Skiing Methodology

For

Persons with a Disability

Adaptations To

Canadian Ski Instructors’ Alliance
Skiing and Methodology Manual
INDEX

Page

ii  Introduction and General information
viii Table of Contents
1  Glossary
8  Equipment and Modifications
15 Special Equipment
22 Teaching Aids
29 Alpine Classification by Functions
31 Teaching Techniques
67 Description of Lifts
72 Appendix A: Skier's Responsibility and Safety in Skiing
96 Appendix B: Preseason Conditioning
109 Description of Disabilities
136 Appendix C: References
141 Appendix D: National and Division Offices
142 Appendix E: Skier Evaluation forms, Registration forms
149 Certification Levels,
154 Guidelines for Certification Participation Clinics
This manual has incorporated the 1988 CADS Manual and added information that the Technical Committee felt should be available to Instructors who work with persons with a disability. With the introduction on new ski equipment and devices this amendment has become necessary. A number of pamphlets previously written and circulated are also included in this publication.

The adaptations in this manual are to be used in conjunction with the Canadian Ski Instructors' Alliance Skiing and Methodology Manual. Therefore, those people who wish to instruct persons with a disability should have at least a CSIA Course in order to understand the manual and adaptations for persons with a disability.

Remember, when working with the disabled, they are people who just happen to function a little differently. Work with what ability a person has, not the disability.

Skiing is easier than most sport for persons with a disability. By going down a hill on a pair of skis, motion is given to you, and the skier just controls this motion. Thus, you don't necessarily need to walk to ski. Skiing is an individual activity, not a team sport.

The Canadian Association for Disabled Skiing was formed in 1976 to assist persons with a disability to enjoy the sport of skiing, and by skiing, improve their everyday lifestyle.

CADS’ Technical Committee suggests to all skiers working with the disabled to take CSIA courses to learn the methodology of skiing.

Due to the number of disabilities that have to be dealt with now, the committee has broken the teaching into classifications by skiing functions, not by specific disability except for the visually impaired and blind.

This structure does have its limitation, but it allows teaching methods to be put on paper.

ACKNOWLEDGEMENTS:

Drawings: Hugh Laurie, and Ivan the Cat, Cranbrook, B.C.

Typist: Lesley Binnion and Ted Rhodes, Calgary, A.B.

"This Association gratefully acknowledges the financial support of Health Canada."
The outdoor activity of skiing, whether it be a ski trip to a mountain ski area or a ski week at a local ski area, provides an ideal opportunity for students with a disability to integrate meaningfully in a positive and rewarding way with their peers.

Skiing has proven itself to be an extremely “USER FRIENDLY” sport for persons with a physical or intellectual disability. Both downhill and cross country skiing are accessible to persons who are visually and/or hearing impaired (partially or totally), amputees, paraplegics, quadriplegics, as well as those who have spina bifida, cerebral palsy or a coordination/balance/mobility loss from a brain injury. With certified or qualified instructors and adaptations to equipment, even those with multiple disabilities can enjoy skiing. Techniques and equipment have been developed such that even those with zero mobility can and should participate.

Disabled skiing is quite simply a caring, therapeutic happening between individuals who enjoy adventure. It just seems to bring out the best of the student, the instructor and their supportive friends. Skiing allows an excitement and fluidity of motion, rarely accessible to persons with a disability. It provides an opportunity to develop a skill, the mastery of which, helps develop the personal confidence required to face, accept, and challenge the realities of day-to-day living.

For some, it opens the door to the possibility of having fun; for others, it provides a very special camaraderie, not otherwise possible or available. For some, it’s a return to living; for others, it’s a spur to go on and tackle the unknown!

The Canadian Association for Disabled Skiing (CADS) is dedicated to promoting, through its provincial and territorial divisions (see Appendix “D” for Division offices), the physical and mental well being of persons with disabilities through healthy recreation and competition. Its Technical Committee has the responsibility to ensure the quality and maintain the standards of its Instructors Certification Program.

For everyone involved, Disabled Skiing is addictive because everyone ends up feeling better about him/herself! It helps everyone feel “WHOLE“ again.

Skiing With a Difference-Together-Goes Beyond Fun
DUTY OF CARE

One person owes a “Duty of Care” to other persons in many situations.

The amount of care owed to another person varies greatly, depending on the circumstances. Your duty of care increases in each of the following circumstances:

• a person comes on to your property;
• a person pays to use your property or facility;
• a person engages you to provide a service;
• a person purchases or rents goods or equipment from you;
• a person rides a vehicle or other mode of transportation that you operate;
• a person hires you to provide instruction and guidance;
• a person hires you to provide services to a minor; and
• a person hires you to provide services to a very young child.

Clearly all the preceding instances apply to ski areas, ski schools and in particular, children’s programs. There are very few situations where the duty of care owed to a client will exceed that owed by a ski instructor to his young student. Perhaps a brain surgeon or an airline pilot would have a higher obligation.

The ski instructor assumes the role (and responsibilities) of a child’s parent as soon as that child is dropped off for the day at the ski school. The instructor must then do everything that a “reasonable” parent would be expected to do in looking out for the child’s safety and well being. The key word here is “reasonable”. For example: a reasonable parent would anticipate many “foreseeable” risks and hazards such as reckless skiers, difficult terrain, over tiredness, frost bite, allergic reactions, etc. On the other hand one would not anticipate a major earthquake or a 747 falling out of the sky.

The challenge to the ski instructor to fulfill this role is not an impossible one, but rather one that requires full-time diligence, thorough knowledge of the ski school program and facilities and a genuine concern for the well being of the students.
ROLE OF PLAYERS

In the setting up of an activity (a one to several day event) to include students with a disability there are various relationships that need to be established and built. An example would be the development of a working relationship with the persons with a disability in a program, the hill management, and ski school director. Another relationship that needs to be established is a cooperative working relationship between parents, instructors, and students. Each one of these parties has a vested interest in having a successful, fun, safe activity.

Responsibility, integrity, and loyalty are all part of developing a positive, cooperative attitude. It takes time to establish an activity for the person with a disability as there are many uncertainties and myths that could interfere. With a positive, proactive attitude programs for persons with a disability can be successful and a real learning experience for all those involved. Remember, we are in a strong position to influence people about sports for persons with a disability. As physical educators, we strive to give each person a new rewarding experience in the development of fitness for the student with a disability.

All key players in an activity have a variety of roles and responsibilities that need to be looked after. Guidelines for the roles of the area, physical education teacher or supervisor of program, instructor, student, and parent will be discussed.

**Student**

- Be dressed appropriately for lessons
- Be on time for the lesson
- Be respectful of the instructor and listen to instructions
- Help the instructor understand the degree of disability and limiting factors
- Ski under control at all times
- Follow the Canadian Skiers Responsibility Code for skiing under control (Unit 4-10)
- Obey all signs at the hill and do not ski in areas that are restricted access or closed
- Have fun in the lesson
Parents of Persons with a Disability

- Attend information night
- Ensure that checklists and registration information is complete and filled in correctly
- Identify emergency person to be phoned if assistance is needed at hill e.g. accident happens
- Ensure that the student is dressed appropriately for skiing
- Ensure that the student is early or on time for lesson
- Help the teacher and instructor understand the type of disability and what could be limitations in learning to ski e.g.: limited movement of the hips

Ski Instructor of persons with a Disability

- Talk to the student about the expectations beforehand
- Ensure you know what the disability is and the range of ability the student has e.g.: can student walk independently, does she/he have a different foot position, is there a behavioral component to the student's disability
- Meet student in the same place every lesson and assist the student with equipment if needed
- Coordinate with supervisors regarding equipment modifications that might be needed due to disability e.g.: use of ski bras, outriggers, cants, etc.
- Make the lesson fun and enjoyable for the student
- Encourage the student to wear appropriate clothing and discuss alternatives for student if ski suits are not available
- Teach the Skier Responsibility Code to the student and model the Code at all times
• Use the CSIA Method of Ski Instruction and CADS adaptations for your student and modify the teaching to the ability of the student with a disability

• Have a minimum of Level I in CSIA certification with a certification from CADS and use the CADS Methodology of Teaching adaptations to the CSIA Skiing and Methodology Manual

---

**Area Management**

• Ensure that the ski hill is a safe environment to run programs

• Ensure that trails are well marked

• Area patrols, i.e. ski patrols will be on the hill to assist if an accident occurs

• Organization of activity and / or visit to the ski area should be done in coordination with hill manager and ski school director

• Costs of the program and details of the program operation should clearly be outlined to all parties

• Ensure that there is disabled parking for students near the lodge for easy access

• Check to see if lodge, cafeteria and washroom facilities are user friendly to wheelchair clients

• Check to ensure that lift operators are familiar with the procedures of loading and unloading persons with a disability who use specialized equipment

• Ensure that the ski patrol are familiar with evacuation procedures for persons with a disability and their specialized equipment

• Provide a sign to warn that skiers with a disability are skiing on various slopes at the ski area
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>ii</td>
</tr>
<tr>
<td>SKIING WITH A DIFFERENCE....TOGETHER</td>
<td>iii</td>
</tr>
<tr>
<td>DUTY OF CARE</td>
<td>iv</td>
</tr>
<tr>
<td>ROLE OF PLAYERS</td>
<td>v</td>
</tr>
<tr>
<td>Student</td>
<td>v</td>
</tr>
<tr>
<td>Parents of Persons with a Disability</td>
<td>vi</td>
</tr>
<tr>
<td>Ski Instructor of persons with a Disability</td>
<td>vi</td>
</tr>
<tr>
<td>Area Management</td>
<td>vii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>viii</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td></td>
</tr>
<tr>
<td>DAYS OF OLDE</td>
<td>1</td>
</tr>
<tr>
<td>Equipment and Modifications</td>
<td>8</td>
</tr>
<tr>
<td>Equipment and Modifications</td>
<td>8</td>
</tr>
<tr>
<td>Ski Boots</td>
<td>8</td>
</tr>
<tr>
<td>Adaptations</td>
<td>8</td>
</tr>
<tr>
<td>Bindings</td>
<td>9</td>
</tr>
<tr>
<td>Selecting a Binding</td>
<td>9</td>
</tr>
<tr>
<td>Caution</td>
<td>10</td>
</tr>
<tr>
<td>Adaptations</td>
<td>10</td>
</tr>
<tr>
<td>Skis</td>
<td>10</td>
</tr>
<tr>
<td>Types of Skis</td>
<td>11</td>
</tr>
<tr>
<td>How to Choose a Ski</td>
<td>11</td>
</tr>
<tr>
<td>Adaptations</td>
<td>11</td>
</tr>
<tr>
<td>Poles</td>
<td>12</td>
</tr>
<tr>
<td>Adaptations</td>
<td>12</td>
</tr>
<tr>
<td>Outriggers</td>
<td>13</td>
</tr>
<tr>
<td>Connectors</td>
<td>13</td>
</tr>
<tr>
<td>Ski Tips</td>
<td>13</td>
</tr>
<tr>
<td>SPECIAL EQUIPMENT</td>
<td>15</td>
</tr>
<tr>
<td>Prosthesis</td>
<td>15</td>
</tr>
<tr>
<td>Walking Leg</td>
<td>15</td>
</tr>
<tr>
<td>Skiing Leg</td>
<td>15</td>
</tr>
</tbody>
</table>
Double Above Knee Amputees .............................................................15
Double Below Knee Amputees .............................................................15
Stump Protectors ..................................................................................18
Canting ..................................................................................................18
Platform ..................................................................................................18
Ski Walker .............................................................................................20
Arm and Above Knee Amputees (same side) ...........................................20

General Safety (Risk Management) .......................................................21

TEACHING AIDS .................................................................................22

Body Contact Aids ................................................................................22
Aids When Teaching Skiing .....................................................................27
Falling ....................................................................................................28
Rising (3 Track) ......................................................................................28
Rising - Double Person Lift (students with severe disability) ..................28
Rising - an easier method ......................................................................28
ALL STUDENTS SHOULD EXPERIMENT
GETTING UP BY THEMSELVES .........................................................28

ALPINE CLASSIFICATION BY FUNCTION FOR DISABLED SKI INSTRUCTION ..................................................29
FUNCTION 1 - Blind, Skiing with Guide .................................................29
FUNCTION 2 - Skiing with 2 skis & 2 poles ............................................29
FUNCTION 3 - 3 Track - 1 ski and 2 Outriggers .....................................29
FUNCTION 4 - 4 Track - 2 ski and 2 Outriggers .....................................30
FUNCTION 5 - Arm Disabilities (amputees, paralysis, congenital malfunction) ..............................................................30
FUNCTION 6 - Others .............................................................................30
FUNCTION 7 - Sitskis, Sledges, Biski and Quadski (paraplegics, quadriplegics, weakness of Lower Limbs) .........................................................30

TEACHING TECHNIQUES ................................................................31

VISUALLY IMPAIRED FUNCTION 1 .................................................31
Inside "Remember, you are the Student's eyes" ...................................31
Outside: ...............................................................................................31
SKI LESSON: First lesson of Progression ..........................................32
TEACHING AIDS .................................................................................32
NUMBER POSITIONS ..........................................................................34

BELOW THE KNEE AMPUTEES FUNCTION 2 ................................35
Skiing with 2 skis and 2 poles ...............................................................35
3 TRACK FUNCTION 3 .............................................................36
Three Track..........................................................36
Adjust Length of Outriggers ........................................36
Walking with Standard Outriggers ...........................36
Walking with Flip-up Outriggers ..............................36
Heeling and Stopping..............................................36
Climbing Side Step .............................................36
Diagonal Side Step ...............................................37
Sliding Straight Run............................................37
Progression: .........................................................37
Traversing ........................................................38
Progression: .........................................................38
Diagonal Side Slipping ........................................39
Progression: .........................................................39
Uphill Christie ...................................................40
Fan Progression: ..................................................40
Progression: .........................................................40
Parallel Christie ..............................................41
Parallel Christie Progression to Medium Radius
Christies ...........................................................................42
Short Radius Christie ...........................................42
Use Outriggers for Balance Only.................................42

4 TRACK .....................................................................................43
VARIATIONS ........................................................................43
On Snow Procedures........................................................43
Start On a very shallow slope .........................................43
Straight Running ..................................................43
Falling ..................................................................44
Rising ...................................................................44
Fan Progression....................................................44
Steering ................................................................44
Rotation ................................................................44

ARM DISABILITIES FUNCTION 5..........................................46
Arm Amputees .....................................................46

MENTALLY HANDICAPPED FUNCTION 6 ......................46
DEVELOPMENTALLY DISABLED.........................46
Technique Considerations....................................46
Methodology Considerations................................47

HEARING IMPAIRED FUNCTION 6 ..............................49
Teaching Aids ....................................................49
Finger Spelling - the language of the
DEAF ..................................................................49
HEARING IMPAIRED FUNCTION 6 ..............................50
Signing ...................................................................50
Signing ...................................................................51

SITSKI (Monoski) FUNCTION 7 .........................................................52
TEACHING TECHNIQUE - SitSki .......................52
Instructions for Teaching Sitski (Mono-ski) ...............52
  Preparation for Sitskiing ..................................53
  Familiarization with Mobility (with the Sitski stationary) ........................................53
  Falling on a Side/Getting up with Assistance(on level ground) ........................................54
  Falling on a slope ...........................................54
  Moving on Flat Ground (outrigger ski in down position) ...........................................54
  Sliding Downhill on a Flat Ski - Elementary Form ................................................54
  Starting on a slope .........................................55
  Traversing across a slope ..................................55
  Forward Side Slipping (sliding across the slope and downhill) ......................................56
  Uphill Christie ..............................................56
  Fan Progression ...........................................56
  Parallel Christie Progression to Medium Radius Christies ........................................57
  Riding Lifts and other devices ................................57
  Uphill Towing (T-Bar Training) ..........................57
  Chairlift Loading ...........................................58
  Unloading .....................................................59

CHAIRLIFT EVACUATION ....................................60
  Lift Evacuation Plan .........................................60
  Special procedures for disabled skiers using Sitski or Monoski devices ............................60
  Evacuation Procedure ........................................60

LOADING AND UNLOADING SIT SKIS ON CHAIRLIFTS ...............................................61
  Requirements for Sitskis using Chairlifts at Mount Washington, BC .................................61

SLEDGE FUNCTION 7 ..............................................62
  Teaching Technique .........................................62
  Loading Student in Sledge ..................................62
  Tether ............................................................63
  Stop ...............................................................63
  Advanced Turns ..............................................64
  Loading on a Chairlift .......................................64
  Unloading from the Chairlift ...............................65
  Clothing ..........................................................66

BISKI, QUADSKI .................................................66

DESCRIPTION OF SKI LIFTS .................................................67
  Vertical Drop ......................................................67

- xi -
Appendix B: PRESEASON CONDITIONING

Introduction .................................................................................. 97

General Objectives of Fitness Program ........................................ 97

Organization .................................................................................. 98

Warm Up ..................................................................................... 98

Slow Motion Race : Focus on slow stretching ......................... 99
Tangle / Untangle : Focus on stretching body parts ................ 99
Hoops ....................................................................................... 99
Follow The Leader : Light aerobic exercise ......................... 99

Typical Warm Up Stretches ......................................................... 99

Shoulder, chest and upper back stretches ........................................ 100
Shoulder, chest and upper back stretches (cont'd) .................... 101
Back Exercises ........................................................................ 102
Wrist, hand and finger exercises ............................................. 103
Lower body stretches ................................................................ 104
Warm Up Exercises .................................................................. 105
Ski Warm Up Exercises on skis ............................................ 106
Cardiovascular / Aerobics .................................................. 107
Blob Run ............................................................................... 107
Gator Tag ............................................................................ 107
Four Walls ........................................................................... 107

Muscular Strength and Endurance Training .......................... 107

Roll ................................................................................... 108
Cleaning House ...................................................................... 108
Shark ! ! ............................................................................... 108
Balance ............................................................................... 108

DESCRIPTION OF DISABILITIES ........................................ 109

AMPUTEES ........................................................................ 109
General Description .................................................................. 109
General Concerns .................................................................... 109
Flexibility Concerns ............................................................. 109
Muscular Strength Concerns ................................................. 109
Aerobic Concerns .................................................................. 109

ARTHRITEIS ........................................................................ 110
General Description .................................................................. 110
General Concerns .................................................................... 110
Flexibility Concerns ............................................................. 110
Muscular Strength Concerns ................................................. 110
Aerobic Concerns .................................................................. 110

ASTHMA ............................................................................... 110
General Description .................................................................. 110
General Concerns .................................................................... 110
Flexibility Concerns ............................................................. 110

CSIA Certification.................................................................150
EXAMINER DEFINITION AND CRITERIA ...............................151
  Senior Examiner.............................................................151
  Appointment..................................................................151
  Examiner....................................................................152
GUIDELINES FOR CERTIFICATION
PARTICIPATION CLINICS......................................................154
<table>
<thead>
<tr>
<th><strong>GLOSSARY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALPINE</strong></td>
</tr>
</tbody>
</table>
| **AMPUTEE** | A person who has lost a limb(s).  
- Two types - Congenital (from birth) 
- Acquired (surgically removed) |
| **AK** | Above knee amputee - includes hip disarticulation (removal of leg through the hip joint) |
| **AUTISTIC STUDENTS** | Normal body structure. Problem with sensory integration (unable to handle and analyze a lot of sensory information coming in at the same time). Chronic developmental disability manifested by lack of responsiveness to other people, gross impatience in communication and bizarre, stereotypic behaviors. Try one thing at a time. Most autistic students do not like touch and back away from it. |
| **BK** | Below knee amputee |
| **BALANCE** | To put or keep in a state of equilibrium. In skiing look at their normal balance (for them) and try to achieve this on skis. Adjustment in stance or in their normal walking position. |
| **BI LATERAL** | Means two limbs have been amputated and could be on one side, an arm and a leg, both legs or both arms. |
| **BLIND** | A visually impaired person - totally blind - from no perception of light in both eyes to perception of light but inability to recognize any object or shape in any direction at any distance. |
| **BUCKETS/ SOCKETS** | The portion of the artificial leg that the stump fits into. |
CADS  Canadian Association for Disabled Skiing
CANSI  Canadian Association of Nordic Ski Instructors
CANT  A beveled wedge - a tilt - a slant. A plastic or wood wedge put under the person’s foot to level the ski onto the snow (see equipment modification).

CEREBRAL PALSY (CP)  Various types of non-progressive brain disorders. Characterized by paralysis, weakness, incoordination or other abnormalities of motor function.
COMMON TERMS
  Monoplegia - one extremity
  Hemiplegia - paralysis affecting one side only
  Quadriplegia - both sides affected (both arms and legs)
  Diplegia or Paraplegia - affecting legs only.

TYPES OF CP
  Spastic - movements are still and slow (stiff and tight muscles)
  Athetoid - muscle tone fluctuates, leads to involuntary movements which are constant and unpredictable
  Ataxic - lack of muscle stability - disturbed co-ordination and lack of balance
  Mixed - usually one of the above types tends to predominate but there is a mixture of involvement

CHRISTIE  Any turn in which the skis are parallel during all or part of the turn
CHRISTIE UPHILL  An uphill turn initiated from a traverse.
CONGENITAL HIP  Dislocation of the hips at birth - usually fused restricted movement.
CSIA  Canadian Ski Instructors' Alliance
DEAF  A person who cannot hear over 55 decibels in best ear
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEVELOPMENTALLY DISABLED</td>
<td>Individuals with below average intellectual functioning which originates during the developmental period (0-18 years) and is associated with impairments in adaptive behaviour (the ability to adjust to various circumstances).</td>
</tr>
<tr>
<td>MH</td>
<td>May have normal body structure. Usually a limited attention span, perceptual problems (auditory, visual or tactile) fine and/or gross motor skills deficits and may have behaviour problems.</td>
</tr>
<tr>
<td>DIABETIC</td>
<td>Will often be the cause of a disability. Person will usually have medication with him/her at all times. S/he will usually know when s/he needs insulin and will administer him/herself. You will probably not see someone go into a coma, but if in doubt, get him/her to a hospital as soon as possible.</td>
</tr>
<tr>
<td>FALL LINE</td>
<td>The path of least resistance on any given trail</td>
</tr>
<tr>
<td>FOUR TRACK</td>
<td>A skier using 2 outriggers and 2 skis, using 4 points of contact with the snow.</td>
</tr>
<tr>
<td>GATE</td>
<td>Two sets of poles set a distance apart to identify a turning point in a race course. The feet of the racer must cross an imaginary line between the poles.</td>
</tr>
<tr>
<td>GIANT SLALOM</td>
<td>A race, with generally longer course with fewer gates in a given distance. Skiers are normally traveling at a faster speed than slalom.</td>
</tr>
<tr>
<td>GUIDE</td>
<td>A good skier who can guide a visually impaired / blind person while skiing and getting around a ski area. Should have a good knowledge of skiing and the ski area trails and layout. Not necessary to be an instructor.</td>
</tr>
<tr>
<td>LEARNING DISABLED</td>
<td>Have a normal body structure but can have a limited attention span, perceptual problems (auditory, visual or tactile), fine and/or gross motor skill deficit and may have behaviour problems. These people are NOT mentally retarded.</td>
</tr>
<tr>
<td>LIFT</td>
<td>Device to transport skier uphill.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MOGULS</td>
<td>Close high bumps usually found on Intermediate to Expert ski runs. Created by skiers while turning.</td>
</tr>
<tr>
<td>MUSCULAR DISTROPHY</td>
<td>This is a progressive disease manifested by weakness and wasting muscles. Condition deteriorates. Evaluate condition of students at the start of each season.</td>
</tr>
<tr>
<td>NORDIC</td>
<td>Basically anything referring to skiing over easy rolling terrain without the aid of lifts. The skier supplies the motive power. The term is also used to identify ski jumping in a classification with cross country skiing.</td>
</tr>
<tr>
<td>NSIA</td>
<td>National Ski Industries Association</td>
</tr>
<tr>
<td>OUTRIGGERS</td>
<td>Arm crutches with ski tips attached by means of some type of rocker. Flip-up outriggers - a hinge system to allow the ski attachment to raise vertically to be used as a normal crutch.</td>
</tr>
<tr>
<td>PARALLEL</td>
<td>Any position or turn which requires the skis to remain parallel, not necessarily together or touching.</td>
</tr>
<tr>
<td>PARAPLEGIC</td>
<td>Paralysis of both lower limbs due to a spinal disease or injury.</td>
</tr>
<tr>
<td>POLIO</td>
<td>A viral infection in the spinal cord effecting transmission of nerve impulses from the brain to the muscles in the limbs. Skin sensation retained. There can be no muscle built in the affected limb.</td>
</tr>
<tr>
<td>PROSTHESIS</td>
<td>A man made artificial limb.</td>
</tr>
<tr>
<td>QUADRIPLEGIC</td>
<td>Paralysis of both lower limbs as well as the upper limbs due to a spinal disease or injury.</td>
</tr>
<tr>
<td>ROTATION or ANTICIPATION</td>
<td>A movement of the upper part of the body to help successfully complete a turn. This movement is normally started while turn is being initiated.</td>
</tr>
<tr>
<td>SCHUSS</td>
<td>Many interpretations but basically skiing straight down fall line with no turns.</td>
</tr>
</tbody>
</table>
SCOLIOSIS A curvature of the spine.

SKATE TURN Used in slight, quick change of direction.

SLALOM A prepared race course on which the skier must pass through gates.

SNOWPLOW A "V" Position of the skis used in teaching beginners to ski. Also used as a braking manoeuvre.

SOCKETS/BUCKETS The portion of an artificial leg that the stump fits into.

SPINA BIFIDA Abnormality at birth in bony vertebrae about the spinal cord. Can range from mild muscle weakness to total paralysis in limbs.

STEM A position derived by pushing out uphill ski from a parallel position to initiate some turns.

STUMP Remaining portion of limb.

TELEMARK TURN Cross country term for a turn while skiing downhill.

THREE TRACK A skier using 2 outriggers and 1 ski, using 3 points of contact with the snow.

TRAVERSE A means of traveling across the "fall line" in a parallel or snowplow position.

WAX Applied to base of ski to aid free movement of skis on snow.
Disabled Skiing Methodology

Sitski

Sledging with a tether

DAYS OF OLDE
Equipment and Modifications

This information is to assist the instructors and coordinators of programs to adapt equipment and material for the betterment of the disabled when they are learning to ski. Since gravity provides the motion, it is essential that the skier is equipped so that he can control his movement and direction of travel.

The object of modifying equipment is to keep the disabled skier in his normal balanced stance, ie: if his foot is *splayed* out - then a device is made to keep his foot in its natural position and *NOT* the position that would be assumed by an able-bodied skier.

This information is intended to be a guide and the fact that suggestions are made, does not rule out the fact that each case should be treated in its own manner.

Ski Boots

Most ski boots sold in Canada have an outer shell made of a plastic type of material. The inner boot varies with some boots using wax and others foam to assure a good fit. Most boots use 5 buckles to clasp the boot to the foot. Some rear entry boots use fewer buckles. The more expensive boots usually worn by expert skiers have a high back that is very rigid to allow the skier to perform expert skills. It is suggested that a beginner to intermediate skier can successfully enjoy skiing in a low to medium priced boot.

When fitting boots a skier should take time to ensure a proper fit. Proper contact between foot, boot, and ski are essential to master necessary skills required to become a competent skier.

When buckled, the heel should fit snugly in the boot and when the skier flexes his knees forward, the heel should remain solidly in its place and not lift. If the heel does not fit snugly, the skier will likely end up with blisters and sores. The toe should not reach the end of the boot and the toes should move freely. The rest of the boot should fit snugly around the foot without any pressure points. A proper fit will give the skier positive reaction to skis when body movements are emphasized.

Adaptations

For the skier with a disability, boot modifications may be required. The object of modifying the equipment is to keep the skier with a disability in his normal balanced stance.
1. **Braces:** two methods may be used. The liner may be taken out of the boot and the shoe and the brace placed inside the shell. In the second method the brace is fitted with a cup fixture and the foot and brace can then be fitted in the boot without the shoe. This method is much warmer than the first.

2. **Canting:** some of the newer boots have a built in mechanism, which allow the boot to be tilted or slanted to fit the angle of the foot. There is a limit to the canting that may be done (5 to 10 degrees). A block may be placed between the binding and the ski to accommodate the necessary boot canting.

3. **Heel lifts, arch supports, orthotics:** these devices can usually fit inside the boot(s).

4. **Different boots:** some skiers may require different size and type of boot for each foot.

5. **Buckets/Sockets:** double amputees may choose to use customized sockets or buckets to support or replace ski boots. These may fit directly into the ski bindings.

6. **Punching out:** if pressure points develop, boots may be punched out to provide a bit more room to the pressure site. There is a limit to the amount of adjustment that can be made.

**Bindings**

Bindings are used to attach the boot to the ski while still allowing the ski to release during a fall. There are many different types of bindings available on the market. Step-in bindings are the most accepted binding. This binding requires the skier to place the toe of the boot under the toe piece of the binding and literally step down on the ski for the heel to become engaged. The step-in will release both laterally and forward. A binding is only as good as the setting. Step-in bindings are more convenient to get into for anyone who has difficulty bending over or for persons with arm disabilities.

**Selecting a Binding**

1. When selecting a binding, the weight of the skier is an important factor in the selection.

2. Ensure the skier can operate the binding.

3. Determine if there will be a requirement for modifications, and if modifications are made, will the binding still operate in a safe manner?
4. **MUST** be equipped with a retention device. (*ski stopper or strap* - straps may be used only as a last resort)

**Caution**

A fully qualified technician should adjust the tension release. Bindings should be checked on a regular basis and should be re-adjusted as the skier progresses in ability.

Weight is an important factor in the selection of a binding. As well, the instructor should make sure the student can operate the binding. Every binding must be equipped with a ski stopper or safety strap.

**Adaptations**

The object of modifying bindings is to keep the skier with a disability in a normal balanced stance. If his/her foot is splayed out, then a device is made to keep the foot in its natural position and secure the ski to the boot to retain this position. This may mean the binding needs to be modified.

1. **Offset**: when it is necessary to offset a binding or displace the position of the foot over the ski, a Spadem an Binding or similar type is suggested.

2. **Buckets/Socket**: Amputees skiing with a bucket or socket instead of a boot will need a binding modification to accommodate the bucket/socket.

3. **Canting**: when a block is used to provide tilt or angle to accommodate the angle of the skier’s foot, the cant is usually placed under the binding.

4. **Positions**: bindings may be mounted in a forward or offset position.

5. **Adjustments**: different disabilities will require different adjustments of tension on various brands of bindings.

**Skis**

The ski is a long runner made of wood and coated with a variety of substances. It has steel edges that enhance its ability to glide on snow and execute turns. The ski equipment business is highly competitive and the manufacturers are constantly improving skis and their performance. Today, a beginner is advised to purchase a shorter ski, approximately equivalent to the student’s height. The short skis will perform as effectively as longer skis, up to an expert level. The expert skier relies on the added length of steel edging to perform at higher speeds. The short ski will enable a beginner skier to initiate turns easier and therefore progress much more rapidly.
**Types of Skis**

1. Short or G.L.M. skis - preferred by beginners (100 cm and longer)
2. Recreation skis - most popular ski
3. Freestyle or wide short ski - used when necessary
4. Children's skis - small plastic skis are useful for small children
5. High performance skis (racing skis)
   a) *Slalom* - is a quick reacting ski (for shorter turns), used by competent skiers
   b) *Giant Slalom* - a softer reacting ski (for longer turns), often preferred by competent recreational skiers. Length is generally longer than a slalom ski
   c) *Downhill* - is used for stability and skiing at fast speeds. Length is longer than the G.S. ski

**How to Choose a Ski**

1. Since most ski shops have professionals who can help select the proper ski for an individual to match his ability and type of skiing
2. Length - depends on competence of skier, weight and what you want the ski to do
3. Many rental shops have a variety of skis - try several brands before choosing and discuss performance of the ski with the shop professional

**Adaptations**

Gravity provides the locomotion and source of movement in skiing. The ski provides the equipment to glide over the snow. The skier must be equipped so that s/he can control his or her gliding movement and direction of travel. This may require using a different type of ski, a modification to the skis, or the addition of equipment which will enhance the skiers base of balance.

1. Shorter skis: shorter skis allow easier turning. Either "Graduated Length Method"(GLM) short skis or skis cut to make them shorter may be used.
2. Freestyle skis: these skis are designed to slide easier and the backs are slightly turned up.
3. Camber: skis which have a slightly reversed arch may help some skiers by changing the amount of ski which contacts the snow, especially during turns.

4. Single ski: for skiers using only one ski, a high performance ski may be preferred.

5. Two skis: skis can be tied together at the front, back, and/or middle if necessary.

6. Skids: made from old skis, skids are used to strap on the foot of a weak leg but are not intended to provide turning control. It slides over the snow surface and provides a rest position for the weak limb and foot.

7. SITSKI: a type of ski where the skier sits over a single ski and uses outriggers to assist in balance.

8. BI-SKI: a type of ski where the skier sits over two skis and uses outriggers to assist

9. Sledge: a type of modified sled which rides directly on the ground. Skier may use three different types of poles. Adaptations are available according to the strength and ability of the student.

Poles

Until the skier reaches a high level of ability a very inexpensive pole will be sufficient. To fit the pole to a particular person, the student will place the grip end of the pole on the floor and place the hand on the pole under the basket, with the upper arm beside the body, the lower arm should be parallel to the floor. Most grips are adjustable and students should be taught proper method of gripping the pole and placement of the strap.

Adaptations

Ski poles are made of a variety of materials. They are used by the skier to keep his balance and in the timing of turns. The poles may also be used to assist him in walking on flat land and climbing up a hill. The poles have baskets on the end to prevent the pole from plunging too deeply into the snow. For the skier with a disability ski poles assist in rising from a fall. Poles may be replaced with outriggers.
**Outriggers**

These devices take the place of ski poles and are a standard metal arm crutch equipped with either a side or front opening cuff with short skis attached to the bottom of the crutch. The bottom adjustable pipe is bolted or contact cemented to a connector which is then bolted to a ski tip.

Outriggers are used for balancing the skier, but for three tracking the body weight should be carried on the leg not the arm.

Skiers must be taught to use the outriggers as a crutch if they do not normally use crutches to walk with. Most persons will tend to allow the hands to come back when they first start to ski. They must hold the outriggers forward at **ALL** times.

Check the length of the outriggers often. Generally, the length with the skis on and arm extended should be approximately 2-4 cm off the snow when standing erect. Also check the adjustment for angle.

The length of the outrigger may change as the skier improves in ability. Racers use different lengths for each discipline.

**Connectors**

There are several types: 1) *moveable* 2) *stationary* 3) *flip-up*

Movement is necessary when skiing bumps, but for the beginner they could be tightened to give more stability. The plates of the connector (see diagram) are bolted through the metal or fiberglass ski tips that have been cut to 40 cm (16 inches) cord length. The centre of the connector is usually mounted 15 cm (6.5 inches) from the heel of the ski tip. The holes in the bottom are filled in, to stop dragging and icing up. Glue or epoxy is used on the heels of cut off skis to prevent delamination.

Flip-up - there is a cord attached to the connector which runs up the crutch to the handle. When the cord is pulled, the ski tip flips up and locks in place so the outrigger becomes a walking crutch when not skiing. This type of outrigger is also very useful in getting up when you fall while skiing.

**Ski Tips**

Ski tips are cut off from regular skis with glue or epoxy used on the heels to prevent delamination. A metal plate can be used on the heel, which will provide more grip for icy conditions and extra braking.
SPECIAL EQUIPMENT

Prosthesis

Walking Leg

A normal prosthesis can be used for skiing but will require a block under the heel to raise the foot into a more forward position. Care must be taken however, to make sure the stump will not rotate or move inside the prosthesis. This is achieved by applying full weight on the prosthesis at the appropriate time.

Skiing Leg

This has a set of side irons built into or attached to the prosthesis with a laced thigh corset to provide lateral stability and help maintain stump-to-socket contact. These legs have a forward lean built into them to assist the skier to put the weight to the tip of the ski. The hinge at the knee will work forward and back and has a limited lateral motion. Skiing legs are heavier than a walking leg due to the increase of material used.

Double Above Knee Amputees

People with double above the knee amputations can ski with their prostheses in a locked position using two skis and two outriggers (4 track). In addition, the skis may be tied together to keep them from splitting. Some double above the knee amputees ski in specially made "buckets / sockets" - please refer page Unit 2-14

Double Below Knee Amputees

People with double below the knee amputations can also ski on their prosthesis using two skis and ski poles. It is recommended to use "skiing legs".
Disabled Skiing Methodology

Walking Leg  Wedge  Modified for Skiing

Skiing Leg (forward lean 18 to 22 degrees)

Stump Protector
Nut
Screw
Removable
Disabled Skiing Methodology

Ski Bucket

- Belt
- Elastic Straps
- Buckles
- Fiberglass
- Foam Rubber to Absorb Shock
- Walking Base
- Rubber is Removed when skiing & is held on by criss cross straps

Ski Bucket Attached to Ski

- Bucket
- Steel Bracket
- Ski
**Stump Protectors**

Most above knee amputees need something on the stump while skiing to:

1) protect it
2) keep it warm

A protector can be made by a prosthetist and should be made with warmth in mind. It can be a thigh lacer or a friction fit.

Many skiers with an above the knee amputation make modifications to a protector allowing a walking "peg " to be attached so they don't have to bring their full prosthesis to the ski area.

**Canting**

Canting can be accomplished by placing a wedge under the bindings, inside or outside the foot to provide a lateral position change. Canting can also be made so that there is a forward or backward change of position. Some boots have a lateral adjustment built into them.

**Platform**

This device is used by skiers who have one effected leg and cannot ski on it - e.g.: polio. A platform is also used by instructors to simulate 3 Track Skiing.
Disabled Skiing Methodology

Cant

Normal Binding

Offset Binding

Platform

**SKI BRA**

These are attached to the ski tips with wing nuts to prevent the skis from spreading apart. Can be stepped apart for walking.
Ski Walker

Used when the person with a disability cannot support herself on her legs when starting to ski. This is a normal walker with skis attached to the walker legs. The Ski Walker is ONLY an aid until the person can balance on outriggers and ski as in Function 4.

ARM AND ABOVE KNEE AMPUTEE (1 side)

Special equipment can be made. A bucket can be attached to stump of arm and outrigger in one piece or use underarm crutch instead of normal outrigger. When the skier becomes competent, they will usually ski with one outrigger.
1. Discuss the student's disability with the student or parent prior to starting the lesson. It is important that you know the limitations, medical problems and any medication being used by the student.

2. Have the equipment adjusted indoors as it is much warmer there, plus any tools required are easier to use without mitts or gloves on.

3. Make sure that you and your student are properly dressed for the weather (mitts are warmer than gloves, goggles are safer than sunglasses).

4. Prior to using a lift, thoroughly brief the student on all phases of its operation: getting on, riding with safety bar down, getting off and safety features of the lift.

5. Equipment should be in good repair and skis equipped with ski brakes or runaway straps.

6. Keep the student clear of any hazards such as:
   a) snow guns
   b) snow grooming equipment
   c) lift towers
   d) race courses
   e) stay out in the open - do not stop in a position where you cannot be seen by approaching skiers eg. not below bluffs, around corners and below large bumps
   f) stop at the side of trails at all times
   g) look uphill prior to moving onto the trail
   h) do not stop and talk under a Chairlift

7. Be aware of frostbite and hypothermia

8. Accidents can happen when you or your student are tired, so stop skiing before this point of fatigue is reached.

9. In case of an accident, do not leave the injured student. Send someone to get the paramedic or ski patrol and keep patient warm. Make notes of what happened when you get a chance and get the names of witnesses. Fill out an accident report - check with the area for CPSSA accident (incident) forms.

10. Skiing is a fun sport, but because of the many variable, accidents can and may happen. The instructor must be alert to what is happening at all times, and must use sound judgement so as to prevent accidents. As an Instructor, you are in charge of the lesson and student and therefore are responsible for what happens.

11. Advise the area management, including lift operators, ski patrol etc that disabled skiers are on the hill.
**Body Contact Aids**

**LONG "POLE"**

- should be 5m (15 feet) or longer and fairly stable
- useful for stability, balance, rhythm and confidence
- useful in lower levels of teaching
- have student push down on pole
- work on body stance of student while working with "Pole"
- instructors have inside hand facing up

**SHORT "POLE"**

- should be 3m (10 feet) long and fairly stable
- useful for stability, balance, rhythm and confidence
- useful in lower levels of teaching
- have student push down on "Pole" (slightly)
- "Pole" can be used for - leading student on flat terrain, pulling across terrain or uphill and skiing downhill etc.
- instructor must have inside hand facing up

*Remember* - The student is not attached to the "Pole". They can fall under or off the "Pole". Remind your student to stand up.
USE OF TWO "POLES"

- poles should be at least 3M (10 FEET) long and fairly stable
- instructor can be in front or back of student
- useful for balance, rhythm, coordination, stability and confidence
- very helpful when teaching the student who is blind

SKI BACKWARDS AND HOLD TIPS

- useful for balance, feeling movements, confidence and in difficult situations
ROPE OR WEBBING HARNESS

• useful for confidence, balance, rhythm and stability
• useful for children

PUSHING STUDENTS UP HILL

• useful for those not able to climb
• enables you to work at bottom of the hill without using a snowmobile and student does not get so tired
• make sure student stiffens body as this makes it easier to push them uphill
Disabled Skiing Methodology

SKIING ON LOWER SIDE OF STUDENT
- useful for traversing, snowplow, lower levels of teaching
- useful for confidence, balance and stability

HAVE STUDENTS HOLD INSTRUCTOR'S WAIST
- useful for confidence
- useful for going downhill in difficult situations
- Caution - instructor's skis must not be under student's skis. The instructor's skis should be on the outside
TURNING AID

- to assist in direction change by applying pressure to the back knee and with the opposite shoulder to stabilize upper body

RIDING SURFACE LIFT

- put child on instructor's leg, NOT between the legs

BE CAREFUL THAT STUDENTS DO NOT BECOME TOO DEPENDENT ON BODY CONTACT AIDS
**Aids When Teaching Skiing**

1. It may be easier to have students walk (without skis) to the area where you want to start the lesson. Try to start near the lift that you will take them up so they don't have to walk a long distance and get tired.

2. Do not let your student get tired trying to put on skis. Have them sit on the snow and then help them up. For very disabled persons, you may have to put their skis on for them.

3. Students may get tired climbing, so try to progress fast enough that they don't get bored, eg.: traverse instead of straight running, work on side slipping, etc.

4. Get them up a lift where there is easy terrain, as soon as possible.

5. Have them traverse, side slip across and if flat where you stop, have them face downhill and turn around or have them sit down and turn around or use body contact aids to turn around.

6. Do this all the way down the hill and lead into christies (lots of slide) uphill until a turn is achieved.

7. Using a garland exercise - Student is always skiing and learning.

8. Use body contact aids when necessary.

9. Persons with a severe disability may not be able to climb - Use skidoos, walk or push uphill to a gentle or flat slope and work from there using body contact aids. It is better if the Instructor does not have outriggers when teaching persons with a severe disability. In this way the instructor can help the student and be more agile. In some cases, it may be necessary to take off your skis.

10. When students get tired, rest and make the student aware of his limitations.. It is important that the student realizes his limitations, especially when skiing on their own.

11. Teach persons with a disability to ski on their own - (When they are ready)!
   a) Let student ride the lift with another instructor and then with other people in lift line.
b) Teach student about terrain to suit his type of skiing - different snow conditions, how and who to ask for help if needed, eg.: a difficult terrain can always be traversed or side slipped

c) After student has skied several runs, basically on his own, sit down and discuss problems he encountered

d) Try to make them independent so they can ski on their own or with their friends.

**Falling**

Falling is inevitable and it is safer to fall backwards and towards the uphill side. Crouching is encouraged to bring the seat to the ground first and then skidding to a stop. Keep outriggers up and out of the way.

**Rising (3 Track)**

Get yourself back into shape if necessary, replace equipment, ski etc. Sit on hill with stump side up hill with ski across the hill. Bring your body over the ski, replace lower outrigger; then, using the uphill hand push up and forward to balance over ski. Some students will need assistance at the start, but should always be encouraged to do it by themselves, stress independence (but don't let them tire).

**Rising - Double Person Lift (students with severs disability)**

With skis across fall-line, lifter in front puts the uphill ski between the student's legs and puts other ski on downhill side. Lifter from behind lifts from under arms. Student put arms around front lifter and on count of 3, the front lifter brings the skier up and forward. Use legs with back straight to lift.

**Rising - an easier method**

Once your student has skis on and is seated across the fall-line, stand in front of the student, place your ski poles in front of the student's boots (to stop forward motion) grasp one of the student's hand and let them assist pull to stand. Very little effort is required from either person.

**ALL STUDENTS SHOULD EXPERIMENT GETTING UP BY THEMSELVES**
ALPINE CLASSIFICATION BY FUNCTION FOR DISABLED SKI INSTRUCTION

INTERNATIONAL competition classifications are based on FUNCTION availability.

NOTE: The following classifications are for Ski Instruction only - NOT for competition. For competition refer to International Paralympic Committee.

To be able-bodied is a Function and a person with a disability means that there is a lack of function. Therefore, this manual is written on Function availability only and not whether the function is lost through cerebral palsy, paraplegia, amputation or anything else.

FUNCTION 1- Blind, Skiing with Guide

a) Totally blind
b) Partially sighted - 6/60 or 20% field of vision

FUNCTION 2- Skiing with 2 skis & 2 poles

a) Single above knee amputee skiing on prosthesis
b) Below knee amputee-single or double - skiing on prosthesis
c) Slight polio - skiing on limbs
d) Other disabled, e.g., cerebral palsy, - skiing with 2 skis and 2 ski poles

FUNCTION 3 - 3 Track - 1 ski and 2 Outriggers

a) Above knee amputee skiing on one leg
b) Below knee amputee skiing without prosthesis
c) Polio or persons with a disability and ski on one leg
d) Double leg amputee skiing on one prosthesis
**FUNCTION 4 - 4 Track - 2 ski and 2 Outriggers**

a) Double above knee amputee using prosthesis

b) Polio - with braces

c) Cerebral palsy and persons with other disability having necessity to ski 4 Track

**FUNCTION 5 - Arm Disabilities (amputees, paralysis, congenital malfunction)**

a) Double - unable to use poles

b) Single - able to use one pole

**FUNCTION 6 - Others**

a) Trainable mentally handicapped

b) Multi-disability - e.g., paralysis on one side. Usually the most dominant disability determines the methodology of teaching. e.g. if a student has paralysis on one side the technique of teaching may be a combination of function 3 and function 4, with special adaptation to the outriggers.

c) Deaf

**FUNCTION 7 - Sitskis, Sledges, Biski and Quadski (paraplegics, quadriplegics, weakness of Lower Limbs)**

a) usually confined to a wheelchair. The amount of strength in the upper body and location of the lesion will determine the type of equipment to be used by persons with these disabilities.
TEACHING TECHNIQUES

VISUALLY IMPAIRED FUNCTION 1

Inside  "Remember, you are the Student's eyes"

Verbal communication is the most important aspect of teaching a student who is visually impaired or totally blind. Before starting to teach, establish what vision if any, the student has. Make the student wear goggles at all times for protection from the sun and objects that may injure them. At the start, guide from the back but as they progress, it is recommended that the guide ski in front of the student. The voice coming from the front gives a better direction to follow without the skier moving his/her head.

1. Introduce yourself to the student.
2. Always say their name when directing conservation at them. Say who is speaking until such time as they get to know your voice.
3. Discuss the visual impairment and any other medical problems with the student or parent.
4. For new skiers, explain the operation of the equipment by having them feel the skis and binding and then trying on the equipment.
5. Explain the key words or commands that you will use, i.e.; turn left, turn right, slow or stop.
6. Speak loud and clear at all times.

Outside:

1. Ensure that they are properly dressed for the weather, goggles should be worn at all time on the hill for protection from the elements, the sun and other objects.
2. Explain all the noises to the student that comes from the snow guns, snowmobiles, lifts, etc., and their location in reference to the fall line.
3. DO NOT leave the student alone at any time on the hill. It is very lonely in a dark strange surrounding.
**SKI LESSON:** First lesson of Progression

1. Have the student walk around on the snow with the ski boots on.

2. Standing still, have the student transfer their weight slowly from one foot to the other. Explain how this weight transfer will be used in the future when they will learn to turn the skis.

3. Have the student lean forward to get the feeling of the increase of pressure on the toes and shins.

4. Have the student lean backwards to get the feeling of the increase of pressure on the heels. In both of these exercises have the student tell you what they feel. Explain to them the feeling they should get in a normal skiing stance.

5. Now take the student for a walk on the slope that they will be skiing on. Have the student explain to you where the pressure is on their feet and at this time explain to them where they are in reference to the fall line.

6. Place the student in a wide track stance facing downhill on a slope as if you were going to do straight running and have them experience the forward pressure on their feet. This pressure will be the same when they have skis on their feet and doing straight running downhill. Also have them stand in a wedge position on the slope to experience the different pressure pattern.

7. Teach students how to make an emergency stop.

8. On the flat have the student put on one ski and using the poles for balance, slide on the one ski. The student will feel how easily the ski slides on the snow. Try the ski on each foot.

9. Now progress as if you were teaching a sighted person.

**TEACHING AIDS**

1. Physical contact is very important. Put the student into the positions you want them by physical contact.

2. When walking or moving about have the student hold your elbow.

3. Use a pole, **NOT A SKI POLE**, to help guide and control the student. A rope harness may also be used.
4. Keep talking so that the student is aware of your position, they use your voice as a reference. It also lets the student know that you are still there. Instruct the student to stop on losing voice contact.

5. With a beginning student, ski behind them because from there it is easier for you to see where they are going. As they progress, it is suggested that you ski in front of them because they can follow the sound of your skis and the sound of your voice.

6. Anticipate a delay from the time you give the student a command until the time they react.

7. The guide should be a proficient skier.

8. Use the "number positions" as you see fit.
NUMBER POSITIONS

This aid is designed to help the student know his position with reference to the fall line. As the student progresses, he may stay in the 2, 3 and 4 range as the links his turns. The important aspect if this aid is that the student will realize that when s/he is in position 3, s/he will accelerate because s/he is going down the hill. It will not be necessary to use this aid as the student becomes more proficient.
BELOW THE KNEE AMPUTEES FUNCTION 2
Skiing with 2 skis and 2 poles

The skiers should be taught as able-bodied skier according to CSIA methods, noting the inability to flex the ankle on the amputated side. Check equipment aids in the equipment section.

A recent amputee might choose to start skiing on outriggers either with or without their prosthesis. In these cases teach as for 3 Track or 4 Track. When skiing confidence is attained or the stump has healed sufficiently to wear a proper skiing or walking prosthesis, have them ski as an able-bodied skier.

NOTE: Encourage below knee amputees who have a reasonable length of stump left, to ski on the prosthesis.
3 TRACK

Three Track

Usually the progress is very quick with this function. Keep climbing on the hill to a minimum by using the chair lift. Avoid surface lifts due to the pressure on one leg for a long period of time. The CSIA progression could be used but avoid the wedge turns. When moving on the ski, small hops, flexion and extension of the knee and ankle will assist in turning.

Adjust Length of Outriggers

This is most important. While standing straight up on the ski with the arm held down, the outrigger ski should be approximately 2 to 4 cm off the snow.

Walking with Standard Outriggers

Place outriggers obliquely to the ski next to the boot, to move forward push backwards with a downward pressure on the edges of the outriggers. As the ski slides forward, bring the outriggers forward and repeat action.

Walking with Flip-up Outriggers

Bring the outriggers skis into the upright position, place along side of boot and use as normal crutches.

Heeling and Stopping

This is an elementary way of slowing to a stop. While straight running, lower the body over the boot till the heel of the outrigger digs into the snow. When you add pressure and weight to the outriggers, the speed will decrease - a release of pressure will allow an increase of speed.

This exercise should be taught along with straight running.

Climbing Side Step

Do as little of this as possible - USE THE LIFTS! Place the ski across the fall-line on its uphill edge. Place lower outrigger next to boot also across fall line. The uphill outrigger should be placed about 45 cm (18 inches) uphill, with a hopping motion, move the leg towards uphill outrigger. Balancing on leg, repeat to move uphill remembering to use the uphill edge of the ski.
3 TRACK (cont'd))

FUNCTION 3

**Diagonal Side Step**

Do as little of this as possible - **USE THE LIFTS**! This enables a person to get across a hill while climbing. Similar to climbing side step, except when hopping, hop forward and uphill. When you come to the end of the traverse, step around downhill, or sit down and change direction. When starting, use small hops on a shallow hill.

**Sliding Straight Run**

Straight running will allow the student to experience and adapt to balance in motion

- Stance should be with knee and ankle flexed with the body weight resting over full foot.
- Outriggers should be placed on the snow between ski tip and boot.
- Keep the stump pressed against the good leg to stabilize movement.

**Progression:**

- Longer slope and slightly faster speed
- Add a hop through a flex and extension of the leg.
- Emphasize that the leg is where the up motion comes from, NOT the outriggers
- Add a change of direction of the foot with the hop
Traversing

- Position body over full foot with majority of weight resting on leg and NOT the outriggers.

- Outriggers slightly forward of the foot.

- Edging - when turning with the ski leg on the outside of the turn, use ankle and knee; and then the ski leg is on the inside of the turn, use inclination

- Ski should be edged enough to allow it to track across slope

Progression:

Change amount of knee, ankle and hip flexion inward to create more edge.
Diagonal Side Slipping

• Start this exercise from a slow traverse, roll the knee downhill to allow the ski to slide.

• Outriggers should travel in the same direction as the upper body.

• Some weight may be carried on the outriggers.

• Pivot the foot to control steering angle.

• A hop or extension can also be used to help release the edge.

Progression:

• Less weight on outriggers.

• Pivot foot to control steering angle.

• An extension or hop can be used to help release the edge.
Disabled Skiing Methodology

**Uphill Christie**

- Start from diagonal sideslip, pivot the foot in the direction of the turn, increasing the edge as the turn progresses.

---

**Fan Progression:**

- Uphill Christie can be advanced to the fall-line in both directions.

---

**Progression:**

- Both directions should be practiced with more emphasis when the stump side is downhill.
- Practice with a hop with emphasis on the up motion from the leg, NOT the outriggers.
Parallel Christie

- Start from steep traverse, flex and extend and turn the foot in the direction desired.

Increase edge until desired direction is reached and repeat in opposite direction to link turns.
**Parallel Christie Progression to Medium Radius Christies**

As proficiency progresses, edging and flexion is more evident and carving the turns in a more aggressive manner.

- From a flexed position, extension and unweighting allows ski to move under torso
- Pivot the ski and direct it to the side, upper body remains quiet
- Add edging gradually
- These turns are regulated by edging and pressure control to the ski

Starting with medium radius and fluid continuous turns and progressing into short radius fall-line turns refer to "Dynamic Parallel" in the CSIA Manual.

**Short Radius Christie**

Same as parallel christie with quicker actions, resulting in shorter radius turns. The outriggers and upper body will tend to stay in the fall-line. Each turn must be made completely to maintain good control.

*Use Outriggers for Balance Only*

Some skiers use long normal ski poles instead of outriggers as they become more proficient skiers.
4 TRACK

FUNCTION 4

VARIATIONS

This function will have more variations of mobility and disabilities than other functions so discretion and thought must be given to each student when approaching his method of skiing.

The emphasis is to find their natural balance position from the start.

The instructor is encouraged to have the disabled skier in a "high" stance with a minimum amount of weight or pressure on the outriggers. You are referred to the CSIA manual to determine the stance of a skier.

Two methods of skiing are used, one with "limited knee movement" and the other with "some knee flexion". These two methods of skiing are general but lead to the method used to turn the skis. In the case of "limited knee movement", rotation of the hip will be the main force linked with the turning of the outrigger. Where "knee flexion" is possible, then use of the lower limbs will be the main turning force with a possible use of rotation.

On Snow Procedures

1. Outriggers: adjust length and angle
2. Walking: with boots on, on floor and then on snow with outriggers, long pole or walker
3. Sliding: with skis and outriggers on level surface
4. On Slope: use a very shallow slope; climbing, straight running, heeling or braking with outriggers
5. Straight Running across the Fall-line: both direction; sliding on flat skis; use hip movement or lateral movement of knees to get flat ski
6. Traverse: weight on downhill ski; stance; weight distribution
7. Turns: Christie uphill; use fan progression
8. Parallel Turns: skidded turns; progress to carved turns

Start On a Very shallow slope

Straight Running

If necessary, use teaching aids to help attain their balance point before using outriggers. Using teaching aids will also be a confidence builder as many will never have experienced the freedom of sliding before.
In some cases it may be necessary to use two to four people to assist in helping a 4 Tracker get started.

**Falling**

Let them! They will anyway! Try to have them fall uphill and slightly backwards if possible, trying to keep the outriggers away from the body.

**Rising**

There is no single way of achieving this. Many students will need aid for a long time, but must be made to make most of the effort themselves. ** HOWEVER, do not allow them to get exhausted trying to get up on their own.**

**Fan Progression**

Practice steering on a shallow slope in both directions. Increase the speed as ability improves, continuing the turn to a complete stop, being careful not to slide backwards at the finish.

This movement may be started at the bottom of a slope from a straight running position, and then moving up the slope continue the exercise from a traverse position.

The hip will start to come into play with some students. After the initiation of the turn with the upper body and outriggers, the hip will rotate in the direction of the turn and moved slightly to the outside of the turn. This helps get a quicker change of direction of the skis.

**Steering**

Steering can be effected in more than one way, but the most effective seems to be using the outriggers and upper body rotation to initiate the turn, unless the student has the ability to effect some form of unweighting.

**Rotation**

Rotation is a rotary motion of the body in the direction of the turn. This motion or rotary movement can be started by heeling the inside outrigger, causing the body and outside outrigger to rotate in the direction of the turn.

The upper body must be blocked to transmit this power to the skis.

Once the turn has been started, the lower torso should be allowed to follow. Most 4 Trackers have the upper body strength to perform these movements.
NOTE: Upper body is blocked throughout the turn.
**ARM DISABILITIES**

*FUNCTION 5*

*Arm Amputees*

Most of the arm amputees can be taught as able-bodied person. Balance may be a problem when learning, but most amputees have achieved a balance position in their everyday life.

Other concerns will be getting skis to the hill and putting them on, (step-in bindings with ski brakes will help) and getting after a fall.

If a single arm amputee uses a pole, watch for over rotation of the upper body.

FALLING - when wearing a prosthesis, care must be taken to keep the prosthesis up and away from the body to avoid injury.

**MENTALLY HANDICAPPED**

*FUNCTION 6*

*DEVELOPMENTALLY DISABLED*

With developmentally disabled individuals, it is not a physical disability that has to be contended with. More often than not, it is different types of learning or behavior problems that impede skill acquisition. For example, the student's attention skills i.e.: the ability to listen and watch, may not be well developed. The development of fundamental skills such as walking, running, speech, etc., may also be impaired. The lower the functioning level of the student, the greater the probability that the above abilities will be impaired and that behavior problems will be evidenced. There are specific techniques and methodological considerations that have been successful in helping this population to acquire skills. These can be applied to help produce good skiing techniques.

*Technique Considerations*

It is suggested that the progressions developed for skiing maneuvers be taught at a slower rate than usual and in step by step fashion. The progressions themselves may have to be broken down into more steps than are outlined in the "Maneuvers" section of the CSIA manual. By analyzing the maneuvers in this fashion they become more accessible to the student. There are more opportunities for success as well as for positive feedback from the instructor.
MENTALLY HANDICAPPED (cont’d)  FUNCTION 6

Methodology Considerations

Two important teaching considerations to be aware of, and to implement when presenting skills and maneuvers to these students are:

1. the types of assistance that you give your students
2. fading assistance

Types of assistance refers to the physical, visual or verbal help that you can give your student. Giving the appropriate type of assistance is important if the student is to learn to perform individual steps or entire skills and maneuvers correctly. Performing correctly is important right from the beginning. We want the student to experience as little failure as possible so that he/she does not become frustrated. Also, an inappropriately performed skill or maneuver can be especially difficult to correct with some developmentally disabled individuals.

Physical assistance, i.e., moving the student through part, or an entire skill or maneuver may be necessary so that the student actually feels how to perform correctly. Visual assistance usually refers to instructor demonstration, but additional visual cues have been found to be helpful. For example, making coloured marks in the snow, such as a "V" so that the student can place his skis on, can help to develop the concept of tails out, in the snowplow. Parallel lines in the snow can be used for the student to practice side stepping. Reference points can be pointed out and focused upon to help develop the concept of being across the fall-line. Verbal instruction should be kept simple and direct.

Ski-bras are useful equipment, especially for conveying the concepts involved in the snowplow and snowplow turn. Other aids such as poles are not suggested unless an accompanying physical disability is evident. A one to one teacher-student ratio is suggested at the onset of a program in order to provide the appropriate assistance.

Once the instructor establishes which type of assistance a student requires to correctly perform individual steps or entire skills or maneuvers, he/she must then fade assistance on successive tries. Fading assistance refers to the systematic decrease of assistance so that the student becomes more independent in performing individual steps or entire skills and maneuvers correctly. Fading assistance too quickly will frustrate the student. Fading assistance too slowly will make the student dependent on the instructor.

Praising all instances of correct and progressively independent performance will also help to produce good skiing techniques. Finally, use a surface tow at first rather than a chairlift, as a chair can lead to control problems both on the chair and on the hill.
MENTALLY HANDICAPPED (cont’d)  

FUNCTION 6

These methodological considerations will help the instructor to deal with developmental problems as well as to promote skill and maneuver acquisition. If inappropriate behavior is impeding progress, do not be afraid to be firm in demanding appropriate in-hill behavior. Work closely with parents or guardians who know the student in order that you are aware of individual behavior problems and how they are usually handled. Consistency in this regard is important. An intensive look at teaching skiing to this population can be found in the ISIP manual outlines in the reference section.

The system of using games as now covered in CSIA courses is also a consideration in the program for developmentally students.
HEARING IMPAIRED  

FUNCTION 6

Person who have a hearing impairment should be taught the able-bodied system of skiing except they can not hear verbal commands.

- Use physical demonstrations (put student into position you want), rather than verbal explanations. Show corrections in the same way.

- Carry a pencil and paper for communicating.

- When demonstrating, have a talk with your student through an interpreter (signer), to explain what you want and expect, if this is not possible, write down in brief form what you want and expect.

- When speaking to the student face them when you speak so that they are able to see your lips. Many hearing impaired lip read well.

Teaching Aids

When skiing backwards ahead of the student, point to the direction you wish them to turn.

Finger Spelling - the language of the DEAF

![Finger Spelling Chart]
HEARING IMPAIRED

FUNCTION 6

Signing

Happy to Meet You

My name is

BATHROOM, TOILET
COME-ON
FOLLOW
ENJOY, appreciate
Disability Skiing Methodology

**HEARING IMPAIRED**

**FUNCTION 6**

- GOOD
- HELP, aid
- LOOK AT, WATCH
- PAY ATTENTION
- PLEASE
- PRACTICE, exercise
- READY
- SHOES
- SHOW, demonstrate
- SKI
- START, begin
- STOP
- TRY, effort
- UNDERSTAND
- WAIT
A relatively new piece of equipment that has been developed will provide the paraplegic with the ability to ski on one ski with outriggers and present a three track configuration. Previously the paraplegic used the Sledge as a means of enjoying the winter on the ski slopes. In the past few years the Sitski has been developed to provide greater flexibility and freedom for the persons with a disability.

There are many sitskis on the market and more are being developed. The Sitski is a piece of equipment that has a molded seat placed on a frame and this frame is attached to a ski. The seat should fit snugly since it acts in a similar manner as the Ski Boot on the foot of a skier. The frame is mounted with a shock absorber and has the facility to be lifted so that it can be self loaded on a Chairlift. The Sitskier is also equipped with short adjustable outriggers to provide support when required and an aid to assist turning the sitski. The Sitski will usually progress very quickly in a similar way that an advanced or expert skier would. It ultimately makes the skier independent of others.

The Sitskier can be taught in a progression similar to the Three Track Skier. If the individual is athletic and in excellent shape, it is possible for an injury level as high as T-5 to use the sitski. A higher level of injury may lack balance and strength to control the movement of the sitski.
FUNCTION 7

In many cases the Sitskier has had the opportunity to use the Sledge as a beginning stage of skiing. This experience will provide the skier with a knowledge of moving over the slopes at a ski area and strengthening the arms, back and abdomen. It is suggested that some experience in using the Sledge could be helpful in starting a new skier on the Sitski.

When injury levels are above T-10, a higher seat belt (chest belt) should be considered to provide support and provide the skier with the opportunity to lean forward and sideways and transfer weight for the initiation of the turn. A test of strength of the student is to have her/him sit in the sitski and attempt to push the sitski to an upright position from a 45 degree angle.

The skier should be comfortable and snug in the seat to provide a response to the ski in a similar fashion to a ski boot on a stand-up skier.

**Preparation for Sitskiing**

- check the equipment - ensure the ski, outriggers, seat and harness are in good repair
- check the handles and belts
- fill the space between the body and the seat and bucket with padding such as foam to avoid any lateral movement of the body if required

**check:**

- angle of the skier in the sitting and forward position
- height of the outriggers
- ski lift attachments (safety line, evacuation harness)
- outrigger hand holds

**Familiarization with Mobility (with the Sitski stationary)**

- upper body has forward and backward movement and observe the ability to move upright from a forward position
- upper body side to side movement
- edging, weight on one outrigger
- rotating upper body movements (the outrigger glide)
- balance on ski without outriggers
**SITSKI (cont'd) Function 7**

- Lift rear of ski by supporting on two outriggers
- Leaning on outriggers, perform a 360 degree movement by moving the rear of the ski

**Falling on a Side/Getting up with Assistance (on level ground)**

Take advantage of a fall to demonstrate getting up, with assistance:

- Downhill outrigger around Assistant's hip, uphill outrigger on ground as support
- The assistant places her/himself sideways to the Sitski and exerts pressure with one of his skis on the ski of the Sitski while pulling the outrigger - lean away from the Sitski
- The student assists by pushing on the uphill outrigger until attaining an upright position

**Falling on a slope**

- The same method can be used when falling on a slope with the ski of the Sitski placed across the slope

**Moving on Flat Ground (outrigger ski in down position)**

- With the outriggers ahead of the body apply pressure on the tail of the outrigger ski and move backward
- With the outrigger skis behind and to the side of the Sitskier and in an outward "V" push against the edge of the outrigger ski and move forward
- Move backwards up a small incline, ending on a flat surface
- Circuit training: With the technique used on para 2 perform a forward turn of 45 degrees, then a backward turn of 45 degrees

**Sliding Downhill on a Flat Ski - Elementary Form**

The incline should have a gentle slope and with a lengthy outrun at the bottom.
SITSKI (cont'd)  

FUNCTION 7

Starting on a slope

• place the outriggers ahead of the skier and place the outrigger skis in a "V" position on their edges and move to a position to run down the slope

• release the outrigger edge and slide forward in a relaxed and balanced position

• while sliding forward lift one outrigger and maintain balance and then place it on the snow and lift the opposite outrigger - alternate lifting left then the right outriggers

• lift the both outriggers

To STOP brake with the heels of the outriggers (apply pressure on the heel of the outrigger ski by moving the upper body forward to apply the pressure on the outriggers)

Traversing across a slope

• the skier will face across the slope in a shallow traverse with the outriggers close to the skier at an angle of about sixty degrees to the ground

• the shoulders should be facing at a slight angle down the slope

• from the stopped position, facing across the hill, free the edge by leaning the upper body forward in the downhill direction, steer the outriggers in the direction of travel

• the body should have an angulation to the ski and may be checked by lifting the downhill outrigger

• with a slight pressure heel the uphill outrigger, turning the downhill outrigger into the slope and a slight rotation of the head and shoulders uphill, the ski will skid uphill and the skier comes to a stop - have her/him prepared to hold the position across the slope so s/he does not slide backwards

• with a gentle rocking motion the skier will then begin to continue down the slope
SITSKI (cont'd)  Function 7

Forward Side Slipping (sliding across the slope and downhill)

- start this exercise from a slow traverse, move the upper body downhill to allow the ski to slide
- the upper body and outriggers should face downhill and in the direction of the slide
- equally weight both outriggers to maintain the slide
- rotate the hip slightly to control the steering angle

Uphill Christie

- stop the skier on convex terrain to feel the balance over the ski and to establish pivoting of the ski
- start with a forward slide slip
- descend across the slope, heel the uphill outrigger to initiate a rounded slide into the hill, steer the downhill outrigger uphill
- using flatter terrain, start the counter movement with the upper body
- continue the exercise in both directions and increase the turn radius

Exercise: A Christie Garland Exercise could be practiced at this point to improve the control and maneuver.

Fan Progression

Utilize convex terrain for this exercise

- continue the traverse exercise with progressively steeper angles to the hill
- turns into the hill in both directions will be performed by a slight pressure to heel the uphill outrigger, maintaining pressure on the downhill outrigger and turning slightly uphill and a slight rotation of the head and shoulder to the uphill side
- continue the exercise in both directions until the mono-skier has turned in both directions off the fall–Line

56


**SITSKI (cont'd) FUNCTION 7**

- starting in a steep traverse across the *fall-line* heel the downhill outrigger, turn the uphill outrigger downhill, rotate the shoulders in the direction of travel to accomplish a turn across the *fall line*

- practice the exercise in the opposite direction

- link the turns

**Caution:** watch for overrotation to prevent the skier from running backwards downhill

**Parallel Christie Progression to Medium Radius Christies**

As proficiency progresses, edging and upper body movement, body angulation is more evident and carving the turns in a more aggressive manner:

- the body and outriggers will tend to stay in the fall line to produce shorter radius turns

- these turns are regulated by edging and forward body pressure to control the carving produced by the ski

Starting with medium radius and fluid continuous turns and progress into short radius fall-line turns.

**Riding Lifts and other devices**

**Uphill Towing (T-Bar Training)**

The Instructor should explain the overall function of the T-Bar while sitting at the bottom of the hill on level ground near the lift. Then the Instructor will explain the method of towing the Sitski uphill, getting on the lift, staying in the tow track and getting off the lift.

**The Instructor will then:**

- test on level ground with a rope attached to the mono-ski and pulled by the Instructor

- this is repeated going uphill of a gentle slope

- have the student test the unhooking while being towed by the instructor on level ground
FUNCTION 7

- the Instructor then takes the student to the T-Bar and while holding the rope pulls the student rides the lift
- the Instructor will then attach the rope to the T-Bar and have the student attach the rope to the safety release on the Sitski

**Loading and Unloading Sitskis on Chairlifts**

**Chairlift Loading**

- check compatibility of Sitski and Chairlift (chair height at loading area, type of covering on seat to allow smooth release when unloading)
- before entering into the lift Line show student how the Sitski works when loading and unloading
- with the student in the Sitski observe how the loading of the lift is done, the operation of the safety bar and explain the procedure when unloading
- have the student practice loading two or three times (without the lift operating)
- when you feel comfortable that the student understands the lift operation enter the lift line
- if possible use two people to load the first few times
- as you approach the head of the line have the Lift attendant slow or stop the lift
- enter the loading area with skier and stop at loading point
- raise the handle of the Sitski by taking the weight off the Sitski and support skier from falling sideways (hold on to handles on Sitski)
- watch the approaching chair to be loaded
Chair Lift Unloading

- Remove safety strap
- Have student place outriggers on each side of Sitski (outrigger skis in down position)
- Lift safety Bar
- Instructor should always have a firm grip on the Seat Handles and Sitski to prevent premature unloading
- Make sure Sitski points straight towards the unloading ramp
- A small push by the Instructor may be needed to start the ski moving on the unloading ramp (it may help if the chairlift is stopped the first two or three times the skier uses the lift)

**NOTE:** These are general instructions for the loading and unloading of Sitskis on Chairlifts. Local regulations may dictate slightly different procedures. Check with the Program Coordinator and the Hill Operations Manager for an variance from these instructions.
SITSKI(cont'd)  
FUNCTION 7  
CHAIRLIFT EVACUATION  

Lift Evacuation Plan  

Special procedures for disabled skiers using Sitski  

Preamble:  

- Every Sledger must be accompanied by an escort who is certified by the director of the disabled Program, and be familiar with the evacuation procedure.  
- A Sitskier may or may not be accompanied by an escort but must be familiar with the evacuation procedure.  
- The user of the device and the escort must ensure that the evacuation portion of the equipment is complete and in safe condition.  
- In the event of a lift evacuation, the line herald must inform the evacuation leader if any Sitskis are on the line.  

Evacuation Procedure:  

The following routine should be followed, however, if any difficulty arises, one patroller must be prepared to ascend to the chair and assist in securing the skier to the evacuation rope.  

- Place the TEE between the legs of the Escort  
- Take the device's evacuation and clip it into the metal ring on top of the evacuation tee  
- Once the skier is secured to the evacuation tee, ensure that "Belay is on". When answered "on Belay", unfasten the safety line from the rear of the seat  
- The escort can assist the skier in smoothly sliding off the chair  
- The evacuation team should be prepared to have two people ready to stabilize the device and skier when they reach the snow surface.
LOADING AND UNLOADING SIT SKIS ON CHAIRLIFTS

These are requirements for Sitski operation at Mt. Washington, B.C.

Loading Disabled Skiers in SITSKIS

1. It is recommended that all persons tethering a Sitski wear a safety vest.
2. Some of these skiers will require assistance.
3. These skiers must be accompanied by an escort.
4. The escort, or escorts, must be certified by the Sitski Supervisor or Ski School Director, to be fully trained in all aspects of chairlift loading, unloading and evacuation with these devices.
5. The skier is responsible to have the Lift Operator notified prior to loading, of the particular loading and unloading requirements of the skier, i.e., lift speed etc.
6. During the chairlift loading or unloading the lift operator shall remain in his/her normal operating position unless the chairlift is stopped.
7. The escort shall assist the Sitskier in grasping the roll bar to aid in moving it all the way on to the chairlift seat.
8. The escort must attach the sitski's safety line as soon as possible after loading, and must ensure a minimum of slack in the line.
9. The sitskier may require a full stop to load.
10. The loading lift operator must contact the top unloading operator and inform him/her of the chair number and unloading requirements of the skier.
11. The top lift operator should watch for hand signals from the skier or escort, i.e., SLOW, STOP.

Unloading

The unloading procedure is the same as previously written.
The person with a disability who uses a wheelchair will find great pleasure when using a Sledge. This type of skiing will provide freedom of movement on ski slopes which will be an experience not accomplished on a wheelchair.

the physical condition of the student will be assessed by the qualified members of the program. Factors that are considered include the strength of the student’s grip and location of the lesion. The strength of the grip will determine the type of pole used. Most common poles are the spike or kayak types.

Loading the Student in the Sledge

When lifting from a wheelchair into a sledge the student will be made comfortable by having the knees slightly bent with a knee pad placed under the knees to prevent hypertension.

NOTE: Before moving the student into the Sledge check all straps and buckles to ensure that they have not been damaged. If straps are frayed or worn, buckles bent or damaged then replace them with serviceable equipment.

• fasten seat belt, shoulder harness and all other straps

• install and fasten the waterproof cover

• check that the Evacuation Straps are properly installed and stowed in the correct location
**Sledge**

- Check that there are not any loose lines hanging out of the sledge
- Check the Tether line and ensure it is securely attached to the sledge and that it is not frayed or damaged

**Tether**

The Instructor should explain to the student the purpose of the Tether Strap and the role of the Tether Person

- It serves as a safety mechanism in the event the sledge gets out of control
- Explain the Fall Line
- Explain how the uphill or inside edges are used to carve a turn
- Use a shallow slope in the first lesson
- Have the student find a balanced position when moving

**Stop**

To perform a stop while moving down a slope:

- Ski down the fall line
- Plant the pole on the uphill side and lean into the hill
- Continuing turning into the hill until stopped
- Practice in both directions
- If the student has difficulty in stopping the Tether Person will bring the sledge under control by utilizing a hockey stop manoeuvre

**Turning the Sledge**

Turning the sledge is initiated by:

- Pole plant on the downhill side
- Lean the body to the inside of the turn, this shifts the body weight and causes the ski edge to turn the sledge
- Straighten the body and prepare for the next turn
- The next turn is commenced just before the sledge enters the fall line
Disabled Skiing Methodology

Sledge  

FUNCTION 7

- stress the need for smooth arc turns and rhythm when shifting the upper body weight

Advanced Turns

As the student advances in ability to turn, the Tether person should have the skill to anticipate when the student will turn and turn at the same time.

Encourage the student to perform tighter turns on intermediate terrain.

Suggest to the students to have one of their friends to become a certified Tether Person.

The student should be made aware that their vision is restricted since they are sitting so close to the surface.

Loading on a Chairlift

To enable the student understand the chairlift operation move the student to a position out of the traffic adjacent to the chairlift loading area. As the chair is loaded with skiers explain the operation and mechanics of the loading and unloading.

When ready to load have the student join the lift line and move to the loading area:

- request the lift operator to slow the lift
- have the student move to the loading area
- two persons are required to load the sledge (usually the tether person and lift operator)
- the Instructor and lift operator will stand facing each other on each side of the sledge, grasp the roll bar with one hand and with the other hand grasp a hand hold strap or front of the sledge
- on the Instructors signal lift and place the sledge on the chair seat, ensuring the roll bar rests against the chair backrest
- fasten the safety strap to the cross bar at the back of the chair and instruct the student to sit back and not lean forward
- lower the safety bar

64
FUNCTION 7

Sledge Loading on Chairlift

When approaching the unloading area:

- signal the operator to slow the lift
- raise the safety bar
- release the safety strap
- place hands in the same position as used during the loading
- tilt the sledge forward and push off as soon as the front of the sledge makes contact with the snow
- guide the sledge with the roll bar away from the loading area
**Sledge**

**Clothing**

While in the sledge, snow has a tendency to fly up into the face of the skier so proper clothing is an important factor. Goggles, a hat or toque and a warm waterproof jacket should be worn.

Special care should be taken with quadraplegics and paraplegics. Since they have little or no feeling in their lower body, frostbite can easily set in. Use insulated boots to protect the feet from frostbite. Layered clothing should also be worn so the body temperature can be adjusted depending on the amount of physical activity. Waterproof mittens or gloves are a necessary requirement.

**BISKI, QUADSKI (Dual ski)**

A recent addition to the equipment available for persons who have a weakness or paralysis of the lower limbs or have suffered the loss of the lower extremities is the Biski and Quadski.

Since all of the persons mentioned above may not be able to adapt to the Sitski but may be able to use the Biski or Quadski. These devices can also be use by persons who do not have a good sense of balance or may have a weakness in one or both their arms.

The Quadski has a hand rest for the skier. It is also equipped with outriggers or pontoons which are attached to the base of the device. The skier is not required to use outriggers for stability and control.

This type of skiing has the advantage of being higher above the snow surface than the Sledge, thus providing better visibility to the skier. It is advised that a Tether person be used to assist the skier using the Biski or Quadski.
The following is a list of ski terms you should become familiar with when seeking information about a ski hill.

**Vertical Drop**

If a triangle were drawn representing the slope of a hill (see "A") vertical drop represents the distance as shown. This measurement should represent the distance vertically from the bottom of the lift to the top.

![Diagram of Vertical Drop](image)

**Maximum Length**

Describes the length of the longest ski run offered. Because the degree of steepness varies with each run and the vertical drop remains the same, some ski runs may vary quite a bit in distance and still be supplied by the same lift. Usually, the beginner or novice run will be the longest.

**Lifts**

There are several types of ski lifts used to transport skiers to the top of slopes. Four basic lifts are used and an explanation of each follows:

a) chair lift
b) T-Bar
c) Rope, Cable or Handle tow
d) J-Bar or Poma lift
**Chairlift**

There are different types of chair lifts used today:

a) single

b) double

c) triple

d) quad

e) detachable quad

The most common chair lift used in ski areas are the Double and Triple chair lifts. These lifts are most popular with skiers, especially beginners because of the comfort of riding in a chair with your skis off the ground and secondly the relatively short learning period required to use the lift in a proficient manner.

Designs of chairlifts vary with the manufacturer as well as the age of the lift. All chair lifts have designated loading and unloading areas and have instructions for loading and unloading posted at prominent places.

**Rope, Cable or Handle Tow (surface lift)**

The rope or cable tow has a relatively low cost of installation compared to Chair lifts and T-Bars. Most rope tows are home made and although they may seem crude at first glance, the rope tow must meet stringent safety standards set by government agencies.

The original rope tow still found today is a continuous piece of hemp or nylon approximately 2.5 - 5.0 cm in diameter driven usually be an electric, gasoline or diesel motor. On the uphill side, the rope will be free of all pulleys and wheels. Usually on the down side the rope will be suspended on pulleys much higher than the upside.

It is extremely important to follow all safety rules regarding the use of this type of lift for if used improperly, the skier will not only have difficulty in holding onto the rope, but the skier's clothes could become entangled or torn.

Before a beginner uses this type of lift, an introductory lesson should be taught by a qualified instructor or lift operator.

The cable and handle tow are similar to the rope tow except the cable is usually made of standard metal rather than hemp or plastic. Also, attached to the cable you will find a handle or loop to hold onto rather than grabbing a rope. These tows also must meet all safety standards as set by government agencies.
**T- Bar (surface lift)**

The T-Bar is named because of the shape of the device used to pull the skier uphill (upside down T). This lift is a little harder to use than the chair lift. However, with proper instruction from an instructor or lift attendant, a skier usually feels at ease after two or three trips up the hill.

The student must be taught to stand up straight and wait for the T-Bar to *pull* the skier uphill. Otherwise, the "T" device will only stretch and the skier usually ends up sitting on the ground.

The lift is designed to carry two people. One person may use the lift however, two people will help balance the "T" and find it easier to use.

**"J"- Bar**

The J-Bar is similar to the T-Bar in that the skier will be pulled up the hill. The big difference between the two is that the J-Bar will only carry one person up the hill. It is most important that the beginner skier be given full instructions on the use of the lift by a qualified instructor or lift operator.

*The rope, cable or handle "T" Bar and "J" Bar tows are not recommended for use by most skiers who have a disability.*

**Ski Lift Safety**

All lifts must meet rigid safety standards and are inspected once or twice annually by government inspectors.

Emergency stopping devices are found and well marked at critical areas, i.e. bottom, top, midway, disembarking area and all safety gates.

If a skier has difficulty mounting or loading a particular lift at the bottom the lift operator will normally slow or stop the lift until the skier is ready to load.

At the top or main disembarking area, there will be a safety gate. If the skier should become entangled or "caught up" while disembarking and it is apparent that he or she cannot 'get off' safely, usually the lift operator at the top of the lift will stop the lift, or failing this, the skier will trip the safety gate and the lift will automatically stop. All intermediate towers between the bottom and top of the lift also have safety circuits. If for some reason the main cable became disengaged from the idler wheels, the lift would automatically stop.
Chairlift

Lift Loading

1) Before entering loading area remove pole straps from wrists
2) If using outriggers have skis on the snow
3) Move to the marked loading area
4) Look over the outside shoulder as the chair approaches
5) Keep poles lifted and pointed ahead
6) Keep skis parallel pointing uphill

Riding Lift

7) When seated pull the safety bar down
8) Do not swing or bounce the chair
9) Keep poles together
10) Keep feet on safety bar foot rest (if chair equipped with foot rest)
11) Watch for signs to prepare to unload

Chairlift Unloading

1) Lift safety gate when indicated by sign
2) Do not put pole straps on wrists until leaving the unloading area
3) Make sure outrigger skis are in the "down" position before unloading
4) Stand up at designated point and ski down the incline
5) Leave the unloading area as quickly as possible
Disabled Skiing Methodology

**Riding T–Bar**

**Loading**

1) Remove pole straps from wrists
2) Move to loading area as marked
3) Keep poles in outside hand tips facing forward, holding bar with inside hand
4) Keep poles away from operator
5) Look over inside shoulder, grasp bar as it approaches and place against back of thighs
6) When riding lift, stay relaxed

7) **Do Not sit down or lean back**

**Riding**

1) Flex knees
2) Keep skis in track
3) Get off only at the designated area

**Unloading**

1) First person skis away from the unloading area while the other holds the bar
2) Second person releases the bar gently and then skis quickly away
3) When disembarking leave top of lift as quickly as possible
APPENDIX A : SKIERS RESPONSIBILITY AND SAFETY IN SKIING ACTIVITIES

Safety in skiing for Persons with a Disability

Part I       Safety - general notes
Part II      Review of items needed when planning a ski program
Part III     Medical safety precautions
Part IV      Alpine Safety Rules and Safety Test
Safety in Skiing for Persons with a Disability

Part I Safety - general notes

Skiing is fun - it is an outdoor experience and anyone can participate in it and enjoy the activity even though they are not a top racer or an expert skier. We hope you will enjoy the activity and have the student’s family become a part of the experience.

Skiing is a sport that often the teacher, parents and the student have not had the opportunity of experiencing. In order to provide some guidelines for the preparation of the student, teacher and ski school, for the new activity, a number of factors should be considered in the fall prior to traveling to the ski area.

This preparation must include the type of disability, conditioning, availability of certified ski instructors, medical considerations and other factors that will provide a happy positive experience for the student.

Skiing is an activity that may have some hazards so there is some element of danger involved.

Part II Review of items needed when planning a ski programme

- check information from each student with a disability who is skiing since some special precautions may need to be taken
- review the Code of Responsibility which is general for all ski areas (included in Appendix B)
- discuss what clothing is appropriate for outdoors and skiing (alpine and cross country have different clothing due to increased exertion while cross-country skiing)
- discuss dressing in layers so that outer clothing may be removed during strenuous exercise and put back on when the exercise has finished

Ski school

- have a representative from the ski school give an in-class presentation to the students who are participating
in the outdoor activity. This should include the film “Be Aware Ski With Care” (see Appendix D)

• arrange lessons with the ski school at the ski area.

Ski area

• if students with a disability are taking downhill lessons try to ensure that the instructor for the student is Certified to teach skiers with a disability by the Canadian Association for Disabled Skiing.

• provide a ratio of 1:1 for a student with a disability to instructor unless students with the same disability are taking lessons and the Ski School Director feels one Instructor can teach more than one student.

• students with a disability will often require modified equipment and if the teacher observes that the student’s walk or stance are not normal, or the student has a requirement for canes or crutches and other supporting aids and / or uses a wheelchair the Director or Program Co-ordinator of the Ski School should be made aware of the situation. This will provide them with time to view the student as well as have modified equipment and an instructor available for the lessons.

Rental shop

• notify the ski area rental shop several days prior to visit to ski area (this may be arranged by the Area Ski School if they have been involved in the arrangements) if students with a disability are skiing to ensure that the rental shop has suitable equipment (often modified equipment and / or outriggers are required for the person with a disability to be taught or when participating in skiing)

Type of lift or uphill conveyance at ski area

• investigate the type of lift used and the terrain it accesses as these are very important for skiing in consideration with the ability of the individual student

• have students write the test provided on lift safety
• when any doubt regarding the lift or terrain use the “Bunny Hill” for the first lesson

• discourage the use of long scarves, use a neck tube instead of a scarf, and avoid any loose clothing worn outside a ski jacket or outer clothing

Ski run markers

• review with students ski run markers as they must recognize and understand their meaning (see Appendix B)

• review with students warning signs posted on ski runs

• have students write test on ski run safety prior to arriving at the ski area

Clothing

• blue jeans are inappropriate clothing to wear for outdoor winter activities

• students should wear long underwear

• protective clothing and outdoor wear should be used by the students when taking part in downhill and cross country skiing

• students with some disabilities such as Down syndrome should wear helmets

• the student should be dressed in layers to withstand the cold but not overdressed so that they become overheated when participating in the activities

• helmets should be used by all students who are using Sledges and Sitskis

• use neck tubes or sleeves which are safer than scarves

• wool mitts or cloth gloves should be avoided because they become wet very easily and stay wet

• goggles and/or sun glasses should be worn on sunny days in the spring (prolonged exposure to the sun will cause snow blindness and damage to the eyes

• sun screen should be used to protect the skin on sunny days in the spring


Danger

- students with a mental handicap often do not understand the concept of danger or cause and effect
- be alert
- explain danger
- watch the student carefully
- use buddy system
- conceal items that could cause injury to the student
- demonstrate dangers with a video

Speed

- students with a mental handicap as well as other disabilities who have never experienced anything more than a slow walk do not have any concept of speed and the ability to slow down or stop
- students with a mental handicap can be very fast when you are not watching
- keep the students under constant supervision

Insurance

Liability insurance is carried by all ski areas. This is usually of a third party type where the injured person is covered by the insurance policy.

It does not cover personal injury i.e. if a person falls and injures him/her self that injury is not covered by the area insurance. Usually this type of injury is covered by Medicare or provincial hospitalization plans.

If the teacher plans an outing with some of his class it would be wise to check with the administration re: what insurance coverage is provided. If a ski instructor is certified by the Canadian Ski Instructor’s Alliance and Canadian Association of Nordic Ski Instructors, and has a current membership then they also have third party liability insurance through their respective organizations.

The teacher should have a signed waiver for each student who is skiing. This waiver should include sufficient information
regarding the activity so that the parent or guardian is well informed about what will occur during the outing prior to signing the waiver.

When purchasing a lift ticket at a ski area there is a waiver on the back of the ticket which relieves the area of responsibility for accidents. This is a point to discuss with the ski area representative when planning an outing for the school to a ski area.

**Equipment**

Students with a disability who are beginning ski lessons may require modification to ski equipment so that they can maneuver on the ski hill. Manuals are available to demonstrate the equipment and modifications that are used in teaching skiers with a disability to ski (see Unit Three) and these are:


- Canadian Association for Disabled Skiing. *Catalogue of Ski Equipment, Accessories and Aids for Disabled Skiers*.

These manuals are available from the Canadian Association for Disabled Skiing, Box 307, Kimberley, B.C. V1A 2Y9

**Accidents on the ski hill**

Establish a class procedure to follow if there is an accident on the hill such as:

- identify who must be notified (Lift Operator or Ski School Supervisor) in the event of an incident

- have students use a buddy system so the person not injured can alert other skiers to report the accident to the nearest Lift Operator or Ski School Supervisor

Precautions to be taken when a skier has an accident:

- keep the injured person warm

- do not move the injured person - wait for a paramedic or Ski Patrol who will take charge of the situation
• if the injured skier is a person with a disability, make sure the ski patrol is aware of the nature of the disability

• place crossed skis in the snow above the injured person to mark the location and to prevent other skiers from skiing into the injured person

Safeguarding personal belongings

• unfortunately ski areas often experience incidents of petty theft.

• students should be advised to lock their personal belongings that are left in the ski lodge when skiing

• locking ski racks usually are provided at ski areas

Part III Medical safety precautions

Medication and medical record

• at the beginning of each year, medical forms should be sent home with the students to be completed by the parents. The parent should meet with their family doctor to ensure the student is able to ski and participate in this outdoor activity

• it is useful to have a medical record available at the ski area if the student with a disability is on special medication, subject to seizures and other medical information that would be useful to the paramedics in the event of an “incident”

• a copy of the medical record should be given to the paramedic to be filed in the event the information is required

Assessment of physical condition of a skier with a disability

• the physical education teacher should plan a conditioning program which begins in the fall and continues until the ski program commences

• CADS certified ski instructors for persons with disabilities should view the student’s walk and determine what equipment would be required when the student skis

• assessment should be done by the CADS certified instructor at least two weeks prior to the ski lesson so
time is available to prepare or modify equipment. This could be done at the time of a visit to the ski area

- during this assessment the ski school director and ski instructor should be informed of any medical condition that may affect the student’s skiing and activities

**ALPINE SAFETY RULES**

The following is a list of general safety rules for downhill skiers. You should ask the area operator before the day of visit for additional rules (run and lift closures) that apply to his area.

- Wear proper clothing - windproof water repellent jackets and pants, leather mitts or gloves, proper ski socks, warm underwear, and a hat to protect your ears.

- Unless it is absolutely necessary do not take your skis off and walk up or down a hill. Walking on snow leaves holes that can be dangerous to other skiers. If the you must remove skis make sure you walk down the side of the trail.

- If you are the first person to come across an injured skier stay with the person and send the next skier down for help. The injured skier may become cold and need whatever extra clothing can be spared.

- When riding lifts always remove ski pole straps from wrist.

- When a skier approaches another skier who is moving in the opposite direction both parties pass on right.

- The skier approaching from above another skier is responsible for not colliding with skiers below.

- At least twice a day check that bindings release properly.

- Never ski a hill that is marked "CLOSED" or ski runs that are graded beyond your level of ability.
• Long scarves can easily get caught in moving machinery so should be tucked inside your jacket. It is much safer to wear a neck tube.

• Keep your ski edges sharp, your pole baskets and wrist straps in good repair. Bindings should be kept well lubricated and adjusted.

• The beginner should take lessons from a qualified instructor, buy or rent proper equipment and ski beginner slopes.

• Ski wide of crossed skis on a slope. This is a signal that an accident is ahead.

• Always use bindings with ski brakes, since runaway skis can cause serious injury to others.

• Wear suitable goggles to protect your eyes from wind and blowing snow, also to cut down glare from sun and snow.

• Beware of frostbite and check other skiers' faces for white spots.
SAFETY RULES TEST

TRUE  FALSE

1. Skiers may remove skis on trail, providing he or she descends slope on sides.
2. When riding lifts, straps on ski poles may be left on the wrists.
3. Students should never ski alone.
5. It is alright to ski runs marked "closed" if extreme caution is used.
6. Lessons are not required for beginner skiers who are in good physical condition.
7. Goggles are not necessary for skiing in a snow storm.
8. Take lessons from a qualified instructor only and not a friend.
9. Long scarves and loose clothing may be worn on rope tows only.
10. Briefly outline the procedure when skier encounters a ski accident.

ANSWERS

10. Place crossed skis in snow well above accident, to warn oncoming skiers.
   - Stay with victim and send next skier for help from Ski Patrol
   - do not remove equipment from injured person unless extreme pain is evident.
   - Never remove ski boot from injured person. Assist Ski Patrol if requested.
**Skier's Responsibility**

Alpine Skier’s Guide for Greater Skiing Enjoyment

Be Aware - Ski with CARE and Trail Markers

Skier’s Responsibility Code

Exclusion of Liability Assumption of Risk
Alpine Skier’s Guide for Greater Skiing Enjoyment

*The More You Know, the Greater the Enjoyment.*

1. It is always wise to warm up for any strenuous activity; skiing is no exception. You will get off to a better start if you take a few warm-up runs on easier terrain first. Pre-season conditioning, either from other athletic pursuits or lots of walking, will make early-season skiing more enjoyable.

2. In high mountain country where avalanche conditions may exist, heed all Avalanche warnings.

3. Avoid skiing through ski school classes. The same goes for race courses, unless you are a participant.

4. Do not attempt to stop a run-away ski. Instead, shout the warning “Run-away Ski” to people below.

5. You will be more comfortable if you dress in layers of non-restrictive clothing which can be removed or added on as temperatures change.
6. On sub-zero or windy days, shield your face with a high collar, neck gaiter or facemask. Greasy skin creams also protect the face from cold. A good pair of mittens with liners is usually warmer than gloves.

7. Skiing in bright sunshine is exhilarating, but sun reflecting on snow, like on water can cause severe sunburn and snowblindness. Use a good sunblock lotion and wear dark glasses or goggles.

8. Before your youngster goes off for a day on the slopes, be sure to insert a note with a contact name, phone number and local address inside the child’s parka.

9. Parents or guardians are responsible for their children’s activities on ski area property.

10. Obey all ski area advisory signs.

11. It is recommended that beginning skiers take ski school lessons to learn the rules and techniques of the sport. No matter what your level of skiing ability, a special ski week program or periodic lessons can make meeting skiing’s challenge more enjoyable.

12. Recognize your limitations. If you are tired or cold, stop for a while. Tired skiers and those who ski beyond the limits or their ability are more prone to injury.

**Using the Ski Lifts**

There are common courtesies and basic guidelines for riding the various surface and aerial ski lifts with which, for your safety and the safety of others, you should be familiar.

- Obey all posted instructions
- Do not use a lift until you are familiar with its operation. Watch and learn or ask for assistance.
- Slow down before approaching the entrance to a lift.
- Load and unload only at designated areas.
- Be polite and courteous at the loading areas.
- Do not bounce or otherwise abuse lift equipment.
• Make sure no loose clothing is caught in lift before unloading.

• Move quickly away from unloading areas.

• If a lift stops, do not attempt to get off. Remember, if there is a mechanical problem, area personnel will provide assistance.

• When riding a lift with small children, help them load and unload. Do not allow them to ride a lift alone until they can do so properly. You are responsible for your children and their actions.

---

**Enjoy Your Equipment Even More**

Keeping your skis and bindings in good condition plays an important role in enhancing your skiing enjoyment. The bottoms of the skis should be maintained periodically to keep them smooth. A quick application of wax will add polish to your turns. Frequent sharpening of your edges (or even daily under certain conditions) greatly aids your control. Your bindings should be kept lubricated and the release setting checked frequently by a qualified ski mechanic during the ski season. While there is no absolute guarantee that a binding will release under all circumstances, conscientious maintenance increases the binding’s reliability. It is always good to protect your bindings from the elements by keeping them covered when on a car rack.

Most full-service ski shops have qualified ski mechanics to perform ski/binding maintenance. If you ski often, you may want to learn to service your own equipment, but this does require a level of expertise which can best be obtained by reading special instructional guides on the subject.

Having confidence in your equipment brings greater confidence in your skiing.

**Skier's Responsibility Code**

There are elements of risk in skiing that common sense and personal awareness can help reduce.

**SKIING'S CHALLENGES** are as varied as the millions of individuals who ski.
From the beginner to expert, the great thrill of skiing is discovering the magnificent world of winter mountains and learning to fully enjoy the varied challenges found with every run down our slopes and trails. You’ll find these challenges with every turn you make, whether gliding down gentle meadows or conquering strenuously steep slopes, floating through deep powder or handling the hardpack. No two runs are ever exactly the same - that’s part of the great thrill of skiing.

Alpine skiing provides a depth of independence and satisfaction which can be derived from few other sports. The more you know about skiing, the more you will enjoy it. The obvious key to maximum personal enjoyment of the sport is the individual’s ability to control the proper blending of all its variables.

The following pages serve as a guide to discovering the special world of alpine (downhill) skiing.

The following pages are a partial list. **BE SAFETY CONSCIOUS.**

The safety material in this Appendix has been supplied and published with permission of:

Canada West Ski Area Association, Suite 103, 3313 32nd Ave., Vernon, B.C. V1T 2M8. Tel: (604) 542-9020 Fax: (604) 542-5070
Getting Acquainted with the Mountain World

The four illustrated symbols comprise the international trail marking system. It is important to remember that these symbols indicate only the relative degree of challenge of a particular slope or trail compared with all other trails at that one ski area. Therefore, it is always a good idea to start off on the "Easiest" trails when you visit a new ski area, then, if you wish, progress to the "More Difficult" and "Most Difficult" as you get a feel of the area's general degree or difficulty.

When going to a ski area for the first time, obtain a trail map and keep it in your pocket for quick reference. A trail map will show you where the various runs and lifts are located and will give you an indication of the degree of challenge on each slope or trail. Remember, the map and these symbols are only an aid to help you make responsible choices of which portions of the mountain are right for your skiing ability. Keep in mind the day's weather and snow conditions when selecting your runs as these will have an impact on how much you enjoy a particular run on a given day. You must match your desire for challenge with the prevailing conditions.

Expect the Unexpected

Trail and slope conditions vary constantly with weather changes and skier use. Be aware of changing conditions - natural or manmade. Obey all advisory signs. Ski with care through a snowmaking area, stay out of the way of snow vehicles, and be prepared to avoid other manmade or natural obstacles.
SKIER'S RESPONSIBILITY CODE

There are elements of risk in skiing that common sense and personal awareness can help reduce.

1. Ski under control and in such a manner that you can stop or avoid other skiers or objects.

2. When skiing downhill or overtaking another skier, you must avoid the skier below you.

3. You must not stop where you obstruct a trail or are not visible from above.

4. When entering a trail or starting downhill, yield to other skiers.

5. All skiers shall use devices to prevent runaway skis.

6. You shall keep off closed trails and posted areas and observe all posted signs.

THIS IS A PARTIAL LIST. BE SAFETY CONSCIOUS.

With permission of Canada West Ski Area Association.
1 Ski under control and in such a manner you can stop or avoid other skiers or objects.
When skiing down hill or overtaking another skier, you must avoid the skier below you.
3 You must not stop when you obstruct a trail or are not visible from above.
4 When entering a trail or starting downhill, yield to other skiers.
5 All skiers shall wear retention straps or other devices to help prevent runaway skis.
You shall keep off closed trails and posted areas and observe all posted signs.
APPENDIX B: PRESEASON CONDITIONING

Introduction

Organization

Exercises

Description of Disabilities

Muscular Strength and Endurance
**Introduction**

Prior to beginning a ski program, students need adequate time for body conditioning. Unit One contains information on body conditioning using both circuit and group exercises which will fulfil the needs of students who will be involved in downhill and/or cross country skiing.

The exercises pertain to muscles not only used in skiing but also in the maintenance of general good health. The student exercises at his or her speed and achieves the ultimate goal without competing with fellow students.

The curriculum outlined involves general exercises to be performed by every student each day plus evaluation exercises to be completed each day, using the circuit training method. The teacher and students can follow the progress of the individual student’s physical fitness using the evaluation criteria presented.

**General Objectives of Fitness Program**

- Increase of muscular and joint flexibility and skill
- Increase of body control, of balance, and of kinesthetic senses
- Training of cardiovascular system
- Reinforcement of joints and muscle groups particularly contributing to skiing
- Acquiring the satisfaction and assurance of becoming fit
Organization

The exercises described may not be practical for use in some schools. You must choose the exercises keeping in mind what each exercise is used for. For instance, your time in class might only allow a maximum of 15 exercises. You should pick out of each group an equal number of exercises. If all the exercises shown cannot be used, you should change exercises periodically for variety.

Warm Up

The warm up period is essential because it increases the temperature of the muscle, which results in an increase in both the velocity as well as the force of contraction; heats the connective tissue causing the tissue to be more elastic, reducing the chances of pulls or tears; increases the chemical reaction within the muscle cells; and increases the blood flow and oxygen transport to the muscle cell. It should take between 10 and 15 minutes, beginning with a light aerobic exercise for 5 minutes. This could include light jogging, walking or wheeling, use of stationary bikes, Stair Masters, or the hand ergometer. Next the instructor should include a series of upper body exercises such as arm circles, shoulder shrugs, lateral raises, and horizontal abduction and adductions. The final 5 minutes should be spent on stretches. Some examples of typical stretches and exercises follow this section.

Students in the elementary program may benefit from a warm-up with a games approach. Ideas for games which will accomplish this are:
**Slow Motion Race: Focus on slow stretching.**

Students form a line at one end of the room or field. The teacher designates a finish line about two or three meters away. If students have a visual impairment, a sound clue such as clapping can be given to let students know where the finish line is located. The object of the game is to be the last one across the finish line. The rules are that you have to extend your body parts as far as possible. For example, you must lift your leg up as high as it can go, then stretch it forward as far as possible before putting it down. Arms should also be extended in a pumping motion like a real race. (If students are very skilled at this the finish line will have to be moved closer)

**Tangle / Untangle: Focus on stretching body parts.**

Students stand in a line holding hands. The first person in the line walks the group around and tangles them as much as possible by walking under arms and around people. When the group is really tangled, the person at the other end of the group tries to untangle. The focus is on gentle slow movement.

**Hoops**

Each student is given a hoop to swing around their arm in continuous motion. Students can have races to see who can swing their hoop the longest, slowest, highest, or fastest. The hoops can be passed from arm to arm and the passes counted.

**Follow The Leader: Light aerobic exercise.**

Students take turns leading the group. The teacher can determine a focus for the movement. For example, when each student leads they must come up with a new hand pattern or method of locomotion.

**Typical Warm Up Stretches**

Each of these stretches should be held for 15 - 30 seconds. The movements are to be slow, but firm. **No bouncing (Ballistic stretching) should occur.** Always work both sides.

NOTE: These exercises have been taken from a Get Fit Manual created by Catherine M. Walsh, Diane J. Hoy and Leona J. Holland at the Rick Hansen Centre at the University of Alberta, Edmonton, Alberta, Canada 1982.
Shoulder, chest and upper back stretches

Arm Cross: Place one hand on the opposite shoulder so that the elbow points forward. Pull the elbow towards the body with the other hand and hold. Repeat.

Overhead Stretch: Clasp the hand over head with palms facing up and stretch as high as possible. Hold.

Back Scratcher: Place the palm on one hand between the shoulder blades so that the elbow points upward. Push down on the elbow with the other hand. Hold. Repeat the opposite side.
**Shoulder, chest and upper back stretches (cont'd)**

**Behind back stretch:**
Clasp the hands behind the back.
Lean forward and lift arms as high as possible. Hold.

**Chest Stretch** (Choose one):
A. Hold the arms out at shoulder level with the palms facing forward. Keeping the elbows straight, have a partner pull the arms back as far as possible. Hold.
B. Clasp the hands behind the head. Have a partner pull the elbows back as far as possible and Hold.
C. Sit in a doorway with the arms out at shoulder level. Tilt forward as far as possible and Hold.
Back Exercises

Lower Back Stretch
Lean forward touching the chest to the knees and letting three arms hang.

Trunk Twist
Hold both arms to the side with the palms facing down. Gently twist the trunk to one side while bringing the opposite arms across the chest. Hold. Repeat to the other side.

Side Stretch
With one arm overhead and the other hanging beside the chair, lean as far as possible in the direction hanging arm (do not lift the seat of the chair). Hold. Repeat to opposite side. NOTE: If balance is poor, hold on the side of the chair.
**Wrist, hand and finger exercises**

**Wrist Stretches:** With the arm straight so the fingers point up, gently pull the hand back and hold. Repeat with the other hand. **NOTE:** Those with upper limb paralysis should grasp the hand below the fingers. With the arm straight bend the wrist so the fingers point down. Gently pull the hand back and hold. Repeat with the other hand.

**NOTE:** People with upper limb paralysis should check with their physician before performing exercises which stretch out the fingers because of the potential to diminish gripping ability.

**Wrist Circles:** Slowly rotate the wrists through complete circles. Repeat in the opposite direction.

**Finger Stretches:** Gently pull the fingers back, one at a time and hold. Repeat with the other hand. **NOTE:** People with upper limb paralysis should check with their physician before performing this exercise.
**Lower body stretches**

**Inner Thigh Stretch**
Lie face up with the legs straight and the knees pointing straight up. Have a partner move legs as far as possible and hold.

**Hip Flexor Stretch (Choose one):**
A. Lie face down on a bed or bench. With the knee in a bent position, have a partner lift the leg as high as possible while holding the buttocks down with the other hand. Hold. Repeat with the other leg.
B. Lie face up with the hips at the edge of a bed or bench. Bend one leg up to the chest and hold. Have a partner push down on the thigh of the other leg and hold. Repeat on the opposite side.
Warm Up Exercises

The aim of exercises is to gradually warm-up the whole body. When warming up we want to:
- loosen up the muscles
- extend the back
- stretch the lower segments:
  - ankles
  - knees
  - hips
Ski Warm Up Exercises

7 years and Older
- rotation of arms
- rotation of ankles
- extension forward - one leg at a time
- side extension - one leg at a time
- lift a ski at 90 degrees

Warning
- Extensions must never hurt. We can feel the stretching but never uncomfortable burning feelings.
- In most exercises, it is advisable to keep the top of the body upright and look in front of you.
Cardiovascular / Aerobics

Twenty minutes of aerobic conditioning follows the warm up. This is probably best done before any strength training for students with a disability as students may be too tired to do it following strength training. The teacher should utilize a variety of activities which meet the skill of the students. This might include walking, jogging, wheeling, hand ergometers, cycles, rowers, and recumbent bikes.

Young students may find that a games oriented approach is more interesting and keeps them more intensively engaged than more traditional cardiovascular activities like walking, running, riding a stationary bike. Following are some examples of games which could build cardiovascular endurances.

Blob Run

Four or five students stand close together in the centre of a circle. The others form a circle around them holding hands and facing out. As a group they must move down the gym, around a pylon, and back to the finish line.

Gator Tag

Players are scattered at random all over the gym or field. The gator carries a rope and pulls it behind him, trying to tag other players. When a person is tagged they must join the gator by holding the rope.

Four Walls

Each wall is given a number 1,2,3,4. Students sit in teams in the centre of the gym. The teacher calls out the order in which a line in front of a walls must be crossed, then as a group and helping each other the teams must all touch cross the lines in front of the walls in the correct order, then return to the centre of the gym and sit down.

Muscular Strength and Endurance Training

The extent to which the teacher may wish to include formal weight training will depend upon the age and abilities of his/her students. An alternative is to utilize surgical tubing. Traditional use of weight training as a method of building muscular strength and endurance is not appropriate for elementary school children. Alternatively, games which focus on strength, endurance, balance and coordination will prepare students for skiing.
**Roll**

Two teams on either side of a large ball or rolled mat. When a signal is given both teams rush to the mat and push as hard as they can. The object is to push the mat into the other team's territory.

**Cleaning House**

With two teams, the students position themselves on either side of a net. Each would have an assortment of balls. When a signal is given, each team must throw balls into the other team's side of the net. After a previously arranged time, the teacher gives the signal and all activity stops.

**Shark!!**

In groups, students are given a specific area for an island. This can be a taped off area or a newspaper or mat if a more tactilely defined area is needed. The students must start away from their island. They can pretend to be swimming in the ocean. When the teacher yells SHARK, all students must go to their assigned island and have no body parts off of the designated area. Students need strength and balance to stay on their island.

**Balance**

With a partner, students will balance with each other using the right amount of strength to maintain their balance. They will start standing facing each other holding hands. They will sit down and stand up without breaking their hold. Students can try this in groups of 3-5.
DESCRIPTION OF DISABILITIES

AMPUTEES

General Description

Persons with missing limb(s) or partial limb(s) are classified as either congenital amputees or acquired amputees. Persons with congenital amputations have been missing limb(s) or appendage(s) since birth, due to failure of development of such appendages during the fetal stage of development. Persons with acquired amputations had their limb(s) removed through trauma or surgery.

General Concerns

Fitness levels of persons with amputations vary. Therefore, each fitness program should satisfy the personal fitness objectives of the individual. Such a disability, especially if just recently acquired, can cause the person to be overly self-conscious of his/her disability. If safety is not compromised the person should be allowed to participate in clothing that may make him/her feel more comfortable about his/her disability. Persons with amputations may have a decrease in sensation which affects proprioception (unable to sense where the limb is positioned in space). Most importantly, persons with a prosthesis should check the skin before, during and after exercise for redness and skin irritation. Progression of exercise should only take place if the skin tolerates it.

Flexibility Concerns

Stretching and flexibility exercises are important for both the unaffected and affected limbs. The only concern is removal of the prosthesis to eliminate any shearing leading to skin irritation.

Muscular Strength Concerns

Upper extremity prosthesis are usually removed during exercise. Never hang weights or resistance on the prosthesis, but always place weight on the residual limb(stump). This can be achieved by wrap-around velcro weights on the stump. At times, a weight may be needed to be strapped on the stump for balance. During the bench press and military press type of exercises, a prosthesis may be used if direct pressure is being applied and no skin irritations occur.

Aerobic Concerns

Aerobic exercises can be varied and should be designed to fulfill the cardio-respiratory needs of the individual. Persons affected by peripheral vascular disease tend to have a lower cardio tolerance for physical activities, so monitoring of the aerobic and/or cardio exercises should take place.
**ARTHRITEIS**

**General Description**

Arthritis is a slow progressive disease affecting the various joints of the body, leaving the joints swollen and painful. In *Rheumatoid arthritis*, most of the active joints (hands and knees) are usually affected and starts to occur in children between the ages of 2 to 4 and 8 to 11 years. The cartilage surrounding the end of the bones begins to degenerate and does not replace itself. The joint space is reduced and usually results in bones grinding against each other, causing swelling and pain, as well as reduction in function of the joint.

**General Concerns**

Arthritis can be serious enough to be considered a primary disability. Therefore, it is necessary that the medical forms are completed to make sure that instructors are aware that a participant has arthritis.

**Flexibility Concerns**

Various stretching exercises should be provided to maintain and improve the participant's range of motion. Flexibility exercises should also help prevent deformities. Participants should be given and taught exercises that are safe and pain free and that can be done several times a day.

**Muscular Strength Concerns**

Strength training exercises can or should also be done, but exercises that put an excessive amount of stress on affected joints should be avoided.

**Aerobic Concerns**

Aerobic exercises that cause the body and/or feet to leave the ground and come back into contact with the ground should be eliminated. Any jarring movements such as jumping, running and dancing should be avoided. Exercises that are of a fluid, rhythmical nature are recommended. Cycling and swimming are excellent activities that will train the cardiovascular system, while reducing the stress placed on the joints. Arthritis may only afflict some persons in the upper appendages. Therefore, under his/her physician's direction activities such as running could be included.

**ASTHMA**
Disabled Skiing Methodology

General Description

Asthma is a condition in which allergies or other irritants cause the bronchi of the lungs to go into spasmodic contractions. Coughing, paroxysmal panting (sudden outburst) and wheezing are usual characteristics exhibited by a person having asthma. Contact with various irritations or substances that persons are allergic to will activate the spasmodic contractions of asthma. Some asthma attacks may be triggered by exercise-induced asthma.

General Concerns

For most persons, asthma will most likely be considered a secondary complication; however, it cannot be ignored. Such a condition should be noted on the participant's medical and par-Q forms. If shortness of breath, wheezing, excessive tiredness or tightness in the chest is observed, the participant should cease exercising and be advised to see a physician. Exercise-induced asthma can be triggered by cold, dry air, therefore exercise programs utilizing the pool should be considered. For persons with severe asthma or for persons with the severity of their asthma unknown, high intensity training can occur if the volume of work does not exceed more than five to ten minutes of stop-and-go activities. Generally, asthma is not considered debilitating or exercise limiting. Many world class endurance athletes have asthma.

Flexibility Concerns

No changes are necessary for an asthmatic's flexibility program.

Muscular Strength Concerns

No changes are necessary for an asthmatic's strength training program. In fact, the stop-and-go nature of strength training is best suited for persons with asthma.

Aerobic Concerns

Again, activities of a stop-and-go nature (interval training) should be encouraged. Another aerobic training program using the principle of high volume-low intensity (Long Slow Duration) can be employed as long as the asthma remains under control and symptoms do not appear.

AUTISM

General Description

Autism is a severe, chronic, developmental disability of undetermined origins. It often occurs before the age of 3 years. Individuals with autism often demonstrate a lack of responsiveness to others, lack of communication and stereotypic
behaviors. While some students with autism do not exhibit motor deficits, most show delays.

**General Concerns**

Due to the nature of autism, care should be taken to minimize any potential situations that may cause the child to experience stress. Stressful situations usually cause regression into autistic type behaviours, which in turn, disrupts the flow of physical education. Careful and timely planning is needed to ensure that the child remains calm at all times. When activities are structured for success while reducing failure, the chances of emotional outburst and/or withdrawn tendencies are greatly reduced. It is also more advantageous to organize cooperative instead of competitive games during physical education. Also, following high excitement activities a relaxation component should be incorporated.

**Flexibility Concerns**

Bizarre movement patterns (flapping, twisting, spinning, etc.) may cause the child with autism to experience extreme flexibility in both a quantitative and qualitatively different way on the one hand, and physical unpliable characteristics on the other. At their best, the child autism is capable of moving with grace and poise. Self-stimulation (repetitive actions) often prevents flexibility to occur consistently and within the correct context.

**Muscular Strength**

Odd movement and grimaces (lunging and darting movements) often describe motor and muscular capabilities of the child with autism. For the most part children with autism are abnormal in their gross motor development. They exhibit clumsy and poorly co-ordinated behavior. The child with autism, in most cases, may have poor gross motor/muscular development. Due to their high degree of stereotyped motoric behavior, these children seem to exhibit extreme muscular strength overall, but usually show such behavior in a developmentally inappropriate way. Relaxation training is often a method used to reduce aggressive behaviors with this general population.

**Aerobic Concerns**

Aerobic activity in the child with autism, may be similar to that found in "normal children". However, due to their hyperactive tendencies, tranquilizers prescribed (beta-endorphins) may accelerate or slow-down the natural heart rate of the individual. Also, deficiencies in gross motor skills mentioned earlier, may prevent the child with autism from obtaining the benefits of aerobic activity. Especially those activities that require the use of muscular strength.
CEREBRAL PALSY / HEAD INJURIES / CEREBROVASCULAR ACCIDENTS (STROKES)

General Description

Cerebral palsy, head injuries and cerebrovascular accidents (strokes) are three conditions that result from or are caused by damage to the various upper motor neurons of the brain. They all have similar physical traits and can affect the body in different motor and cognitive patterns. Cerebrovascular accidents or strokes occur due to a disruption of normal vascular circulation to the brain. Arteries transporting oxygenated blood to the brain can be blocked by a blood clot or through atherosclerosis (hardening of the artery) or rupture (cerebral haemorrhage) resulting in excessive pressure and an insufficient blood supply for the brain. If the brain does not receive the required blood and oxygen, the affected parts of the brain could be damaged. Often stroke victims are found to have been affected on only one side of the body (hemiparesis), as compared to the more diffuse involvement of persons with cerebral palsy or brain injuries. Cerebral palsy is a group of neuromuscular conditions caused by damage to the motor areas of the brain. The damage could have occurred prenatally - failure of normal development of the brain during the fetal stage of development, peri - and/or postnatally - damage occurring after birth, through various accidents such as anoxia and infections. A brain injury usually occurs as a result of a trauma, accident, condition or disease that led to a loss of consciousness or even coma. The severity of the motor impairment varies greatly among individuals with cerebral palsy, brain injuries and strokes.

General Concerns

Characteristic limitations of physical performance of these three disabilities are decreased motor control (athetosis and ataxia), abnormal muscle tone-hypertonicity (spasticity and presence of extraneous muscular activity from decreased motor control and activation of primitive reflexes) and the difficulty with maintaining upright postural activity.

Muscular Involvement

Spastic - spasticity is an abnormal increase of muscle tone with signs of increased reflexes. Spasticity may fluctuate depending upon various factors including posture, positioning, temperature and warm up stretching. Flexor muscle groups of the upper extremity and the extensor muscle groups of the lower extremity are usually observed as having abnormal muscle tone in spasticity.

Athetoid - athetosis is a slow involuntary writhing movement which is uncontrollable, irregular and jerky due to damage to the basal ganglia. Speech difficulty due to the involvement of the speech muscles is often associated with athetosis.
Ataxia—depending upon what part of the cerebellum is damaged, ataxia could result in tremor, incoordination, difficulty with rapid and fine motor control and difficulty with balance and trunk control.

In older children with cerebral palsy and in post-rehab stroke, and brain injured individuals, the emphasis shifts from inhibiting / facilitating techniques towards concentrating on range of motion and strength, with less concern about provoking unwanted reflexes. If abnormal reflexes continue, an attempt should be made to utilize them in an individualized task performance appraisal. The most common abnormal reflexes observed are Asymmetrical Tonic Neck Reflex (ATNR), Symmetrical Tonic Neck Reflex (STNR), Tonic Labyrinthine Reflex (TLR), Moro Reflex (MR) and Positive Support Reaction (PSR).

Flexibility Concerns

Flexibility concerns are apparent for persons with spasticity and moderate to severe athetosis/ataxia. The flexibility component could be the most important component for persons with abnormal muscle tone. Participants should stretch all muscle groups, particularly the flexors of the upper extremity and the extensors of the lower extremity. Quadriceps, calves, hip adductors, biceps, chest and shoulder muscles are the major muscles that should never be forgotten when doing stretching exercises. Participants may need assistance with stretches.

Muscular Strength Concerns

Strength training programs are dependent upon the severity of the muscle involvement. Persons with mild to moderate or even severe athetosis/ataxia should have a program that concentrates on motor control instead of muscular strength. Bilateral exercises that will emphasize trunk stability should be introduced. Advanced participants or athletes may use the Universal, Tricon or Samson machines that will control their movement throughout the range of the exercise. Positioning is critical for all persons with cerebral palsy, strokes and head injuries no matter the severity of the disability. Straps and binders are strongly recommended in holding participants in the proper position and balance. The majority of persons severely affected with this type of disability will probably be unable to use the Universal or other isotonic machines. Therefore, it is recommended that at first, the participant is assisted throughout the range of the exercise to promote control. Then have the assistance slowly reduced until the participant has active control of the exercise.

Resistance training is not recommended for muscles affected by abnormal muscle tone (spasticity). In fact, any exercise that increases the onset of abnormal muscular tone should be stopped immediately. Again positioning is essential in performing any exercises. For example, persons with spastic lower extremities should be positioned securely so that their lower extremity is in flexion when performing upper exercises. The hip and knee joints should be at 90 degrees or less to each other and the feet flat on the floor.
Aerobic Concerns

Any aerobic exercise that the participant is able to do is considered positive. Persons with balance disorders might have problems with staying on a stationary bike, therefore walking exercises where a person could fall without hitting equipment and using a recumbent bike would be more beneficial. Some exercises might be too difficult for some persons with coordination problems. Be imaginative in establishing aerobic exercises for participants. The exercises should be of a fun nature to assist in the motivation of exercising.

CONVULSIVE DISORDER

General Description

Convulsive disorders are distinguished by recurrent seizures. A seizure can be either a sudden change in consciousness or behaviour characterized by involuntary motor activity. Two types of general seizures exist. Absence in the person's consciousness being impaired up to 30 seconds. Symptoms of such a seizure include a dazed appearance, and may include the rolling up of the eyes. Speech will stop immediately upon the initiation of the seizure and will continue after the seizure with no loss of thought or unity. This type of seizure may be hard to observe as no jerky convulsions occur.

Tonic-clonic seizures (grand mal) are convulsive seizures of up to four stages. Stage one - aura - a pre-warning phase that seizure is about to occur. The sign is always the same for a particular person and may be a vision, a smell or a flash of lights. Stage two - tonic - a phase lasting up to 30 seconds in which continuous contraction of the muscles causes the person to stiffen and straighten out. If the respiratory muscles are tonically affected cyanosis (blue skin due to lack of oxygen) may occur. The person loses consciousness in this stage. Stage three - clonic - a phase of two to three minutes of intermittent contraction and relaxation. This phase may cause a person to bite his/her tongue and lose control of other bodily functions. Stage four occurs after a brief period of consciousness or semi consciousness where the person complains of confusion and tiredness. The person may go into a deep sleep for a couple of hours.

General Concerns

Exercising is generally thought to be very beneficial for persons with seizure disorders. Physical activity raises the acidity of the blood which is generally believed to inhibit seizures. A major concern in exercise is that a person learns to breathe properly and does not participate in activities that require the person to hold their breath. Holding the breath increases the alkaline level of the blood, increasing the susceptibility to seizures. Activities involving vigorous, floppy head movement or head contact should be avoided. If a participant does happen to have a seizure, do not interfere. The seizure will take its course. Protect the
participant from hurting him/herself by removing any equipment around the participant. Although seizures are common and do not present an immediate health concern, arrangements for immediate transportation home should be made for that person and a family member or contact person should be notified about the seizure. A tonic-clonic seizure can be very embarrassing for the person, plus, as previously mentioned, a sleep stage is to be expected. An absence seizure may leave the person in a state of disorientation and he/she may feel more comfortable going home. If you have any doubts that the person might not be having a seizure, call for an ambulance immediately.

**Flexibility Concerns**

No changes or concerns regarding flexibility.

**Muscular Strength Concerns**

Monitor all exercises to ensure the proper breathing technique is being utilized.

**Aerobic Concerns**

Avoid high risk activities that involve holding breath and moderate risk activities causing the head to flop around. Monitor activities where a person can hurt themselves if a seizure occurs (e.g. falls off a bike).

**DEAF AND HARD OF HEARING**

**General Description**

Hearing impairment includes partial as well as total hearing loss due to congenital defects, pathological and traumatic accidents. The ear is divided into three sections: the external (outer) ear; the middle ear; and the internal (inner) ear. The inner ear governs the function of both hearing and balance. Sensory receptors for sound are located within the cochlea of the inner ear. Also in the inner ear, within the vestibular apparatus, are the three semicircular canals, utricle and the saccule where the sensory receptors for balance are located. Often problems with auditory functioning are associated with balance disorders, usually because both systems in the inner ear are effected.

**General Concerns**

The main physiological concerns of hearing impairment deals with balance disorders. Instructors should be aware of any balance problems and design programs for the participants that will not jeopardize safety (i.e. problems affecting supine and sitting positions on the machines as well as motion activities). As long as safety is not threatened any activity can be considered. Another major concern is the means of communicating with persons with a hearing impairment. Instructors and volunteers should be attentive and learn to
face the participant when speaking to allow the participant to read lips. Visual cues (demonstrations) and writing messages can also be utilized in communicating. Signing partners may also be required by some participants to ensure that the intended message is being received.

**Flexibility Concerns**

No flexibility concerns, except that if passive stretching is taking place a system of communication should have been agreed upon to avoid stretching injuries. These injuries are due to miscommunication or even lack of communication between the participant and the person assisting with passive stretches.

**Muscular Strength Concerns**

No concerns other than being aware of balance disorders in activities affecting exercises requiring sitting, standing or moving; and the potential communication problems such as those involved in describing exercises and the associated techniques.

**Aerobic Concerns**

The above mentioned concerns might affect the aerobic aspect of the participant's program. However, a variety of activities can and should be employed to reduce boredom associated with repetitious aerobic exercise without sacrificing safety.

**DIABETES**

**General Description**

Diabetes is a metabolic disorder affecting the blood sugar level which in turn controls many of the body's functions and can lead to various diseases. Diabetes mellitus is the most common form of diabetes. It is a disorder resulting in insufficient insulin in the blood stream to maintain homeostasis. Diabetes mellitus is recognized by two types. Type I- formerly known as juvenile diabetes has an onset before 20 years of age and is described as being insulin dependent. Very little or no insulin is produced by the body, therefore daily injections of insulin are required. Type II-was formerly known as adult diabetes. This type of diabetes usually occurs in adults over 40 years of age; and is described as being noninsulin dependent. Insulin is still deficient with Type II diabetes, however, it is not as critical as Type I diabetes and a daily insulin injection might not be required.

Insulin is necessary to keep the blood-sugar level low. Frequent and prolonged rise in blood sugar damages the microscopic capillaries supplying the eyes, kidneys, nerves and blood vessels. If the blood-sugar level is left unchecked severe complications could occur such as renal disease, cardiovascular disease, blindness, amputation, unconsciousness, coma and even death.
**General Concerns**

Three major factors regulate blood glucose in diabetes; insulin or oral blood sugar lowering medication, diet and physical activity. A physician is needed to prescribe and monitor a regime that would balance the three factors and hopefully reduce the amount of insulin medication needed. Exercise is very important in maintaining homeostasis for persons with diabetes. Exercise performed at least three times weekly will enhance blood sugar balance, enhance diabetic well-being and help reduce a person’s body weight. Over 65% of persons with diabetes are overweight. In diabetics, exercise lowers the blood sugar only if a functional amount of insulin is in the blood. To maintain the correct insulin balance, the calories (energy) spent during a workout should be known. A physician's expertise is required to prescribe the correct insulin dosage based on the insulin management plan. Regular daily scheduled exercise, meals and injections should minimize the chances of insulin shock or reaction.

Injection of insulin into a region of the body that will shortly be active in exercise accelerates the absorption of insulin in the blood. Consequently, the time to peak insulin effect and decreasing blood sugar is shorter. Therefore, injection into the thighs or legs prior to cycling, running or even walking should not occur. The gluteals and abdominal region is the most suitable location for an insulin injection prior to exercise. An important concern of persons having diabetes and exercising is that the instructors should be able to recognize the signs of persons going through insulin shock or reaction. Insulin shock or reaction may be caused by overexercising, undereating, skipping a meal, eating at a different time of day than normal, or accidentally injecting too much insulin. Instead of a blood sugar level that is too high, it is now too low. The signs of insulin shock are shakiness or trembling, nausea, hunger, headache, fatigue and excessive perspiration. If these signs and symptoms are recognized early enough the course of the reaction can be reversed immediately with a quick source of sugar (candy, fruit juice or glucagon).

**Flexibility Concerns**

No changes or concerns for flexibility except the positive benefits that flexibility exercises increase circulation, which could lead to a reduction of circulation problems often associated with diabetes.

**Muscular Strength Concerns**

Persons with diabetes should be aware of energy expenditure (calories) for any muscular strength or endurance program based on intensity and duration.
**Aerobic Concerns**

Again, energy expenditure should be known to maintain insulin balance. If extended physical activity is planned, the diabetic should be prepared by reducing insulin dosage or by eating additional food.

**DOWN SYNDROME**

**General Description**

Down syndrome refers to a type of mental retardation that is defined as "subaverage general intellectual functioning existing concurrently with deficits in adaptive behaviour and manifested during the developmental period". The most common type of Down syndrome is a type known as trisomy 21, and is characterized by a 24th pair instead of 23 pairs of chromosomes.

**General Concerns**

Characteristics of children with Down syndrome are often internal as well as external in nature. Cardiovascular as well as endocrine abnormalities may prevent them from successfully participating in age appropriate physical activities. Although the age expectancy of the individual with Down syndrome is on the rise (due to better health care and lifestyle), there is still a tendency for this group as a whole to experience poor health conditions, which in turn may affect their participation in physical education. Individuals with Down syndrome also tend to have a wide range of respiratory conditions that affect their general health.

**Flexibility Concerns**

Children with Down syndrome characteristically have loose joints. This may appear to be a sign of flexibility, but in actual fact may be more a result of poor muscle tone often referred to as hypotonicity. This condition may actually present challenges to individuals in physical activities requiring flexibility and muscle strength. Finally, weight seems to be a problematic area for individuals with Down syndrome. Diet and vigorous exercise are usually used to control overweight problems.

**Muscular Strength Concerns**

Children with Down syndrome have poor muscle tone that results in a floppy appearance. Reaction time and kinesthetic awareness are also inefficient. Atlantoaxial instability is a condition where the individual experiences a greater than usual mobility of both upper cervical vertebrae situated at the top of the neck. The spinal cord could be squeezed or even severed if the neck is flexed or forced into a position. Muscular strength in this population generally ranges at different levels. A general consensus though, is that muscular strength is poor.
and needs to be remediated using physical education programs which enhance and develop motor skills and muscular strength.

**Aerobic Concerns**

If a broad spectrum of physical activities are provided, there is little reason why children with Down Syndrome should not improve their general functioning in this area. Due to respiratory problems however, physical activity may have to be adapted and/or modified to enable the individual to participate fully and successfully in the sport.

**LEARNING DISABILITIES**

**General Description**

The characteristics of a child who is learning disabled are often varied. The National Advisory Committee on Handicapped Children, however, has formulated a commonly agreed upon definition that outlines three criteria:

1. A disparity between the child's potential and actual performance.
2. Several processes individually or in combination, may be responsible for the learning disorder.
3. Certain handicaps such as hearing and visual disorders are not included.

The definition reads as follows:

"children with special learning disabilities(LD) exhibit a disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbances, or to environment disadvantage."

**General Concerns**

1. Difficulty in keeping up with class peers especially in games that require precise hand-eye coordination.
2. Poor ability to interact socially with their peers (a concern for group activities in fitness).
3. Conceptual deficits - children with a learning disability often have problems integrating pieces of information to form logical conclusions,
for example remembering the rules of a complex game or quickly remember the appropriate rules / skills during a fast moving game.

4. Memory deficits - children with a learning disability also experience problems in remembering rules of complex games. They also often show difficulty in calling upon rules / skills that are required to be retrieved quickly in fast moving games.

5. Perceptual deficits - digital Agnosia refers to a condition that occurs due to poor tactile perception. In this case, children are unable to correctly identify which hand has been placed behind their backs. Digital agnosis may also affect other body parts as well. Accuracy in perception may be influenced by this conditions in physical education. Activities requiring the student to catch a ball may be an example of an area that is affected.

6. Unawareness of various positions, location of their body parts, and movements in physical education.

7. Deficits in figure-ground discrimination - presents problems in games requiring throwing or selecting team mates to whom they should throw the ball.

8. Deficits in integration - children may fail to synthesize visual information correctly after watching a demonstration in physical education. In this example, the child would be unable to copy the actions of their teacher or classroom peers after a demonstration. This in turn leads to limited learning and participation of the student.

9. Auditory Perception deficits - problems in hearing and sequencing words may prevent the learner from understanding and learning the concept that is presented.

10. Attention and activity level deficits - may manifest themselves in the form of Hyperactivity and inability to stay on tasks in physical education.

**Flexibility Concerns**

Children with a learning disability often experience difficulties in awkwardness and un-coordination. The actual causes of these conditions are unknown. Prenatal, nutritional, trauma as well as mild types of cerebral palsy have all been documented as possible causes. Following are other conditions associated with flexibility:

- Body - part integration - difficulties in integrating parts of the body e.g. upper and lower extremities do not work in concert.
Disabled Skiing Methodology

- Asymmetries deficits - one side of the body moves better than the other side or one hand may be significantly better at manipulating objects than the other.

- Overflow of movement - this is extraneous movement caused by immaturity in the nervous system. The child's appearance looks qualitatively different from other peers.

**Muscular Strength Concerns**

- Dysgraphia - the inability to print with clarity, which may also involve other motor abilities as well.

- Motor planning (Praxic behaviour) - difficulties in integrating parts of the body, for example upper and lower extremities do not work in concert

- Asymmetries - one side of the body moves better that the other side, or one hand may be significantly better at manipulating objects than the other side.

- Overflow (Associated movements) - extraneous movement caused by immaturity of the nervous system. The child's appearance looks qualitatively different from their peers.

- Perseveration- defined as "undue persistence" these children experience difficulty transferring one movement to another when called for in physical activity.

- Impersistence - this is the opposite of perseveration, and involves the child's inability to hold and maintain body positions used in physical activities.

- Hypotonicity - problems with poor muscle tone, which leads to an inability to hold objects, support their body weight off the ground, apply force and to run well and quickly.

- Hypertonicity - problems with tonus, evident in how much or how little muscle tone is apparent. Too much muscle tone may cause the child's muscles to become overly tense with noticeable twitching and tremors. Mild forms of cerebral palsy may also cause tension of muscles due to emotional stress that is experienced by the child.

- Imbalance, unsteadiness, and tremors - these conditions may manifest in either the upper and / or lower extremities of the body. An unsteady gait is usually characteristic of this condition.
Disabled Skiing Methodology

- Clumsiness, uncoordinated movement.
- Poor fine motor coordination.
- Motor planning problems.
- Poor balance.

Aerobic Concerns

Due to all of the above mentioned deficits, it is not surprising that aerobic conditions of the child with a learning disability may be affected. Many children may exhibit poor general aerobic conditioning if there is a lack of physical conditioning. Certain areas of health and fitness may create problems in physical activity, for example problems in awkwardness and coordination that are needed for most aerobic activities e.g. starting, stopping and running.

MUSCULAR DYSTROPHY

General Description

Muscular dystrophy (MD) is a genetically determined condition characterized by progressive weakening and atrophying of skeletal muscle attributed to pathological, biomechanical and electrical changes that occur in the muscle fibre. MD in itself is not fatal, but the secondary complications of immobilization increase the effects of respiratory disorders and heart disease. The weakening and shrinking of respiratory muscles results in a reduction in vital capacity which may lead to respiratory infection. There are three types of muscular dystrophy. Duchenne's is the most common and severe. The onset is usually before three years of age and persons affected by Duchenne's often have a shortened life span due to the severity of the secondary complications. Facio-scapular-humeral is the most common type of MD affecting adults, and does not affect normal life span. Persons with facio-scapular-humeral are characterized as having progressive weakness of the shoulder muscles, starting with the trapezius and pectoralis muscles and continuing with the biceps, triceps, and deltoids. Progressive weakness of the muscles of the face may also be observed.

Muscles of the hip and thigh may also be affected, resulting in a waddling side-to-side gait while walking. The third type of MD is limb girdle. Limb girdle muscular dystrophy manifests itself in the shoulder or hip and thigh area. However after slow progression weakness will occur in both upper and lower extremities.

General Concerns

Exercise is considered to be very beneficial for persons with MD. It helps minimize and reduce secondary complications associated with this condition.
Encourage the participant to be as physically active as possible. Promote the use of manual wheelchairs instead of using power wheelchairs if he/she is able to do so.

**Flexibility Concerns**

While MD may effect flexibility due to the deterioration of specific muscle fibers, stretching exercises are important in maintaining the range of motion. Fatigue is a concern and exercises should be stopped when the participant reports physical fatigue. The focus of enhancing flexibility is to reduce muscle contractions.

**Muscular Strength Concerns**

Concentrate on using muscular strength and endurance programs that focus on the areas most affected by MD such as the shoulder, hip and thigh muscles.

**Aerobic Concerns**

Fatigue acquired through physical activity is generally considered to be intrinsically beneficial. However, there is not universal agreement on the interaction of fatigue and muscular dystrophy. Emphasize the importance of aerobic activity. Weakness of certain muscles may predetermine the type of activity that can be accomplished.

**SPINAL CORD INJURIES / SPINA BIFIDA**

**General Description**

Spinal cord injuries are traumas to the spinal cord that temporarily or permanently disrupt the nervous system control below the lesion. Damage to the spinal cord usually results in motor and sensory impairment. Impairment can be complete or incomplete (partial) paralysis, also known as paresis (weakness). Thirty-one pairs of nerves exit the spinal column at various vertebral levels to innervate specific muscles and body organs. The severity of impairment is dependent upon the vertebral level at which the trauma occurs. The higher up the spinal column that the lesion occurs the more severe the injury, with more paralysis and more dysfunction of the musculature. Spinal cord injuries are generally classified as either paraplegia or quadriplegia. Paraplegia is partial or complete paralysis of the legs and lower trunk of the upper body (lesions below T1 level). Quadriplegia is partial or complete paralysis of both arms and both legs (lesions above T2 level). Another disability affecting the spinal cord is Spina bifida.

Spina bifida is a congenital orthopedic defect caused by the failure of one or more vertebral arches to close prior to birth. This type of lesion takes the form
of a tumor as the spinal cord and the sac containing the cerebrospinal fluid can protrude through the opening.

**General Concerns**

Various concerns exist with respect to exercise and spinal cord injuries. However, most of the concerns are directly related to the vertebral level of the lesion. One major concern for both paraplegics and quadriplegics is that exercise can induce hypotension. Hypotension is a decrease in blood pressure, which can result in a reduced blood flow to the brain and cardiac muscles leading to fainting and even severe shock. Some of the signs of hypotension are paleness and coldness of the skin, shakiness, dizziness and blurred vision. Early recognition of the signs of hypotension can help reverse the effects using methods such as tipping the person back in his/her chair or even lying that person down. If the signs of hypotension do not quickly subside, medical assistance should be sought immediately. An even more severe concern for persons with spinal cord injuries is that of autonomic dysreflexia (also called hyperreflexia). Individuals with lesions above the T5 level are very susceptible to experiencing autonomic hyperreflexia. This is brought about by a noxious stimulus (harmful, eg. an internal infection or kinked catheter) of the autonomic system. Hyperreflexia is characterized by increased blood pressure, pounding headache, excessive sweating and shaking. This can be a serious condition if not dealt with promptly. The high blood pressure can result in the bursting of blood vessels leading to stroke or death. Removal of the noxious stimulus as quickly as possible is very important; and can be as simple as unkinking a leg bag or emptying a leg bag. If the symptoms of hyperreflexia do not disappear seek medical assistance immediately.

**Flexibility Concerns**

It is very important to stretch all the major muscles, including the muscles that are impaired by the injury. The only concern with flexibility exercises is that quadriplegics should not have the extensors of the wrist and fingers stretched or opened out. This is cautioned because of the need to maintain whatever grip the individual has been able to retain in order to maximise function in activities of daily living.

**Muscular Strength Concerns**

Various muscular strength, power and endurance programs can be provided for persons with spinal cord injuries. Assistance in transferring to and from the exercise machines as well as spotting for the exercises may be required. Most concerns and training considerations are directly related to the level of the lesion. For all levels, persons should be properly positioned and stabilized to prevent further injuries, complications, and promote proper exercise techniques. Abdominal binders attached to the wheelchair are strongly recommended to help in the stabilization of the person. Programs with consideration for the back
musculature are also encouraged. Quadriplegics should be careful to keep their hand in a fist when transferring or performing exercises so as not to stretch wrist extensors. Grasping rings should be used for exercises involving pulling the resistance with the hand such as lat pull downs to avoid stretching out the hand. Stabilizing the wrist joint (especially if no tricep innervation) is advised with exercises that cause the joint to compress are involved, such as bench press and/or military press.

**Segmental Innervation Training Considerations**

**C5 Quad**-Deltoids and biceps function, so exercises isolating these muscles should be emphasized. Will most likely require wrist cuffs to access a Universal machine.

**C6 Quad**-Above muscles plus wrist extensors and serratus anterior are innervated. Exercises working these muscles should be provided, and will likely require cuffs for Universal machines; also velcro weights should be utilized.

**C7 Quad**-Above muscles plus triceps and wrist flexors are innervated. Wrist cuffs are still required to access the machines. Velcro weights are also beneficial.

**C8-T1 Quad**-Above muscles plus finger flexors and hand intrinsics are innervated. Persons at this level have hand grip and the use of dumbbells in the program is very beneficial.

**T2-T4 Para**-Complete function of the muscles of the upper extremity as well as partial innervation of the back extensor muscles.

**T5-T11 Para**-Above muscles plus partial abdominal innervation. Start including abdominal exercises in the program.

**T12-L1 Para**-Above muscles plus the quadratus lumborum and iliopsoas (hip flexors) muscles are innervated. Include the appropriate exercises for the new innervations.

**Aerobic Concerns**

The only major concerns for persons with spinal cord injuries while performing aerobic exercises are that persons with injuries higher than T6 will not be able to meet their target heart rate due to the lack of sympathetic involvement; and quadriplegics do not perspire below their lesion, therefore control of thermal regulation must be achieved externally. Wheeling exercises and hand ergometer work are very good activities in promoting cardiovascular fitness for quadriplegics and higher level paraplegics. Paraplegics with low level lesions should utilize walking and cycling (stationary) activities as well.
NOTE:
A.....Phrenic nerve- Diaphragm
B.....Upper limbs
C.....Sympathetic outflow- Blood vessels, temperature control, head (pupils, etc)
D.....Lower limbs
E.....Bladder, bowel, sexual function
VISUAL IMPAIRMENT

General Description

Visual impairment includes partial as well as total vision loss due to congenital defects, pathological and traumatic accidents.

General Concerns

There are no direct physiological concerns related to persons with visual impairments and exercise. However, a major concern is the safety of the participants within the surrounding environment. Instructors are required to orient all persons with visual impairments with the environment including all possible hazards (i.e. doors, stairs, uneven floors, equipment positions and pieces of equipment sticking out). It is recommended that doors are either fully open or fully closed to allow easy navigation to access the facility. It is also imperative that the instructors use concise, descriptive verbal communication when describing what is to be done (e.g. techniques). Visual cues and demonstrations acceptable for communicating with other persons is inappropriate for persons with visual impairments.

Flexibility Concerns

No flexibility concerns other than providing a safe environment.

Muscular Strength Concerns

The only concerns are for safety and succinct communication. Communication may take the form of passively directing the limbs through the entire range of the exercise to teach proper technique (e.g. taking the participants arm and moving it through the entire motion of the expected dumbbell tricep extension).

Aerobic Concerns

All aerobic activities are beneficial, but again safety is a concern. A variety of activities that do not require excessive and inconsistent changes in direction are recommended. For running activities, a guide runner may be necessary. Swimming is encouraged; and the laps in the pool should entail using buoyed lanes for a direction guide.
Muscular Strength and Endurance


The amount of force that a muscle or group of muscles can exert in one maximum effort is termed muscular strength, while muscular endurance is defined as working against resistance for a prolonged period. The development of muscular strength and endurance also aids in reducing body fat and is a primary objective for exceptional students. Following are several examples of performance goals and short-term performance objectives that aid in the development of muscular strength (Hovart, 1988).

Performance Goal:

Improvement of muscular strength and endurance

Activity 1:

Conditioning arms and shoulder girdle (curl)

Equipment: surgical hose, weights and pulleys.

Action: Grasp the object at shoulder width with the palms facing upward and flex the arm, bringing the resistance from the stationary position with the arms at the side to the shoulders. Breathing is exhaled as the resistance is brought to the shoulders and inhaled as it returns to the starting position. The movement should be repeated ten times.

Teaching Hints: The curl may be initiated is either a standing or sitting position with one or two hands. A minimal amount of resistance should
be provided until the student can perform ten repetitions. The number of repetitions of the resistance may be changed to meet the performance level of students.

Modification: Reverse the grip with the palms facing downward to execute a reverse curl to develop reciprocal muscle groups.

Activity 2:

Abduction of upper shoulder

**Equipment:** surgical hose, free weights, weight-training machines, pulleys.

**Action:** Grasp the surgical hose or other resistance with one hand while keeping the arm straight and bring the weight to the side and then eventually overhead.

**Teaching hints:** The exercise may be initiated in a standing or sitting position. For nonambulatory student the surgical hose may be anchored under the wheelchair tire. Repetitions and change periodically to meet the performance level of students.

**Modification:** The exercise can be performed on alternate sides of the body or in front of the chest with straight arms.
Activity 3:

Tricep Extension

**Equipment:** surgical hose, weights and pulleys.

**Action:** Grasp the surgical hose behind the back reaching overhead, with the resistance behind the back; pull upward and backwards behind the neck. The action should be repeated with the other hand.

**Teaching hints:** The exercise may be initiated in a standing or sitting position. For nonambulatory students the resistance should be adjusted to functional ability level and performed on a chair or wheelchair. Resistance should be selected to encourage ten repetitions and used concurrently with the bicep curl.

**Modification:** The exercise arm can be supported by the nonexercising arm. When surgical hose is used, it can be anchored under the wheelchair, which will require a longer pull to complete the exercise. If free weights are used, the nonexercising arm should support the active arm.

Activity 4:

Chest and shoulder development (chest stretch)
Disabled Skiing Methodology

**Equipment:** surgical hose

**Action:** Grasp the tubing in both hands beginning with the hands overhead. Keep the tubing taut and bring down to the waist and the return to the starting position. The head should be turned to the side slightly. Breathing involves exhaling as the surgical hose is moved downward and inhaling while returning to the original position. The movement should be repeated ten times and resistance selected at the student's functional ability.

**Teaching hints:** The exercise can be initiated in a sitting or standing position. Initial resistance should be selected to encourage ten repetitions.

**Modification:** Beginning in the overhead position, keep the arms straight and perform the exercises behind the neck.

**Activity 5:**

Chest development (chest pull)

**Equipment:** Surgical hose, pulleys

**Action:** Grasp the surgical tubing in both hands beginning in front of the chest and open the arms to the side. Breathing involves inhalation while arms stretched to the side and exhalation while the hands return to the starting position.
Teaching hint: The exercise can be performed in a sitting or standing position. Initial resistance should be selected to encourage ten repetitions.

Modification: To increase the resistance, shorten the length of surgical hose. If pulleys are used, one arm at a time can be used to pull the resistance across the body.

Activity 6:

Development of chest and shoulder girdle (bench press)

Equipment: Weights, dumbbells, or exercise machine.

Action: Grasp the barbell at shoulder width in a supine position with the arms extended. Lower the bar to the chest and then press to the starting position. Breathing involves exhalation when the arms are extended and inhalation when the bar is brought to the chest.

Teaching hints: The exercise should be completed in a supine position with the feet on the floor. For nonambulatory students, the feet should be extended on a bench while a wider area of support is provided for the lower back. Initial resistance should be selected to encourage ten repetitions.

Modification: The exercise can be performed with dumbbells or an exercise machine using the same motion. The grip may be varied to exercise various muscles of the chest. In addition, the exercise can be performed in an incline position.

Activity 7:

Strengthening abdominal muscles; (crunches)

Equipment: None

Action: In the supine position with the knees bent and arms crossed over the chest. Bend the shoulders forward and raise the back until the abdominals contract. Return to the beginning position, exhaling as the movement begins and inhaling as the student returns to the beginning position.

Teaching hints: The exercise should progress only to the point that the abdominals contract and should be performed slowly with the proper breathing. If students have problems bringing their body from the floor, assistance or a physical prompt with a hand behind the back can be
provided. Students should begin with the number of repetitions easily attained without undue discomfort.

**Modification:** The exercise can be performed with a weight or an incline for students with more developed abdominal muscles. Several sets of repetitions may be encouraged to alleviate undue strain.

*Activity 8:*

Leg strengthening (quadricep extension)

**Equipment:** surgical hose, weight machine

**Action:** In a supine position with the knees bent and the surgical hose placed around the soles of the feet and anchored around the waist, the legs are extended and returned to the beginning position. Exhalation occurs when the legs are extended and inhalation during the return to the starting position. Initial resistance should be selected to encourage ten repetitions.

**Teaching hints:** For some students this exercise can be accomplished in a sitting position on a weight-training machine. The amount of resistance should be selected at the student's functional level to encourage ten repetitions.

**Modification:** Manual assistance can be provided for the student with leg involvement to ensure extension. Students should anchor their arms to ensure upright posture during the exercise.

*Activity 9:*

Strengthening legs, hip (side leg raises)
Equipment: Surgical tubing

Action: secure the surgical tubing with a square knot and place around the legs while lying on one side. Lift the leg slowly and hold for three seconds. repeat the movement for ten repetitions and change sides. Exhalation should occur when the leg is raised and inhalation when the leg is returned to the starting position.

Teaching hints: For students with lower-leg involvement, some manual assistance may be required to initiate the action. The height of the lift may vary according to the student's functional ability.

Modification: The exercise can be performed with the surgical hose placed above the knees or in varying positions below the knees. Manual resistance can also be applied as well as performing the exercise without resistance. Ankle weights of varying increments can provide added resistance while performing the activity.

Activity 10:

Leg strengthening (quadricep extension)

Equipment: Leg weights, weight-training machine

Action: In a sitting position on a table with the legs hanging over the table and resistance applied at the feet, the legs should be brought to a horizontal position, held, and returned to a starting position. Exhalation should occur as the legs are brought to the horizontal position and inhalation as they return to ninety degrees.

Teaching hints: Apply the amount of resistance at the student's functional ability level and encourage complete extension. The amount of resistance should be selected to encourage ten repetitions.

Modification: Students can lie on their stomach in a horizontal position and curl their legs to the ninety-degree position to strengthen the reciprocal muscle (Hamstring) groups. The arms should be anchored in each exercise to encourage correct posture and appropriate movements, while resistance and breathing are performed in the manner of the quadricep extension.
APPENDIX C: REFERENCES


Canadian Association for Disabled Skiing. (1988). Skiing with a difference. Film, Kimberley, B.C.

Canadian Association for Disabled Skiing. (1981). Skiing is believing. Videocassette, Kimberley, B.C.

Canadian Association for Disabled Skiing. (1992). Teaching technique for the sitski. Kimberley, B.C.

Canadian Association for Disabled Skiing. (1993). No Challenge Too Great. Videocassette, Kimberley, B.C.


Canadian Ski Instructors' Alliance. Skiing the basics. Videocassette. Ville St. Laurent, Que.

Canadian Ski Instructors' Alliance. Skiing skills. Videocassette. Ville St. Laurent, Que.

Canadian Ski Instructors' Alliance. Snow Motion. Videocassette. Ville St. Laurent, Que.


Walsh, Catherine M., Hoy, Dianne J., Holland, Leona J., (1992), Get Fit, Research and Training Centre for the Physically Disabled, Faculty of Physical Education and Recreation, The University of Alberta, Edmonton, Alberta.
# APPENDIX D: NATIONAL AND DIVISION OFFICES

**National Office:**
Canadian Association For Disabled Skiing,
Box 307, Kimberley, B.C. V1A 2Y9
Tel: (250) 427-7712 Fax: (250) 427-7715

**Division Offices:**

<table>
<thead>
<tr>
<th>Division Offices</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISABLED SKIERS ASSOC. OF B.C.</td>
<td>324-1367 West Broadway, Vancouver, B.C. V6H 4A9</td>
</tr>
<tr>
<td></td>
<td>Tel: 604-737-3042 Fax: 604-738-7175 FAX</td>
</tr>
<tr>
<td>SASKATCHEWAN SKI ASSOC. DISABLED DIV.</td>
<td>17 Clark Crescent Saskatoon, Sks. S7H 3L8</td>
</tr>
<tr>
<td></td>
<td>306-374-7745</td>
</tr>
<tr>
<td>CADS ALBERTA</td>
<td>Percy Page Centre 11759 Groat Road</td>
</tr>
<tr>
<td></td>
<td>Edmonton, Alberta T5M 3K6</td>
</tr>
<tr>
<td></td>
<td>Tel: 780-427-8104 Fax: 780-427-0524 fax</td>
</tr>
<tr>
<td>CADS ALBERTA</td>
<td></td>
</tr>
<tr>
<td>CADS ONTARIO</td>
<td>163, 336 Yonge Street Barrie, ON L4N 4C8</td>
</tr>
<tr>
<td></td>
<td>Tel: 705-725-4774</td>
</tr>
<tr>
<td>CADS NOVA SCOTIA</td>
<td>Alpine Ski Nova Scotia 5516 Spring Garden Rd.</td>
</tr>
<tr>
<td></td>
<td>Box 3010 South Halifax, NS B3J 1G6</td>
</tr>
<tr>
<td>CADS NCD</td>
<td>Box 236 Stn B Ottawa, ON K1P 6C4</td>
</tr>
</tbody>
</table>
APPENDIX E: SKIER EVALUATION FORMS, REGISTRATION FORMS, ALPINE CERTIFICATION AND CERTIFICATION COURSE

Proficiency Form for Student with a Disability

CSIA Student Technical Evaluation Program

Form - Registration - Volunteers

Form - Registration - Students

Form - Equipment Record

CADS Alpine Instructor Certification

Examiner Definition and Criteria

Guileines for Certification Participation Clinics
### SKIER TECHNICAL EVALUATION PROGRAM - CSA FORM

S.T.E.P.™ is a skier evaluation program developed by the Canadian Ski Instructors' Alliance. We have divided skiing abilities into nine different categories called S.T.E.P.™. Each one describes your present level of skiing with a brief explanation of the goal you should strive to reach. The next part is the skills and exercises used to improve your skiing, and as you achieve all of these a pin and a card will be awarded. The following guidelines will help you to assess your present level and enable the ski school to put you in the appropriate program best suited to your skiing ability. Ask your Canadian Ski Instructors' Alliance participating ski school about the S.T.E.P.™ Program and let them help you develop enjoyment of the sport.

<table>
<thead>
<tr>
<th>STEP</th>
<th>PRESENT LEVEL</th>
<th>GOAL</th>
<th>SKILLS AND EXERCISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Children Section**

| A | Straight run and glide to a stop. | Step up fall while driving to be seated. |
| B | Ski in a wedge position. | Step up fall while seated. |
| C | Ski for themselves and make a wedge. | Make a wedge with one ski and drive a half turn on both sides. |
| D | Develop agility and the correct grip. | Flip over on skis and then the other while reversing. |

---

143
Performance Record

SKI SCHOOL FOR PERSONS WITH A DISABILITY
PERFORMANCE RECORD

Student _________________________________
Instructor _________________ Date __________
Supervisor ________________ Disability ______
Boot size ____ Ski ____ Outrigger ____ Eqpt ____
LESSON NO.  1   2   3   4   5

ACHIEVEMENT:
Lesson # ___________________________________________________________________
________________________________________________________________________
Lesson # ___________________________________________________________________
________________________________________________________________________
Lesson# ___________________________________________________________________
________________________________________________________________________
Lesson# ___________________________________________________________________
________________________________________________________________________
Lesson# ___________________________________________________________________
### STUDENT RECORD OF PERFORMANCE (BACK)

Levels of Achievement

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equipment</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Walking w/o skis</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Walking with skis</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Step Around</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>Climbing - side step</td>
<td>17</td>
</tr>
<tr>
<td>6</td>
<td>Falling</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>Rising from fall</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>Body Stance - use pole</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>Body Stance - Outrigger</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td>Straight Running</td>
<td>22</td>
</tr>
<tr>
<td>11</td>
<td>Stop Wedge &amp;/or Outrigger</td>
<td>23</td>
</tr>
<tr>
<td>12</td>
<td>Controlled Wedge</td>
<td>24</td>
</tr>
</tbody>
</table>

Some steps may not be possible because of the strength and disability of the student.

Transportation on Hill: Grunt and shove, Snowmobile, Chair - half way, Chair - Top

Other ____________

**NOTE**: Pocket size cards may be made up with this data (approximately 11 x 14 cm)
Volunteer (Instructor) Information

Date Mo__ Da___ Yr___

Ski School __________________________ Zone of Program ____
Volunteer's 
Last Name _____________________ First Name ____________
Address __________________________ City ________________
Postal Code ___________ Phone: Home ___________ Work _______
Occupation ____________________ Birth date ____________

Have you Instructed on our Program?  Yes__ No ___ Years with the program ______
Have you worked with other Disabled programs? Yes __  No ___
If yes what program(s) ____________________________

LEVEL OF SKIING ABILITY: Beginner:___ Intermediate ___  Advanced ___
Instructor ___ Racer ___

Certification - Instructor: _____________ Coach __________

The Learn to Ski Program operates on Friday evenings during portions of November, December, January and February. We hope you will be able to attend the scheduled lessons.
If you are unable to attend any of the scheduled Friday evenings, please indicate when you will not be available __________________________

Instructor Ski Improvement Clinics and Instructor Development Clinics(other than the first training sessions) are held on Thursday evenings. We hope you will be able to attend all clinics. Lift Tickets will be provided for these sessions. These clinics are organized in order that the Instructor may improve his/her skiing and Instructing ability. Attendance is not mandatory but we would like to see you there.
Will you be able to attend? Yes __ No __. If No please indicate date that you may not attend __________________________

Do you have any suggestions for the type of Clinics held on Thursday evening? __________
Are you interested in attending course(s) to qualify for:

   CADS Certification
   CSIA  Level  I    II    III    IV

Have you participated in any racing programs? State number or years and level of skiing __________________________

Are you interested in Coaching Disabled Skiers in racing programs? ________
STUDENT APPLICATION
Date Mo___ Da___ Yr___

Ski School __________________________ Zone of Program ___
Student's
Last Name _____________________ First Name ______________
Address __________________________ City __________________
Postal Code ______ Phone: Home _________ Work _______

Emergency Contact __________________________ Phone ______
Age: ____ Shoe/Boot size ____ Height ____ Weight ____
Alberta Health Care # _______________

LEVEL OF SKIING ABILITY: Beginner:___ Intermediate ___ Advanced ___

TYPE OF DISABILITY:
BLIND ___ DEGREE OF SIGHT LOSS ______
DEAF ___ DEGREE OF HEARING LOSS ______
AMPUTEE ___ ARM ___ LEG - BELOW KNEE ___ ABOVE KNEE ___
MENTALLY HANDICAPPED ___ LEARNING DISABLED ___
CEREBREAL PALSY ___ SPINA BIFIDA ___ BRAIN INJURY ___
PARAPLEGIC ___ QUADRAPEGIC ___ LEVEL OF LESION ___
STEEL ROD _______ SHUNT _______ Braces ______

Has student been involved in Disabled Ski Program before? Yes ___ No ___ # yrs ___
Is Student active in other sport programs? (Please specify) _________________
If student is from a Group Home, is there a Support Staff accompanying the student? Yes ___ No ___ . If YES will staff member be staying in Lodge or skiing? Lodge ____ Skiing _____.

PLEASE LIST MEDICATION OR OTHER MEDICAL CONDITIONS THAT COULD AFFECT THE STUDENT'S PARTICIPATION ________________________________________________

Does the Student require assistance with Equipment? Yes ___ No ___ . If Yes will person bringing student assist? Yes ___ No ___
Is the Student interested in participating in the CADS Disabled Ski Festival in March? Yes ___ No ___
Would Student be interested in participating in a Disabled Ski Club? Yes ___ No ___
Would Students, Parents, Friends be interested in assisting with Club Projects such as Fund Raising and Bingos? Yes ___ No ___. Specify interests __________________________
EQUIPMENT CARD - Year____

STUDENTS NAME ____________________________ __________
Age ______ Telephone____________________
Disability __________ Function ______________
Ht ______ cm   Weight ______ Kg
Boot Size ________ Number _____________
Ski Length ___ Number _________________
Binding Setting __________________________
Outrigger No._________ Sitski No. ______
Biski No. ______
Instructor ___________ Super __________________________
Certification criteria for Alpine Instructors has been established by the Alpine Technical Committee in respect to norms defined in the CADS Certification Kit.

**CADS Level 1 - Instructor**

Participation in an Instructor Training Clinic as defined in the CADS Certification Kit, including the indoor session, CSIA Progression Clinic and Clinics covering 3 Track, 4 Track, Blind, Sitski, the use of specialized equipment and passed open book exam.

**CADS Level 2 - Instructor**

A CADS Level 1 who has taken the Level 2 course and passed all requirements of the CADS Level 2 Certification, including the teaching examination and four mandatory Ski-Offs as defined in the CADS Certification Kit, shall be classed as a Certified CADS Level 2 Instructor.

**SITSKI CERTIFICATION IS A REQUIREMENT BEFORE BECOMING A ROOKIE EXAMINER.**

**CADS Level 3 - Examiner**

A candidate whose application has been accepted to become an Examiner will be designated as a "Rookie Examiner" until such time as all the requirements to become an Examiner, as defined in the CADS Policy Manual, have been fulfilled.

**COURSE FEES ARE PAYABLE TO NATIONAL OFFICE FOR LEVEL 1, 2, 2a and 3 AS PER CERTIFICATION KIT.**

**CADS Level 4 - Senior Examiner**

To fulfil the requirements for this position the candidate must have had considerable experience as a Ski Instructor, examining Instructors and fulfils the requirements for this position as defined in the CADS Policy Manual.

(96-04-29)
Sitski Instructor Certification

Two situations are considered to attain Certification as a Sitski Instructor. The requirements are fully covered in the Certification Kit and include both situations.

A- Able bodied Instructor:

Must be a Certified CADS Level 2 Instructor and teach Sitskiing for a minimum of one season after attaining a CADS Level 2 certification. The candidate must demonstrate and pass the Sitski Ski-Off as defined in the Certification Kit. Upon passing the Ski-Off the candidate's Certification Card shall be signed to indicate the additional qualification.

B- Person with a disability:

A person with a disability who normally skis in a Sitski can have the opportunity to be tested in the Sitski phase, or all phases of testing for the CADS Certification. A person who has passed one or more Ski-Offs shall have the appropriate section completed on the CADS Certification Card.

Certification Card:

The Certification Card shall have a section on the back of the card to indicate passing of one or more of the required Ski-Off tests.

CSIA Certification:

A CSIA Certification is not a requirement to take a CADS Certification.

A candidate for CADS Level 1 Certification requires 6 hours Instruction in CSIA Teaching Methodology. This instruction may be a combination of the original training course and clinics over a period of time.

A candidate for CADS Level 2 Certification requires 18 hours Instruction in CSIA Teaching Methodology. This instruction may be a combination of the original training course and clinics over a period of time.

If the candidate has a CSIA Certification (Level I - IV) then he/she has met the CSIA requirements for CADS Certification.

(96-04-29)
NUMBER: 6.3 A.

SUBJECT: EXAMINER DEFINITION & CRITERIA

DATE: September 24, 1995

1-SENIOR EXAMINER

The position of a Senior Examiner is one that commands a great deal of respect and has been earned by a person who has many years of experience as a CSIA Examiner, has been involved with CADS programs and has served as a member of the CADS Technical Committee.

TO BE APPOINTED AS A SENIOR EXAMINER AN INDIVIDUAL MUST:

1. have a background with the CSIA and CADS
2. be a member in good standing with CADS
3. have Examining experience with CSIA and CADS
4. be capable of teaching and skiing the CADS Certification Functions
5. be well versed in the CADS organisation
6. make him/herself available to travel and to train Rookies, do refresher or upgrading courses throughout Canada
7. oversee the content of the Certification Courses and associated clinics
8. keep current with CSIA developments so that this information may be passed to the CADS Technical Committee and membership as necessary
9. if required, find examiners for Certification Courses and Clinics.

APPOINTMENT:

When there is a requirement for a Senior Examiner, the position will be advertised in the Winter Newsletter. Interested candidates shall make application to CADS National Office by January 31st.

The applications shall be reviewed by the TC Chairman and the other Senior Examiners. A report of this group, with their recommendation shall be presented to the Technical Committee at their Spring Meeting.

Each member of the Technical Committee shall have one vote, which will be cast by secret ballot, for the selection of the Senior Examiner.

The applicant with the majority vote, of the members of the Technical Committee, shall be appointed a Senior Examiner.

(96-04-29)
2-EXAMINER

An Examiner will be a supervisor with a Learn to Ski Program for persons with a disability. In order for a person (able bodied or with a disability) to become an Examiner, the following criteria must be fulfilled. The potential Examiner must:

1. be a member in good standing of CADS
2. be an advanced skier and have passed a CADS Certification Level 2 Course, be qualified in all functions of disabled skiing and have held a full certification, including Sitski, for a minimum period of three years
3. apply for Rookie Training through the Division Technical Committee or CADS Division Representative who will forward the application to a Senior Examiner with a copy to National Office
4. be accepted by the Senior Examiner processing the application to attend a Certification Course as a Rookie
5. attend and rookie at a Certification Course either at the Spring Festival or an approved Divisional Course
6. have demonstrated the knowledge and ability to run training sessions and clinics for Blind, 3 Track, 4 Track and Sitski
7. have the knowledge and ability to evaluate the candidates' skiing and teaching when being examined for certification
8. have a Senior Examiner present and examining the course
9. pass the certification course to become certified as an Examiner.

Certification Courses where Rookies will be accepted must have a Senior Examiner in attendance. A Senior Examiner will make the selection of Rookies that will be accepted before the course.

The ratio of Rookies to working Examiners on a Certification Course will be one Rookie for each working Examiner.

There shall be a Certification Course at every Spring Festival.

(96-04-29)
NUMBER: 6.3 A. (CONTINUED)

3-ROOKIE ATTENDING A CERTIFICATION COURSE

To qualify as an Examiner, the Rookie:

1 must be a CADS member in good standing
2 must attend and participate in all four clinics and sessions, which will be Blind, 3 Track, 4 Track and Sitski
3 must teach all functions
4 will be assigned to work with a working examiner each day who will brief the Rookie on his/her plans for the session and the rookie will take over and teach the session when asked to do so
5 will demonstrate all Ski-Off turns
6 will be judged on ability to demonstrate all Ski-Off functions
7 will evaluate the Ski-Offs of the candidates
8 will be asked to evaluate the teaching examination along with an Examiner
9 will be judged on his/her performance of the above
10 will be advised if he/she has passed and become certified as an Examiner, and a copy of this notification will be sent simultaneously to National Office.
11 will be advised if he/she has failed of the weaknesses noted and encouraged to prepare for a future Certification Course following the advice of the Senior Examiner to correct for deficiencies

PERSONS WITH A DISABILITY

Persons with a disability may apply to become a Rookie Examiner. They must demonstrate that they are capable of passing the skiing test required for their disability. This person must have sufficient knowledge to teach and evaluate all four disability functions.
GUIDELINES for Certification Participant Clinics

FIRST NIGHT – (INTRODUCTION NIGHT)

CONTENTS

1. EXPLANATION OF CADS – (SEE INFORMATION BOOKLET)
2. MOVIE, SLIDES OR VIDEOS – (EMPHASIS ON DISABILITIES)
3. REVIEW GLOSSARY IN CADS MANUAL
4. FIRST AID AND WHAT TO CARRY WITH YOU ON HILL
5. WORKING WITH THE DISABLED
6. WHAT SKIING DOES FOR THE DISABLED
7. DISABLED AND THE SKI AREA
8. EXPLANATION OF CLINIC TIMES AND CONTENT
9. DEFINE SKIING FUNCTION – (SEE CADS MANUAL)
10. GENERAL DISCUSSION AND GET TO KNOW EACH OTHER

SCHEDULE

DAY 1 9:00 to 10:15am  DAY 2 9:00 to 10:15am
10:30 to 11:45am 10:30 to 11:45am
LUNCH LUNCH
1:00 to 2:15 pm 1:00 to 2:15 pm
2:30 to 3:45 pm 2:30 to 3:45 pm
4:00 to 5:00 pm (Indoors) 4:00 – Be available to answer questions

If the CSIA Progression is to be taught, combine the two morning sessions on Day 1 and run a 3-hour session.

ON SNOW CLINIC CONTENTS:

1: 3 Track
2: 4 Track
3: Sitski
4: Visually Impaired Guiding
5: Teaching aids and other disabilities
6: Mentally Challenged
7: CSIA Progression
SKIER WITH A DISABILITY NOTE: Skiers with a disability must be able to teach their own disability function, but must also be able to teach, detect and correct all the skiing functions. To demonstrate these other functions another demonstrator can be used. The skier with a disability must have usual mobility and strength to assist the student.

ALL PARTICIPANTS MUST ATTEND ALL SESSIONS.

DIFFERENT WAYS OF RUNNING CLINICS:

1. Specialized disabilities (Basic skiing and body contact tools should be used in all clinics)
2. NO SNOW! – Use indoor facility. Use floor to go through normal procedures minus skis and boots, walking through maneuvers.
3. Dry land: Outside – use a slope if possible. Practicum can be done dry land e.g. Blind going through practical experiences of putting on boots, skis and walking etc.

MAKE UP OF CLASSES:

Class 1 – Level 2 and up – CSIA and Experienced Instructors of Disabled Skiing.
Class 2 – Professional personnel in medical field.
Class 3 – Good skiers and Level 1.
Class 4 – Others (including non skiers, volunteers) keep volunteers involved.

WORK TO THE LEVEL OF CLASS

Class 1 – Work on more detailed skiing and disabilities.
Class 2 – Work on teaching and skiing maneuvers, as they understand disabilities.
Class 3 – Work on teaching and skiing maneuvers and disabilities.
Class 4 – Break down to very basic skiing (these people are very important in many areas)
   - Do not discourage anyone from helping.

INSTRUCTORS SHOULD BE AWARE OF:

1. Know your own capabilities
   a) Skiing
   b) Teaching
   c) Knowledge of disabilities
   d) Knowledge of yourself – patience, panic level etc.

2. When in doubt work slowly and safely – work on basics

3. If you feel you can not handle student
   a) Discuss situation with program coordinator
   b) Switch students for awhile or permanently
   c) Go in for a coffee
   d) Ask for feedback from student to see what he/she is learning

4. Keep a personnel record of lessons (problems, gains etc.) and refer to them when similar situations arise.
5. If you panic (anyone can), best to change student.

Many students challenge their instructors; so don’t feel bad if you take on more than you bargained for. Do something about it before you or your student has an accident.

WHAT SKIING DOES FOR THE DISABLED:

1. A form of healthy outdoor exercise
2. Integration into normal society
3. Social
4. Family sport
5. Fluid mobility because motion is given to them by the slope of the hill.
   “You don’t need to be able to walk to ski”.

Try to get families involved in skiing – encourage lessons. Always know your student’s name.

DISABLED AND SKI AREA:

Program coordinators should know procedures at ski area and pass them onto the instructors and disabled students. If you do not know policies e.g. lift lines, blind bibs, stopping lifts etc., check before going out. Always be diplomatic. Most areas are willing to help the disabled, but don’t take advantage of your privileges.

ITEMS TO CHECK ON:

- CLOTHING: Mitts, hat, scarf, adequate ski clothing
- BRACES: Pad under braces well, as braces will conduct cold and rub skin.
- NO FEELING Some people may have no feeling or very poor circulation, check them often. Watch for frostbite.
- AMPUTEES Pad stumps and if wearing prosthesis, check often. To prevent injury to stump use cardboard or professionally made protectors.
- GOGGLES & SUN GLASSES Are important when sunny. Best to train student to wear them at all times. A MUST FOR VISUALLY IMPAIRED.

ON HILL SESSION:

1. BASIC SKI This is very important. All advanced techniques stem from the basics. (It is hard to teach if you don’t understand the basics)

   EMPHASIZE: a) Demonstrations
             b) Running through maneuvers
             c) Brief explanations
             d) Detection and correction of mistakes
Disabled Skiing Methodology

e) Mileage on skis (you learn by skiing, not by standing around)

2. Body Contact Tools: To be used when needed. This is another form of correction and they are confidence builders for the student. (Refer to CADS manual)
   a) Long pole
   b) Short pole
   c) Holding ski tips
   d) Rope harness
   e) Turning person on hill
   f) Pushing on flats or traverse
   g) Skiing backwards holding ski tips, body, hands or poles
   h) Picking someone up after a fall
   i) Holding body, hips, back, arms
   j) Holding person between legs (front or back)

Practicum is important in this section. Have students pair up and run through most of these. Some of these may have been included in basic skiing. – Emphasize again

FIRST AID:

Every ski area has ski patrol and some have a resident doctor.

1. Know where first aid station is located
2. Check with station for procedures
3. Taking a first aid course is beneficial
4. Don’t panic – accidents do happen
5. Tell the ski patrol when you are in their area
6. Invite them to your sessions to observe

FIRST AID AND YOUR STUDENT:

Program coordinator should have the following information:

a) Phone number of parents, spouse etc.
   b) Phone number of doctor
   c) Phone number of hospital
   d) Detailed description of disability and medication – (look for people that bruise easily, they could have internal bleeding)

ITEMS TO CARRY WITH YOU ON THE HILL:

1. “C” clamps and nylon rope
2. Tape (adhesive, fibre glass) and knife
3. Bolts or spring clips – tools (screw driver, wrenches, pliers)
These items help the instructor – tape is most important
WORKING WITH PERSONS WITH A DISABILITY:

Think of them as normal people who happen to have a physical or mental disability. Adjust your teaching to the ABILITY and not the disability of the student.