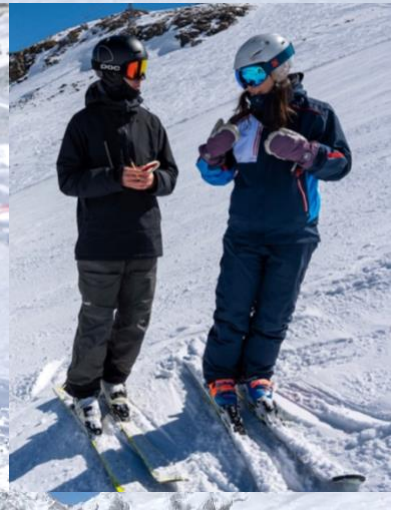

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QUICK REFERENCE GUIDE

for adaptive snowsports

BASI
BRITISH ASSOCIATION OF SNOWSPORT INSTRUCTORS

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Introduction

This booklet is intended as a quick reference guide for Adaptive Snowsport Instructors and/or trainee Adaptive Instructors. It is not a substitute for further reading and/or training. The details included are not intended to be exhaustive.

This booklet covers several disabilities most typically encountered in adaptive snowsports lessons.

Key Critical Considerations (contextual safety factors) and descriptions are provided for each disability/condition.

> **Critical Considerations** are factors we must take into account that directly relate to the context of teaching a disabled learner in an alpine environment in order to keep them safe.

Other disabilities will, of course, be encountered when delivering lessons – this guide is intended to give a *basic* foundation to cater for most situations that an Adaptive Instructor may encounter.

Information highlighted in green is required learning for the course. It is *strongly* advised, however, that you also familiarise yourself with the rest of the content. Text in blue are links you can click. *Other highlighting is purely aesthetic.*

It should be remembered that the symptoms and extent of a disability can vary considerably in most conditions covered by this guide, and that not all symptoms listed may exist in any one individual.

Issue 7.0

Updated by Charlie Laine 2022: BASI Adaptive ISIA, BASI Adaptive Trainer, with support and advice from Disability Snowsport UK

Originally written by Dave Worthington in 2007 (BASI Adaptive Teacher, BASI Adaptive Trainer, PSIA Adaptive), with acknowledgement to Fiona Young (BASI Adaptive Teacher, PSIA Adaptive) and Jerry Craig (BASI Adaptive Teacher)

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Amputation

Classifications	Unilateral – one side	
	Bilateral – both sides	
	Above/below elbow (A/BE) Above/below knee (A/BK) Disarticulation (through the joint) Hemipelvectomy (including part of the pelvis)	
Possible causes	Trauma	e.g. car accident, explosion, industrial incident
	Congenital	i.e. present from birth
	Illness	Hereditary – from a pre-existing medical condition Acquired – from disease e.g. Cancer, Diabetes

Notes:

Critical Considerations

Protection of residual limb	Pad or strap to body or other limb to prevent falling on the end of residual limb, protect from abrasion in falling, and to keep warm.
Notes:	
Possible implications of medication	Check other issues e.g. traumatic brain injury (TBI), or Cancer treatment may cause low bone density and fatigue
Notes:	
Security	May need to consider using additional strapping to ensure learner is secure in seated equipment. May also need ballast in the footwell. Check security of prosthetic [leg] on chairlifts.
Notes:	
Time since major surgery	Allow 12 months for full healing, otherwise seek medical clearance.
Notes:	

Additional Needs

Autism Spectrum Disorder (ASD)	A spectrum disorder, meaning that it affects people in a variety of ways and in varying degrees, that can affect how a person thinks, feels, interacts, and experiences the world around them.
	Asperger syndrome is a condition that falls under ASD.

Autistic learners may have difficulties in the following areas:

Social Communication & Interaction	May struggle to correctly interpret verbal (e.g. language & context) & non-verbal (e.g. body language) communication.
Repetitive behaviour	May be engaged with to gain or reduce sensory input for either enjoyment or stress reduction
Sensory stimulation	May experience hyper- (high) or hypo- (low) sensitivity to sensory stimuli.
Highly focussed interests or hobbies	Can provide an enjoyable source of coping with everyday life where their mind feels clear and free from thoughts, worries & concerns
Extreme anxiety	May experience higher levels of general anxiety due to the constant challenges they face navigating the world and their place in it

Down's Syndrome (Down Syndrome)	Is a genetic condition which occurs by the chance presence of an additional chromosome.
	A learning disability is likely to be present, but will be experienced differently by each individual.
	Heart problems and difficulties with sight and hearing may also be present.

Learning ***disability*** *[may experience…]*	Learning ***difficulty*** *[may experience…]*
Reduced ability to learn new skills	Rate of learning affected (i.e. may not learn at same rate as their peers)
Reduced risk awareness	General intellect not affected
Lower cognitive ability	E.g. dyslexia, ADHD, dyspraxia
Reduced ability to cope independently	
Impairment has a lasting effect on development	

Developmental Disabilities	Refers to conditions where learning is impaired with regards to speech & language, cognition, social & emotional behaviours, and motor skills.
	Arise as a result of a complex mix of factors including genetics, complications during birth, infections, and behaviours of the pregnant person (e.g. drinking/smoking).
	Conditions are generally diagnosed before adulthood e.g. ASD, ADHD, Cerebral Palsy, Learning Disability

A learner with a developmental disability may experience the following difficulties:

Speech & Language	Both receptive (understanding of spoken language) and expressive (ability to express themselves either verbally or by an alternative method e.g. signing, IPAD) difficulties
Cognition	Ability to think, learn & solve problems. Cognitive and physical age may differ which can lead to preconceptions/judgements/assumptions being made about the individual.
Social & Emotional	Difficulties in the ability to relate to other people and manage their emotions and behaviours. May result in difficulty differentiating between types of emotions.
Motor Skills	Ability to use and control small (fine motor control) and large (gross motor control) muscle groups

Critical Considerations

Risk Awareness	May have poor understanding and recognition of danger to themselves or to others e.g. straight lining for the joy of speed/boredom/to get to a particular destination.
Notes:	
Crisis Point Behaviour *(sometimes also known as 'meltdowns' & 'shutdowns')*	An intense verbal or physical expression/reaction as a response to an overwhelming situation. May manifest as a temporary reduction of control of behaviour, or refusal to interact, or withdrawing from/avoiding challenging situations. Reassure the learner and keep them safe.
Notes:	

Behaviour that Challenges *(behaviour that is found to be challenging by parents/ carers/teachers & others)*	Often manifests when the learner is having difficulty communicating or expressing frustrations - may be expressed as refusal to follow instructions, verbal or physical aggression, self-harming or throwing objects. The learner needs to be supported (i.e. aim to reduce/ remove triggers), but behaviour should also be managed appropriately (i.e. through boundary setting or existing behavioural management techniques). Build trust, allow time for the learner to adjust, and be assertive, not confrontational, if required.
Notes:	
Literal Interpretation	May have difficulty with imaginative play, sarcasm, nuance of language, idioms etc. and may take instructions/directions literally. Be mindful of the language used on lessons to prevent misunderstandings/endangering the learner.
Notes:	

Loose ligaments *[Down syndrome]* *ligament laxity & hypotonia*	May affect their movements and balance and present as decrease in muscle tone (hypotonia) & strength, reduced reflexes, hyper flexibility and decrease in stamina. Care must be taken when helping learners who have fallen to not pull them up, but rather to encourage them to get themselves into a position that facilitates pushing movements.
Notes:	
Atlantoaxial Instability *[Down syndrome]*	Instability of the top two vertebra (C1 & C2) in the neck at the base of the skull. People with Down syndrome are at greater risk of having this neck instability due to hypotonia & ligament laxity and loose ligaments. Symptoms that a misalignment (Atlantoaxial Subluxation) has occurred (after a big fall for eg.) include*: Pain or stiffness anywhere along the neck which doesn't get better quickly, unusual head posture, alteration in the way a person walks.* Seek medical attention immediately if this occurs.
Notes:	

Cerebral Palsy

Non-progressive condition that affects the body's muscle tension.
Caused by damage to the brain before, during or shortly after birth.
May affect muscles in all 4 limbs, upper/lower body, one side/whole body including the trunk & face.
Learning and cognitive difficulties may also be present.
Common terms: hemiplegia (one side of body), *mono- di-* or *quadri*plegia (1/2/4 limbs affected)
More than one type of Cerebral Palsy may occur at once.
May have Dysarthria (difficulty articulating speech) if the muscles involved with speech are affected.

Key types of Cerebral Palsy

Spastic	Most common form. Muscles have high muscle tension (**hypertonic**) which can make movement difficult due to the resultant stiffness of the muscles.
Dyskinetic *(athetoid, dystonic, choreoathetoid)*	Affect all four limbs – state of muscle tension constantly changes. Movements may be slow and writhing, or rapid & jerky. Muscle tension may change from hypertonic to **hypotonic** (low muscle tension) day-to-day, or over a single day.
Ataxic	Difficulty with balance and coordination – may be unsteady when they walk. May struggle with quick or very controlled movements.

Critical Considerations

Muscular/Skeletal Stress, Seizures, Fatigue, Dysphagia

Muscular/Skeletal Stress	Want to avoid putting our learners into positions their bodies can't make/sustain when using seated equipment, or when teaching ambulant learners.
Seizures	May be present as Cerebral Palsy occurs when there has been damage to the brain. See epilepsy *(History & Pattern, Light Sensitivity, Environment, Medication).*
Fatigue	Learner may tire more quickly and experience cramping. Be conscious of their stamina and how different Tasks may affect them.
Dysphagia	Difficulty swallowing (muscles in throat & mouth affected). Could lead to choking/sores/frost nip from excess saliva if not monitored.

Notes:

Diabetes

Not considered a disability in its own right.

A person may develop a disability as a result of diabetes complication, e.g. amputation or visual impairment (i.e. diabetic retinopathy).

Consider your knowledge from your first aid course if you know your learner has diabetes.

Epilepsy

A condition that affects the brain, causing seizures.

Seizure = a burst of irregular electrical activity within the brain that temporarily affects how it works

Likely to be present when brain trauma/injury has occurred (e.g. Cerebral Palsy, Traumatic Brain Injury, stroke, lack of oxygen, brain infection)

An individual may have epilepsy, but it may not affect them to the point where it would be considered a disability. Others may experience epilepsy that has a severe impact on their day-to-day lives.

May experience an 'aura' (type of partial seizure) that signifies the onset of another type of seizure.

Consider your knowledge from your first aid course.

Types of seizure

Absence	Brief loss of awareness, may appear to be 'daydreaming', lasts approximately 15s
Complex-partial	Loss of awareness of surrounding, body will make random movements.
Tonic	All muscles in the body stiffen. May lose balance and fall.
Clonic	Causes the body to shake and jerk. May last minutes. May lose consciousness.
Tonic-clonic	Initial 'tonic' stage, followed by a 'clonic' stage.
Atonic	Sudden and brief relaxation of all muscles which may result in falling

Critical Considerations

History & Pattern, Light Sensitivity, Environment, Medication

History & Pattern	Can help us with planning lesson times, and knowing when a seizure is longer in duration than is typical for our learner.
Lift Safety	Knowledge of seizure type can help shape safety decisions when using lifts i.e. can you use existing lift features (child safety restraints/handlebars) to ensure learner safety, or are extra measures needed (e.g. wearing a harness).
Light Sensitivity	Important consideration on a bright day and if using slopes that could create a flickering light effect e.g., dappled light through trees. Polarized eyewear may help reduce sensitivity. *Only applicable if the learner has photosensitive epilepsy.*
Environment	Altitude, dehydration, tiredness/exhaustion, excitement can all influence a person's seizure pattern. Check how any previous skiing experience has affected them (if relevant).
Medication	Travelling to a different time zone may impact when it needs to be taken.

Notes:

Multiple Sclerosis

A condition that causes damage to the nerves in the central nervous system (brain and spinal cord).

The body's immune system attacks the protective coating around the nerve cells (myelin).

The myelin (sheath) is responsible for allowing impulses/messages to pass between nerve cells.

When this is damaged (scarred) the impulses are disrupted or may not even get through at all.

Symptoms can include, but are not limited to: fatigue, problems with vision, mobility challenges, processing difficulties, bladder and bowel problems, numbness and tingling.

Sclerosis = scarring, *Multiple* = occurring in more than one location.

Cause is unclear.

Types of MS

Progressive	Remissive
Symptoms gradually worsen over time	Also known as 'relapsing-remitting'
No periods of remission, although condition may appear to stabilise for periods of time	Periods of worsening symptoms = relapse
	Periods of relief from symptoms = remission
	Relapses can last from days-months
	Over time, periods of remission may significantly reduce

Critical Considerations

Fatigue, Severity of Symptoms

Fatigue	Could exhibit as either mental or physical fatigue, and its onset may be very sudden. Its effect can be instantaneous be very debilitating. Remaining vigilant to your learner's energy expenditure & having a contingency plan is a must, especially if in an alpine environment. If using seated equipment, consider those that are lower to the ground (less effort required to lean them from side-to-side).
Symptom Severity	Your learner may not experience the same level of ability each session depending on the severity of their symptoms at the time. This difference could be physical or cognitive. You may find that an ambulant learner may sometimes need to learn in seated equipment, and that those who habitually use seated equipment may need to adjust their set up depending on their ability on the day.
Notes:	

Muscular Dystrophy

Is a progressive, genetic condition which means it gets worse over time.
It affects the body's muscles and causes them to weaken and degenerate.
There are many different types of MD which can differ in severity.
The heart and muscles used for breathing may eventually be affected, in which case the condition becomes life-threatening.
There are **many** different types of Muscular Dystrophy and muscle wasting conditions (50+).
Consider the impact that the different types of MD may have on your learner (e.g. life-expectancy) and adjust your lesson plan accordingly (e.g. deliver more of an 'experience' rather than a 'lesson').

Some commonly encountered types of Muscular Dystrophy

Duchenne	Muscles around pelvis and thighs usually affected first, followed by the heart, intercostal muscles (between the ribs), and diaphragm. Noticeable symptoms from ages 1-3 and likely to need a wheelchair by age 12. Life expectancy <30
Becker	Affects similar areas of the body to Duchenne, but symptoms are generally less severe and progress more slowly.
Limb-girdle	Affects the big muscle groups at the base of the arms and legs

Critical Considerations

Poor Muscle Tone, Loose Joints

Poor Muscle Tone	Care must be taken to protect the learner as they will be at increased risk of dislocation. Exercise caution after a fall to ensure limbs are not pulled when trying to help them up, and reinforce safe falling procedure (i.e. not extending arms/hands)
Loose Joints	Consider the risks associated with certain equipment (e.g. hand-held outriggers) as the learner's safety must take priority.

Notes:

Spina Bifida

Is a congenital condition that affects the spinal column (vertebrae and spinal cord).

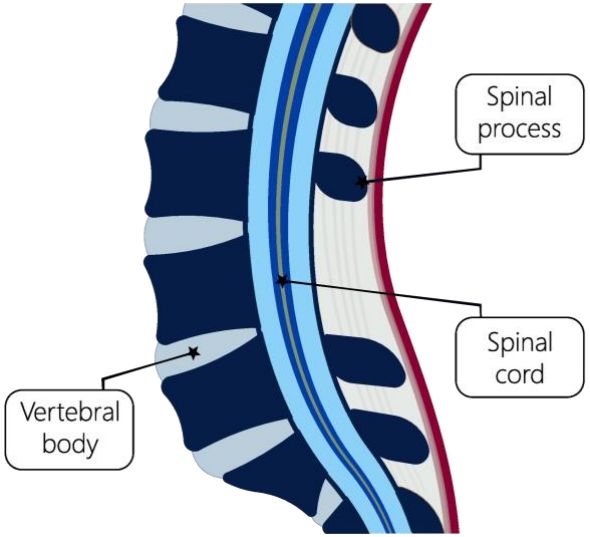
It occurs when the spinal column does not develop properly, leaving a gap or protrusion in the spine.

Damage to the spinal cord may also occur which may affect continence/mobility.

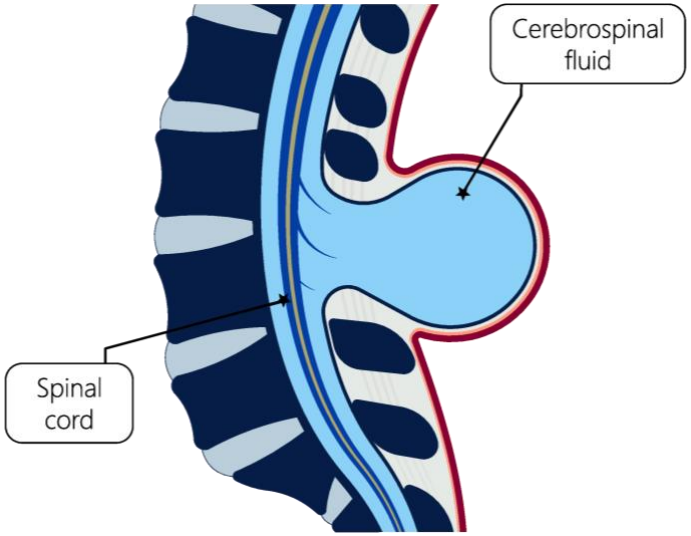
The severity of the condition will vary from person to person depending on where on the spine is affected, size of the affected area, and the type of Spina Bifida they have.

Spinal curvature may also be present.

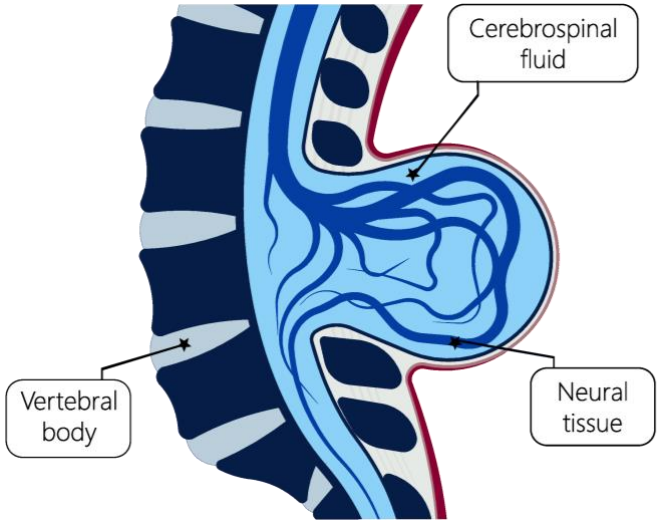
Examples of the different ways Spina Bifida can form:



1 or more vertebrae has not formed properly. Gap in the spine is very small and may even go unnoticed.

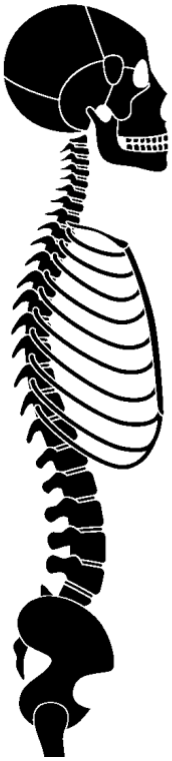


Protective membrane around the spinal cord has pushed out through the vertebral gap and formed a sac/cyst – the spinal cord is not affected.

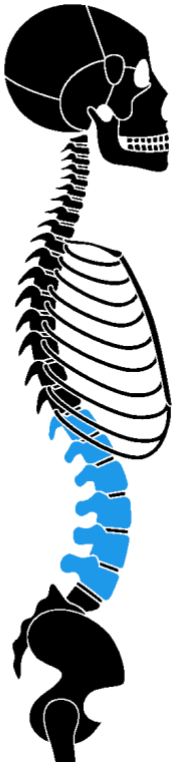


Spinal cord and protective membrane have pushed out through the vertebral gap and formed a sac/cyst – the spinal cord is damaged.

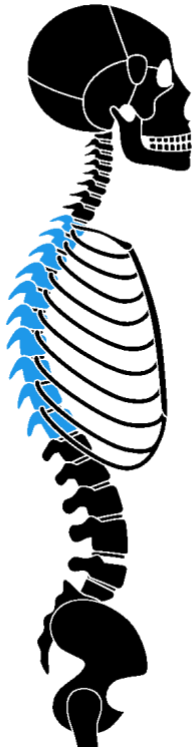
Examples of types of spinal curvature:



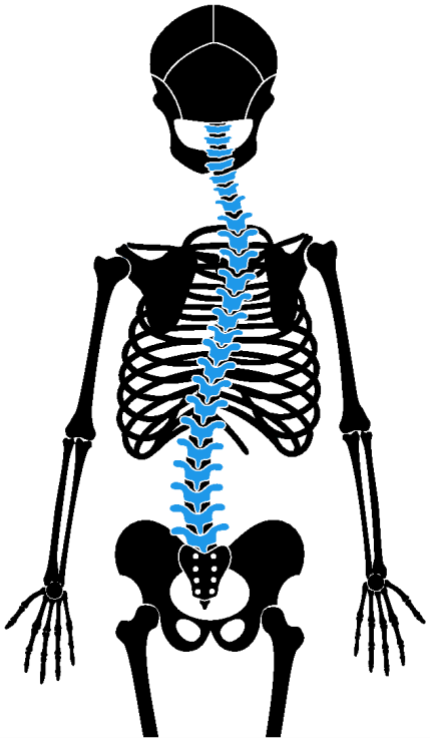
Neutral spine



Lordosis



Kyphosis



Scoliosis
(may only affect part of the spine)

Critical Considerations

Hydrocephalus, Spinal Rods, Catheter, Latex Allergy

Hyrdocephalus & Shunt	Hydrocephalus is a build up of cerebrospinal fluid (CSF) on the brain which occurs when it is unable to drain properly (due to the nature of Spina Bifida). If your learner has hydrocephalus they will most likely have a **shunt** fitted to drain and divert the fluid away from the brain. Care must be taken when fitting a helmet to ensure a safe fit, and to avoid pressing on the shunt causing a blockage.

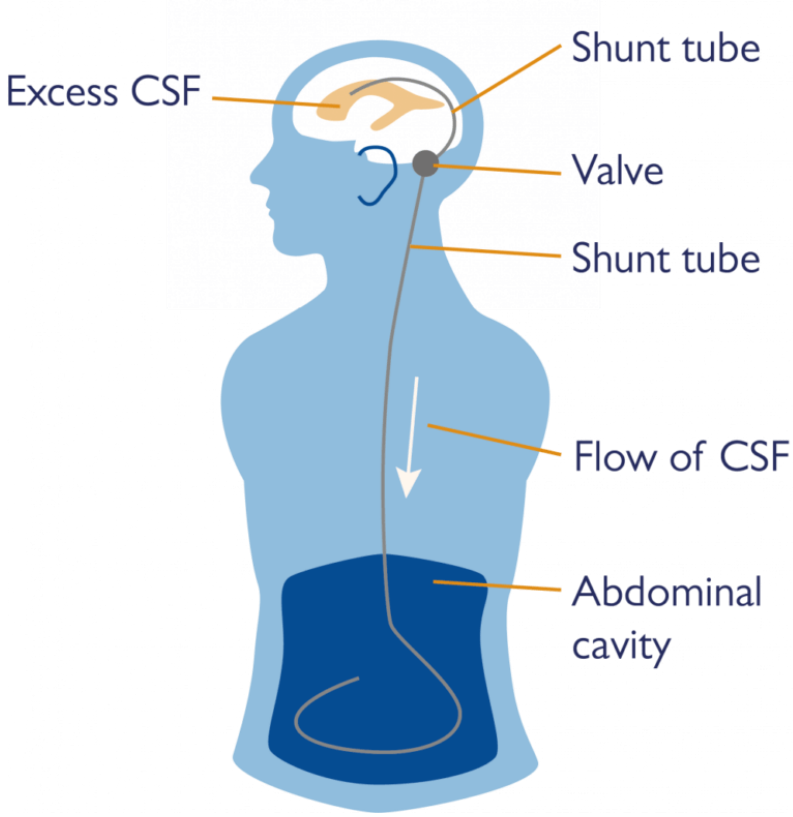


Image © TheHearingClinic.co.uk

Spinal Rods	The learner may have had these fitted to support the spine. If they have been in place for a long period of time they may become ossified (fused) to the bones within the spine. The section(s) of the spine where they have been fitted will be rigid and have no shock-absorption qualities. Consider any features of a bi-ski that would offer protection to the spine if spinal rods are present.
Catheter	Care must be taken when doing straps up on seated equipment to not trap/block the drainage tube. The collection bag should be kept below waist level to prevent any backflow. Ensure tubing is appropriately insulated to prevent freezing in sub-zero temperatures.
Latex allergy	An allergy may occur as a result of overexposure to surgical/anaesthetic equipment the learner may have been exposed to as a direct result of the multiple surgeries they may have undergone over their lifetime. Individuals with Spina Bifida who catheterize may also be at risk. Take caution when using first aid gloves or forms of adhesive tape.

Notes:

Spinal Cord Injury

Name given to damage of the spinal cord.
Damage to the spinal cord may be complete (fully severed) or incomplete (partially damaged).
The spine is made up of 4 sections, each with a specific number of vertebrae.
The 'level' of injury (lesion) denotes where on the spine (at what level of vertebra) the injury has occurred.
Mobility and function below the level of injury will be compromised/affected.

Categories of spinal cord injury

Quadriplegic / Tetripelgiic	Paralysis present in all four limbs.
	Tetriplegia more commonly used in the UK, has Greek origins. *Quadriplegia commonly used in the States, has Latin (quad) & Greek (plegia) origins.*
Paraplegic	Paralysis affects the lower limbs.
'High'	Injury occurs higher vertically on the spine
'Low'	Injury occurs lower vertically on the spine

Sections of the spine:

Cervical, 'C'

- 7 vertebra, C1-C7
- Nerves in this section manage head control to finger flexion

Thoracic, 'T'

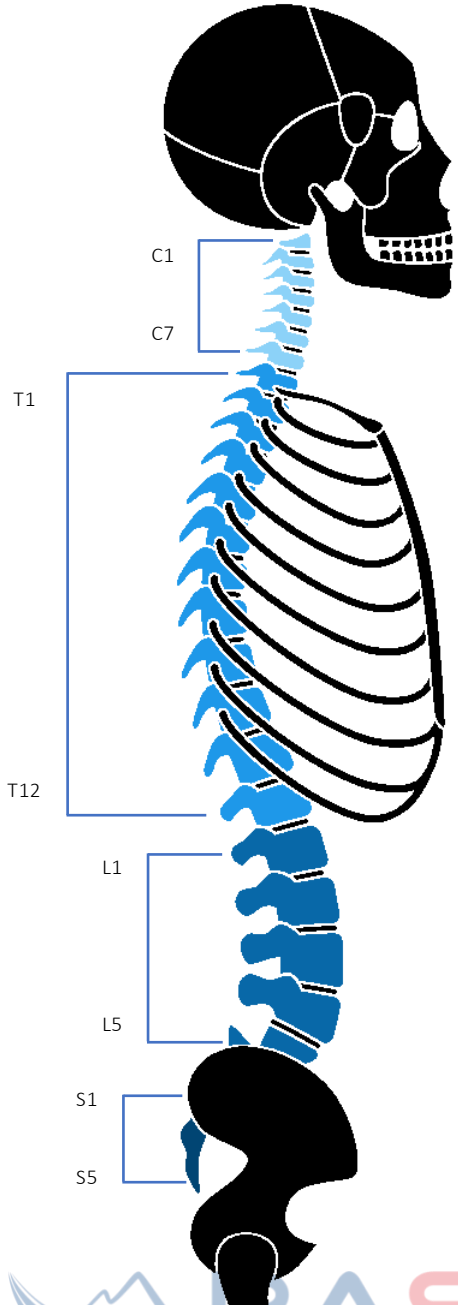
- 12 vertebra, T1-T12
- Nerves in this section manage finger movement to deep breaths

Lumbar, 'L'

- 5 vertebra, L1-L5
- Nerves in this section manage hip flexion to big toe extension

Sacral, 'S'

- 5 fused vertebra, S1-S5 = sacrum
- Nerves in this section manage movement of the feet & ankles to bladder & bowel function



Critical Considerations

Time Since Major Surgery, Pressure Sores, Autonomic Dysreflexia, Thermoregulation, Spinal Rods, Catheter

Time since major surgery	Allow 12 months for full healing, otherwise seek medical clearance.
Pressure Ulcers/Sores	Compromised circulation below the level of the lesion impacts the body's ability to heal effectively. Prolonged pressure on a single area can result in loss of blood supply, leading to damage to the skin and tissue underneath which can take weeks/months to heal depending on severity. Care must be taken to prevent these developing e.g. keep clothing smooth in seated equipment, watch out for phone/keys in pockets, stay vigilant during transfers. Consider using additional padding.
Autonomic Dysreflexia	Occurs when an injury is at **T6 and above**. Causes the blood pressure to suddenly rise in response to a painful stimulus below the level of the lesion. This could lead to seizures, stroke or death. Triggers could include high impact, fall, blocked/frozen catheter, frostbite, developing pressure sore etc. Symptoms include pounding headache, flushed appearance, sweating, sense of impending doom.

Thermoregulation	The body is less able to regulate its temperature below the level of the lesion for both hot and cold environments. Ensure care is taken to adjust layering as the environment dictates and that warm, waterproof footwear is worn.
Spinal Rods	The learner may have had these fitted to support the spine. If they have been in place for a long period of time they may become ossified (fused) to the bones within the spine. The section(s) of the spine where they have been fitted will be rigid and have no shock-absorption qualities. Consider any features of a bi-ski that would offer protection to the spine if spinal rods are present.
Catheter	Care must be taken when doing straps up on seated equipment to not trap/block the drainage tube. The collection bag should be kept below waist level to prevent any backflow. Ensure tubing is appropriately insulated to prevent freezing in sub-zero temperatures.

Notes:

Traumatic Brain Injury

Damage to the brain as a result of:
- Trauma (from impact/loss of oxygen to the brain etc.)
- Disease/Infection
- Stroke

If a result of impact, the injury may be 'open' (e.g. from a bullet) or 'closed' (e.g. concussion).

The learner may experience physical (see hemiplegia), cognitive and/or emotional/behavioural difficulties.

Hemiplegia

A condition that occurs as a result of a brain injury that results in weakness or a degree of paralysis down one side of the body.

A person may experience weakness, stiffness, or reduced control on the affected side.

Left hemiplegia – ***left*** side of the body is affected, *right side of the brain is damaged*

Right hemiplegia – ***right*** side of the body is affected, *left side of the brain is damaged*

The severity of the condition will vary from person to person.

An incomplete spinal cord injury in the cervical region (C1-C7) may also cause the physical characteristics of hemiplegia to occur.

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*Some examples of cognitive and behavioural difficulties associated with traumatic brain injury**

Aphasia	Difficulty expressing (expressive) & interpreting (receptive) spoken language
Concentration	Completing tasks can be difficult and may be abandoned halfway through
Disinhibition/ Impulsiveness	Reduction in behaviour regulation. May result in socially inappropriate behaviour or acting without thinking about/realising the consequences.
Dysarthria	Difficulty articulating speech (control of muscles involved with speech are affected)
Irritability	May manifest as impatience, intolerance of mistakes, physical/verbal outburst.
Reasoning	May struggle to think logically, understand rules or follow discussions.
Repetition	May return to the same topic or be unable to move on from it.
Memory	Short-term memory most noticeably affected. New learning may be affected, but previously learned skills may remain intact.
Spatial Neglect *AKA visual neglect, spatial inattention visual inattention*	Most commonly affects a person's left side (left spatial neglect). It is a deficit in attention and awareness to one side of the visual field due to damage in the part of the brain that processes sight.
Visual Field Defect	May affect one or both eyes and means that an area or side of a person's field of vision has been impacted in some way. They will still have attention and awareness of the impacted side, but will experience reduced sight.

**You do not need to memorise this list, however you will need to be able to identify some examples for the written paper.*

Critical Considerations

Visual Field Defect, Spatial Neglect, Seizures, Hydrocephalus & Shunt

Visual Field Defect *hemiplegia*	Learner may have reduced spatial awareness or blind spots. Establish their functioning field of vision and strive to stay within this, or maintain verbal communication when it is not possible to do so.
Spatial Neglect *hemiplegia*	Learner may also have reduced physical ability on the affected side so may require asymmetric support from equipment (e.g. type of outriggers used). If you end up on their neglected side you may become 'invisible' to them so staying within their functional sight is important.
Seizures *Traumatic Brain Injury*	See epilepsy i.e. *History & Pattern, Light Sensitivity, Environment, Medication*
Hydrocephalus & Shunt *Traumatic Brain Injury*	Care must be taken when fitting a helmet to ensure a secure fit, and to avoid pressing on the shunt causing a blockage.
Incomplete Skull *Traumatic Brain Injury*	A fragment of skull may have been temporarily removed to allow brain swelling to reduce. If medically cleared to participate in snowsports, learner must wear a helmet and ensure scalp is kept warm (e.g. beanie under helmet) to protect and insulate brain.

Notes:

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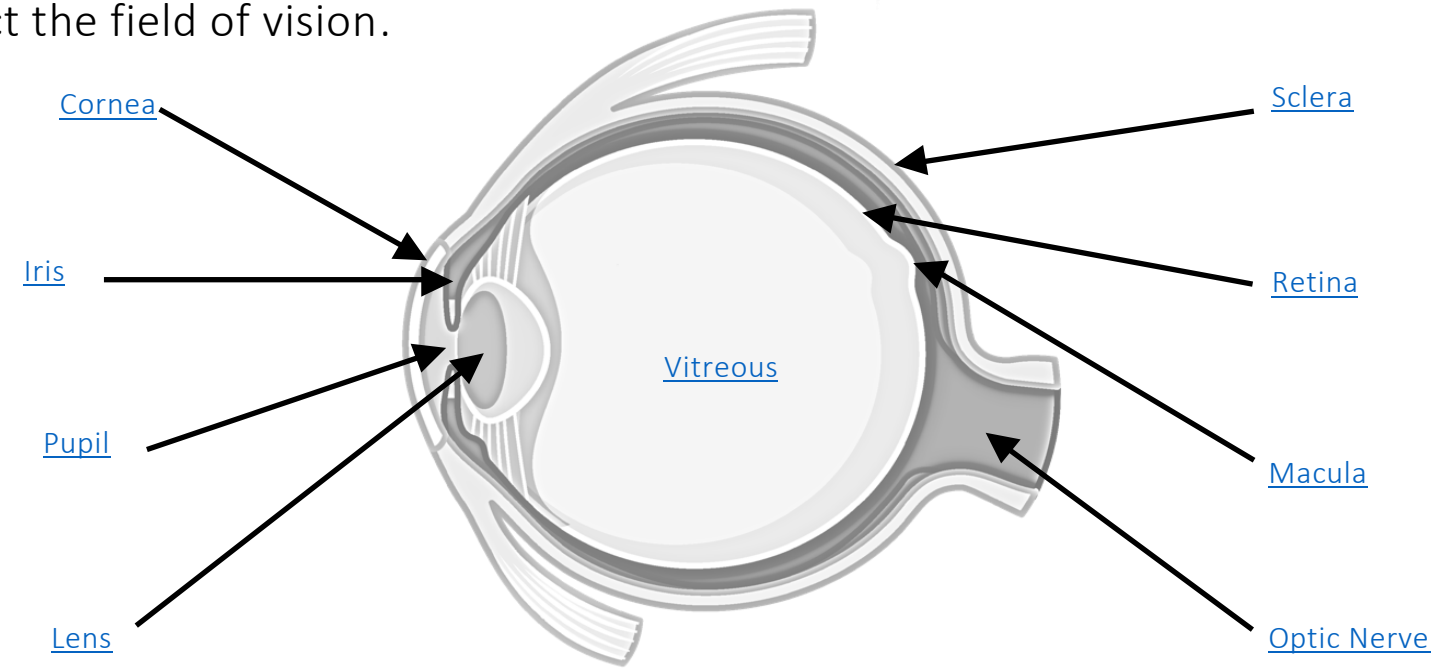
Visual Impairment

Jump to: 'Parts of the Eye', 'Damage Guide', 'Common Conditions', 'Other Conditions'

We consider a visual impairment to be damage to a part, or parts of the eye(s) that affects vision to a point that it cannot be corrected with glasses alone.

The spectrum of visual impairments is vast and more complex than we can comprehensively cover within the parameters of this course so we have chosen to cover a small number of visual impairments that we tend to encounter in adaptive snowsports.

If we understand the function of the eye we can understand how damage to different parts of the eye can impact the field of vision.



Click here for a visual representation of the eye.

Please note that this only offers a brief overview of content covered - we **strongly** recommend also reading the content in this guide

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Parts of the Eye

Jump to: 'Damage Guide', 'Common Conditions', 'Other Conditions'

Part of the eye	What is it?	What does it do?
Cornea	The front part of the outer coating (sclera) of the eye.	Protects the eye, and bends (refracts) light as it enters the eye and helps the eye to focus.
Lens	A transparent layer behind the iris.	Focuses the light that enters the eye through the pupil by changing its (the lens) shape.
Iris	The opaque, pigmented area of the eye that determines eye colour.	Its muscles control the amount of light that enters the eye, and therefore the size of the pupil, by relaxing (dark, environments, more light = larger pupil) or contracting (bright environments, less light = smaller pupil).
Pupil	The small opening at the front of the eye.	Allows light to enter the eye and be focussed on the retina.

Retina	The lining at the back of the eye.	Processes the light that enters the eye using photoreceptor cells called 'rods' and 'cones'. Rods are sensitive to low light, and greyscale. Cones are sensitive to colours.
Macula	The most sensitive part of the retina.	It is responsible for our central vision.
Sclera	The tough outer coat of the eye (the whites of your eyes).	Provides structure and safety for the inner elements of the eye.
Vitreous	Gel-like substance that fills the eye.	Helps the eye maintain its spherical shape and pass information to the retina.
Optic Nerve	Bundle of sensory neurons at the back of the eye.	Carries impulses from the eye to the brain.
Central Nervous System: eye control	Areas of the brain which controls vision – the Occipital lobe.	Processes and interprets information carried from the retina to the brain by the optic nerve. Controls eye movements and focusing.

Jump to Table of Contents

Parts of the Eye – damage guide

Jump to: 'Parts of the Eye', 'Common Conditions', 'Other Conditions'

Part of the eye	What happens if it is damaged or doesn't work properly?
Cornea	The cornea is usually able to heal itself from minor scratches or injuries, but if scarring occurs from deeper injuries, vision can become impaired due to a 'haze' forming on the cornea.
Lens	The most common problem with the lens is cataracts which occur when the lens cells lose their transparency resulting in cloudy vision, and light entering the eye being blocked.
Iris	If the iris becomes damaged or inflamed it will no longer be able to open and close properly to control the amount of light that enters the eye. If too much light enters the eye, the retina can become damaged, leading to blurred vision, or complete blindness.
Pupil	The pupil is a 'hole' at the front of the eye - any injuries or inflammation in this area will affect the iris, rather than the pupil.
Retina	Depending on how damage to the retina occurs, vision can be affected in the following ways: - Full blindness (e.g. from retinal detachment) - Loss of peripheral vision (e.g. from Retinitis Pigmentosa) - Night blindness (e.g. from Retinitis Pigmentosa) - Floating spots (e.g. from retinopathy)

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Macula	Damage to the cells in the macula results in blurring or distortion of the central vision. This will the progress to the blurred area becoming larger, or blank spots developing in the central vision.
Sclera	Damage to the sclera can lead to inflammation and severe pain, vision loss, and even lead to further complications such as corneal inflammation and cataracts.
Vitreous	If the vitreous is damaged, most commonly through age-related, or degenerative conditions, acute detachment and retraction from the retina can occur. This causes 'floating spots' (floaters) that can obstruct the vision which, whilst irritating, do not generally indicate any serious health issues.
Optic Nerve	Damage to the optic nerve is irreversible as the nerve fibres within it are unable to regenerate. When damage occurs, symptoms can include blurring and blind spots, distorted vision, reduced colour vision, and pain.
Central Nervous System: eye control	Although the eye and optic nerve are intact, damage to the occipital lobe by injury or disease may lead to partial or total loss of vision and blurred or double vision, or even spatial neglect.

Commonly Encountered Conditions

Jump to: 'Parts of the Eye', 'Damage Guide', 'Other Conditions'

Condition	Description
Retinal Detachment (Retina)	Occurs when the retina detaches from the back of the eye (from injury or as part of the ageing process). As a result the retina loses its oxygen supply and access to nutrients and will lead to full blindness if not treated urgently. Surgery is usually very successful but improvements to vision can take weeks-months to manifest. Central or detailed vision may be permanently lost/affected.
Retinopathy (Retina)	A disease of the retina that affects the tiny blood vessels in the retina, e.g: diabetic retinopathy (caused by persistent high blood sugar - the sugar blocks the tiny blood vessels to/in the retina) hypertensive retinopathy (due to persistent high blood pressure) 'Floating spots' in the vision is a common early symptom. If not treated full sight loss can occur - the damage done cannot be repaired but it is possible to prevent further damage with appropriate treatment.
Retinitis Pigmentosa (Retina)	Is a genetic condition that causes a breakdown and loss of cells in the retina This results in loss of peripheral vision and difficulty in seeing at night (night blindness).

Macula Degeneration (Macula)	Degeneration of the macula is most commonly associated with those in their 50s-60s+ (age- related macula degeneration) but can occur in younger generations (early onset macular degeneration) The resulting damage to the cells in the macula leads to blurring/distortion in the central vision. Treatment can cause slight improvements to sight and slow the rate of progression, however some forms of macula degeneration are untreatable.
Cataracts (Lens)	Occurs when lens cells loss their transparency making vision cloudy, and light entering the eye becomes blocked. Symptoms can include night blindness, possibility of double vision, sensitivity to light and glare
Glaucoma (Optic Nerve)	Caused by a build up of pressure in the vitreous. Causes initial loss of peripheral vision which can lead to full blindess.
Optic Neuropathy (Optic Nerve)	'A general term for damage to the optic nerve cause by viral infection, neurological conditions (such as MS), or trauma (traumatic optic neuropathy) Damage to the optic nerve is irreversible as the nerve fibres within it are unable to regenerate. Symptoms of optic neuropathy can include blurring, blind spots, distorted vision, reduced colour vision, and pain.

Other Conditions

Jump to: 'Parts of the Eye', 'Damage Guide', 'Common Conditions'

Condition	Description
Albinism	A condition that affects (reduces) the body's production of melanin which is responsible for the colour of our hair, skin and eyes. The reduction in melanin production affects the development of the retina and may result in short/long-sightedness, nystagmus, astigmatism, or photophobia (sensitivity to light).
Astigmatism	When the eye is more 'rugby ball' shaped than spherical which can cause blurred vision, headaches, eye strain, or a 'lazy eye' if only present in one eye.
Nystagmus	An involuntary, rhythmical and repetitive movement of the eyes - they may move together or independently of each other. The amount a person's vision is affected by nystagmus will vary but it is likely that they will have some good vision but may struggle with depth perception, distances, and height.
Strabismus	A misalignment of the eyes where they do not always work together as a pair and may point in different directions. The misalignment may be constant or intermittent, and when focussing on an object, the eye that is focussing may alternate and can result in double vision.

Critical Considerations

Blind spots etc., Light Sensitivity, Colour Blindness, Emergency 'STOP' word.

Blind Spots, loss of Peripheral or Central Vision	Learner may have reduced spatial awareness or blind spots i.e. there may be certain angles when they cannot see you/obstacles/hazards. Establish their functioning field of vision and strive to stay within this at all times, or maintain verbal communication when it is not possible to do so. If a learner has loss of central vision, you should stay within their peripheral vision.
Notes:	
Sensitivity to bright lights	Bright sunlight reflecting off the snow (flaring) can cause temporary further visual impairment (blurring). The flaring light immediately causes a temporary blindness whilst your eyes take time to adjust, or you reach to shield your eyes from the sun.
Notes:	

Colour Blindness	Occurs when the 'cones' (process colour) in the retina do not function properly. Learner will be unable to determine the colour of piste markers/signs, or other coloured 'markers' e.g. 'the man wearing the neon orange helmet'. Instead, use distances that can be measured, or piste names e.g. ' we will stop seven piste markers down' or ' ski down five turns then stop'.
Notes:	
Emergency 'STOP'word	This is vital. An emergency word must be established to ensure that when it is said, the learner stops themselves by any means possible. It is to be used in an emergency situation when there is an immediate danger that cannot be navigated around or avoided e.g. learner getting too close the edge of the piste, or a collision with a piste basher is about to happen etc. This word could be anything from 'foxtrot' to 'abort', but should not be a word that is likely to come up in normal conversation or 'stop'.
Notes:	

Resources

The websites listed below have been used to create this resource. Should members wish to pursue further reading on the disabilities and conditions included in this guide, we encourage them to start with the following:

Disability-Specific

Back Up Trust – *Spinal Cord Injury*
British & Irish Orthoptic Society – *Traumatic Brain Injury (Spatial Neglect)*
British & Irish Orthoptic Society – *Traumatic Brain Injury (Visual Field Defect)*
Down Syndrome Association – *Down Syndrome*
Facing Disability – *Spinal Cord Injury*
Headway – *Traumatic Brain Injury*
Mencap – *Learning Disabilities*
MS Society – *Multiple Sclerosis*
MS Trust – *Multiple Sclerosis*
Muscular Dystrophy UK – *Muscular Dystrophy*
SBH Scotland – *Spina Bifida*
Shine – *Spina Bifida*
Spinal Injuries Association – *Spinal Cord Injury*

General

CDC
MayoClinic
NHS
Scope
Web MD

Whilst we have strived to make this resource as accurate and relevant as possible, should you dispute the content, or feel that we have made an error, please contact basi@basi.org.uk with your concerns and they will be forwarded to the responsible member of the BASI team.