrain (“terrain dictated edging”). A slight amount of banking is acceptable in order to control the edge angle.

■ Emphasis is on producing a rounded, deliberate turn shape, and throughout the turn maintaining the tips of both outriggers in close proximity to the tip of the ski (i.e., there is no “countering movements of the outrigger” or “reaching downhill”).

■ The wedge turn shows the basic skills of skiing in a slow-moving situation, emphasizing the rotary movements created by leg steering with limited 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, while maintaining a constant speed relative to the shape of the turn.

Wedge Turns (for skiers unable to create a wedge with their skis):

■ *Tall stance with a balanced upper body over the skis. Skis are maintained in a parallel relationship.*

■ *Maintain a constant speed throughout the turn. Speed control is a result of turn shape rather than slowing via the outrigger.*

■ *Emphasis is on leg, hip, or torso steering generated as low in the body as possible (at turn initiation steering with the legs or hips throughout the shaping phase of the turn).*

■ *Symmetrical outrigger steering may be used as a rotary enhancer (at turn initiation both outrigger tips are pointed in the direction of the next turn and this movement is held throughout the shaping phase of the turn) but should only be used as a supplement to the primary rotary power of leg, hip, or torso steering.*

Minimal countering movements of the upper body other than the head is always orientated “downhill” (in the direction of the “hub” of the next turn) and never across the hill.

■ *As rotary movements in the turn develop, the skis and outriggers are steered across the hill, increasing pressure to the outside ski by terrain dictated edging on the inside edge of the downhill ski and minimally, both riggers.*

■ *Although the hips and upper body remains centered over the skis, the center of mass may move slightly to the inside of the turn on steeper terrain (“terrain dictated edging”). A slight amount of banking is acceptable in order to control the edge angle.*

■ *Emphasis is on producing a rounded, deliberate turn shape, and throughout the turn maintaining the tips of both outriggers in close proximity to the tip of the ski (i.e., there is no “countering movements of the outrigger” or “reaching downhill”).*

■ *The wedge turn shows the basic skills of skiing in a slow-moving situation, emphasizing the rotary movements created by leg, hip, or torso steering (supplemented as needed by outrigger steering) with limited 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, while maintaining a constant speed relative to the shape of the turn.*

Wedge Christie (for skiers capable of creating a wedge with their skis):

■ Speed is greater than that of a wedge turn and should be constant throughout the task relative to the shape of the turn.

■ Emphasis is on leg steering (at turn initiation steering with the legs throughout the shaping phase of the turn).

■ The ski and lower body is allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the ski (i.e., head, shoulders, torso, and hips slightly countered in the direction of the next turn). This increased upper body countering encourages angulated edging movements. However, angulation is minimal as related to the terrain appropriate for this demo.

■ At turn initiation creating a wedge through leg steering subsequently matching the skis into a parallel relationship before or after the fall line.

■ As rotary movements are accomplished, there is a release of the ski's edge and slight movement of center of mass into the new turn. Edge release is initiated by a minimal extension (as physically possible) in the direction of the new turn.

■ Edge angle and pressure on the inside edge of the skis, is slightly greater and occurs earlier than in a wedge turn. This results in the riggers becoming quite light and flat, making it easy to symmetrically guide into a parallel relationship with the ski. This "matching" occurs at or after the fall line, coinciding to the christie phase of the turn. (Similar to what occurs with two skis.)

■ Throughout the turn, the skier demonstrates dynamic balance by maintaining a "tall athletic stance" with slightly rounded shoulders and spinal column with flexed knee and ankle.

■ Progressive leg steering combined with increased speed and a relatively flat ski produce a round, skidded arc.

Wedge Christie (for skiers unable to create a wedge with their skis):

■ *Speed is greater than that of a wedge christie and should be constant throughout the task relative to the shape of the turn.*

■ *The ski and lower body is allowed to turn slightly more than the upper body, resulting in a slightly countered relationship with the ski (i.e., head, shoulders, torso, and hips slightly countered in the direction of the next turn). This increased upper body countering encourages angulated edging movements. However, angulation is minimal as related to the terrain appropriate for this demo.*

■ *Asymmetrical outrigger steering may be used as a rotary enhancer (at turn initiation one outrigger tip is pointed in the direction of the next turn) and "matched" or moved (toward the midline) back to the neutral position prior to or after the fall line of the turn (similar to the "match" of the skis of a standup skier doing a classic wedge christie). There is no active*

“reaching” of the outrigger downhill although the downhill outrigger will be farther away from the ski than in the wedge turn because of the increased counter of the upper body).

■ *As rotary movements are accomplished, there is a release of the ski's edge and slight movement of center of mass into the new turn. Edge release is initiated by a minimal upper body extension in the direction of the new turn.*

■ *Edge angle and pressure on the inside edge of the ski, is slightly greater and occurs earlier than in a wedge turn. This results in the riggers becoming quite light and flat, making it easy to symmetrically guide into a parallel relationship with the ski. This "matching" occurs at or after the fall line, coinciding to the christie phase of the turn. (Similar to what occurs with two skis.)*

■ *Throughout the turn, the skier demonstrates dynamic balance by maintaining a “tall athletic stance” with slightly rounded shoulders and spinal column with flexed knee and ankle.*

■ *Progressive leg steering (if physically possible) combined with increased speed and a relatively flat ski produce a round, skidded arc.*

Basic Parallel

■ Speed is greater than that of a wedge christie and should be constant throughout the task relative to the shape of the turn.

■ Nearing the completion of a prior turn the skier's stance is slightly flexed and countered in the direction of the next turn. With pressure distributed between both skis, the outside rigger is in an arc away from the midline, pointed toward the “hub” of next turn. This asymmetrical outrigger steering movement (from the outside/downhill outrigger) is a rotary enhancer to the primary rotary power of leg steering (when physically possible) and corresponds with a countered upper body oriented in the direction of the next turn (outrigger, arm, shoulder, torso, and hips all move together as the upper body finishes the old turn in a countered position.)

■ Outrigger movements and upper body separation correspond to the turn size (i.e., long radius turns correspond to a 1 and 11 o'clock countering, with 12 o'clock being aligned with the long axis of the ski toward the ski tip and short radius turns require a 3 and 9 o'clock orientation of the upper body and hips at the finish of the prior turn; much as a pole touch for a two-track skier) and to the student's physical ability and movement range.

■ As the skier starts extending toward the new turn, a change in pressure dominance begins from the old inside edge of the downhill ski to the new inside edge of the outside ski.

■ Continuation of the above movements results in a cross-over or lateral movement of the center of mass and a flattening of the skis, which combined with the guidance of both ski and rigger toward the fall line. Edging movements are achieved by **angulation** of the hips and knee with shoulders level to the fall line relative to the student's physical ability and movement range.

■ The inside rigger and ski complement the actions of the dominant inside edge of the downhill ski. Progressive leg steering (if possible) combined with flexion down and inward regulates edging and pressure, which are progressive throughout the turn.

■ 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.

Dynamic Parallel

■ There is refinement of all aspects of the basic skills of skiing of open parallel and they are performed at greater speed with more precision. Speed should remain constant throughout the task relative to the shape of the turn.

■ Skis are used as a working component in the turn to achieve desired turn shape and type. Ski characteristics such as flex and side cut are considered. Turns are carved, but not railed. Stance is functional for the speed, radius, and terrain being utilized.

■ At turn initiation, the downhill outrigger is moved farther away from the midline in a “reaching” movement. This “reach” with the outrigger is simultaneous with an active cross-over of the center of mass from the old inside edge to the new edge. 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.

■ 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., gliding, braking, short, medium, and long).

Adaptive Functional Skiing Task Examples

(From PSIA-RM Adaptive Exam Guide, Functional Skiing)

Sideslip to Hockey Stop

Why this maneuver? This maneuver is extremely important as a method used in tethering mono- or bi-skis, guiding blind students or working with any other disability. The sideslip to hockey stop is essential for mastering the beginner terrain moving into the intermediate zone and can be performed in any discipline. This maneuver is performed on smooth, easy blue terrain.

Description: From a straight run in the fall line, initiate a sideslip through simultaneous turning of both legs across the fall line while maintaining a stable upper body and balanced/neutral stance. *(A slight flexion of the legs will enhance the ability to turn the feet and legs independent of the torso.)*

1. While side-slipping, a natural lead of the uphill ski and body keeps hips free to adjust edge angles. Upper body should face down the hill while skis turn across the hill.
2. Sideslip should be maintained in a narrow corridor, without traveling across the hill in a corridor no more than the approximate length of 1 ½ skis.
3. Continuous fore/aft adjustments will help maintain a perpendicular sideslip with minimal travel across the hill.
4. After a distinct sideslip, progressively tip both feet and legs into the hill to engage edges to a balanced stop, or “hockey stop”.
5. Continuous adjustments from foot to foot will help center skier over both skis.
6. Reverse direction and repeat the maneuver to the other side.

Falling Leaf

Why this maneuver? This maneuver allows instructors to move slowly down a hill (similar to the sideslip), while adjusting across the hill to match the adaptive student’s path of travel. The falling leaf maneuver saves instructors from having to wedge in the fall line, thus making it an energy-efficient way to ski with novice adaptive skiers. When used as a ski drill it teaches the adaptive student about pressure control and is a great task used in the advanced beginner zone. This maneuver is performed on steeper green to easy blue, groomed terrain.

Description: From a sideslip in the fall line, use feet and legs to direct skis back and forth across the hill. The skier maintains the same directional orientation while the skis move forward and backward. A swooping Z-shaped pattern with coordinated blending of skills will help maintain speed control and allow the skier to maneuver as desired across the hill.

1. From a sideslip in the fall line, use coordinated flexing and extending movements of the joints, along with fore/aft pressure of the skis, to allow the skis to move forward and backward across the hill.
2. Use turning movements of the legs and feet as necessary to control shape and speed.
3. Use tipping movements of the feet and legs to control edge engagement.
4. This maneuver should be symmetrical with the fall line.
5. This maneuver is performed in both directions.

Traverse - to Diagonal Sideslip - to Traverse

Why this maneuver? This maneuver is another way for instructors to move slowly across the hill while assisting students, without having to hold a wedge position. The ability to control the degree of edge engagement and make subtle adjustments is also an important skill when tethering adaptive students on specialized equipment. As an exercise, it enhances the student's ability to maintain balance and stance while establishing edge control. This maneuver is performed on steeper green to easy blue, groomed terrain.

Description: From a clean traverse across the fall line, use feet and legs to release the edges of the skis so they sideslip diagonally across the hill. After a brief period of diagonal sideslipping, re-engage the edges using the feet and legs and continue in a clean traverse across the hill.

1. From a traverse, release both edges to a forward sideslip through simultaneous tipping movements of the feet and legs.
2. The upper body should remain stable and in a slightly countered relationship to the feet and legs. (*Counter is developed through turning movements of the feet and legs.*)
3. After the diagonal sideslip, re-engage both edges through simultaneous tipping movements of the feet and legs.
4. Perform this maneuver in both directions across the hill.

Stem or Step Turns

Why this maneuver? This maneuver is an excellent way to get from one direction to another quickly. It is extremely important in maintaining speed control when tethering because it minimizes time spent in the fall line when changing directions. This maneuver is not necessarily tough but it is also referred to as a blocking turn to stop and change the direction of travel.

Description: At the end of a turn, stem the uphill ski into a diverging (wedge) position. Quickly transfer weight to the uphill ski and initiate the turning process. Match the inside ski from a wedge position to a parallel position and complete the turn with the skis parallel. This maneuver is performed on harder blue terrain to easy black terrain, showing quick directional changes.

1. End each turn with the skis parallel. The skis can either be moving forward slowly as the turn is finished, or skidding sideways for speed control. This maneuver can also be demonstrated from a complete hockey stop.
2. Use the appropriately sized wedge position to regulate the initiation of the next turn. This can either be large or small, depending on the situation.
3. The uphill ski can be stepped and placed into this wedge position, or the tail of the ski can be brushed out through the snow until the wedge position is achieved.

4. Once the ski has been placed, make an immediate and complete weight transfer to the uphill ski. This will start the turn initiation into the new turn and help to minimize time in the fall line.
5. Quickly match the skis once again into a parallel position by sliding, brushing or stepping the inside ski into the parallel. This is considered a 1-2, or sequential movement. The matching movement is made with a rotation of the leg and foot, steering the ski to match.
6. The turn is completed with the skis parallel. Turn shape can be round, skidded, or sideslipped to a hockey stop to maintain speed control.
7. Stem step turns, of any shape, should be linked together with rhythm and flow. Speed control is maintained using turn shape.

Hour Glass Parallel Turns with Progressive Radius Reduction

Why this maneuver? It is an important for adaptive instructors to be able to change the radius of their turns while maintaining speed control in order to manage specialized adaptive equipment safely. Hour glass turns are an excellent way to practice this skill and to teach to any level of student.

Description: This maneuver is a series of parallel turns that start from a medium radius. Each subsequent medium radius turn decreases in radius to become short radius turns. From short radius, the turns are then increased once again back to medium radius turns. The entire series of turns paints an “hour glass” track in the snow. This maneuver is performed with consistent speed control, using turn shape, so that the short radius turns are no faster than the medium radius turns. If numbers were assigned to each turn size, the larger turns might start at 6 then progressively get smaller, to a series of turns at a size of 2, and then back to the larger turn size of 6. The sequence might look like this, 6 – 5 – 4 – 3 – 2 – 2 – 3 – 4 – 5 – 6. This sequence would be repeated until reaching the agreed upon stopping point and finished with a hockey stop. This maneuver is performed on harder blue to easy black groomed terrain with an even fall line pitch.

1. Turns can be performed as a basic parallel or dynamic parallel (depending on the skill level of the skier) or be performed specifically to the disability.
2. All skiers should perform this maneuver with a balanced, centered stance.
3. Turns should be symmetrical on each side.
4. A distinct difference from the medium radius turns to the short radius turns and back to medium radius should be evident.
5. Speed should remain consistent throughout the entire demonstration.
6. Speed control is achieved through skill-blending and turn shape.

Synchronized Skiing with one or more Partners:

Why this task? Synchronized skiing is really fun! It is also a good measure of your ability to adjust your skiing to another person’s turn shape or rhythm. As adaptive instructors, these adjustments must be made in order to successfully meet the skiing needs of our students.

Description: Skiers can synchronize their skiing in pairs or with three or more other skiers. In this task, the group of skiers will cue off the designated leader and match their turns exactly. Typically a set rhythm is established, along with a starting turn direction left or right. All skiers start and end together at the same time. Voice cues help to establish basic rhythms and other performance criteria. There are a variety of group formations that can be utilized when synchronized skiing, such as side-by-side, skier in front and behind, lines, diamond formations,

flying “V” formations and others. This task is performed on groomed green to easy groomed black terrain.

1. Skiers should have the ability to pace as the leader and adapt as the follower(s). The leader is responsible for setting up the synchronized skiing exercise. The follower is acting according to how the leader sets up the task.
2. Turns should occur at the same time rather than in each other’s tracks.
3. Skiers should have a coordinated finish with a balanced hockey stop.
4. The leader and follower switch roles and repeat the same task, but this time the exercise is set up by the new leader.

Freeski Run

Watching skiers ski their preferred turns, or “freeski,” allows for an assessment of their basic skiing mechanics. Most skiers have specific styles and preferred turning mechanisms that either enhance or hinder their ability to ski a variety of terrain or perform specific skill-based maneuvers with accuracy (such as a hockey stop). Adaptive instructors are assessed while freeskiing to help coach them towards better skill and greater overall skiing success.

Description: Skiers are asked to ski a section of hill at their own pace and in their own personal style. With the previous set of skiing maneuvers, the maneuvers themselves dictate a skier’s basic skill, their ability to blend skills and their basic understanding of what to do with their skis and body in order to successfully perform the maneuver. For example, a skier cannot successfully perform a sideslip if they are unable to release their edges and allow the skis to slide sideways down the hill.

In freeskiing, the task does not necessarily outline success. Skiers can ski down a slope and “make it,” but their overall technique may be flawed. In this task, there are certain guidelines that account for successful freeskiing or for freeskiing that needs some work. Typically, if a skier has a flawed overall technique, it will not only be apparent in their freeskiing, but their ability to perform specific maneuvers (like a stem step turn) will be hindered as well.

The freeski run is performed on groomed blue or easy groomed/black terrain.

1. Turns should be linked (no traverse) at a minimum of dynamic parallel or disability equivalent.
2. Skiers should be able to utilize ski design and skill blending to create turn shape.
3. Stance should be balanced and centered.
4. Progressive movements should be used to simultaneously steer the skis through the turn.
5. Speed is controlled through turn shape and should be consistent for the entire run.

Bump Run

It is important for adaptive instructors to be able to ski in bumps so that they can effectively work with mountain skiing students in a variety of situations.

Description: Skiers are asked to ski a section of hill with relatively easy bumps at their own pace and in their own personal style. Since bumps can change drastically from turn to turn, skiers should be able to “adapt” their skiing and adjust their turns to meet the demands of the situation. This task is performed on blue bumps runs, with a moderate pitch and smaller sized bumps. Only one of the following will be examined:

1. Fall-line bump skiing with:
 - a. Rhythmical, linked, parallel, short to medium radius turns (no traversing or stemming).
 - b. Consistent speed maintained through turn shape.

- c. An appropriate blend of skills.
- d. Tactical choices appropriate to terrain and snow conditions.

Medium to Large Radius Turns in the Bumps with:

- a. Linked turns showing a balanced and centered stance.
- b. Maintenance of ski snow contact through absorption.
- c. Consistent speed maintained through turn shape.
- d. Tactical choices appropriate to terrain and snow conditions.

Variable Terrain and Snow Conditions

Some of our adaptive students enjoy the experience of seeing the whole mountain. Whether low intermediate or advanced, students will need an instructor capable of skiing with them no matter what the terrain is or what the conditions of the day may be!

Description: Skiers are asked to ski a section of hill that has not been recently groomed. Skiers should be able to “adapt” their skiing and adjust their turns to meet the demands of the situation. This task is performed on an *un-groomed* blue run.

1. Turns should be linked (no traverse) at a minimum of dynamic parallel *or disability equivalent*.
2. Skiers should be able to utilize ski design and skill blending to create turn shape.
3. Stance should be balanced and centered.
4. Progressive movements should be used to simultaneously steer the skis through the turn.
5. Speed is controlled through turn shape and should be consistent for the entire run.

Other Examples of Functional Skiing Tasks

Short swing (blue to easy black terrain): Short turns down the fall line typically in a corridor of ½ a groomer width or narrower with emphasis of increased edging and steering and pole plant at turn completion.

Pivot Slips (blue or easy black terrain): Ski through a series of linked, pivot slips in a narrow corridor staying in the fall-line while maintaining a consistent speed.

Key Performance Focus

- Skis maintain a parallel attitude
- Path of the COM is more fall-line oriented
- Turning movements originate in the feet and legs
- Quiet and stable upper body

**Teaching
Specific Skill
Requirements
for Level I
Instructors
Skills**

Skill Requirements

**Awareness,
Understanding
and
Knowledge**

The candidate will be able to:

- Understand the concept of learning styles; discuss the different styles, and provide examples of how to recognize a student's learning style.
- Identify styles of teaching and explain the use of the command and task styles.
- Compare student profiles of adults and children with similar disabilities learning in the beginner/novice zone.
- Discuss key factors in maintaining an environment that accommodates the special needs of each student and is paced appropriately.
- Identify a variety of ways to develop trust between instructors and students.
- Demonstrate an understanding of safety, including the Responsibility Code.
- Understand differing needs of one of the six defined disability categories through a spectrum of students of varying age and ability.
- Describe specific needs of a student with one of the six defined disability categories relative to the resort environment.

Application

The candidate will be able to:

- Assess any student in one of the six defined disability classifications evaluating their cognitive, affective, and physical abilities related to strength, mobility, range of motion and his/her communication capabilities.
- Create and maintain an environment that fosters trust through comfortable pace and an understanding of the special needs of the student.
- Demonstrate a variety of ways to develop trust in the instructor/student partnership.
- Demonstrate the use of the command and task styles of teaching in a lesson.
- Demonstrate the application of safety concepts, including the Responsibility Code, relative to one of the six defined disability categories.

Specific Skill Requirements for Level II Instructors Skills

Skill Requirements

Awareness, Understanding and Knowledge

The candidate will be able to:

- Consider and address safety concerns as students move through the intermediate zone learning environment.
- Analyze the importance of options in lesson plans based upon the mental, emotional, and physical needs (development) of individual students.
- Discuss the components of effective feedback in the learning environment.
- Evaluate students in all disability classifications and identify individual physical abilities and mental/cognitive capacity.
- Modify lesson content to meet the needs of students at various stages of physical development, and/or with a variety of learning and physical abilities.
- Demonstrate the understanding of safety, including the Responsibility Code, relative to the six defined disability categories.

Application

The candidate will be able to:

- Identify the particular learning style of each student and adjust the instruction to accommodate the various learning styles.
- Accurately describe movements relative to the ATS effective movement cues
- Identify the personality traits and learning styles of students, and make broad adjustments in lesson plans and delivery to accommodate those traits/preferences.
- Make technical content decisions for lessons based upon both movement analysis observations and student goals and needs through the intermediate zones.
- Use the ATS Teaching Model to address students' needs, explain and employ the equipment necessary, describe and provide terrain options, and address other vital topics to individualize the lesson for each student.
- Demonstrate the application of safety concepts, including the Responsibility Code, relative to the six defined disability categories.

Professional Knowledge Specific Skill Requirements for Level I Instructors Skill Category Terminology

Skill Requirements

The candidate will be able to:

- Define and explain basic skiing terminology as described in PSIA-AASI's *Core Concepts for Snowsports Instructors*, the *Alpine Technical Manual (2nd ed.)*, and the *Adaptive Snowsports Instruction* manual.
- Identify and explain the skills concept.
- Identify the three phases of a turn and effective movements associated with each phase.
- Define and explain basic terminology commonly associated with adaptive ski teaching (including medical terminology regarding physical variations related to adaptive abilities) in the selected discipline.
- Define physical and cognitive abilities as they relate to specific disabilities within one of the six defined disabilities.
- Name common medications and the side effects that may affect students in the selected discipline area.

Equipment

The candidate will be able to:

- Identify equipment needs of skiers through the beginner/novice zone in the chosen classification.
- Describe the various types of adaptive equipment and explain how each piece functions within the chosen specialty.
- Identify common equipment safety issues.
- Explain the basic options and benefits of modern ski designs.

ATS Application to Adaptive Ski Teaching

The candidate will be able to:

- Identify effective movements and skill development through the beginner/novice zone in the chosen disability classification.
- Understand the concept of skill blending, and identify effective and ineffective movement blends for skiers with differing disabilities in one of the six defined disability categories learning in the beginner/novice zone.

Movement Analysis

The candidate will be able to:

- Describe effective movement patterns relative to skill development in beginner/novice zone skiers in the chosen disability classification.
- Identify desired skill and movement outcomes in various types of beginner/novice zone skiing including wedge and wedge christie turn progressions for the chosen disability classification.
- Understand basic biomechanics as it relates to the “four basic skills” and the disabilities related to one of the six defined disability categories.

- 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 in the chosen disability classification.
- List exercises and tasks, which address a student's needs, the equipment being used, terrain options, etc.
- Determine a cause-and-effect relationship as it relates to movements and fundamental skills demonstrated by beginner/novice zone skiing zone.

COMMON ADAPTIVE DISABILITIES (Not discussed elsewhere)

AMYOTROPHIC LATERAL SCLEROSIS (ALS / LOU GEHRIG'S DISEASE): A neurological disease in which the neurons waste away or die, causing muscle weakness, disability and eventually death. Be aware that altitude, exercise and dry air can aggravate some symptoms.

ARTHRITIS: A chronic inflammatory disease of the joints as well as other parts of the body which causes pain and loss of movement.

- **Ankylosing Spondylitis:** Chronic inflammation of the joints between the vertebrae of the spine and the joints between the spine and the pelvis. May cause inflammation and pain in other parts of the body as well. May eventually cause the affected spinal bones to fuse together.
- **Juvenile:** A general term which is used to define any arthritis which affects children.
- **Osteoarthritis:** Degenerative disease which causes inflammation of one or more joints due to the breakdown of cartilage. The most common form of arthritis.
- **Rheumatoid:** A chronic autoimmune disease that causes inflammation of the joints and surrounding tissues. May also affect organs and other parts of the body. Includes periods of increased disease activity (called flare-ups or flares) alternating with periods of relative remission.

Choose appropriate terrain to minimize impact on joints. Avoid excessive repetitive motions and don't overwork a damaged or sore joint.

ARTHROGRYPOSIS (ARTHROGRYPOSIS MULTIPLEX CONGENITAL / AMC): A group of rare congenital disorders characterized by multiple joint contractures (stiffness of the joints that prevents full extension). May include muscle weakness and fibrosis (excessive collagen in an organ or tissue). Sensation is usually intact but deep tendon reflexes may be diminished or absent. Ensure that a doctor's permission has been received before skiing/boarding, since some movements can further aggravate the condition.

ASTHMA (BRONCHIAL ASTHMA): A chronic lung disease that may cause coughing, wheezing, difficulty breathing and tightness in the chest. Be aware that an asthma attack may be triggered by a number of things commonly encountered by an adaptive ski/snowboard student, including: changes in weather (especially cold air); respiratory infections; stress and strong emotions; certain medications; and exercise and physical activity.

BALANCE IMPAIRMENTS: Inability to maintain stability while standing, sitting or moving. May be caused by normal aging or any disease or trauma that impairs sensory processing, neuromuscular response, musculoskeletal function or cognition. Other common causes are hemiplegia or hemiparesis; Meniere's disease; and injury to the central nervous system. Allow extra distance between the student and obstacles, since lack of balance can also impair reaction time.

BURNS: Injury resulting from excessive exposure to heat, sun, caustics, electricity or radiation. Depending on the level of the burn and the success of the recovery, damage may be caused to skin, deep tissue, joints, bones or airways. There are three levels of burns:

- **First-degree burns** are mild and characterized by heat, pain and reddening but no blistering or charring of tissues.
- **Second-degree (partial thickness) burns** affect both the outer and underlying layer of skin, causing pain, redness, swelling, and blistering.
- **Third-degree (full thickness) burns** are severe and extend into deeper tissues. They cause white or blackened charred skin that may be numb.

The burns may impact your student's thermoregulation, so he/she may not recognize when he/she is getting cold. Ironically, the scars insulate the body's own heat, making the student susceptible to heat exhaustion as well. People recovering from burns have a high risk of sunburn and windburn but the chemicals in sunscreens with an SPF higher than 15 may also burn the skin, so encourage your student to use a low SPF sunscreen and reapply often. Areas of skin grafts may be missing a sense of touch, making the student vulnerable to unnoticed blisters around pressure points like boots. Also, since the skin grafts are often taken from the buttocks, your student may experience a sore butt, especially if he/she sits for long periods of time.

CANCER: Uncontrolled growth of abnormal (malignant) cells in the body. Also called carcinoma or malignant tumor. Cancer is categorized in stages:

- 0:** abnormal cells are found only in the first layer of cells of the primary site and do not invade the deeper tissues
- I:** cancer involves the primary site but has not spread to nearby tissue
- II:** cancer has spread to nearby areas but is still inside the primary site
- III:** cancer has spread throughout the nearby area
- IV:** cancer has spread to other parts of the body
- Recurrent:** cancer has come back after it has been treated

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.

Listed below are common definitions of CP classifications:

- **Spastic.** Increased muscle tension and difficulty with relaxation, may lack full mobility at some joints. *Tense contracted muscles.*
- **Athetoid.** May also be called **Dyskinetic.** 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 exhibit a lurching gait. *Jerky, uncontrolled movements.*
- **Rigid.** *Stiff, uncontrolled movements*
- **Flaccid.** *Reduced, diminished muscle tone*
- **Mixed CP.** A combination of CP type. Cu

CEREBROVASCULAR ACCIDENT (CVA) / STROKE: Sudden impairment of cerebral circulation in one or more of the blood vessels supplying the brain, which interrupts or diminishes oxygen supply and commonly causes serious brain damage. Location of the injury in

the brain determines type of symptoms, where the symptoms are expressed and the severity of the disability. Individuals may 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. Other complications include aversion to the affected side of the body; visual deficits; risk of additional strokes; emotional and psychosocial behavior; and long-term or short-term memory loss.

CHARCOT-MARIE-TOOTH DISEASE (PERONIAL MUSCULAR ATROPHY DISEASE): One of the most common inherited nerve-related disorders. Involves damage to the covering (myelin sheath) around nerve fibers, which eventually causes weaker messages traveling between the extremities and the brain. Afflicts the peroneal muscles along the outer side of the lower leg that control pronation and plantar flexion of the foot. Check the fit of the student's boot carefully, since he/she may not be able to feel pressure points.

CONGENITAL ANOMALIES OF HIP/LEG/FOOT: Abnormalities acquired during development in the uterus and not through heredity. Depending on the location and the specific anomaly, may impact basic muscular functions, such as abduction, adduction, approximation, flexion, extension, dorsiflexion, plantar flexion, eversion, inversion, pronation and supination. May also affect the skeletal structure of the hip, leg or foot, causing issues such as dislocation, subluxation (partial dislocation), torsion (twisting) or rigidity.

CYSTIC FIBROSIS (CF): Inherited disease in which thick sticky mucus builds up in the lungs and the digestive tract, especially in the pancreas, which breaks down food. This mucus results in life-threatening lung infections and serious digestive problems. Lungs may be irritated by cold, dry air and high altitude. Remind a student with CF to drink plenty of liquids to help loosen the mucus.

DEAF & HARD OF HEARING: Total or partial inability to hear sound in one (unilateral) or both (bilateral) ears. May also be accompanied by some loss in the ability to correctly interpret auditory stimuli even after amplification. Some frequencies of sound may be muffled or not heard at all. The deaf & hard of hearing 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 *prelingual deafness*. Deafness occurring from three years to 19 years is termed as *prevocational deafness*. Hearing Impairments fall into three categories:

- **Conductive hearing loss (CHL):** Mechanical problem in the outer or middle ear
- **Sensorineural hearing loss (SNHL):** Problem with the inner ear
- **Mixed hearing loss:** combination of CHL & SNHL

Don't assume that a hearing aid corrects hearing loss completely. Get your student's attention before speaking. It is acceptable to do so with a tap on the shoulder or a wave of your hand. Face your student and maintain eye contact throughout the conversation. Try to converse in a quiet place; avoid getting too close to chairlifts or crowds. Confirm that your student understands you and is not just nodding politely.

DEVELOPMENTAL DELAYS: A lag in learning and mastering developmental milestones beyond the time period experienced by most children. May be caused by genetic abnormality

(e.g., Down Syndrome); exposure to toxins before or after birth (e.g., lead or drugs); poor nutrition for the mother during pregnancy or for the child after birth; infections passed from mother to baby during pregnancy (e.g., measles); severe poverty; lack of nurturing. May impact one or more area of development: cognitive; social and emotional; speech and language; fine motor skills; gross motor skills.

DEVELOPMENTAL DISABILITY: A condition resulting from congenital abnormalities, trauma, disease or deprivation which interrupts or delays normal fetal, infantile or juvenile growth and development. Onset occurs before age 18 and it then continues throughout the remaining lifespan. Common developmental disabilities are intellectual disability (mental retardation); cerebral palsy; autism spectrum disorders; epilepsy/seizure disorders; and Down syndrome.

DIABETES: A disease in which the body cannot properly process sugar (carbohydrates). This is caused by the inability of the pancreas to produce enough insulin to meet the body's needs. There are three main types of diabetes:

- **Type 1:** (Formerly Juvenile Diabetes) The body's immune system has attacked and destroyed the specialized pancreatic cells that produce insulin, so the pancreas is unable to manufacture enough insulin to properly control blood sugar levels.
- **Type 2:** (Formerly Adult-Onset Diabetes) The body becomes insulin resistant (muscles, liver and fat cells do not use insulin properly and the body needs more insulin). Eventually the pancreas cannot keep up with the higher demand for insulin.
- **Gestational Diabetes:** Diabetes which first occurs during pregnancy, when a woman's need for insulin seems to increase. Usually goes away after the baby is born, although it leaves the woman more susceptible to Type 2 diabetes in the future.

Two possible concerns with diabetes are:

- **Hyperglycemia:** Not enough insulin. This usually occurs over a few hours or days.
- **Hypoglycemia:** Not enough sugar. Hypoglycemia is a major concern, as it can be triggered by unusual exercise (skiing), delays in meals, or too much insulin. Sugar is needed immediately if it occurs.

DWARFISM: Term applied to a range of conditions resulting in unusually short stature. A person with dwarfism may have body proportions that differ from a child, even though he/she has the height of a child.

DYSLEXIA (DEVELOPMENTAL READING DISORDER / DRD): A reading disability resulting from the brain's inability to recognize and process graphic symbols. Most people with DRD have normal intelligence and many have above-average intelligence. May have difficulty recognizing written words, rhyming or understanding sentences. May also cause directional confusion, trouble with tying shoes or a delay in speech development. Directional confusion may take a number of forms, all of which can have an impact on how you structure the ski lesson: uncertainty of left and right; difficulty reading a map; inability to understand up and down or top and bottom; problems keeping one's place when playing games; inability to mirror an instructor's movements when facing each other.

DYSARTHRIA: A motor speech disorder that results in difficulty articulating words. It can appear as slurred speech; slow rate of speech; quiet speech; mumbling; garbled speech; limited tongue, lip and jaw movement; abnormal intonation (rhythm) when speaking; or changes in vocal quality. Caused by disease or trauma to the brain. Since it may only affect some words, if you are having difficulty understanding a student, ask him/her to repeat using different words. It may also be helpful to ask yes/no questions, which can be answered with simple head movements instead of speech.

EMOTIONAL BEHAVIOR DISABILITY (EBD): A broad, loosely defined category commonly used in educational settings to describe social, emotional or behavioral functioning that departs from generally accepted, age-appropriate ethnic or cultural norms. To be considered an emotional behavior disability, the inappropriate behavior must be severe, chronic and frequent and not the result of situational anxiety, stress or conflict. It must also occur at school and in at least one other setting. Provide the student with a structured routine that includes specific times for activities. Alter the student to any changes of routine as soon as possible. Reward more than punish and when punishing, provide immediate, logical, pre-established and consistent consequences for unacceptable behavior. When possible, allow the student to work one-on-one with an instructor so that distractions are diminished. Use time-outs to allow the student to cool off disruptive behavior.

EPILEPSY / SEIZURE DISORDER: A disorder that disrupts the transmission of electrical signals inside the brain. 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 and/or physically or mentally fatigued. Seizures may consist of a brief suspension of activity where an individual stares into space or may be generalized, with full body involvement. There are many types of seizures that range in symptoms, severity and length. Below are the most common categorizations:

- **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.
- **Absence seizure (petit mal):** Seizure with brief lapse of awareness, 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 are aware of it.
- **Myoclonic seizure:** Rapid, brief jerks of arms and legs.
- **Atonic seizure (drop attack):** Seizure that produces an abrupt loss of muscle tone, causing the individual to suddenly collapse or fall down.

FRIEDREICH'S ATAXIA: Friedreich's ataxia (also called FA or FRDA) is a rare inherited disease that causes nervous system damage and movement problems. It usually begins in childhood and leads to impaired muscle coordination (ataxia) that worsens over time. In Friedreich's ataxia the spinal cord and peripheral nerves degenerate, becoming thinner. The cerebellum, part of the brain that coordinates balance and movement, also degenerates to a lesser extent. This damage results in awkward, unsteady movements and impaired sensory functions. The disorder also causes problems in the heart and spine, and some people with the condition

develop diabetes. The disorder does not affect thinking and reasoning abilities (cognitive functions). Friedreich's ataxia is caused by a defect (mutation) in a gene labeled FXN. The disorder is recessive, meaning it occurs only in someone who inherits two defective copies of the gene, one from each parent. Although rare, Friedreich's ataxia is the most common form of hereditary ataxia, affecting about 1 in every 50,000 people in the United States. Both male and female children can inherit the disorder. Symptoms typically begin between the ages of 5 and 15 years, although they sometimes appear in adulthood and on rare occasions as late as age 75. The first symptom to appear is usually gait ataxia, or difficulty walking. The ataxia gradually worsens and slowly spreads to the arms and the trunk. There is often loss of sensation in the extremities, which may spread to other parts of the body. Other features include loss of tendon reflexes, especially in the knees and ankles. Most people with Friedreich's ataxia develop scoliosis (a curving of the spine to one side), which often requires surgical intervention for treatment.

Dysarthria (slowness and slurring of speech) develops and can get progressively worse. Many individuals with later stages of Friedreich's ataxia develop hearing and vision loss. Other symptoms that may occur include chest pain, shortness of breath, and heart palpitations. These symptoms are the result of various forms of heart disease that often accompany Friedreich's ataxia, such as hypertrophic cardiomyopathy (enlargement of the heart), myocardial fibrosis (formation of fiber-like material in the muscles of the heart), and cardiac failure. Heart rhythm abnormalities such as tachycardia (fast heart rate) and heart block (impaired conduction of cardiac impulses within the heart) are also common. About 20 percent of people with Friedreich's ataxia develop carbohydrate intolerance and 10 percent develop diabetes. Most individuals with Friedreich's ataxia tire very easily and find that they require more rest and take a longer time to recover from common illnesses such as colds and flu. The rate of progression varies from person to person. Generally, within 10 to 20 years after the appearance of the first symptoms, the person is confined to a wheelchair, and in later stages of the disease individuals may become completely incapacitated. Friedreich's ataxia can shorten life expectancy, and heart disease is the most common cause of death. However, some people with less severe features of Friedreich's ataxia live into their sixties, seventies, or older.

GUILLAIN-BARRÉ SYNDROME: A neurological disorder in which the immune system starts to destroy the myelin sheath that surrounds the axons of many nerve cells and may sometimes destroy the axons themselves. The onset can be quite sudden (days or weeks) and the result is an inability to feel heat, pain and other sensations. Symptoms can become life threatening and while partial recovery is possible, some degree of weakness may still be present.

HUNTINTON'S DISEASE (HUNTINGTONS CHOREA): A hereditary, progressive disease of the central nervous system. May cause personality and behavioral changes; cognitive decline; and various motor symptoms. These motor symptoms may include restlessness and twitching; decline in coordination; facial grimaces, a twisted neck or an arched back; localized or generalized weakness; impaired balance; rigidity; involuntary jerking, twisting or writhing motions and difficulty speaking and swallowing. People with Huntington's disease may burn as many as 5000 calories a day and physical activities such as skiing or snowboarding add to that calorie depletion, so be sure your student is getting adequate nutrition to maintain body weight. Your student may also be vulnerable to dehydration. Higher elevation and greater physical activity can exacerbate this situation, so make sure he/she drinks plenty of liquids.

LIMB DEFICIENCY: Complete or partial loss of a part of a limb. May be congenital or caused by in-vitro exposure to a toxin (e.g., thalidomide); severe infection (e.g., meningococcal) or amniotic banding (fibrous bands from the sac surrounding the fetus form a tight band around a developing limb, causing amputation).

LUPUS (SYSTEMIC LUPUS ERYTHEMATOSUS): A chronic, inflammatory autoimmune disorder that may affect the skin, joints, kidneys and other organs. May cause sensitivity to sunlight, so remind the student to wear sunglasses or goggles and apply sunscreen often. Choose terrain that minimizes the impact on the student's joints.

MUSCULAR DYSTROPHY (MD): A group of progressive, degenerative diseases causing weakness of voluntary and skeletal muscles, which control movement. Caused by a defective gene that is passed from parent to child. There are nine main types (Becker, Congenital, Distal, Duchenne, Emery-Dreifuss, Facio-Scapular-Humeral, Limb Girdle, Myotonic and Oculopharyngeal) and they vary in severity, symptoms, population affected and prognosis. Here are three of the most common types:

- **Becker Type:** A form of MD similar to Duchenne MD but often much less severe. Onset usually occurs in adolescence or adulthood. Mainly affects males. Generalized weakness and wasting first affects the muscles of the hips, pelvic area, thighs and shoulders. Calves are often enlarged. There may also be significant damage to the heart muscles.
- **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. Generalized weakness and muscle wasting first appears in the muscles of the hips, pelvic area, thighs and shoulders. Calves are often enlarged. Eventually affects all voluntary muscles and the heart and breathing muscles. Survival is rare beyond the early 30s.
- **Myotonic (MMD or Steinert's Disease):** The most common form of MD in adults, it affects both men and women. A congenital variant appears at birth and is more severe. Myotonia (prolonged spasm or stiffening of muscles after use) affects the face, lower legs, forearms, hands and neck. May also affect the gastro-intestinal system, vision, heart or respiration. Learning disabilities may occur. Life expectancy is decreased.

MYASTHENIA GRAVIS: A neuromuscular disorder created by an abnormal immune response. Characterized by variable weakness of voluntary muscles and often improves with rest and worsens with activity. Pace the lesson to allow scheduled rest periods. Be aware that stress and excessive heat exposure can worsen symptoms.

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.

PARALYSIS (PLEGIA) & PARESIS: General terms used to describe severe or complete loss of muscle strength. **Paralysis** (plegia) refers to the complete loss of function in an affected limb

or muscle group. **Paresis** refers to a partial loss of function in an affected limb or muscle group. Types of paralysis and paresis are classified by region. Here are the types most commonly seen by adaptive skiers and snowboarders:

- **Diplegia & diparesis:** affecting the same body region on both sides of the body (e.g., both arms or both sides of the face)
- **Hemiplegia & hemiparesis:** affecting one side of the body
- **Monoplegia & monoparesis:** affecting only one limb
- **Paraplegia & paraparesis:** affecting the lower limbs
- **Quadriplegia & quadripareisis:** affecting all four limbs & the trunk (sometimes called tetraplegia & tetra paresis)
- **Triplegia & triparesis:** affecting three limbs

PARKINSON'S DISEASE: Progressive disorder of the brain that occurs when the nerve cells in the part of the brain that control movement are gradually destroyed. Leads to tremors and difficulty with walking, movement and coordination. May affect one or both sides of the body, with varying degrees of loss of function. Be aware that tremors may be worse when tired, excited or stressed.

POLIO (POLIOMYELITIS): Viral disease that can affect nerves and lead to partial or full paralysis. In the U.S., the widespread use of the polio vaccine since the early 1960's has virtually eliminated the disease but there are still many people living today who contracted polio before the vaccine was available.

POST POLIO SYNDROME: A progressive, degenerative disease that affects polio survivors years after recovery from initial polio attack. Not contagious, even though the original polio was contagious. Can be neuromuscular and orthopedic in nature. Symptoms vary from person to person. The disease is very disabling since resulting problems are added to preexisting damage that occurred at the initial polio infection. There is no cure. Some symptoms are: excessive fatigue, muscle atrophy, muscle spasms, disc disease, and nerve damage resulting in muscle weakness, scoliosis, and other symptoms. Individuals are treated according to symptoms. Skiing or snowboarding should be reduced or discontinued if the student experiences additional weakness, excessive fatigue or unduly prolonged recovery.

POST TRAUMATIC STRESS DISORDER (PTSD): A type of anxiety disorder that occurs after a person has seen or experienced a traumatic event that involved the apparent threat of injury or death. The types of traumatic events that can cause PTSD are wide ranging, including natural disaster; the events of war; assault; domestic or childhood abuse; and rape. If possible, avoid triggers or warn your student if you expect a known trigger. For instance, the sound of avalanche bombing may be a trigger for a combat veteran. Do not touch your student from behind (even on the shoulder) and ask before touching when you are giving a kinesthetic demonstration. Give the student as much control as possible with options, timetables and maps. Offer positive distractions if your student appears distressed.

RETT SYNDROME: A rare disorder of the nervous system that causes developmental reversals, especially in expressive language, hand use and in later stages, mobility. Most have trouble eating, so they are often shorter and weigh less than average. May be prone to severe and

chronic constipation, seizures, cardiac dysrhythmias, bone fractures or scoliosis. To avoid aggravating breathing problems, structure the lesson to minimize stress

SENSORY PROCESSING DISORDER (SPD): Neurological disorder in which sensory signals don't get organized into appropriate responses. May cause an over-response or under response to sensation. Often misdiagnosed as ADHD because it may cause focus issues, a hyper desire for sensation or socialization difficulties. May also cause difficulties with communication and coordination.

SPINA BIFIDA: Spina bifida, which literally means "cleft spine," is characterized by the incomplete development of the brain, spinal cord, and/or meninges (the protective covering around the brain and spinal cord). Complications of spina bifida can range from minor physical problems with little functional impairment to severe physical and mental disabilities. It is important to note, however, that most people with spina bifida are of normal intelligence. Spina bifida's impact is determined by the size and location of the malformation, whether it covered, and which spinal nerves are involved. All nerves located below the malformation are affected to some degree. Therefore, the higher the malformation occurs on the back, the greater the amount of nerve damage and loss of muscle function and sensation. Children with both myelomeningocele and hydrocephalus may have learning disabilities, including difficulty paying attention, problems with language and reading comprehension, and trouble learning math. Additional problems such as latex allergies, skin problems, gastrointestinal conditions, and depression may occur as children with spina bifida get older. Bladder and bowel problems as well as hydrocephalus are also common. There are four types of spina bifida:

- *Occulta* is the mildest and most common form in which one or more vertebrae are malformed. The name "occulta," which means "hidden," indicates that a layer of skin covers the malformation, or opening in the vertebrae. This form of spina bifida, present in 10-20 percent of the general population, rarely causes disability or symptoms.
- *Closed neural tube defects* make up the second type of spina bifida. This form consists of a diverse group of defects in which the spinal cord is marked by malformations of fat, bone, or meninges. In most instances there are few or no symptoms; in others the malformation causes incomplete paralysis with urinary and bowel dysfunction.
- In the third type, *meningocele*, spinal fluid and meninges protrude through an abnormal vertebral opening; the malformation contains no neural elements and may or may not be covered by a layer of skin. Some individuals with meningocele may have few or no symptoms while others may experience such symptoms as complete paralysis with bladder and bowel dysfunction.
- *Myelomeningocele*, the fourth form, is the most severe and occurs when the spinal cord/neural elements are exposed through the opening in the spine, resulting in partial or complete paralysis of the parts of the body below the spinal opening. The impairment may be so severe that the affected individual is unable to walk and may have bladder and bowel dysfunction.

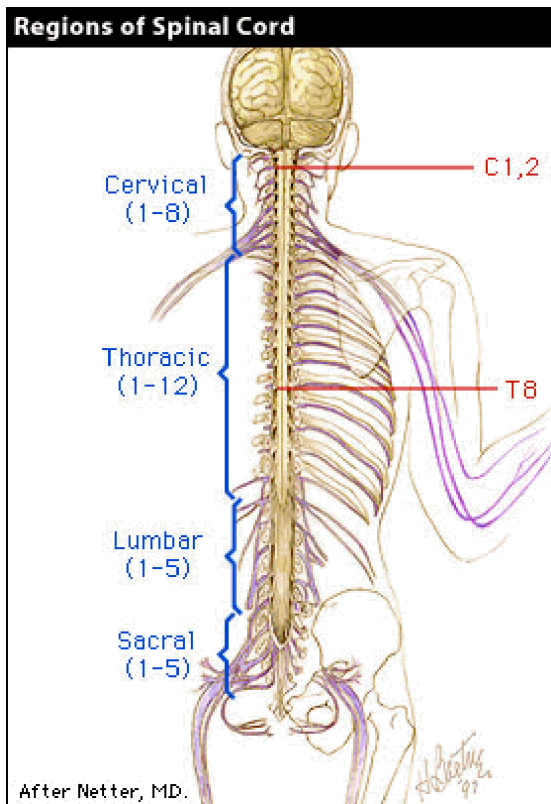
SPINAL CORD INJURY (SCI): Spinal cord damage due to some type of insult, such as trauma, infection or tumor. A person may have an **incomplete spinal cord injury** (SCI), which means that there is some level of motor and/or sensory function below the level of injury. In a **complete spinal cord injury**, there is no motor or sensory function below the level of injury.

Damage which occurs in the cervical region is described as quadriplegia or quadriparesis, as it involves function to all four quadrants of the body. Damage in either the thoracic, lumbar or sacral region is considered paraplegia or paraparesis. Approximately 50% of all spinal injuries cause quadriplegia or quadriparesis. Some of the most common levels of injury are C5-C6, T6-T7 and T12-L1 as this follows the curvature of the vertebral column.

Be aware of the symptoms of autonomic dysreflexia and call ski patrol immediately if your student experiences this life-threatening condition. A student with a spinal cord injury may also have a spinal fusion, which may inhibit the spine's normal flexion and extension.

Thermoregulation and pressure sores are common issues for those with spinal cord injuries and lack of sensory function may render the student unaware of these problems.

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

SPINAL MUSCULAR ATROPHY (SMA): A group of inherited and often fatal diseases which destroy the nerves controlling voluntary muscle movement. May affect crawling, walking, head and neck control and swallowing. Pace lesson to avoid breathing difficulties, which can rapidly escalate to an emergency.

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 which does not cause a fracture to the skull. Injury can be in one or in multiple areas of the brain.
- **Focal injury:** Part of the skull is forced into the brain.

- **Hypoxia:** Injury caused by the lack of oxygen

MEDICATIONS (Type/Reason for Use/Side Effects)

- Analgesics: Relieve pain (Non-narcotic: Sedation, rash, convulsions) (Narcotic: Sedation, dizziness, confusion, increased sweating, respiratory & circulatory depression, constipation, drug dependency w/potential for abuse) (nausea, vomiting)
 - Narcotics
 - Codeine
 - Demerol
 - Tylenol
 - Percodan
- Antibacterial: Treat urinary tract infections (dizziness, headache, rash, sun sensitivity)
 - Fundantin (Urinary Tract)
 - Septra (Urinary Tract)
 - Macrochantin (Urinary Tract)
- Antibiotics: Treat infections (allergic reactions ranging from skin rashes to anaphylaxia, dizzy, drowsy, sun sensitivity)
 - Ampicillin
 - Penicilin
 - Oxycillin
 - Keflex
 - Keflin
 - Ancel
 - Tetacyclin
 - Gentomycin
 - Tobramycin
- Anticholinergics: Treat bladder spasms (dry mouth, constipation, tiredness, headaches)
 - Daricon
 - Ditropin
- Anticoagulants: Treat or prevent blood clots (dizziness, drowsiness, sun sensitivity, easy bruising, excessive bleeding (hemorrhages))
 - Coumadin
 - Heparin
- Anticonvulsants: Treat seizure disorders (dizziness, drowsiness, tremors, rash, weight gain, vision)
 - Dilantin
 - Tegretol
 - Phenobarbital
 - Depakane
 - Clonopin (Klonopin)
- Antidepressants: Control depression &, in some cases, chronic pain (dizziness, fatigue & drowsiness, blurred vision, increased appetite & weight gain, decreased sexual desire, insomnia, dry mouth, constipation; agitation, restlessness, & anxiety)
 - Elavil
 - Prozac
 - Zoloft

- Antidiabetics: Control diabetes (hypoglycemia, vomiting, diarrhea)
 - Insulin
 - Diabinaxe
 - Glucophage
- Antiemetic: Control nausea & vomiting (drowsiness, dizziness, abnormal movements, lethargy, dry mouth, blurred vision)
 - Compazim
 - Phenegan
 - Vistaril
- Anti-Hypertensive: Control blood pressure (dizziness or lightheadedness, headache, fatigue, depression, insomnia)
 - Aldactazide
 - Apresolin
- Anti-inflammatory (Headaches, rash, dizzy)
 - Decadron
 - Motrin
 - Advil
 - Noprosym
 - Indocin
- Anti-Malarial: Treat malaria, decrease symptoms of lupus & rheumatoid arthritis (irritability, headache, weakness, hair lightening or loss, stomach upset, nausea, dizziness, muscle pain, rash, itching)
- Anti-Parkinsons: Relieve symptoms of Parkinson's disease, treat emotional incontinence, relieve pain of shingles (occasional involuntary movements, muscle twitching, dizziness, muscle jerks during sleep, hand tremor, memory loss, anxiety, nervousness, agitation, restlessness, confusion, inability to sleep, nightmares, daytime tiredness, mental depression, euphoria, vomiting, loss of appetite, weight loss)
- Anti-Psychotics: Manage symptoms of psychotic disorders (dizziness, drowsiness)
- Antispasmodic: Reduce muscle spasms (drowsiness, dizziness, lethargy, dry mouth, blurred vision)
 - Dantrium
 - Liorsal
 - Valium
 - Flexeril
 - Robaxin
 - Soma
- Chemotherapy Drugs: Destroy bacteria, viruses, fungi, & most commonly, cancer cells (anemia, hair loss, fatigue, nerve pain, infection)
- Diuretics: Promotes the formation of urine by the kidneys (low blood pressure, electrolyte imbalance, dehydration, abdominal pain)
- Gold Treatments: Treat rheumatoid arthritis (rash, mouth sores, blood or protein in urine, kidney damage, abnormal blood counts, hair loss, gingivitis)
- H2 Blockers: Treat or prevent ulcers (headaches, dizziness, constipation, diarrhea, rash, muscle aches)
- Immunosuppressives: Decrease over-activity of immune system; used in transplant patients to prevent rejection (mouth sores, vomiting, reduced ability to fight infection)
- Muscle Relaxants: Relax stiff or rigid muscles (drowsiness, dizziness, fatigue)
- Nonsteroidal Anti-Inflammatory Drugs (NSAID's): Prevent or reduce inflammation (vomiting, diarrhea, constipation, decreased appetite, rash, dizziness, headache, drowsiness)

- Psychostimulants: Control behavior, especially for ADD/ADHD (Over-stimulation, restlessness, dizziness, dry mouth, problems sleeping)
- Sedatives/Tranquilizers: Reduce anxiety (drowsiness, sedation, fatigue, dizziness)
 - Valium
 - Librium
 - Tranxeme
 - Thorazine
 - Haldol
- Steroids (Corticosteroids): Decrease inflammation & swelling, decrease severity & shorten the length of attacks in many diseases, slow the progress of many diseases (confusion, excitement & restlessness; headache; skin problems including acne & thin, shiny skin; fluid retention & weight gain; increase in blood sugar; mental depression & mood swings; increased risk of infection)
- Stool Softeners: Regulate bowel function (diarrhea, stomach or intestinal cramps, throat irritation from oral liquid form)

SKIER ASSESSMENT

- Balance—Static & Dynamic
- Gait
- Coordination
- Orthopedic Devices
- Noticeable Lean, Fore, Aft, to Sides
- Muscle Strength and tone (upper & lower body); Endurance; Check for spasticity
- Sensation—Skin, Muscles, Light or Heavy Touch Needed
- Flexibility & Range of Motion (ROM)—Muscles, Joints, & Various Planes
- Symmetry—Level Hips; Leg Length Differences
- Shape of Legs—Impact fit of boot
- Shape of Ankles
- Flat Soles—Look at Wear Pattern; Watch Walk