



**DISABILITY SKIING WALES**  
**SGIO ANABLEDD CYMRU**

# DISABILITY SKIING WALES

## TRAINING MANUAL FOR HELPERS AND INSTRUCTORS



Endorsed by Snow Sport Wales

**Registered Charity Number : 1126906**



## TRAINING MANUAL

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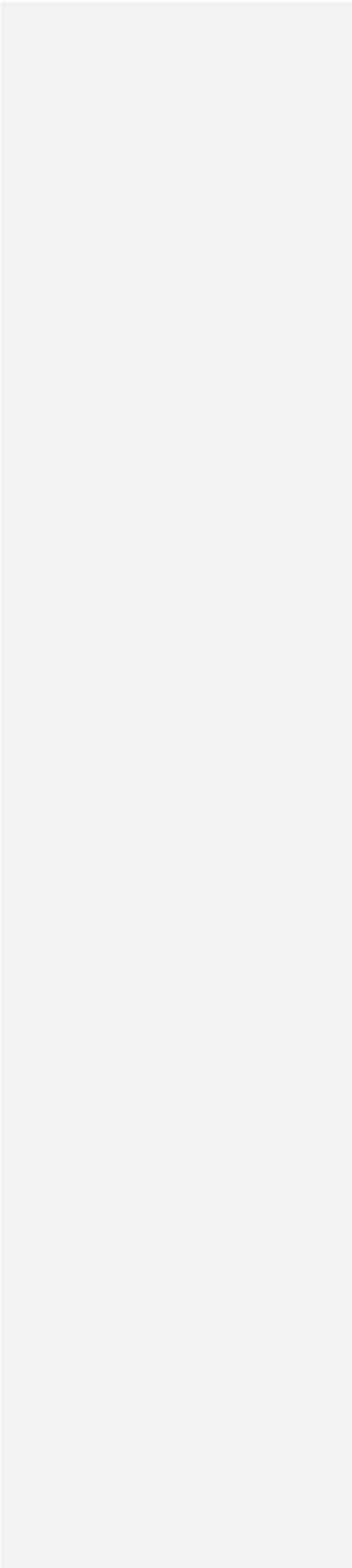
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## **SECTION 1 - DISABLED SKI HELPER AND INSTRUCTOR MANUAL**

### **Our Mission**

At Disability Skiing Wales we aim to provide accessibility to skiing for all disabilities in a safe and supportive environment.

### **Aim of our training**

We have designed a modular based training course to allow our volunteers to be trained as either a DSW helper or DSW instructor, which ever suits their needs and abilities. The DSW helper/instructor flow diagram gives a quick guide through the process.

The aim of our training is to provide high quality disabled skiing support in a safe and engaging environment and which is cost effective to the charity. By presenting the course in module form you will only need to do those modules that reflect your skiers disabilities, although you can choose to do all modules.

Training will help enhance the skiers experience and will permit us to be appropriately insured.

### **How to become an approved DSW Helper**

To become DSW helper you will be required to follow the following steps:

Step 1 – you will need to have a valid DSW membership

Step 2 – you will need to have a valid DBS (formerly CRB) check and attend a Working with Vulnerable Adults course.

Step 3 – you will need to complete the Disability Ski Modules. (Optional)

As an option you can also attend specific DSW disabled ski modules to enhance you skills and understanding of specific aspects of disable skiing e.g. learning difficulties.

It is proposed to run the introduction to disabled skiing modules on a regular basis to support any new volunteers

### **How to become a DSW Disabled Ski Instructor**

To become DSW disabled ski instructor you will be required to follow the following steps:

Step 1 – you will need to have a valid DSW membership



Step 2 – you will need to have a valid DBS (formerly CRB) check and attend a Working with Vulnerable Adults course.

Step 3 – you need to be qualified to a minimal ski instructor level either Snowsport UK level 1, ASSI Level 1, BASI level 1, or equivalent.

Step 4 – you will need to have attended a Disability Skiing Awareness course. This is a two day course which:

- Describes the key features of equipment used
- Provides experience on the equipment
- Provides awareness of the disabilities
- Experiences the use of the uplift equipment

The course deals with:

- Bi Skiing
- Mono Skiing
- Visual impairment
- 3 Tracking
- 4 Tracking
- Learning difficulties
- Hearing Impairment
- Tethering

Step 5 – you will need to be qualified in disability skiing either through completing appropriate DSW modules, BASI Adaptive Instructor or equivalent. NB If trained using the modular approach you will only be able to instruct disabilities that you have successfully completed the module for.

In order to achieve the above, it is proposed to register volunteers with Snowsports Wales as trainee instructors and follow a program of training culminating in the UK SNOWSPORTS LEVEL 1 INSTRUCTORS qualification. The recognized method of undertaking the training for this qualification is to undertake a training course of 14 hours over a 2 day period. However in consultation with your coach this may be made flexible to suit your requirements.

Having achieved Step 5 you are then qualified to teach adaptive skiing at the accredited level.

Following the completion of the training program will need to undertake 20 hours of supervised instruction and complete an assessment to gain the Level 1 instructors qualification.



### **Disability Ski Modules**

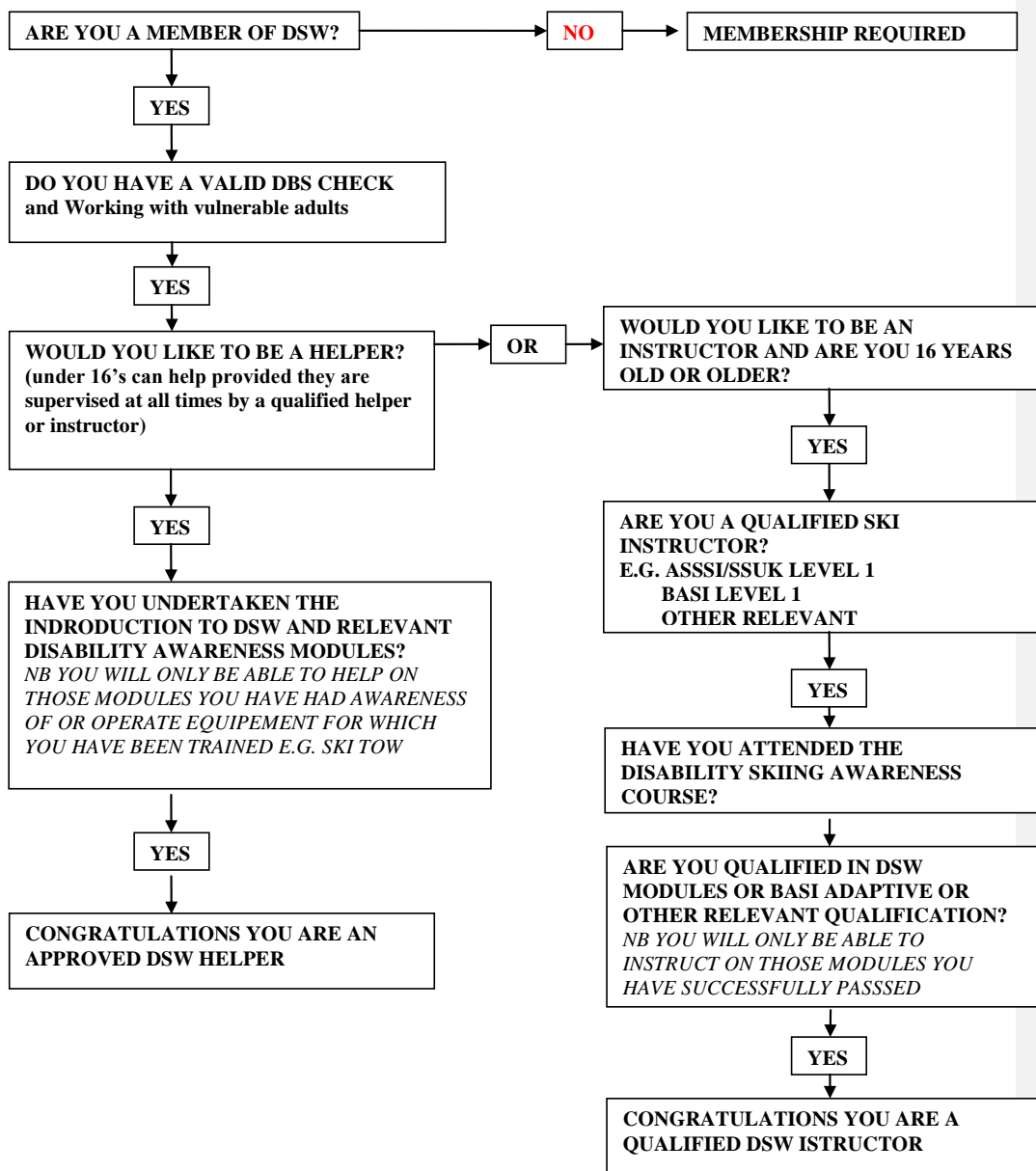
Modules for specific disabilities will be organized throughout the year. These modules will cover the different types of skills required to deal with the various types of disabilities within the ski club. The assessment will be broken in to three key stages, all of which must be passed. The stages are:

- Introduction
- Supervised Training (with minimum 2 hours)
- Practical experience (generally obtained during monthly ski sessions)

We will use the *Professional Ski Instructors of America "Adaptive Snowsports Instruction"* manual as a reference guide .

### **Costs**

The cost of enrolment in the helper and disabled instructor program is free for committed DSW volunteers. The ski instructor program will be determined by Snowsports Wales and may be paid by DSW pending the level of commitment you are willing and able to give.







**SECTION 2 – PARTICIPANT ASSESSMENT FORM**

A PARTICIPANT/SKIER MUST BE ASSESSED BY A QUALIFIED INSTRUCTOR BEFORE THEY ARE ALLOWED TO SKI. The following form must be completed for all skiers and reviewed by a qualified instructor.

**Disability Skiing Wales (DSW) Participant/Ski Assessment Information Form**

Name: .....

All Information will be held "In Confidence" and may be used in the event of an Insurance claim

**Personal Details**

<b>Name:</b> _____	<b>Date:</b> _____
<b>Address:</b> _____	<b>DOB:</b> _____
Line 1: _____	<b>Weight*:</b> _____
Line 2: _____	<b>Tel no: home:</b> _____
Line 3: _____	<b>work:</b> _____
<b>County:</b> _____	<b>Post code:</b> _____
	<b>mobile:</b> _____

\* For safety reasons a 200 lbs weight limit may be applied, dependent on Skier requirements

**e-mail** home: \_\_\_\_\_ First attendance: \_\_\_\_\_  
work: \_\_\_\_\_ DSW Member: yes/no

Emergency contact (Doctor Etc):  
Tel No \_\_\_\_\_

**Contact person if different from above. Relation/Carer:** \_\_\_\_\_  
**Name:** \_\_\_\_\_ **Tel No** \_\_\_\_\_

**Medical details - Please detail pre-existing medical conditions / disabilities:**

**Medication: please detail below, including how and when to use:**

**Please indicate [tick ✓] if any of the following are applicable and give details /dates:**

Head injuries / shunt ?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Seizures/epilepsy (if yes, when was last)?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Hepatitis ?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Operation / treatment in last 12 months?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Pending operation / medical treatment?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Recent injury?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____
Allergies (particularly Latex)?	No <input type="checkbox"/>	Yes <input type="checkbox"/>	_____



**If medical clearance requested by DSW, please complete this section**

GP/Consultant: Name: _____
Surgery (daytime) Tel no: _____
Emergency (24hr) Tel no: _____
Date cleared for skiing activities: _____ Member Signature: _____

### Ski Experience and Declaration

**Have you ever skied before? Yes/No**

**Is your ski experience prior to becoming disabled? Yes/No/NA**

Please give details of your experience: (Please tick appropriate box)

Beginner [basic turns]	<input type="checkbox"/>
Beginner/intermediate [basic parallels]:	<input type="checkbox"/>
Intermediate [confident parallels]:	<input type="checkbox"/>
Advanced /instructor:	<input type="checkbox"/>
First learnt to ski (year) _____	
Dry slope experience:      No <input type="checkbox"/> Yes <input type="checkbox"/> approximate length of time _____ months/years	
Snow experience:      No <input type="checkbox"/> Yes <input type="checkbox"/> approximate number of weeks _____	
Guide/Ski qualifications:      No <input type="checkbox"/> Yes <input type="checkbox"/> If Yes please give details	
_____	
_____	

**DECLARATION**

**I declare that all the information given on this form is true and correct to the best of my knowledge and I do not hold the DSW or its operatives responsible for any consequences that arise from false information.**

Name _____ for and behalf of _____
Age if Under 18: _____ (Parent / Guardian / Carer Signature Required)
Signed: _____ Date: _____
Signed: _____ Date: _____

**If ANY information contained in this form changes please inform the DSW Centre Organise/Administrator and request to complete a new form. Declaration to be renewed annually.**

Instructors observations and comments (to be shared with skier):



### **SECTION 3 - COMMON DISABILITIES**

#### ***Common Disability Summary***

These notes are intended as a guide only. They are not a substitute for detailed description and further reading or other knowledge and/or training. These notes are intended as an aide memoire to support more extensive reading and are not to be used in isolation.

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Readers Notes .....	



### Introduction

This section is intended as a quick reference guide for Disabled Helpers and Ski Instructors. This booklet covers a number of common disabilities typically encountered in the skiing world.

In general the subtypes or key names of a disability are listed in the left hand columns with summary and related issues being listed in the right hand column.

Other disabilities will be encountered but this is intended to give a basis for extension to cater for most situations that an Adaptive Instructor may encounter.

It should be remembered that symptoms and extent of disability can vary considerably in most conditions covered by these notes and that not all symptoms listed may exist in any one individual

Additional space is also provided for your own notes.

#### Amputees

Classification :Above Knee (AK), Below Knee (BK), Above Elbow (AE), Below Elbow (BE),Distarticulation (through joint),Hemipelevectomy (incl .part of pelvis)  
 Unilateral – one side, Bilateral – both sides,  
 Trauma - Car accidents, Industrial, Bombings  
 Congenital - From birth, eg, Thalidomide, Genetic Defects  
 Illness - Hereditary or Acquired, eg, Diabetes, Cancer, Circulatory problems,  
 Infection  
 Time since major surgery, Allow 12 months for full healing, otherwise seek medical clearance  
 Healing time  
 Protection of stump  
 Pad or strap to other leg to prevent falling on end of stump, protect from abrasion in falling, also to keep warm  
 Possible medication Check other issues, e.g. TBI or cancer treatment may cause low bone density and fatigue  
 Possible security in Mono or bi-ski  
 Double amputee may be difficult to strap in securely

#### Autism

Slowness in understanding messages, possible non verbal. May have perseveration (repetition) or starting problems. In a world of their own.

#### Asperger

Difficulty in social interaction, communication and limitations in imaginative play.  
 May prefer routine, may be upset by unscheduled change. Possibly non-tactile  
 Possible seizures  
 Possible inappropriate  
 May shout, scream or swear. Should seek to stop/control  
 Social responses  
 High tolerance to pain  
 Poor recognition of danger to self and others  
 Possible self- abuse  
 Hitting or biting self.



Should try to stop/control (particularly if under stress)  
Possible tantrums  
Should try to stop/control(particularly if under stress)

### Cerebral Palsy

Lack of oxygen to brain during birth (Anoxia).

Two main types – **Hypertonic** (Tense), **Hypotonic** (Flacid). Non progressive condition. Types are often combined making distinction difficult. Degree of Conditions(s) vary considerably

#### **Spastic CP**

Permanent stiffening of muscles and decreases in range of joint movement.

Person has to work harder to walk or move.

Most common form of CP, affecting different areas of the body.

#### **Athetoid CP**

Constant involuntary movements (random Jerky or writhing), muscles rapidly change from floppy to tense.

Dysarthria – speech impairment common, due to difficulty controlling tongue, breathing and vocal cords.

Hearing problems are also common.

Difficulty maintaining posture.

#### **AtaxicCP**

Difficulty with balance. May have poor spatial awareness. Usually can walk but will probably be unsteady. May also have shaky hand movements and jerky speech.

#### **Dystonic CP**

Rapid changes in their body tension or tone.

When changing position muscles either become very tense or very floppy.

See also **Hemiplegia** conditions

Possible visual/hearing difficulties

Excitement may increase symptoms

Possible learning difficulties

Possible seizures, See **Epilepsy**

Muscular/Skeletal stress as a result of skiing posture/movements vs physical characteristics of individual.

### Diabetes

Disease affecting the body's ability to control or utilise carbohydrates (sugar levels).

#### **Hypoglycemia - low blood Sugar.**

**Type I** – insulin-producing cells in the Pancreas have been destroyed. Type I generally affects younger people.

Both sexes are affected equally.

Insulin dependent.

**Type II** – usually appears in middle-aged or later, occasionally in younger people.

The body no longer responds normally to its own insulin, and/or the body does not produce enough insulin.

Can be controlled by diet.

Can cause circulatory problems – may result in amputation.

Can cause **Diabetic Retinopathy**, resulting in blindness.

Exercise affects blood sugar level

Check insulin injections up to date, check regular eating



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Diabetic attack, mood swing, sweating, pallid, confusion (aka) drunk,  
eventual loss of consciousness – give sugar

#### **Downs Syndrome**

Additional Chromosome (#21)  
Intellectual disability (variable extent)  
Oval eyes, large tongue.  
Possible heart problems (40 –50%)  
Possible Sight&/or hearing problems  
Poor immune system  
Reduced muscle tone (hypotonia)

#### **AtlantoAxial**

Inability of C2/.C3 vertabrae, 10 –15% symptomatic1 – 2% require  
Stabilization

#### **Subluxation**

Normally checked at birth but verify.  
Potential loose joints  
Take care lifting and supporting.

#### **Epilepsy**

Analogous to an electrical storm in the brain  
Petit Mal - Short “absences” or minor blackout  
Grand Mal - Convulsive seizure. During seizure try to remove objects which  
may result in harm from skiers vicinity.  
Do not try to restrain but protect head.  
Place in recovery position when convulsions stop.  
Usually requires rest (sleep) on recovery.  
Bladder/Bowel may void.  
Check history and pattern  
Seizures may have a cyclic pattern  
Flickering light may Induce seizure eg, sunlight through trees.  
Take care on chairlifts, use a harness.  
May be induced by altitude,  
Check any previous skiing history  
Tiredness, dehydration, Excitement, alcohol  
Check medication (may be affected by changing time zone)  
If changing time zone medication may be disrupted.



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**Friedrich's Ataxia**

Hereditary (genetic) condition resulting in progressive deterioration of Nervous system.  
May result in deformity of spine/feet/hands.  
Fatigue and progressive weakness/reduction in co-ordination  
May affect heart.  
May wear braces, will eventually use wheelchair.  
Progressive disorder  
May not be able to achieve what they did last visit.  
Fatigue - Heart/muscle/nerves may be affected  
Possible leg braces  
May have problems fitting ski boot.

**Fragile X Syndrome**

Genetic condition resulting in mental retardation or Autism.  
Leading cause of mental retardation in 1 in 10 cases of Autism.  
More common in Males.  
Hyperactive, possible violent outbursts, possible depression  
Oversize ears, elongated face  
Co-ordination difficulties.

**Hemiplegic – Stroke/TBI**

**Left Hemiplegic**

Left body/Right Brain affected  
Good spoken language  
Good prior memory, poor  
Lability – difficulty with appropriate control of emotions  
Difficulty with time and place  
Possible perseverication (repeating)  
Possible Left Aversion  
Possible Shunt  
Possible seizures (see\Epilepsy)

**Right Hemiplegic**

Right body/Left Brain affected  
Dysarthria – speech affected  
Aphasia – problems understanding& utilisation short term memory, distractable of words within sentences  
Possible visual cut (Right)  
Possible seizures (see\Epilepsy)



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### **Multiple Sclerosis**

Damage to Myelin Sheath of nerve cells.  
Resultant loss or scaring can cause multiple symptoms aka short circuits.  
Progressive.  
Subject to Variable periods of remission.  
Possible for cool conditions to relieve symptoms  
Possible for hot conditions to worsen symptoms - Speech may be affected (slurred) possible longer reaction times and issues with priority of thoughts  
Easily fatigued/poor stamina/Ski early part of day  
Poor balance  
Conditions may vary due to don't assume same ability each session remission  
Possible eyesight problems  
Check each session as condition can vary

### **Muscular Dystrophy**

Hereditary, progressive disease causing degeneration of muscles  
**Duchenne MD**  
Fat/Connective tissue replaces muscles.  
Normally wheelchair by 12.  
Life expectancy mid 20's.  
**Becker MD**  
Similar to Duchenne's but slower progress.  
**Mytonic MD**  
Affects CNS, Eyes, Heart – slow & varied progress.  
**Limb-Girdle MD**  
Affects shoulders, Girdle, Pelvic Girdle  
Fatigue, can be very stiff when sat in mono/bi for a length of time.  
Poor muscle tone possible. Take care lifting, after falling etc as risk of joint dislocation may exist  
Loose joints

### **Poliomyelitis (Polio)**

Viral infection affecting the spinal column  
Resulting in partial or total paralysis  
May use AFO and/or full leg brace(s)  
May result in impaired growth of limb(s) if infected when young.  
Circulation may be impaired, so affected  
Limb(s) may be of concern in cold conditions  
**Post Polio Syndrome**  
Tiredness and atrophy of unaffected muscle groups.  
Possibly made worse by hard exercise.  
Possible leg braces  
Remove brace if 3 track.  
4 track may have problems fitting ski boot.

### **Spina Bifida**

Congenital defect of Spinal column and cord.  
Spinal column does not completely enclose the Spinal Cord or Cord loops outside Column.  
May have reduced growth or nerve impairment below lesion with various associated issues.  
May walk with full leg braces or use AFO  
See also SCI for other possible symptoms.  
Possible Harrington Rods





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To support spine, may become ossified with rigid section in back  
Care off-loading mono/bi skier from chairlift (reduce ground impact/shock).  
Possibly sensitive in area of lesion. This area may be sensitive.  
Take care with padding in mono and bi.  
Donought pad.  
Possible latex allergy. Check tape and do not use latex gloves if accident  
Hydrocephalus& Shunt. Take care not to restrict if fitting helmet.

### **Spinal Cord Injury**

Vertebrae  
Cervical7, Thoracic 12, Lumbar5 (2)  
Nerve Pairs  
Cervical 8, Thoracic12, Lumbar 5,Sacral 6  
Quadriplegia  
Loss of motor function in upper and lower extremities  
Tetraplegia  
Loss of motor function in lower extremities some loss in upper extremities  
Paraplegia  
Loss of motor function in lower extremities  
T4/6  
Normal for lesions below T4/6 to mono-ski above bi-ski  
May be complete or incomplete  
Muscle below lesion may spasm  
Time since major healing. Allow 12 months for full healing, otherwise seek  
medical clearance.

Some graphics showing the general layout of the spinal cord are given  
overleaf.

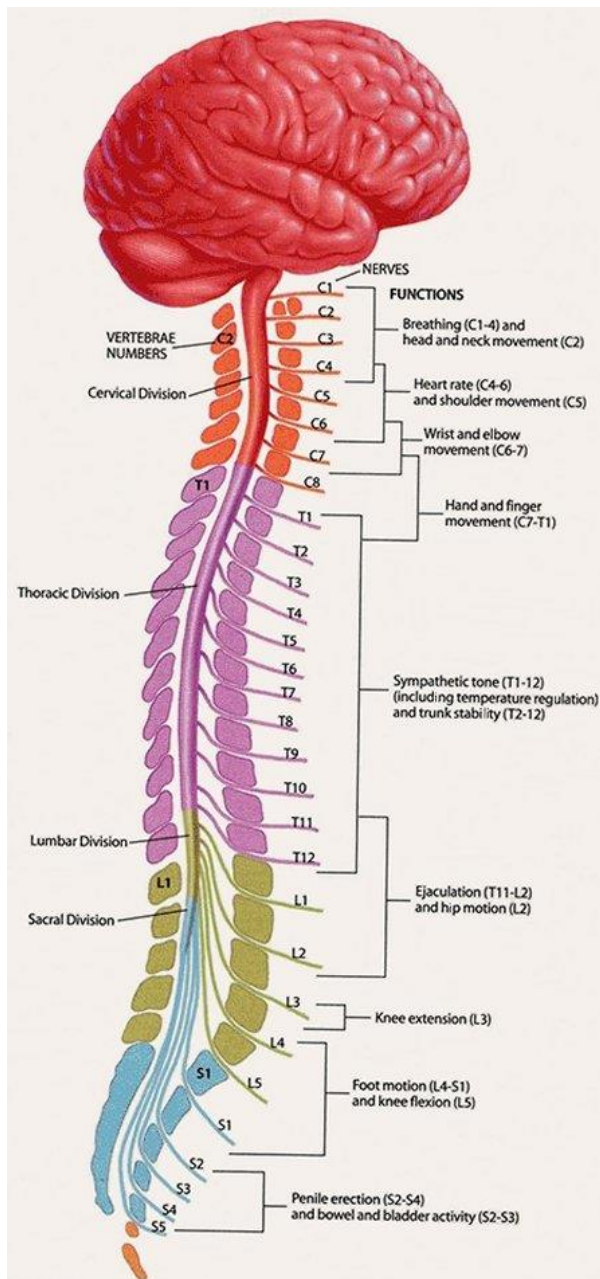


**DISABILITY SKIING WALES**  
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The image shows the four main regions of the spinal cord

- Cervical
- Thoracic
- Lumbar
- Sacral

The functions and areas affected by different elements of the spinal cord are also shown to give the reader an introduction into general layout of this complex area.





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<b>Autonomic Dysreflexia Syndrome (ADS)</b>	Sense of doom, clammy sweating (above lesion), severe headache, High BP Life Threatening, T6 and above
<b>Thermoregulation</b>	Poor below lesion, no sweating below lesion
<b>Pressure sores, wounds</b>	Reduced healing below lesion, can lead to severe health problems. Care with padding/transfers.
<b>Possible Harrington Rods</b>	To support spine, may become ossified with rigid section in back. Take care off-loading from chairlift to reduce/control shock on spine.
<b>Catheter/Urine Bag (see ADS)</b>	Ensure any catheter and urine bag is not obstructed when tightening straps
<b>Traumatic Brain Injury</b>	May be Closed injury (internal, eg contra-temps) or Open injury (eg gunshot wound) See Hemiplegia – Possible affects as Left and/or Right Hemiplegic. Possible seizures. Check medication up to date and history - see Epilepsy Incomplete skull. Check with Open injury (or post operation that skull is complete(should wear helmet)
<b>Visual Impairment</b>	Can't see at 20' or 20degvisual angle <b>Albinism</b> Light sensitive, Imperfect retina, poss Nystagmus. Sunscreen <b>Amblyopia</b> Congenital poor vision, can develop in life <b>Cataracts</b> Opacities in Lens. Bright lights impairs vision (blurring/flare) <b>Congenital</b> Eg, German Measels, Glaucoma <b>Corneal Disease</b> Result of injury or disorder <b>Diabetic Retinopathy</b> Likely to be other complications <b>Strabismus</b> Squint/Double Vision unequal muscle balance (12 eye muscles ) <b>Glaucoma</b> Pressure in Vitreous Humour, initial loss of peripheral vision, can cause atrophy of optic Nerve and total blindness. <b>Macular Degeneration</b> Loss of central detail vision <b>Myopia</b> Short sighted <b>Nystagmus</b> Oscillating eyes, possible blurred vision <b>Retinal Detachment</b> Blind Spots <b>Retinosis Pigmentosa</b> Night Blindness. Loss of peripheral vision



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**Tunnel Vision**

Similar to RP. Loss of peripheral vision

**Colour Blindness**

Sex linked, generally males only affected

**Disease of Optic Nerve**

**Other conditions**

**Arthritis**

Check which joints affected. If in leg joints care with approach used to minimise load/wear on affected joints. Conditions may vary if neck is affected, may result in Atlanto

**Axial Subluxation** (see detail in Downs Syndrome).

**Gullain Barre Syndrome**

Also known as Polyradiculitis. Degeneration of peripheral NS affecting extremities of/and limbs. Muscle weakness to total paralysis



**SECTION 4** - INDIVIDUAL TRAINING RECORDS AND MODULES

SUMMARY SHEET

Name: .....

DBS checks complete (date):

Working with Vulnerable adult's course complete:

Disability Skiing Awareness course complete:

Emergency First Aid Course complete:

Snowsports level 1 attained:

Other qualification (list):

Module	Introduction	Training	Practice
Ski Kart			
Pilot Ski			
Sit Ski			
Blind Skiing			
Special needs			
Three track			
Four Track			



TRAINING MODULE: SKI KART

Introduction to Equipment	Training and Practice	Practical experience with Pupil	Supervisors signature
Pupils Suitability Checks	Pressure setting adjustment	2 Hour sessions with disabled pupil are required to gain practical experience	
Pupils Medical Checks	Fitting pupil to Kart	Obtained during monthly ski sessions	
Homologation Certificate	Ability to ski forward and stop	List dates and times below	
Ski fitting and Din setting	Ability to turn		
Seat sizes and weight limit	Emergency stop		
Pressure settings and weight limit	Drag lift use		
Safety Straps and footrest	Chair lift use		
Evacuation strap	Ski kart as pupil (minimum 1 hour)		
Emergency brake	As a guide (minimum 1 hour)		
Steering mechanism			
Drag lift mechanism			
Chair lift operation, chair settings and ski lock			
Guides safety leash and position			

TRAINING MODULE: PILOT SKI



Introduction to Equipment	Training and Practice	Practical experience with Pupil	Supervisors signature
Pupils Suitability Checks	Pressure setting adjustment	2 Hour sessions with disabled pupil are required to gain practical experience	
Pupils Medical Checks	Fitting pupil to Pilot Ski	Obtained during monthly ski sessions	
Homologation Certificate	Ability to ski forward and stop	List dates and times below	
Ski fitting and Din setting	Ability to turn		
Seat sizes and weight limit	Emergency stop		
Pressure settings and weight limit	Drag lift use		
Safety Straps and footrest	Chair lift use		
Evacuation strap	Pilot Ski with weights		
Guide bar	Pilot ski as pupil (minimum 1 hour)		
Steering mechanism	As a guide (minimum 1 hour)		
Drag lift mechanism			
Chair lift operation, chair settings			
Guides safety leash and position			



TRAINING MODULE: SIT- SKI

Introduction to Equipment	Training and Practice	Practical experience with Pupil	Supervisors signature
Pupils Suitability Checks	Weight limits	2 Hour sessions with disabled pupil are required to gain practical experience	
Pupils Medical Checks	Fitting pupil to Pilot Ski	Obtained during monthly ski sessions	
Homologation Certificate	Ability to ski forward and stop	List dates and times below	
Ski fitting and Din setting	Ability to turn		
Seat sizes and weight limit	Emergency stop		
Safety Straps and footrest	Drag lift use		
Evacuation strap	Chair lift use		
Used as a bucket ride	Sit Ski with weights (Optional)		
Use of outriggers	Sit ski as pupil (minimum 1 hour)		
Drag lift mechanism	As a guide (minimum 1 hour)		
Chair lift operation, chair settings			
Guides safety leash and position			





TRAINING MODULE: BLIND AND PARTIALLY SIGHTED SKIING

Introduction	Training and Practice	Practical experience with Pupil	Supervisors signature
Pupils Suitability Checks	Carrying and fitting equipment	2 Hour sessions with disabled pupil are required to gain practical experience	
Pupils Medical Checks	Standard instructions	Obtained during monthly ski sessions	
Ski and boot fitting and carrying	Blindfold ski using verbal and radios	List dates and times below	
Walking and Star turns (on flat)	As a guide using verbal and radios		
Star turns on slope	Emergency stop		
Standard verbal instructions	Drag lift use with blindfold		
Skiing with training bar	Drag lift as a guide		
Skiing using a stick ride			
Ski guides position			
Use of radios			
Use of drag lift and position			
Use of chair lift			



## **KartSki**

### **POCKET GUIDE**

**15/04/13  
V 1.01 (First Draft)**

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Caroline Weston  
Jan Williams**



### Assessing Karts skier

[NB It is currently only possible to 'lock' the R/H ski]

#### Variety of disabilities and reasons, e.g.:

weak/paralysed lower body (e.g. partial C5 break)

poor sense of balance

leg amputees

muscular diseases affecting legs and arms – but note above requirements.

e.g. MS/some CP – depending on severity.

#### The Kartski requires:

some upper body strength:

- able to control ski-handles (may need hands to be velcroed to handles)
  - check hand grip and ability to pull/push laterally and longitudinally.
- able to support upper torso
  - check ability to sit up from folded forward position
- able to use lift-release chord
  - check ability to pull on chord (even if needs to be fastened to hand)

*Consider suitability for mono-ski/bi-ski as an option to Kartski. Must be able to use arms to control levers.*



### **Introduction to Equipment – KartSki**

Demonstrate/show/explain how Kartski operates, demonstrating:

- Use of tether/tetherer
- How the handles control the skis in plough and parallel positions.
- How rear-brake operates [Note may be raised for operation on Dendix]
- How snow brakes work when fitted.
- Adjustment of seat
- All strapping and its adjustment
- How the drag-lift release mechanism works.
- Locking the right-hand ski for lift and for manoeuvring on flat.
- How to set the ski in the chair lift position:
  - Disengage lift-lock pin.
  - Release seat back and allow to recline
  - Lift seat into high (chair-lift) position.
  - Return seat to 'down' position when off lift
  - Re-engage lift-lock pin.
  - Remove/Re-attach tether
- Plain how mechanism can cause the Kartski to tip when stopped at right angles to fall-line if lower lever is pushed out towards fall-line



### Loading and unloading the KartSki (2-3 guides required)

#### Loading

- Ensure **right hand ski** is in 'locked, straight ahead position'.
- Ensure **lift lock** is 'engaged'.
- Consider dropping the seat-back to its most reclined position when loading skier.
- Ensure skier is sitting right back into pocket of seat and is sitting 'square' – NOTE- There is no facility for high level chest support – *the Kartski is **not appropriate** for skiers with high level breaks who cannot support their own upper bodies.*
- Use padding as appropriate.
- Check clothing
- Check for pressure points, catheters, etc **[ADSL]**
- Adjust seat back forward to a comfortable position and to centralise mass of skier.
- Adjust foot support bar to height of skier :
  - Ensure that there is sufficient ground clearance between skier's heels and ground and that feet cannot fall off the back of the foot bar.
- Make sure all straps are tightened and nothing is trailing (e.g lift release chords)
- Ensure skier's hands are gripping the handles securely (consider use of Velcro or similar for those with 'gripping' problems).
- Ensure guide is attached via tether to Kartski.

**Unlock right-hand ski before departure.**



### Loading and unloading the KartSki (2-3 guides required)

#### Unloading

- Ensure **right hand ski** is '**locked** in straight ahead position'.
- Undo all straps.
- Separate tow strap on one side.
- Depending on the skier it may be helpful to:
- Unlock **lift-lock-pin**
- Raise seat to fully 'up' position' – this helps to 'tip' skier out into standing position – ensure adequate support of skier
- Withdraw Kartski
- Where appropriate replace with skier's wheelchair.
- Lower Kartski and **re-engage lift-lock** pin.



### KartSki – Central Theme Equivalence

Central Theme	Kartski Equivalence
Plough	Straight running with s flat and pointing straight ahead. Speed controlled by tetherer.
Plough Turn	Turn initiated by pulling outer handle inwards and towards body of skier. Refine by creating a flattish turned ski on the inner side of turn by pulling lever backwards and minimally inwards. All movements to be smooth and progressive. Practice <b>reverse snowplough</b> on counter-slope
Plough Parallel	Initiate turn as in snowplough and then match inner ski by pushing lever outwards and away from body.
Basic Parallel	Direct both skis into new turn direction by performing the plough parallel movements simultaneously rather than sequentially. NOTE: Movements must be smooth and progressive.
<b>WARNING</b>	<b>When turned at right angles across the fall line, the lower ski MUST NOT be pushed down the fall line. This causes the back of the ski to tuck under the seat of the Kartski, the centre of balance to fall outside the lower ski and the ski to topple - initially backwards and downhill and then to roll forward onto the downhill side.</b> In such a situation, the lower ski must be kept in the snowplough position or in the straight ahead position. Steer with upper ski only.



### **Lifting a toppled skier. (Ideally, 2-3 guides required)**

If a Kartski topples as a result of a crash or as a result of the situation described in **'WARNING'** in Central Theme, the following process should be followed:

- The **Skier** should tuck arms into chest (will probably be holding ski handles in this position) and tuck head into neck (do a turtle) – adopt foetal position.
- Check the skier – if any doubt about neck injury immobilise the skier's neck and summon assistance.
- Assuming skier OK. Then:
- Have skier take hold of the uphill ski handle to help them support body weight as ski is righted.
- If skier cannot hold on/support own upper body weight then use guide to help lift skier.
- Rotate Kartski so that it is facing across fall-line with skis on the downhill side – use on of guides to help support skier in this process.
- Using the rear frame/roll-over bar whilst pushing on the upper ski, lever the Kartski onto its skis (taking note to ensure lower ski is in straight ahead or plough position – otherwise Kartski will re-topple – see **'WARNING'**).





### Tethering a KartSki

- The Kart-Ski should **always** be tethered – note the tether is a single rope with harness.
- Because of considerable mass, **the Kartski is very difficult to stop in an emergency.**
  - Unlike a Bi-ski/Mono-ski the Kartski cannot be laid on its side in an emergency.
- Let the tether out smoothly:
  - Wear gloves to prevent ‘rope burns’
  - Be careful not to get a loop caught around hand/finger.
- Keep speed in control and appropriate to terrain and to the numbers on the slope.
- Practice ‘hockey’ stops with your skiers so that they are aware of the procedure:
  - Kartskier to apply full ‘snowplough’
  - Tetherer to apply ‘hockey stop’
  - Stop in straight line – down fall-line.



### **Manoeuvring the KartSki on the flat. (Ideally, 2 guides required)**

The Kartski is much easier to manoeuvre if the skis are BOTH flat and pointing straight ahead. This allows the guides to pull the front of the ski whilst pivoting the mass of the ski around the centre of mass. This is helped by:

- **Locking the right-hand ski in the straight ahead position** with the lock bar
- **Front guide** pulling on a tow-strap fixed to the middle of the foot-bar (a sturdy dog-lead is ideal and when not being used can be threaded up over the middle of the skiers legs and under the lap straps.
- Skier keeping left handle in the upright position (ski flat)
- Front guide should always pull forward and into the turn. Pulling sideways causes the skis to 'dig-in' and make for very hard work.
- Rear guide pushes on roll-over bar and can push forward and into turn with front guide and can also bear down on the top of the roll-over bar to help 'pivot' the Kartski (flat skis) in tight situations (e.g. getting lined up on lift track).
- **Remember to release the right hand lock-bar before next descent.**

The skier can 'walk' the Kartski forward on flat terrain by alternatively pulling inwards and backwards on each handle.



## KartSki Using Lifts 1 - Drag Lifts

**Secure cooperation of lift attendants before attempting to use lift – especially with beginners.**

**Make skier sure clothing etc secure and adequate – especially in mountain environment.**

### **Drag lift equipment**

- Remove tether – guide carries tether.
- Explain to skier how lifts works/procedure to *expect (even if did this in initial introduction – repeat it)*
- Don't rush loading
- Lock right hand ski with lock-bar
- Keep both skis flat whilst manoeuvring onto lift track (see '**Manoeuvring Kartski on flat**').
- Ensure skier has firm grip/hand attached to left hand lever – keep as still as possible.
- Ensure skier has firm hold of release cable in right hand and can pull sufficiently for release to occur.
- Send at least one guide up ahead of skier to help lift track at top .
- Leave a good space (at least one button – unless guide following) after Kartski to allow time to clear track at top (see '**Manoeuvring Kartski on Flat**').
- **Check comfort/security** of skier & **re-attach tether** before setting off again.  
*[Fatigue/PPS/Thermoregulation/ADS/Pressure Sores]*



### KartSki Using Lifts 2a - Chair Lifts – Loading

**Secure cooperation of lift attendants before attempting to use lift – especially with beginners. Get them to slow lift for loading.**

**Make skier sure clothing etc secure and adequate – especially in mountain environment.**

#### **Chair lift equipment**

- Explain to skier how lifts works/procedure to expect (*even if did this in initial introduction – repeat it*)
- Don't rush loading. Ensure skis flat whilst manoeuvring.
- Remove tether.
- Lock right hand ski with lock-bar
- Release seat-lock-pin.
- Release seat to reclined position.
- Lift seat into high position.
- Manoeuvre ski in front of approaching lift – do not allow other skiers on unless guides.
- Allow lift to pick up seat of Kartski
- Lower the safety rail
- Attach safety strap



### KartSki Using Lifts 2b - Chair Lifts – Unloading

**Secure cooperation of lift attendants before attempting to use lift – especially with beginners.- E.g. Get them to slow lift for dismount**

- On lift explain to skier how dismount will work/procedure to expect (*even if did this in initial introduction – repeat it*)
- Don't rush unloading. Smooth and unhurried.
- Remove safety strap.
- Lift the safety rail
- Ensure skier has firm grip/hand attached to left hand lever on dismount – remind to keep straight.
- Push Kartski forward and off lift at top.
- Guide skis in behind the Kartski and pushes clear of lift.
- Send at least one guide up ahead of skier to help clear lift track at top .
- Lower Kartski seat (if already hasn't happened)
- Set seat in forward position
- Engage seat-lock pin
- Re-attach tether
- Check comfort/security of skier before setting off again.  
*[Fatigue/PPS/Thermoregulation/ADS/Pressure Sores]*



### Specific points relating to use on Dry Slope

The Kartski (plus skier) is **heavy**. The considerable mass take time to stop:

- The Kartski is controlled by the Kartskier and its trajectory is very dependent on the abilities of the Kartskier.
- Ensure that speed is kept under control by effective tethering – a rapid stop from high speed is virtually impossible
- Ensure that there is ample clear room at the bottom of the slope – particularly around the lift – **steer away from lift queue and stop in reverse plough on counter-slope.**
- Ensure that there is room to manoeuvre on the slope without endangering others
- Consider warning other skiers (whistle??).
- Keep 'reverse brake' tied up – it tends to catch in matting diamonds and deflect path of Kartski.
  - Note this means that there is no reverse brake on lift:
  - Teach skier to reverse plough on counter slope and then test on lift.
- Kartski very prone to toppling if downhill ski is checked (e.g. by hitting a race gate) – therefore suggest only brushes or football marker cones are used.

Storing Kartski: 1) Remove skis. 2) Ensure handles are folded inwards and secured by waist strap. 3) ensure all straps and chords are tied up. 4) Ensure tether and harness kept with Kartski (secure on seat)



## **PILOT SKI**

## **POCKET GUIDE**

**10/10/13  
Version 1.2**

### **Note**

**The Pilot ski is a new piece of equipment by Tessier and is not covered in the PSIA Adaptive Snowsports Manual**

**This Guide has been prepared by Gordon Roe and Peter Harris  
of Disability Skiing Wales  
from the Tessier Instruction Manual**



### Pilot-Ski - Introduction to Equipment

Demonstrate/show/explain (depending on skier's cognitive disability):

- How **seat and straps** hold skier in snug, supportive manner – use of padding.
- Use of helmets for pupil and guide- compulsory
- How footrest may be changed or adjusted, dependent on leg length
- How **articulating undercarriage** allows skier to turn
- How shaped skis work
  - Expected leaning when being piloted.
  - Keep hands and arms inside
- **Handlebar** assembly and how guide controls
- **Tether line** used for safety
- **Drag lift equipment** - what to expect and how it works.
  - Attaching to **drag lift**
  - Releasing from **drag lift**
- **Mechanical chair lift loading features:**
  - how they work
  - procedure and what to expect.





### Pilot-Ski Set Up

#### **Padding:** [Check for latex allergy]

- Use padding to ensure:
- Skier is comfortable – relieve any pressure spots (**pressure sores**), pad spine and base of spine [**Spina Bifida –lesions, Harrington Rods**].
- Pad between knees – check for obstructing catheter tube/bag – [**ADS!!**].
- Skier is sitting 'centred' in ski and is not twisted.

#### **Helmet:**

- Must wear – check for comfort and restrictions [**Hydrocephalus shunt**]

#### **Straps:**

- Comfort
- Support – consider nature of disability.
- Ensure skier is fitted to chair (think of fitting a ski boot)

#### **Mechanical adjustment**

- Pressure setting for skiers weight. Inflate or deflate as necessary using pump
- Weight limit 15 stone
- Pressure formulae
- Adjust footrest and backrest for skiers comfort.

#### **Clothing:**

- Is/will skier be warm enough/ not overheated [**thermoregulation**] – **check regularly**



### **Pilot-Ski Skiing 1**

#### **Choice of route**

- Avoid very steep narrow pathways (difficult to steer)
- Choose open piste where possible
- Choose interesting route with features
- Aim to give someone an experience to remember (speed, fun).
- To show pupil how they can assist the guide when turning using whatever movements they can make. Keep arms in at all times.

#### **Guide/Pilot**

- Choose own ski length to avoid clashing with rear of pilot ski (about 160cms)
- Become one unit with pilot-ski.
- Tilt pilot-ski by pressing down with hand on turn side and lift on other
- Keep own skis parallel throughout turn to avoid inner ski getting caught under pilot ski.
- Skid your turns to match pilot-ski's carved turn radius.
- Remain tethered to pilot ski for emergency stop
- Avoid frequent turns if pupils suffers from nausea

#### **Considerations:**

- Choose best route for injury/disability type – e.g. avoid bumps for spinal injury
- Do not push pupils head forward
- Choose best stopping place with full view uphill and to side of piste.
- Check skier's temperature regularly – esp on snow — they are largely passive.



### **Pilot-Ski Skiing 2**

#### **Piloting Basis**

- Try to act as one with the pilot ski. Do not fight it. Steer it and follow it
- Ski parallel as much as you can
- Slow down by side slipping or turning uphill. Do not snowplough

#### **Beginning**

- Hold the sides of the rear bar and push the horizontal traverse bar into the front of your pelvis. You will get progressively further from the traverse bar as you improve
- To initiate a turn, put the skis flat on the snow, press down on the inside bar and pull up on the external bar of the turn.
- After passing the fall line, lean the pilot ski over to the hill to give an edge
- Control speed by pointing uphill on the traverse
- As you progress you will feel more comfortable in leaning the pilot ski at the beginning of the turn. This will carve the Pilot ski
- It is recommended that you use alternate sliding and carving turns to give confidence to the pupil

### **Pilot-Ski Skiing 3**

#### **Active skier inside pilot ski**

- Depending on their abilities, the pupil can assist the pilot by leaning the upper body to the left or right. There are two options here:
  - Option 1. The pilot tells the pupil when they will start the turn and the pupil helps by leaning into the curve
  - Option 2. The pupil initiates the turn by leaning (and if possible indicates the way they wish to go). The pilot then follows and controls and balances the machine.

Once this is practiced the pupil will feel as if they are skiing alone



### **Pilot- ski**

#### **Ski lifts in General**

- In France the Pilot ski has authorisation code No. AVMH\_735\_99\_D for use on slopes
- The ski lift harness has authorisation code No.AVMH\_734\_99\_B
- These codes should be produced when asked

#### **Important note**

In France the drag lift release mechanism is only guaranteed/designed to work if one person is in the dual ski (solo). It is not designed for use when the guide rides the lift on the same button as the pilot ski when the drag lift is a button lift due to the weight limit.

In most countries when a T bar is used, a pilot ski can be dragged using the release mechanism as the T bars are designed for two people.

### **Pilot-Ski**

#### **Using Lifts 1 - Drag lifts**

- Secure co-operation of lift attendants before attempting to use lift.
- Be aware that lift attendants may ask to see Certification before allowing on lift. (Located under body of pilot ski)
- Make sure guide is attached to pilot ski with tether
- Make sure pilot arm is upright
- Ensure tow release mechanism works before riding on the lift.
- Ensure helpers stationed at top and bottom lift station:
  - to stop lift in emergency and
  - to help with loading and unloading lift.
- Be careful with front tow loop when loading – **trapped fingers!!**
- Ensure clear straight line with release mechanism
- Re-attach all release cables and straps after riding lift and stow away securely so that they cannot interfere with ride.
- Check comfort/security of skier before setting off again.



Warning- Some lift exit points are steep. This means the release mechanism is under severe tension at point of release and can recoil into the pupil



### **Pilot-Ski**

#### **Using Lifts 2a - Chair lifts**

- Practise with static lift chair if possible
- Secure cooperation of lift attendants before attempting to use lift:
  - agree speed of lift for loading/unloading
  - agree use of emergency stop if problem occurs
  - agree to keep other customers off the chair being used
  - note width of access onto lift. May be necessary to enter from the side
- Ensure emergency evacuation straps are accessible before loading
- Use two lifters – one each side, if possible
- Put down pilot bar
- **Before entering lift line** agree on:
  - who will communicate with lift operators
  - who is 'leader' – to calza | timing for load and unload – agree timing – “Load on 3: ..1..2..3/load or 1 2 3 and load)
  - how to lift / where to hold pilot-ski
  - who will pull down safety bar down.
  - unloading procedure and who will bucket pilot-ski after unload
  - any (hand) signals to be used

### **Pilot- Ski**

#### **Using Lifts 2b - Chair lifts (continued)**

- Put pupil in load position, hands in etc
- Ensure skier knows to 'keep head down' if loading/unloading fails and chair passes over the fallen pilot-ski.
- Secure assistance to prevent anyone else getting on lift with pilot-skier and helpers.
- Before entering the lift area 3 things must be done
  - Fold the pilot bar
  - Unlock the frame and lift
  - Loosen the strap of the backrest so that the pupil is comfortably seated on the chair and not tipped forward



- Position in pilot-ski in centre of chair between footrests to ensure the safety bar of the chair lift can be fully closed

The Guide/ Instructor must stand to the side and in front of the pilot ski to enable the pilot ski to be seated before the guide/instructor sits down



### **Pilot- Ski Using Lifts 2c - Chair lifts (continued)**

- Keep the Pilot ski against the back of the chair until the restraining bar is brought down. This is done by holding the back bar and placing the arm behind the seatback (see photo below)
- When preparing to dismount the pilot must be as close to the Pilot ski as possible and keep his back to the seat of the chair lift seat. This will enable him/her to push the pilot ski off the chair when dismounting.
- The pilot must hold the rear pilot bar and push the pilot ski straight off the lift.
- The pilot will be the last to leave the chair
- Clear the loading area as soon as possible
- Before going back on the slope, lock the frame and unfold the pilot bar



### **Pilot –Ski Reminders**

- The pilot ski does not have any legal right to queue jump in the lifts
- The chair lift personnel must be ready to stop the lift in an emergency. This is his principal role. He is not there to help you on and off the lifts
- Introduce the pilot ski to the lift attendant as he may be unfamiliar with it
- 100% concentration is required at all times with the pilot ski

If passing another skier you must leave plenty of room between you. The other skier has priority. If he/she decides to turn then you must avoid him/her





**BI-SKI**

**POCKET GUIDE**

**08/12/07  
V 2.12**

**Acknowledgements**

**Dave Worthington – PSIA Adaptive, BASI Adaptive trainer  
PSIA ‘Adaptive Snowsports Instruction’ Manual**



### Bi-Ski – Central Theme Equivalence

(Dave Worthington)

Central Theme	Bi-Ski Equivalence
Plough	Straight running with outrigger braking. Basic stance with rigger between hip and knee. Arms slightly flexed in 'chicken wing' position.
Plough Turn	Turn initiated by inclination into direction of turn possibly aided by 'head lean'. Riggers remain in neutral position with 'push and block' extension/absorption in arms to maintain rigger-to-ground contact. Speed and fine control via instructor tethering. Return to neutral prior to next turn initiation – 'centre'.
Plough Parallel	Turn initiated by increased inclination into direction of turn. Riggers remain in neutral position with 'push and block' in arms to maintain rigger-to-ground contact. Speed and fine control via instructor tethering. Introduce 'countering' into neutral fore/aft posture to control rotation and anticipate next turn.
Basic Parallel	Turn initiated by forward pressure followed by angulated movements – 'hip-drop' if possible. Riggers remain in neutral position with 'push and block' in arms to maintain rigger-to-ground contact. Speed and fine control via instructor tethering is reduced and more emphasis on skier control of line. 'Countering' to control rotation and to anticipate next turn while returning to neutral fore/aft posture

*Chicken Wings: Arms flexed at elbows. Elbows away from body.*



## Bi-Ski Set Up

### **Padding:** [Check for latex allergy]

- Use padding to ensure:
- Skier is comfortable – relieve any pressure spots (**pressure sores**), pad spine and base of spine [**Spina Bifida –lesions, Harrington Rods**].
- Pad between knees – check for obstructing catheter tube/bag – [**ADS!!**].
- Skier is sitting ‘centred’ in ski and is not twisted.

### **Helmet:**

- Must wear – check for comfort and restrictions [**Hydrocephalus shunt**]

### **Straps:**

- Comfort
- Support – consider nature of disability.
- Ensure skier is fitted to chair (think of fitting a ski boot)

### **Dowel Test/Canting:** [See Mono-Ski crib sheets for details]

- Centre skier fore/aft – weight/ballast bi-ski if necessary.
- Important as ability increases – and skidding manoeuvres are introduced
- Check lateral pressure (by use of ‘Bluetack’ indoors) or signs of edging (depth of edge groove) when sitting in balanced position of flat terrain on snow.

### **Clothing:**

Is/will skier be warm enough/ not overheated [**thermoregulation**] – **check regularly**



### Bi-Ski - Introduction to Equipment

Demonstrate/show/explain (depending on skier's cognitive disability):

- How **seat and straps** hold skier in snug, supportive manner – use of padding.
- How **articulating undercarriage** allows skier to turn
- How shaped skies work
  - expectation of angle of lean when:
    - Skiing
    - Being bucketed.
- If used – how **hand held outriggers** function:
  - claw brake
  - flip cord
- If used – **fixed outriggers**:
  - how they augment balance
- If used - **handlebar assembly**:
  - how skier holds and uses
- If used – **tether lines**:
  - how used to assist skier
- **Drag lift equipment** - what to expect and how it works.
- If to be used – **mechanical chair lift loading features**:
  - how they work

procedure to expect.



## Bi-Ski Bucketing

### Why?

- Not able to ski alone/ control bi-ski (e.g. CP). *(Note – preferable to use tethering)*
- Tired (e.g. MS in a down phase)
- Lacking confidence – especially wrt to:
  - the nature of the slope/part of slope
  - number of people about
  - conditions of snow, etc.
- To give someone and experience (speed, fun).
- To show student how they can initiate the turns using whatever movements they can make.

### How?

- Ski close into bi-ski with own skiis parallel to bi-skiis.
- Become one unit with bi-ski.
- Tilt bi-ski by pressing down with hand on turn side to tilt bi-ski onto edges.
- Keep own skiis parallel throughout turn to avoid inner ski getting caught under bi-ski.
- Skid your turns to match bi-ski's carved turn radius.

### Considerations:

- Choose bi-ski best for injury/disability type – e.g. suspension for spinal injury
- Consider speed and ride w.r.t. injury / disability (e.g. no bumps for spinal injury)  
***Do not lean over the student and inadvertently push their head forward.***



### Bi-Ski Use of Hand-held riggers

- Assess skier's ability to use hand-held riggers

#### If able to use hand-held riggers:

##### Zone of usage:

- Beginner/low intermediate– from hips to knees
- Upper intermediate/advanced – from hips to mid-shin (*depending on mobility and strength of skier*)

##### Rigger adjustments

- **Cuff** – below elbow – doesn't pinch when arm flexed. Gap on outside.\*
- **Length**- depends on steepness of terrain – but in general
  - **strength position** - arms relatively straight with slight bend at elbow – so can operate within zone of hips to knees. **Chicken wings. Not locked at elbows.**
  - able to maintain contact with ground on 35° slope/ whilst leaning at 35° to one side.
  - longer for more advanced – for riggers to be used parallel to angle of shins shin (*depending on mobility and strength of skier*).
- **Brake** – set to operate (check flip-cord works /adjust flip-cord adjusting length)
  - depends on confidence of skier – more brake for less confident – too much rigger bounces/skips – too little rigger slips/lack of control
  - soft snow MORE brake. Hard snow LESS brake

\* *Some skiers prefer gap on inside – gap on outside pinches, more comfortable on inside – less prone to rubbing.*



## Bi-Ski Tethering 1 - With fixed riggers

*The tetherer **MUST** be fixed to the bi-ski so that in the event of an emergency the fallen tetherer acts as a brake/anchor to the bi-ski. With fixed riggers, the bi-ski cannot fall over and stop. It will continue to accelerate and oscillate from rigger to rigger until it takes off and flips.*

- Ensure the tetherer is attached to the tethers so that they cannot be let go:
  - with a continual tether:
    - Have a short trap looped through itself and pulled tight on the wrist. Have the other end attached onto the continual tether via a carabiner so it can slide around the tether.
  - with two tethers:
    - Loop each end of each tether through itself and pull tight around each wrist so that cannot pull off.
- **Fixed riggers MUST be removed on lifts**
- Set fixed rigger length to suit slope gradient: On steeper gradients, set short to allow meaningful turn shape. On runs which cut across the fall line, the riggers may need to be set much shorter to allow traversing.  
Especially with skier who cannot balance – use short tethers so that can ski close and control attitude of bi-ski with tethers.



**Bi-Ski  
Tethering 2  
With/without fixed riggers**

**Terrain:**

- Choose terrain to suit tethering
  - if terrain becomes difficult – shorten/ remove riggers and bucket?  
*[DW comment: You are likely to be able to go slower with tethers. I don't agree with this.]*

**Assisting/controlling turns:**

- Use 'power wedge' / 'power snow plough' to control bi-ski – brace through turning ski
- Pull tether into body at waist with hand on turning side (downhill)
- Pull up and across body with opposite hand (uphill) to tilt the bi-ski onto new edge.

*[Imagine a very large steering wheel angled at about 30° to the horizontal. Start with hands at a quarter to three and turn wheel in direction of turn.]*





### Bi-Ski Using Lifts 1 - Drag lifts

- Secure cooperation of lift attendants before attempting to use lift.
- **REMOVE any fixed riggers before using lift** and stow securely for ride/ give to assistant.
- Make sure tetherer / bucketer is attached to lift tow straps (or to the bi-ski – see situation at MK Snowdome).
- Ensure tetherer /bucketer tow straps allow tetherer / bucketer to be towed independently of bi-ski (where possible – see MK Showdome situation).
- Ensure tow release mechanism works before riding lift.
- Ensure helpers stationed at top and bottom lift station:
  - to stop lift in emergency and
  - to help with loading and unloading lift.
- Don't hold front of tow loop when loading – **trapped fingers!!**
- Re-attach all re-lease cables and straps after riding lift and stow away securely so that they cannot interfere with ride.
- Re-attach fixed riggers if being used.
  - Check comfort/security of skier before setting off again.



### **Bi Ski Using Lifts 2 - Chair lifts**

- Practise with static lift chair if possible – can skiers load themselves/assist with load? Practise.
- Secure cooperation of lift attendants before attempting to use lift:
  - agree speed of lift for loading/unloading
  - agree use of emergency stop if problem occurs
  - agree to keep other customers off the chair being used
- Ensure emergency evacuation straps are accessible before loading
- Use two lifters – one each side
- **Before entering lift line** agree on:
  - who will communicate with lift operators
  - who is 'leader' – to call timing for load and unload – agree timing – “Load on 3: ..1..2..3/load or 1 2 3 and load)
  - how to lift / where to hold bi-ski
  - who to put safety bar down.
  - who to attach safety retention strap
  - unloading procedure and
  - who will bucket bi-ski after unload
  - any (hand) signals to be used
    - Put bi-ski into 'load' position before entering lift queue.



### **Bi Ski Using Lifts 3 - Chair lifts (continued)**

- Ensure skier knows to 'keep head down' if loading/unloading fails and chair passes over the fallen bi-ski.
- Secure assistance to prevent anyone else getting on lift with bi-skier and helpers.
- Position in bi-ski in centre of chair
- Ensure inside skis of loaders are pointing in direction of lift on load and unload.
- Ensure bi-ski security/retention strap is attached around back of lift during ride.
- Review / rehearse unloading procedure with bi-skier during lift ride.
- Just prior to arrival at top station:
  - undo retention strap – but maintain firm hold on bi-ski
  - move bi-ski forward to just short of tipping point to assist unload.
- Put bi-ski into 'ride' mode and check skier's security/comfort etc after dismount.



### **Bi-Ski Teaching Progression – Beginner/ Novice 1**

Demonstrate equipment before transferring to bi-ski. Instructor/Assistant to tether as required.

#### **Flatland drills:**

Stance – athletic, balanced, slightly flexed

Locate outrigger position for comfort/control/lateral support

Lift riggers off snow to test balance:

Left off – right off – both.

Using riggers:

Lean to left and return to neutral – repeat to right.

Use riggers to push bi-ski backwards (easier) - forward (harder)

Pivot bi-ski about centre on flat skis.

Practice falling and getting up:

- Keep arms and riggers inside bi-ski in a fall. [*Hands together in front of body – riggers pointing to front of bi-ski.*]
- Bi-ski across fall line
- Put rigger(s) in snow above the bi-ski and push upright.  
Help by blocking bi-skiis with foot/skiis and pulling on bucket.



## Bi-Ski Teaching Progression – Beginner/ Novice 2

### Straight run

(Choose gentle slope with natural run-out/counter slope)

- Push student up slight hill and position in fall line (fit and strong students can try to push themselves up).
  - Student braces (slope hangs) with outriggers:
    - in skiing position and turned inwards towards bi-ski – using inside edge of rigger to brace.
  - Student turns riggers into fall line and glides downhill to terrain assisted stop.
  - Encourage student to keep riggers near hips – '**power position**'.
  - Experiment with rigger position fore/aft and laterally to experience/determine advantages/disadvantages of different positions.
- Show student how to control speed by pushing riggers forward to engage brake.

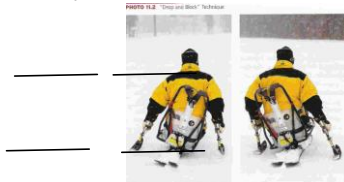


### Bi-Ski Teaching Progression – Beginner/ Novice 3

**Introduce turns:** *[Speed and fine control via instructor tethering]*

- Use static drills to get student to experience tilting bi-ski onto edges:
- use body to initiate tilt and/or
- push with one arm (outside of turn arm) and **'block'** with other (inside turn arm)
- From a traverse, student tips bi-ski onto downhill edge (using arms and body) to engage edges – extension/absorption in arms to maintain rigger/ground contact.
- Hold position until ski passes through fall line and comes to halt.
- Experiment with adding angulation by lowering inside hip (**'hip drop'**).
- Us inside rigger to **'block'** upper body from leaning into turn (keep shoulders parallel with snow (photos)

[New photos needed]



- Practise varying radius of turns – from left and right traverses.
- Practise turning into fall line from a traverse and gliding to a halt.



### Bi-Ski Teaching Progression – Beginner/ Novice 4

#### **Linking turns:** *[Speed and fine control via instructor tethering]*

On a shallow slope:

- Ski quick, linked turns down the fall line:
  - maintain square shoulders, an up right head and hip drop.
  - initiate turn by a **'push off'** with uphill outrigger to achieve a cross over from uphill to downhill ski edges
  - use turn shape to control speed rather than outrigger braking
  - Use **'hip-drop'** (inside hip) to achieve good angulated body position during turns – encourage student to be aware of their posture.
- Come to halt by completing one turn across the fall line and using turn shape to bring to halt.
- Practice **'garlands'** to become comfortable turning into and out of the fall line, and to establish awareness of amount of edging required to maintain a traverse.
- Use the **'push-off, block, hip-drop'** sequence of movement to encourage centre of mass to be supported by muscles and skeleton of upper body rather than arms – this applies to all students - even those with little or no torso control.
- As student speed increases consider moving riggers forward 1 to 3 inches to overcome increased frictional resistance between rigger and snow  
Za cannot resist increased friction and whose arms are dragged back. Adjust length of bungee to keep riggers in 'power position' next to hips.]



### Bi-Ski Teaching Progression – Beginner/ Novice 5

**Adding mileage with linked turns:** *[Speed and fine control via instructor tethering]*  
Using suitable terrain *[N.B. You can 'bucket' or 'tether' your student across difficult terrain.]*

- Explore varying turn shapes and radii – ski in a reverse snow-plough and have your student follow you ski tracks.
- Practise varying the amount of 'hip-drop' to carve turns.
- On shallow terrain, practice 'wiggles' down fall line to encourage flow and prevent over-turning.
- Show how to stop a slide after a fall by using the claws on the riggers. *[Think of using riggers as you would an ice-axe in a slide.]*
- Practice getting up after a fall.
- If the student is able, explore self-loading techniques.

***[Be aware of 'fatigue' in student.]***  
***[Thermoregulation]***





### Bi-Ski Teaching Progression – Intermediate 1

#### **Control of rotary movements:** *[Speed and fine control via instructor tethering]*

- Introduce controlled skid through increased speed, steeper terrain, decreased turn radius.
- Introduce use of countering movements of chest and shoulders to control skid and reduce overturning.
- Control skidding by turning downhill rigger in direction of turn from the 'power' position.
- Vary turn sizes – relate to nature of terrain.
- Lengthen outriggers on steeper terrain.
- Run improvised slalom course with variety of radii and rhythm.
- Practise intentional overturn and control:
  - stay committed to the inside edge/inside rigger
  - bi-ski will carve turn backwards, returning skier to position from which they can re-start a turn into the fall-line.
- To reduce overturning:
  - move head, shoulders and as much of torso as can be controlled into direction of new turn before skidding starts (**anticipation**).
  - turn riggers in direction of the new turn  
    move downhill rigger in direction of new turn.



## Bi-Ski Teaching Progression – Intermediate 2

### **Enhancing Cross-over:** *[Speed and fine control via instructor tethering is reduced]*

- Encourage moving rigger away from hip and forward to mid-shin (mono-ski style).
  - Lengthen outriggers so that student can touch on snow with outrigger shaft approximately in line with shins and slight bend at elbow – without engaging brake.
- Reinforce extension movements in direction of new turn (*project into turn*).
- Refine extension and flexion movements of torso in ‘initiation’ and ‘control’ phases of turn. *[For students lacking torso control – leaning forward = extension; returning to upright/neutral fore-aft = flexion.]*
- Develop short radius turns.
- Reinforce importance of *angulation (hip-drop)* with extension/rotation movements.
- Explore refining speed control by skidding at end of turn.
- In case of oversteering:
  - move riggers towards new turn earlier in completion phase of previous turn.
  - ensure student stays ‘countered’.

*[Note: Moving outriggers forward and away from ‘power position’ requires student to adjust balance over seat and skis. Students may not have sufficient arm and torso strength to support their weight and achieve this. Therefore, introduce movement gradually - based on student’s physical abilities and confidence.]*



### Bi-Ski Teaching Progression – Advanced

- Develop a more aggressive cross-over:
  - extend inside downhill arm and torso in direction of next turn (*projection*)
- Increase countering movements of head, shoulder and torso earlier in the turn, coordinating with downhill outrigger.
- Augment edging movements with '*push-off*', '*cross-over*', and '*spine extension*' movements of uphill rigger.
- Increase effectiveness of rotary movements by shifting outriggers farther away from the axis of rotation.
- Introduce bumps and more varied terrain. Explore terrain assisted pressure control movements.
- Use '*falling leaf*' to develop fore and aft pressuring/tip and tail release.
- Develop '*target skiing*' – student's head, shoulders and torso point towards a downhill target throughout the turn.
- Practise short-radius turns for speed control on steeper terrain.
- If chairlifts are suitable and skiers are strong/agile – teach self-loading onto chair lift – or loading with one assistant (to remove need for a second helper).
- In case of problems maintaining speed control on steeper terrain:
  - emphasise counter motions through turn
  - discuss importance of rigger placement for type of turn – relate to use of pole in stand-up skiing (towards centre of new turn – by hip for short radius, towards feet for longer radius).



### Bi-Ski – Fixed Outriggers Teaching Progression – Beginner/ Novice

Demonstrate/explain equipment before transferring to bi-ski. **Instructor/Assistant fixed tether mandatory.**

#### Flatland drills:

- Consider whether to assist student from in front (in reverse snow plough – **ensuring assistant is fixed tethering**) or from tether position – consider:
  - ability of student to balance/ any hearing impairment/ any learning difficulties
- Encourage student to balance over skis using subtle movements of body and arms – consider use of handlebar system.
- Demonstrate balance against the left rigger, in neutral, against right rigger use small movements if possible.
  - return to neutral after each side movement to prevent '*rigger bounce/oscillation*'.
- Explore how movement of various parts of body can affect tilt of bi-ski:
  - head tilt; shoulder droop; lateral movement of arm(s); hip-dip.
  - practise isolating movements
  - practise smooth cross-over movements of arms.



## Bi-Ski – Fixed Outriggers Teaching Progression – Beginner/ Novice 1

### **Instructor/Assistant fixed tether mandatory.**

**First turns:** *(with assistance from instructor or tetherer/buddy)*

On a shallow slope:

*[Instructor can ski backward in front of the bi-ski to communicate with bi-skier – also can help balance the bi-ski from this position.]*

- Start in fall line
- As speed increases have student shift centre of mass towards desired turn.
- If handlebar system can be used, encourage student to pull/push/lever their centre of mass in direction of desired turn.
- Have students perform turn to stop in each direction.
- Ensure sufficient speed to initiate turn, if moving too slow the riggers tend to bite into snow and could topple the bi-ski over.
- Tell/cue the students when to make the turn
- Assist turn by using tether (see **Tethering** )
- Control speed via the tether.
- Perform garlands to help shifting centre of mass form and back to neutral.
- Complete turns across fall line.

*Fixed riggers should be adjusted to engage the snow early – but may need to be altered in length in response to terrain change or removed and the student bucketed .*



### **Bi-Ski – Fixed Outriggers Teaching Progression – Beginner/ Novice 2**

#### **Instructor/Assistant fixed tether mandatory.**

**Linking turns:** *(with assistance from instructor or tetherer/buddy)*

- Student initiates turn (see earlier stages)
- Have student cross fall line and return to neutral position (with or without assistance).
- Have student take deep breath between turn to help find centre of mass/ neutral (sitting up) position.
- Initiate turn in other direction (with or without assistance).
- Return to neutral position .
- Practise linking more turns:
- stay close to fall line – try not to overturn
- try to maintain steady speed
- use tether line to assist student (especially if they cannot support their torso or have jerky/uncontrolled movements).
- Be aware that the fixed riggers restrict the radius of the turn.

*They may need to be altered in length in response to terrain change or removed and the student bucketed*

**Remove fixed riggers on lifts**



## **MONO-SKI**

## **POCKET GUIDE**

**03/12/07**  
**Version 2.1**

### **Acknowledgements**

**PSIA 'Adaptive Snowsports Instruction' Manual**  
**Dave Worthington – PSIA Adaptive, BASI Adaptive trainer**  
**Dave Chugg – BDST/DSUK Development Officer**



**Mono-Ski – Central Theme Equivalence**  
(Dave Worthington)

Central Theme	Mono-Ski Equivalence
Plough	Straight running with outrigger braking. Basic stance with rigger between knee and ankle. Arms slightly flexed.
Plough Turn	Turn initiated with rigger brake and pointing rigger(s) into turn ( <i>extrinsic/differential friction</i> ). Whole body 'look into turn' ( <i>intrinsic</i> ) with <b>none to slight</b> inclination. Maintain ground contact with both riggers. Return to neutral position, with a flat ski, prior to next turn initiation – 'centre'.
Plough Parallel	Turn initiated with rigger brake and pointing rigger(s) into turn ( <i>extrinsic/differential friction</i> ). Whole body 'look into turn' ( <i>intrinsic</i> ) with slight inclination. Maintain ground contact with both riggers. Introduce 'countering' in the neutral fore/aft position to control rotation and anticipate next turn. Progressively reduce brake.
Basic Parallel	Reduce rigger brake and introduce turn initiation with insider rigger edge whilst pointing rigger(s) into turn ( <i>extrinsic/differential friction</i> ), combined with slight forward pressure movements (rigger and upper torso). Whole body 'look into turn' ( <i>intrinsic</i> ) with slight inclination. 'Countering' to control rotation and to anticipate next turn, returning to neutral fore/aft stance to prevent ski over-steering.

Comment [AMC1]: Done

Comment [RJ2R1]:

Comment [RJ3R1]:

Comment [RJ4R1]:

Comment [RJ5R1]:

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Comment [RJ7R1]:

Comment [RJ8R1]:

Comment [RJ9R1]:

Comment [RJ10R1]:

Comment [RJ11R1]:





### Set Up - Mono Ski

**Padding/straps:** [Check **Latex Allergy**] [ Mono skiers tend to be SCI, amputees, spina bifida, polio]

**Support:** consider nature of disability. [Check that the skier can move in fore-aft plane and can bring themselves back from a 'forward' lean – ensure that straps are tight at the correct height to support – especially with SCI]

- Use padding to ensure skier is comfortable – relieve any pressure spots (**pressure sores**), pad spine and base of spine [Spina Bifida –Lesions, Harrington Rods. Shunt]
- Protection of any stump(s). [Catheter – Bags] [[Polio - Leg braces. Post Polio Syndrome]
- **Ensure skier is fitted to seat** (think of fitting a ski boot) – **SMUG** – **v important if double amputee/hemipelvectomy – Custom**
- Pad between knees – check for obstructing catheter tube/bag [ADS!!].
- Skier is sitting 'centred' in ski and is not twisted. [Cross the T]
- Seat back must support highest muscle group with paresis without restricting movement.
- Adjust foot-tray for thigh-to-seat contact (or pad) with appropriate knee flex.

How much knee flex?  
High break – more flex.  
Low break - less flex (DC)

**Helmet:** Must wear – check for comfort and restrictions [Hydrocephalus shunt]

**Dowel Test/Canting:** [N.B. **Plastic binding must NOT be used – set at MAX DIN (26+)**]

- Centre skier fore/aft – ballast mono-ski if necessary.
- Check lateral pressure (by use of 'Plasticine' indoors) or signs of edging (depth of edge groove) when sitting in balanced position on flat terrain on snow.

**Suspension:** Check spring tension (pre-load) to manufacturer's setting – keep a record of setting.

**Angulation and Rotation:** Check for equal angulation (A) and rotation (R) in each direction – adjust as necessary. Unequal A & R may limit ability to make equal turns in both directions.

**Clothing:** Is/will skier be warm enough/ not overheated [Thermoregulation] – **check regularly**



### Notes on Dowel Testing– Mono Ski/(Bi-Ski)

#### Dowel Testing:

*To ensure that longitudinal centre of mass (skier plus chair) is over ski centre mark(“sweet spot”).*

**Manufacturer’s ‘boot centre mark’** - usually in centre of sidecut. This marks the point on the ski to which the centre mark on the ski boot should be aligned for maximum performance and control.

#### Method:

1. Transfer fully dressed skier into ski.
2. Place dowel under bottom of ski at ski centre and perpendicular to ski.
3. Move skier until centrally balanced over mark, so that, ***in an athletic stance***:
  - slight forward head tip pressures tip of ski
  - slight backward head tip pressure tail of ski.
4. Mark this position on equipment frame (i.e. above ski centre mark) – **‘frame centre’** mark.
5. Without skier -fix frame to ski so that ski centre and frame centre match. *[Note: A consideration for a beginner is to set 0.5 to 1 inch forward of the centre mark. However, if skier over-rotates then try moving them back if they can’t disengage the ski tip.]*
6. Check with skier in ski  
*Note these settings in skier’s notes (and which ski and frame used).*



### Notes on /Lateral Balance/Canting – Mono Ski/(Bi-Ski)

#### **Canting:**

*To ensure skier is balanced laterally over ski to achieve a 'flat' ski in normal, resting stance.*

**N.B: Mono/Bi-skiers commonly have a unilateral weight distribution, which tends to keep ski on one edge unless corrected. An edged ski is hard to steer.**

#### **Method 1: Check visually for 'tilt':**

- Place student in ski on hard, flat floor.
- See if student can lift riggers off ground and maintain balance.
- Check that student is sitting symmetrically when balanced.
- If one shoulder is higher, pad under buttocks (cant) to achieve a more symmetrical position.

#### **Method 2: Checking for an asymmetrical impression**

- Place skier in equipment on mat of dense (memory) foam
- Student balances whilst lifting riggers into air.
- Lift student and equipment off mat. **[Lifting techniques]**
- Check impression for evenness.
- Pad under student to achieve equal impressions.
- Repeat until equal

*[Alternative to foam: Use strips of plasticene on a level, hard floor.*

*On FLAT piste: Check for different depth impressions on snow ]*

Canting can be achieved by inserting thin wedge between ski and binding. Some mono-skis have adjustment to offset seat from centre line to achieve a flat ski.



### Suspension Adjustments – Mono Ski (Bi-ski)

#### Adjust Suspension

- Adjust the pre-load according to the manufacturer's instructions.
  - [Rule of thumb: The heavier the skier, the greater the suspension tension (pre-load).
  - May need to change to a stiffer spring for heavier skier and vice-versa]  
[Pre-load: Is the load that is required to begin to compress the spring.]
- Set lighter for beginners.
- If suspension has 'compression' and 'rebound' damping settings:
  - Increase 'compression' damping to prevent bottoming out.
  - Reduce 'rebound' damping to reduce tendency for ski to lose ski-snow contact after compression.

[N.B. Excessive rebound damping may make loading onto chair difficult as suspension is very slow to re-extend fully.]

[Note (DC): In practice, for lessons etc. you would not really make fine adjustments to suspension unless it was obvious that there is a problem e.g. bottoming out (skier too heavy) or not compressing the suspension (skier too light)]

#### Fore-aft lean:

Check that the skiers can move in fore-aft plane and can bring themselves back from a 'forward' lean – where appropriate ensure that straps are tight at the correct height to support. [SCI]



### Introduction to Equipment - Mono-Ski

Demonstrate/show/explain

Comment [AMC12]: DELETED

- how **seat and straps** hold skier in snug, supportive manner – use of padding. Skier must be able to feel highest strap securing them to mono-ski. Maintaining balance require that student can feel and control muscle group below highest strap.

[Check that the skier can move in fore-aft plane and can bring themselves back from a 'forward' lean – ensure that straps are tight at the correct height to support – exp with SCI]

- how **suspension** works
- how (shaped) ski works
- How **hand held outriggers** function:
  - claw brake
  - flip cordet
  - use of differential friction to initiate turns
- **Drag lift equipment** - what to expect and how it works.
- If to be used – **mechanical chair lift loading features**:
  - how they work
  - procedure to expect.

How to **transfer** into the mono-ski.



### Bucketing/Seat Assist- Mono-Ski

#### Why?:

- Not able to ski alone/ control mono-ski (esp. in early stages).
- Tired
- Lacking confidence – especially wrt to:
  - the nature of the slope/part of slope
  - number of people about
  - conditions of snow, etc.
- To give someone an experience (speed, fun).
- Help skier to 'pattern' correct movements.

#### How?:

- Ski close into mono-ski with own skis parallel to mono-ski.
- Become one unit with mono-ski.
- Keep own skis parallel throughout turn to avoid inner ski getting caught under mono-ski.
- Skid your turns to match mono-ski's turn.

#### Considerations:

- Choose mono-ski best for injury/disability type – esp. wrt fit.
  - Choose mono ski best fitted for skier level of ability (COG Height)
  - Consider speed and ride wrt injury / disability
- Do not lean over the student and inadvertently push their head forward.***

Comment [AMC13]: Done



### Use of Hand-held riggers - Mono-Ski

#### Zone of usage/length of rigger:

- Beginner/low intermediate– from knees to ankle; elbows flexed 35° – 40°; in athletic/strength stance

**[Strength position** Head up, looking forward. Shoulders, hips, knees level. Slight forward curvature of spine. Upper arms hanging vertically at the sides, with slight space between elbows and body. Lower arms hanging at same angle as outrigger shafts. *Not chicken wings. Not locked at elbows.*]

- Upper intermediate/advanced – may wish to have slightly shorter.
- In general: so that skier can propel backwards on flat ground by pushing against inside edges of riggers. *[Note: Teach to push, and rest, with rigger in ‘ski’ position.]*

**Cuff:** Below elbow – doesn’t pinch when arm flexed. Gap on outside.\*

*[\* Some skiers prefer gap on inside – gap on outside pinches, more comfortable on inside – less prone to rubbing.]*

**Brake:** Set to operate (check flip-cord works /adjust flip-cord adjusting length)

- Depends on confidence of skier – more brake for less confident – too much rigger bounces/skips – too little rigger slips/lack of control.
- Less brake than for bi-ski because of steeper shaft angle of rigger in ‘ski’ position.
- Soft snow MORE brake. Hard snow LESS brake

#### How to use riggers:

- It is the angle of the rigger (rotation in the direction of the turn) and differential friction that creates the turn.

***Do not put too much pressure on riggers – no stress on arms and shoulders***

Comment [AMC14]: Deleted.

Comment [d15]: I think this should say “break bolt further out”

Comment [AMC16]: Surely less = less bolt

Comment [d17]: I don’t think this really follows for technique.

Comment [AMC18]: Discuss please.



### **Tethering - Mono-Ski**

*Tethers are only used on a mono-ski in exceptional circumstances. In such circumstances, they need to be used with great finesse, otherwise they will unbalance the mono-ski.*

#### **General Rule:**

- **Do not tether a mono-ski:**
  - Mono-skiers should stay on flat/gentle terrain until they can ski.
  - If terrain becomes difficult –bucket/seat assist!

*[DC comments: Generally, only tether if needed to get to appropriate terrain (i.e. to a learning terrain area). A strong (always tight) tether is unproductive though as a student will inevitably have their own turns “blocked” and the skier might become reliant on the tight tether for speed control. Sometimes when a skier seems to have a tendency to take downhill slammers an instructor may well decide to use a loose tether and then employ it only to save the skier from the pain of a slammer. These are real life situations though and would be the instructors call – remember prime aim of mono-ski is for independence. Use single tether if at all.]*





### **Mono-Ski Using Lifts 1 - Drag Lifts**

- Secure cooperation of lift attendants before attempting to use lift.
- Make sure tetherer / bucketer is attached to lift tow
- Ensure tetherer /bucketer tow straps allow tetherer / bucketer to be towed independently of mono-ski (where possible – see MK Snowdome situation).
- Ensure tow release mechanism works before riding lift.
- Ensure helpers stationed at top and bottom lift station:
  - to stop lift in emergency and
  - to help with loading and unloading lift.
- Don't hold front of tow loop when loading – **trapped fingers!!**
- Re-attach all re-lease cables and straps after riding lift and stow away securely so that they cannot interfere with ride.
- Check comfort/security of skier before setting off again.

If mono-skier is riding lift solo – make a visual check all cables/straps stowed at top of lift and remind skier to do this for themselves – if assistance is needed then help to do so.



### **Mono-Ski Assisted use of Chair Lifts**

- Practise with static lift chair if possible – can skiers load themselves/assist with load? Practise.
- Secure cooperation of lift attendants before attempting to use lift:
  - agree speed of lift for loading/unloading
  - agree use of emergency stop if problem occurs
  - agree to keep other customers off the chair being used
- Ensure emergency evacuation straps are accessible before loading
- Use two lifters – one each side
- **Before entering lift line** agree on:
  - who will communicate with lift operators
  - who is 'leader' – to call timing for load and unload – agree timing – “Load on 3: 1..2..3/load or 1 2 3 and load)
  - how to lift / where to hold mono-ski
  - who to put safety bar down.
  - who to attach safety retention strap
  - unloading procedure and
  - who will bucket mono-ski after unload
  - any (hand) signals to be usedPut mono-ski into 'load' position before entering lift queue.



### **Mono-Ski Assisted use of Chair Lifts (continued)**

- Ensure skier knows to 'keep head down' if loading/unloading fails and chair passes over the fallen mono-ski.
- Secure assistance to prevent anyone else getting on lift with mono-skier and helpers.
- Position in mono-ski in centre of chair
- Ensure inside skis of loaders are pointing in direction of lift on load and unload.
- For load: If only one lift operator is present then make sure they are ready on the "stop" button in case of miss-load. If two are present then one may be asked to help with the load.
- Make sure back of ski is not caught on the safety bar when loading, **if it is caught then IMMEDIATELY call for a stop** before the chair leaves the loading area
- Ensure mono-ski security/retention strap is attached around back of lift during ride.
- Review / rehearse unloading procedure with mono-skier during lift ride.
- Just prior to arrival at top station:
  - undo retention strap – but maintain firm hold on mono-ski
  - move mono-ski forward to tipping point to assist unload.
- Put mono-ski into 'ride' mode and check skier's security/comfort etc after dismount.



## **Mono-Ski**

### **Developing Un-assisted use of Chair Lifts**

When skier confident, attempt an unassisted load:

- Practise with static lift chair if possible.
- Secure cooperation of lift attendants before attempting to use lift:
  - agree speed of lift for loading/unloading
  - agree use of emergency stop if problem occurs
  - agree to keep other customers off the chair being used
- Ensure emergency evacuation straps are accessible before loading
- Check skier has put mono-ski into 'load' position before entering lift queue.
- Ensure skier knows to 'keep head down' if loading/unloading fails and chair passes over the fallen mono-ski.
- Secure assistance to prevent anyone else getting on lift with mono-skier and helpers.
- Ensure skier positions mono-ski in centre of chair
- Ensure mono-ski security/retention strap is attached around back of lift during ride.
- *Solo mono-skiers do not usually use retention strap* – but should position themselves so they can pull the bar down on the chair as much as possible
- Review / rehearse unloading procedure with mono-skier during lift ride.
- Just prior to arrival at top station:
  - Undo retention strap – but maintain firm hold on mono-ski
  - Ensure skier moves ski forward to tipping point to assist unload.

Check ski is in 'ride' mode and check skier's security/comfort etc after dismount.



## Mono-Ski

### Teaching Progression – Beginner/ Novice 1

Demonstrate equipment before transferring to bi-ski.

#### Flatland drills:

**Stance** – athletic, balanced, slightly flexed

Locate outrigger position for comfort/control/lateral support

Lift riggers off snow to test balance:

Left off – right off – both.

#### Using riggers:

Lean to left and return to neutral – repeat to right - angulate body to reduce pressure on arms

Use riggers to push mono-ski backwards (easier) and forwards (harder)

- by engaging claws (check brake **setting**)
- by using inside edges of riggers turned at 90° to slope
- in crutch position

Perform star turn by lifting whole ski on riggers in crutch position.

Repeat with ski in 'chairlift load **position**'.

#### Practice falling and getting up: (best practised on a slight **slope**)

- Keep arms and riggers inside mono-ski in a fall. [*Hands together in front of body – riggers pointing to front of mono-ski.*]. Avoid riggers getting behind or underneath ski in fall.
- Mono-ski across fall line
- Allow up-hill rigger to dangle from wrist, pointing uphill, away from ski.
- Put downhill rigger(s) in snow above the mono-ski. place uphill palm/fist on snow and push upright.

Help by blocking mono-ski with foot/skis and pulling on bucket.

**Comment [d19]:** I prefer to have them get used to the edge from the start. This helps develop this skill from the start for when the brake gets backed off. Using them as a pick axe also has a tendency to snap them!!

**Comment [d20]:** I would not bother with this. A beginner is just likely to fall – and from this position it will be a hard fall. There is not a lot of value in this for a beginner anyway.

**Comment [d21]:** I don't think "practicing falling" is a good idea. If they injure themselves I think you are on dodgy ground. Best to brief them on falling but instruct on getting up.

**Comment [AMC22]:** Didn't mean them to practice falling - - Hve re-written.



## Mono-Ski Teaching Progression – Beginner/ Novice 2

### Straight run

*(Choose gentle slope with natural run-out/counter slope)*

- Push student up slight hill (fit and strong students can try to push themselves up) and position in fall line (have student turn into fall line – using star turn – if able.)
- Student braces (slope hangs) with outriggers, either:
  - a) in crutch position
  - b) in skiing position and turned inwards towards mono-ski – using inside edge of rigger to brace.
- Student) turns riggers into fall line and glides down hill to terrain assisted stop.
- Encourage student to maintain athletic stance with riggers between knees and ankles.
- Encourage student to close eyes whilst gliding to ‘feel’ the balance.
- Have student to briefly lift both riggers off snow in straight run.
- Show student how to control speed by pushing riggers forward to engage brake: flexing forward at hips and spine, dropping elbows and driving both hands down and forward to engage claws.
- Use inevitable falls to practice getting back up unassisted.

*[Fatigue/PPS/Thermoregulation/ADS/Pressure Sores]*

If lack of gentle slope or skier is nervous, ski backwards in reverse plough keeping eye contact and controlling speed.

**Comment [d23]:** Must be in skiing position as you don't want them to risk sliding in crutch position.

**Comment [AMC24]:** DONE

**Comment [d25]:** May need to do in traverse if no suitable terrain



### Mono-Ski Teaching Progression – Beginner/ Novice 3

#### Straight Runs (continued)

- Ensure student keeps both riggers on snow with equal pressure. – Check level knees, hips and shoulders. Keep head up and look where they want to go [WYLIWIG – “Where you look is where you go.”]
- Practise straight runs traversing across slope – position self to stop students inadvertently heading down slope.
- Check movement of riggers:
  - if bouncing /lose contact with snow - too much brake.
  - if students arms extended straight, when attempting to brake:
    - either, riggers too short;
    - or, insufficient brake.
- ***If student is having difficulty controlling mono-ski – check:***
  - ***that is supported high enough (see ‘Intro to Equipment,). May need to add a high back, kidney belt, etc to provide additional support and allow the student to ‘feel’ and control ski.***
  - ***that student is properly centred over ski (Dowel Test/Canting)***  
*[Fatigue/PPS/Thermoregulation/ADS/Pressure Sores]*



## Mono-Ski Teaching Progression – Beginner/ Novice 4

### Introducing turns (on a gentle slope)

*[Note: These are **skidded** turns.]*

- From a balanced, straight run, encourage student to turn head into direction of intended turn. This should be enough to initiate a turn.
- Hold turn until comes to halt across the fall line.
- Can encourage this by skiing backwards in a gentle turn, telling student to follow you.
- Practise turns to hill in both directions.
- **Develop turns using head and shoulder rotation in direction of turn.**
- Add turning both riggers in direction of turn – keep both riggers on snow.
- Student needs to maintain relaxed, centred stance to keep ski flat through turn and allow to skid the turn.
- Towards end of turn, ski will edge slightly as it crosses fall line. The steeper the terrain, the more the edge engagement.

*[Note: Looking in direction of turn causes a slight lateral weight shift. Head (5-7 pounds) is directed across ski ('passive cross-over'). Results in slightly more pressure on inside rigger. Ensure rotary movements are not 'overdone' as this will lead to an over-edged ski which will track and inhibit the turn. If students have difficulty – check they are maintaining a flat ski as they turn head and shoulders. Check that student is properly centred over ski (Dowel Test/Canting). Check equal brakes on riggers.]*

**Comment [d26]:** I would not bother developing this skill. We need to stress that the rigger is the turning power not the shoulder rotation. Plus this will only work on perfect beginner terrain. Mostly you will need to use the rigger more or less straight away.

**Comment [AMC27]:** Discuss

**Comment [AMC28]:** Discuss please





### **Mono-Ski**

#### **Teaching Progression – Beginner/ Novice 5**

**Linking turns** (on a gentle slope) [*Note: These are **skidded** turns.*]

*Equivalence to stand-up skiing: Leaning Forward = Extension*

*Leaning Back into bucket = Flexion*

- Steer both riggers into the direction of the new turn.
- Look in the direction of the new turn with the head and upper body
- Lean forward to flatten the ski and initiate the turn
- Lean back once the fall line has been crossed to prevent over-rotation.
- Practice 'garlands' to become comfortable turning into and out of the fall line, and to establish awareness of amount of edging required to maintain a traverse.
- Practise keeping the head and upper body pointing towards an object at the bottom of the slope to encourage some countering. The upper body should remain stable, quiet, and pointing slightly more down the hill than the lower body and ski. towards the bottom of the slope.
- Encourage gentle edge engagement towards the finish of the turn.
- Practise varying radius of turns – from left and right traverses.
- Ex-motorcyclists may tend to lean into turn to ride the edge of the ski. Encourage skidded turns to start with to learn to control speed and change direction.

[Notes: (i) Looking with the head and body towards the new turn distributes slightly more weight towards inside rigger, increasing friction, leading to stronger rotary effect.

(ii) Turning the upper body in the direction of the next turn causes the turning torso to store energy through the bottom half of the turn. When the skier leans forward and flattens the ski, this energy is released and turns the ski into the fall line as the upper and lower body re-align.]



## Mono-Ski Teaching Progression – Intermediate 1

### Enhancing cross-over:

An effective cross-over (of the centre of mass across the centre line of the ski) is critical. Focus on turn initiation – upper body & both outriggers move in the direction of the new turn.

### Drills:

#### Moving:

- Practice 'garlands' to become comfortable turning into and out of the fall line, and to establish awareness of amount of edging required to maintain a traverse. Focus on turn initiation and completion.
- Have student follow your tracks on snow.
- Apply light pressure to /reach with outside rigger to create angles in hips and spine.
- Practise side-slipping down hill across fall-line by releasing and setting edge.
- Change from slipping traverse to edged traverse by altering hip/spine angulation.
- How quickly student can turn each time you call a turn?
- When initiating turn, how far can student reach down fall-line without falling?
- High speed hockey stops on your command.
- Smooth short radius turns and then short swings with an abrupt edge-set.
- Falling leaf.

#### Static:

- How much edge angle skier can achieve @ 90° to fall line?
- How far student can reach downhill without falling?

Student practices self-loading drag &/or chairlift [*Instructor to go 'hands on' if there is an error*].

**Comment [d29]:** I would not use falling leaf till more advanced. Try it yourself – it's a scary thing to do in a mono for most intermediates!

**Comment [AMC30]:** Moved to advanced.



## **Mono-Ski**

### **Teaching Progression – Intermediate 2**

#### **Increasing speed:**

- Maintain balance by constant contact riggers/snow
- As speeds increase and turns tighten, forces increase. Student inclines to inside of turn to balance. Maintain contact with outer rigger to reduce banking.
- 'Commit to the turn':
  - head, shoulders, arms, outriggers move toward centre of turn at turn initiation.
  - this flattens ski & shifts pressure to inside rigger allowing creation of rotary force as outriggers steered in turn direction.

#### **Overcoming fear of committing to turn** (*one of most difficult parts of learning to mono-ski*):

- Start with stationary ski across fall line
- Point downhill rigger directly down fall line so that arm and rigger are at 90° to mono-ski.
- Drop elbow to engage brake.
- Look down hill and lean forward.
- Mono-ski slips into fall line and continues to pivot around end of rigger to complete turn to halt.
- Avoid student 'paddling' round turn.
- Repeat on other side.
- When successful, encourage student to feel same body position and make same commitment to downhill outrigger when skiing.

#### **Avoid edge lock – and subsequent downhill-slam fall.**

Caused by excessive cross-over before rotary movements. Create friction with inside rigger before aggressive movement in direction of turn.

[Fatigue/PPS/Thermoregulation/ADS]



## Mono-Ski

### Teaching Progression – Advanced 1

**Extend the boundaries** - Ensure chairlifts and mono-skis are compatible (loading height?) – **Check – Be ready to help**

**Different terrain:** Bumps; powder; crud; steeps; race gates.

#### Refining movements:

- Hip check/hip-projection (if student has usable musculature in lower torso)
- Encourage rhythm (by having student ski to rhythm of you, at bottom of slope, waving poles side to side)
- Ski in an inverted wedge – have student stay within corridor made by your skis.
- Synchronised turning with student.
- Practise *self-arrests* on steep terrain [use rigger as would an ice-axe in arresting climbing fall].
- Practice *slide recoveries*:
  - Use rigger to swing mono-ski across fall line into sliding self-arrest
  - Push off hill with uphill hand.
  - Reach downhill with downhill rigger to meet snow.
  - tilt pelvis to engage edge
  - Continue skiing
  - Beware downhill slam-fall.

#### Carving

- Increase aggressive movement into turns to put onto early edge > carving
  - Minimal brake to reduce rotary movement/skidding
- Shoulders parallel to terrain at all times throughout turn.

**[Fatigue/PPS/Thermoregulation/ADS**



## **BLIND SKIING**

## **POCKET GUIDE**

**27/11//13**  
**Version 1.0**

### **Note**

**This Guide has been prepared by  
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Of Disability Skiing Wales  
from experience gained from the BSCD, the "52 Association" in the USA  
And in the British Winter Paralympic Team of 1988**



## Blind Skiing

### Introduction

The following “Pocket Guide” is intended to provide assistance to a guide or ski instructor who is attempting to teach a Blind person to ski for the first time.

When teaching partially sighted people, the same techniques may be appropriate in the early stages, until the pupil gains confidence on the slopes. Then different techniques may be used.

In terms of presentation, this guide uses a simple bullet point system to itemise the relevant points and to avoid excessive dialogue. When it has been considered necessary to highlight various important points, a **red text** is used beneath the title

### **Top Tip**

### Definition of Blindness

In the UK the quality of sight is measured in two hundredths.

A person with normal full vision would be classified as having 200/200 vision (used to be 20/20 vision). This means that the person can see a pre-defined object perfectly from a distance of 200 feet.

A person with 180/200 vision for example, means that the person would have to stand 180 feet from the object to see it with the same degree of clarity as a person with perfect vision (200/200).



A person is classified as legally blind if they have 20/200 vision (or less) in their best eye, with full corrective measures having been taken (generally wearing corrective glasses).

A person is also classified as legally blind if they have a field of view of 20 degrees (or less). The normal field of view is 180 degrees.

### **Statistics**

In the UK, approximately 2,000,000 people suffer from some form of sight loss.

Out of these 2,000,000, approximately 360,000 are registered blind or partially sighted.

153,000 are registered as legally blind (2013 figures).

These statistics are expected to increase in the future as the population ages.

It is particularly important to note that in 30% of legally blind people, other illnesses accompany the blindness, namely:

- 4% have mental health problems
- 8% have learning difficulties
- 27% have impaired hearing
- 60% have physical difficulties

### **Assessment**

#### **Top Tip 1 – Other difficulties**



Because of the above statistics, it is particularly important to have a full and comprehensive assessment of the Blind pupil before commencement, not simply an account of their visual difficulties. With such a high percentages of hearing impairment and physical difficulties potentially accompanying blindness, the instructor should be aware that other difficulties may be present over and above problems with their sight.

On the assumption that the pupil does not have any usable vision, an overall assessment of the pupil's physical fitness must be made. Generally younger ski pupils, who are attending one of the Blind Schools in the UK, are kept very fit and active by the specifically trained staff. They take part in sporting activities which account for their sight difficulties (Go ball, tandem riding, etc.) and are used to the rigours of sport. After they leave Specialist schools, these activities may not be so available to them and their physical condition may deteriorate.

Consequently an assessment should address the following:

- Go through the medical assessment form slowly knowing the above potential difficulties
- Ask the pupil specifically, if they have any hearing or physical problems
- Assess their spatial awareness e.g. ask the where the door is that they have probably just used, or ask them to point towards a specific noise etc. Some pupils are better than others at remembering which side of the lift they exit.
- It is important to protect their eyes. Ask if they are comfortable wearing goggles. Ask them if they use any special eye drops.
- Sometimes pupils have artificial eyes. These have to be cleaned before they go on the ski slope and they can be aggravated by the mist system on the dry ski slopes (hence the use of goggles). Ask them about this and tell them about the mist system.
- Sometimes blind ski pupils can feel a little sick especially on the chair lifts. Ask them if they suffer from motion sickness.





- Many blind people wear braille watches which are larger than the normal watch and expensive. Be aware of this when fitting equipment.



## Progression

The following progression steps relate to a totally blind pupil who is learning from the beginning. It is assumed that they have never touched a pair of skis or boots before, but will have had skiing described to them by others.

It is assumed that they have reasonable fitness and have hearing.

### Progression Step 1 - Introduction to Equipment

This is best carried out inside in a quiet environment without the distractions or noise of a ski slope. It is important that the blind pupil is able to put all their equipment on themselves and to fit their skis to the bindings. If the Instructor or guide has constantly to complete these tasks for the pupil, they will frankly wear themselves out.

- Describe the equipment carefully and warn the pupil that the edges of skis are sharp.
- Let the pupil touch the skis, bindings, boots and sticks and describe how they work and fit together. Describe the binding system and its settings.
- Show them the helmet, gloves and goggles.
- Stress that it is important that they are able to put on their own boots and equipment.
- They will be given a high visibility vest to indicate to others that they are visually impaired.
- It is also vital that they are able to fit the skis to the bindings on their own and they should practice this in the room. Generally they feel for the front of the



binding with their hands, place the boot toe beneath the lip and the feel for the back binding. This is difficult for them and requires flexibility.

- Get them to walk around the room and get the feel of the equipment
- Show them how to release their ski bindings put their skis together and carry them on their shoulder for walking. Also ask them to practice holding the skis vertically (when joining a cable car queue or in narrow passage ways.)
- When walking, the blind pupil's sticks are generally carried by the instructor as the blind pupil will require a free hand to hold the arm of the instructor when walking on or off the ski slope.

### **Top Tip 2 - Stick straps**

Generally it is not recommended that the blind pupil puts their hand through the strap on the stick. There have been instances where the stick gets caught when skiing and the pupils in not able to release. Let them hold the strap and the stick together. Sometimes the stick will be dropped, but this is the lesser problem.

### **Progression Step 2 – Beginners - On the flat**

#### *Moving walking and familiarisation*

Blind skiing is not easy for the pupil or instructor. Clear calm instructions are vital with consistent repetition. Both parties will require 100% concentration at all times.

The following bullet points give an example of how a beginner may progress:

- Once they have their boots and gear on, ask the pupil to simply walk from the hire shop to the slope holding onto the instructors arm with their skis on their shoulder. Carry their sticks for them and practice leaving sufficient room for them. Walking in ski boots is a strange experience for most people.



- At the ski slope, but on level ground ask them to fit their own skis to the boots in accordance with the instructions given in the introduction.
- Ask them to walk in a straight line, then in a circle and then to move backwards and forwards. Ask them to lift one ski up and generally move with skis on.
- Get them to use their sticks for balance and get used to their length

### **Top Tip 3 – Do not touch**

Once they have been guided to the ski slope, do not physically help them at this stage. It is much better to let them get used to finding their own way around. This will take time but will pay off in the long run. Use very calm and clear verbal instructions.

- Ask them to put their skis in the wedge shape and describe how it looks and why it is important to keep their tips together and heels apart. Repeat many times.
- Describe a star turn to them which enables them to change direction. Ask them to try this only on the flat, to the left and right.

### **Top Tip 4 - Kick turns**

Never ask a blind pupil to do a kick turn. It is particularly difficult for them to position the heel of the kicked ski.



### **Progression 3 - Beginners - On the slope**

#### *Sidestepping, straight running, stopping and turning*

The following paragraphs indicate some of the techniques used to progress a blind pupil.

#### *Sidestepping*

Sometimes simply holding the end of their ski stick will assist and provide added confidence in this simple manoeuvre.

- Ask them to sidestep down the slope, then back up to the same position.
- Then ask them to walk across the slope ( traverse) and back

By this stage the pupil should be getting used to the feel of the equipment and the slope. A rapport should start to develop between instructor and pupil which is an important confidence boosting stage.

Like most pupils they will almost certainly start to sideslip on the slope. Do some basic edge control exercises, such as releasing and they edging to show them how to grip the slope.

Encouragement is the key here but also the truth. If a pupil does not complete a task successfully, tell them so.



Do not try to limit your adverse comments because of the pupils disability, the truth is always the best policy.

They may now be ready to try some basic manoeuvres such as straight running on skis and stopping.

### *Straight running and stopping*

The best way to start is to use a training bar with an instructor either side with the blind pupil in the centre as shown in the following photograph. Instructors will need a powerful snowplough to control the blind skier. Be aware pupils also tend to lean heaving on the bar.





This will give the pupil confidence and instruction (by one instructor only) can be easily given. The techniques used to teach a blind person to ski are the same as a sighted person i.e. edge control, weighting of skis etc.

Also advise the pupil to slacken their grip to reduce reliance on the bar

When only one instructor is available the ski chariots can be used with the instructor skiing either backwards in front of the pupil or behind



### *Turning*

The pupils should be encouraged to commence the turning technique after mastering straight running. Use the same techniques and description as for a sighted person. The blind pupil has the added feeling of security when holding the training bar. They should soon master the technique of placing the skis in the wedge position, weighting and unweighting skis etc.

Further techniques should now be tried to encourage the blind skier to ski without the additional equipment. Skiing backward in front of the pupil holding their ski tips is particularly helpful for the blind and also skiing backwards using their sticks for assistance as shown below





**Top Tip 5 - Dispense with additional equipment as soon as possible**

Try to dispense with the additional equipment as soon as possible to avoid the pupil becoming over reliant on the training bar or chariots



## Progression Step 4 - Verbal Instructions and Radios

### *Standard verbal instructions*

At this stage it is necessary to introduce the standard set of verbal instructions to the pupil. This is well in advance of when a lot of them will be required, but it will serve to familiarise the pupil with instructions for the future. The verbal instructions are highlighted in **BLUE CAPITAL LETTERS**

The standard instructions have been developed for use either with or without radios (see later), are as follows:

- **AND HALT** - This means halt steadily and safely in the direction you are travelling. It is not an emergency stop.
  - AND - The first word AND, alerts the skier that an instruction is coming and when voice activated radios are used, it serves to activate the radio.
  - HALT – The second word HALT requests an steady halt as soon as the word HALT is used
- **AND STOP** – This means stop as fast as you possibly can in the direction you are travelling. This is used as an emergency stop
- **AND LEFT TURN** – This means carry out a medium radius left turn, but each word is significant:
  - AND – Alerts the pupil that an instruction coming. It also activates the radio (if used)
  - LEFT - Indicates the direction of the turn that will be carried out. It does not mean turn left when they hear the word LEFT. It is an advance warning that a left turn is coming up.



- TURN – Relates to the timing of the turn and is when you want the pupil to turn left. Sometimes it is necessary to repeat the word TURN as the radio may require a second activation sound.

A common fault is for a pupil to turn left as soon as he hears the word LEFT

- **AND RIGHT TURN** – As described above for AND LEFT TURN

Adjectives describing the severity of the turn are then introduced, for example:

- **AND HARD RIGHT TURN**
- **AND LONG LEFT TURN** etc. both describe the type of turn before it is needed. Again only turn when you hear the word TURN.

One of the difficulties an Instructor with the blind will experience is a loss of voice due to the fact that they are speaking loudly all the time and are probably at altitude in the cold. It is common to see Instructors carrying their favourite cough lozenges. In many ways this is why radios are useful when skiing on snow.

### *Radios*

- These are usually voice activated and turn on automatically after being triggered by the first word (**AND**). They generally have a single earpiece, mouthpiece and wires connection the radio to the headsets.
- The microphone is positioned in front of the mouth. The radios are two way so you will be able to converse with each other.
- The radio body is placed in the inner jacket pocket of the ski jacket. Some jackets have specific radio pockets with holes for the wires.
- The batteries are usually rechargeable, and require charging each night



### Top Tip 6 – Spares

Take spare batteries with you as they tend to be affected by the cold and have limited life when used constantly.

### Progression Step 5 - Use of lifts

As a general note, do not underestimate the degree of difficulty sometimes experienced when taking a blind person on a lift.

Do not take a blind person on a lift until you have used it first.

You need to observe:

- The direction of the exit point.
- The exit path, its width, steepness and condition
- The length and condition of the route (if it's a drag lift)
- Any features e.g. doglegs

#### *Single person drag lifts (Poma lifts)*

These are usually the most difficult as your blind pupil will be remote from their instructor. The following bullet points are relevant:

- Tell the lift attendant that you will have a blind pupil on the next run



- Describe the lift to the blind pupil and tell them:
  - The approximate length of the lift
  - The entrance arrangements, lift passes ready etc.
  - The entrance gate system
  - The condition of the surface and if there is severe rutting
  - If there are any downhill sections on the way up
  - The type of poma (spring loaded, pull down or fixed)
  - The direction of exit

Generally join the normal queue for the lift and don't take the short cut. This gives time for the description above.

- It is normally best to put the pupil on the lift first and allow the instructor to follow. This allows the Instructor to observe the pupil and speak to them during the drag time. (using radios)
- Carry their sticks for them. They have enough to concentrate on
- Position the pupil in the direction of travel by standing alongside. The lift attendant will normally give the Poma to the pupil and hold them steady while the lift takes over
- The instructor must catch the next Poma to stay as close as possible. Make sure there are two together as a long distance between Pomas is problematical. Sometimes pomas are removed for maintenance
- If the radio fails halfway up the lift establish a signal from the blind pupil to advise you that he cannot hear. Usually lifting a hand up
- If the lift is being used for the first time, describe the route for example:
  - Rough ground ahead



- Crossing point (expect other skiers to cross)
- Dog leg to the left
- Last pylon coming up
- As you approach the exit, describe it, concentrating on the steepness or congestion. Narrow exits are difficult
- Count down to the exit by saying **AND - 3, 2, 1 EXIT LEFT - NOW**
- Keep instructing the pupil until they have stopped

### **Top Tip 7 – Problems on Drag lifts**

- Should your pupil fall on the drag lift, ski past them and then sidestep down to them and provide assistance. This avoids your Poma hitting the pupil. (this is normal ski etiquette)
- If you, (the instructor) fall on the drag lift, you have a nightmare on your hands. Try to get the lift stopped. If this fails, radio the pupil and tell them to sidestep off the lift as soon as they can. You will then have to sidestep up the slope to your blind pupil and provide assistance.

#### *T-bar drag lifts*

These are much easier than single Poma lifts as you will be alongside each other.

Similar techniques are used, the main points are:



- Carry the blind pupils sticks for them
- Put the pupil on the exit side of the T bar. This saves them crossing over on exit
- Continue to describe the route and exit arrangement
- When ready to exit give the pupil one end of your stick (the handle end) to provide guidance off the lift onto the level area

#### *Chair lifts*

These should be easier than either of the drag lifts mentioned above.

- Carry your pupils sticks for them
- Describe the lift entry system for them
- Stand alongside the pupil and provide support especially if moving carpets are used
- The lift attendant will probably slow the lift (not essential), but get your pupil to feel for the chair as it approaches, then sit down. You will be alongside so this is not normally difficult.
- When pulling down the footrest, be careful as your pupil will almost certainly have to move their skis through the gap before placing their skis conventionally on the bar



- When exiting, lift bar up and count down to the landing, holding the arm of the pupil. Tell them not to stand up until you do. Then exit alongside each other and move away for the exit area.

### **Top Tip 8 - Lift Tickets**

- These days most lifts have tickets which are read automatically and are simply left in your pocket. Some of the older ones require both of you to insert the ticket into a slot when passing through the entrance gate. The instructor will have to do this for the blind pupil, so the pupil will have to go through first.

### **Progression Step 6 - Conclusions**

The preceding pages give a brief “Pocket Guide” to skiing with the Blind. The techniques are relevant for dry ski slope use and for use on snow.

They do not cover partially sighted pupils who are able to see the instructor sufficiently to follow. The partially sighted however, may benefit from the same style of audible commands and they may also benefit from the use of radios. If their sight is deteriorating then they will be better prepared for skiing with less sight.

This guide does not cover racing with the blind which requires a set of very different techniques to be adopted.