



LEARNING TO CYCLE WITH DISABILITY

CYCLING WITH A DISABILITY



Duration: 30-60 min lessons (multiple as required)



Location: Outdoor/Indoor (gym or suitable area)



Lesson Type: Practical



Equipment: Bicycles, helmets, marking cones, whistle

The trainer will focus equally on teaching the trainee and on guiding their assistant, the individual who will work in tandem with the trainee in sessions. Having an accompanying individual who will take a physically active role in the learning process is key to learning for the trainee, and will also ensure the trainee will have informed assistance between sessions which promotes optimal learning and progress towards independent cycling.

AIMS & OUTCOMES



This session employs a biopsychosocial model (NOTE 1 *) of disability and seeks to maximise an individual's potential while supporting progress with any necessary equipment adjustments and with inventive, inclusive approaches to training methods and the training environment. It is important that a trainer assesses an individual in person themselves, as in some cases, others may make assumptions about an individual's ability to cycle which limit that individual's potential.

A trainer's focus in assessment should be on the individual

- Discussing their goals for cycling
- Finding out what teaching approach will best suit them
- Exploring their needs and requirements
- Understanding their physical capability (e.g. sitting, walking)

In all instances, trainers are encouraged to take a unique approach to each individual and their particular needs by, at all times, exploring the goals of the individual and ways to work towards these.





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The practical aim of this session is to introduce a trainee with a disability, who hasn't cycled independently before, to independent usage of a bicycle. Trainees will learn how to mount and dismount while keeping control of the bike, will be guided on optimal position (seated, body, arms, legs and head) and will progress, in turn, towards moving without pedals, starting, balancing, pedalling and stopping, the core bike handling skills.

By the end of a number of sessions, depending on the learning curve of the individual, the trainee will be able to;

- Demonstrate cycling skills appropriate to the individual
- Demonstrate cycling skills according to their own learning curve
- Experience cycling as an enjoyable activity to the fullest of their ability
- Experience cycling as an independent activity to the fullest of their ability
- Experience cycling as an empowering activity which facilitates independence and increases self esteem
- Experience cycling as an activity which offers low impact fitness and health benefits
- Experience cycling as a group activity, which reflects and promotes confidence in the individual's ability
- Demonstrate an ability to safely mount and dismount a bike while preventing it from moving
- Demonstrate correct seated position on the bike
- Demonstrate a walking motion while seated on the bike (STRIDING), as the first stage of movement
- Demonstrate increasing length and speed of stride as the next stage of movement
- Demonstrate the ability to keep both feet off the ground for five seconds or more (GLIDING)
- Demonstrate the ability to keep the bike going in a straight line, while feet are off the ground
- Demonstrate correct starting position
- Demonstrate correct start
- Demonstrate cycling in a straight line
- Demonstrate correct stopping

NOTE 1*

The biopsychosocial approach to disability views disability as arising from a combination of factors at the physical, emotional and environmental levels.

This approach or model takes the focus beyond the individual and addresses issues that interact to affect the ability of the individual to maintain as high a level of health and wellbeing as possible and to function within society. This approach is consistent with the revised definitions of disability of the World Health Organisation (WHO). It recognises that disabilities are often due to illness or injury and does not dismiss the importance of the impact of biological, emotional and environmental issues on health, well-being, and function in society.

See the following for more information www.who.int/classifications/icf/training/icfbeginnersguide.pdf



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DELIVERY METHOD



The first step in the training process will be to **assess**

- the **balance, co-ordination** and **muscle strength** of the trainee
- the individual's ability to understand and follow instruction and to proceed from this point.

It is important that **appropriate equipment** is available from the outset to facilitate the trainee's learning.

This may mean

- making appropriate **adaptations to equipment** (e.g. adjusting brake lever tension to assist an individual's grip and pull)
- making recommendations with regard to **accessing specific equipment** to facilitate cycling (eg a semi-recumbent bike) before training is due to commence

Setting up the bicycle

Before a trainee gets on the bike, the trainer will assist them to check that the bike is the right fit, and where appropriate, will have them make adjustments themselves;

- The **saddle** will be **lower** than a standard cycling position, to allow the trainee to **stride** with **both feet** comfortably **reaching the ground**
- On the other hand, the saddle should not be so low that the trainee's legs are bent, rather than flexed, as this will **hinder** progress towards the stage at which the trainee is ready to pedal (saddle height should be increased by small degrees as confidence grows and appropriately to learning stage)
- The **saddle** will need to be **parallel** to the ground
- The **handlebars** will need to be at a **height and reach** that suits the trainee, holding a **comfortable upright position** when striding
- The trainer may need to make **adjustments** to a bike that are **specific** to an individual and should be conscious, at all times, of the particular **needs of each individual**
 - adjusting brakes for someone who has limited pulling strength
 - adjusting front brake tension to prevent a trainee being pitched forward by accidentally pulling the brakes too firmly

Environment

The trainer will also need to assist the trainee to **assess the environment**;

- The **needs** of each **individual** should be considered and **adjustments** to the **working area** should be made accordingly, taking account of **features** such as
 - sloping **ground surfaces**, gutters, shores and kerbs
 - **surface grip**
 - ~ gravel
 - ~ stones
 - ~ leaves
 - all of the above may be impacted negatively by weather such as rain or frost
 - **access points** such as doors and gates
 - **yard furniture**
 - ~ poles
 - ~ shelters
 - ~ nets
 - **walls**
 - **corners** etc.
- individuals with **limited mobility** or **sensory disability** may be more affected by **weather**
 - impact on the **length of a session**
 - suitability of **indoor or outdoor** venues
- For some trainees, a **busy environment which overstimulates** may
 - **hinder progress**
 - **prove upsetting**
- Some individuals may require **highly structured** and **recognisable environments**
 - become **attached to a particular piece of equipment or bike**



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Interaction and communication

The trainer should also be conscious of **interaction and communication**;

- a trainer should always **communicate directly** with a **trainee who has a physical or intellectual disability**, or a **trainee who is on the autistic spectrum** giving
 - **concise, clear** directions
 - with **clear signals** and **demonstrations** to support these
 - **repeated** as many times **as appropriate** to promote understanding
 - **readiness to break** when the trainee indicates they wish to or feels uncomfortable with an aspect of training
- Always present **positive, open body language**
- a trainer should always **give time to respond**
 - **Never rush** someone for a response
 - **Don't speak over** someone speaking, even in an attempt to assist
 - Ask someone to repeat if needed, **don't guess**, then repeat back for confirmation
- a trainer should always communicate with a trainee with full **respect for their age** – treat **adults as adults** without patronising
- a trainer also needs to be aware of **cultural aspects of interaction**
 - are there issues for individuals relating to **eye contact**?
 - are there issues relating to **touch and contact**?
- a trainer should **place the individual at the centre of communication** taking a perspective that disability is to be factored into the learning process but is not a 'sickness' that defines it or them
- a trainer should always be aware that each individual experiences their disability differently and all **training** should be approached on an individualised basis and on the basis of a person's **ABILITY** rather than a particular disability
- a trainer should
 - **progress** at the **pace of each individual**
 - focus on **one teaching point at a time**, until the **outcome is achieved**
 - give **feedback** regularly to both the trainee and whoever is working with them
- **Positive framing** is also very significant – telling a trainee **what to do**, rather than what not to do
- It is hugely important that the trainer works with the **trainee on his/her goals**
- A trainer must be aware of particular **communication techniques** for individuals and should communicate in the way the individual is comfortable e.g. **verbal, non-verbal, signs and gestures**
 - someone who is **deaf or hard of hearing**
 - ~ will require a **visual stimulus back up** (a flag system)
 - ~ if a trainee can **lip read**, it is hugely important that they **can clearly and directly see the trainer's face at all times**
 - ~ the trainer will need to **face the trainee** when talking to facilitate
 - ~ the trainer should ensure their face is well lit and not in shadow – face the sun
 - someone who is **blind or vision impaired**
 - ~ may require an **aural** and/or agreed **touch system back up**
 - ~ an agreed **key word code**
 - ~ an agreed **whistle code** (if any distance or external sound factors involved)
 - ~ **hand contact code** – hand to the shoulder, arm or back for agreed pointers
- Other ways to **clarify learning points** include
 - **Demonstration**, so that the trainee can see what is to be done and copy, leading to repetition and reinforcement of a particular action
 - Breakdown a skill into **smaller parts** to be learned separately and built to a whole
 - images (**pictures and symbols**)
 - **trigger words** – the same words used to relate to the actions to encourage consistency
 - **Social stories** – what to expect of the activity in its usual setting eg "when cycling round the park where others are cycling, cycle in the same direction and don't get too close to other riders"
 - **Film of techniques**
 - **Makaton Symbols** – Makaton is a language programme using signs and symbols to help people to communicate. It is designed to support spoken language and the signs and symbols are used with speech, in spoken word order.



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Interaction and communication

- A trainer also needs to communicate with someone who is **assisting the trainee**
 - Clearly defining their **role** and how they can best **assist the learning process**
 - Being especially clear about **appropriate levels of support** and highlighting where intervention can hinder the learning process
 - ~ Supporting the weight of someone who is trying to achieve **balance**
 - ~ Holding or moving the handlebars for someone who is learning to **control** and steer a bike
 - ~ Holding the saddle of someone who is working on **starting independently**
 - **Changing** levels of support to **match progress** through the learning process
 - ~ **Walking or jogging** at the striding stage
 - ~ Taking a **firm grip of clothing** at the trainee's back (jacket/jumper) at the balancing stage
 - ~ Moving to a lesser **grip** as balancing improves and the trainee can stop safely
 - ~ Arriving at a reminder periodic **tap to the shoulder** when a trainee has achieved independent cycling but still needs prompts to keep balance and control
 - ~ Using **verbal prompts** such as
 - "Sit up" to encourage cycling body position on the bike
 - "Push down" to prompt pedalling motion
 - "Foot down" when brakes are pulled and prior to full stop
- someone with a **physical or intellectual disability** may need **assistance**
 - mounting and dismounting
 - pulling brakes
 - moving on the bike
 - maintaining balancebut at all stages this assistance should be directed by the participant with **respect** for their preferences, age and goals and should be given by their assistant
- someone with a **sensory disability** or someone with **autistic spectrum disorder** may have considerations linked to
 - **touch** – **physical manipulation** may not be possible
 - **sound** – excessive or even moderate background noise may be problematic, as may the volume of the trainer's voice
 - **weather** – sensitivity to water (rain), wind or sunlight

Class structure is very important;

- Training should be based around the **TREE** philosophy (**NOTE 2***) – appropriate adaptations to
 - **Training style**
 - **Rules** of operation
 - **Equipment** and adaptations
 - **Environment** and making this more conducive to individual learning

NOTE 2*

The Inclusion Spectrum Framework (ISF), incorporating the TREE principle, developed by Ken Black and Pam Stevenson 2011

The ISF shows various ways in which sport and physical activities can be presented and modified to ensure that every child is able to join in, learn and experience a certain level of achievement and success. It suggests four main ways of presenting sport and physical activity:

1. Open Activity: Everyone can play without the need to modify the activity.
2. Change to Include Activity: Everyone does the same activity but a number of changes are made to support all children taking part. This method incorporates the widely known TREE model.
3. Ability Groups Activity: Children are grouped according to ability and do the same activity or a modified version which meets their needs.
4. Separate Activity: Some participants work separately for a given time to develop a number of skills that will help them be more successful when they re-join the group.
5. Adapted Physical Activity/Disability Sport: Bring in activities, games or sports that are based on adapted physical activity or disability sport programmes.



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- It is **generally** best to have someone who is committed to **assisting each trainee** and will take responsibility for supporting **regular practice between sessions** – it is crucial that this individual understands the steps they are helping the trainee to achieve
- This person should also act as a “**spotter**”, so that in a group session, trainees don’t collide
- **Zoning** is another effective way of avoiding possible collisions – here, trainees who are at different stages in their progress are grouped in **different sections of the training area** and don’t risk entering the path of someone travelling at a different speed
- A trainer needs to be aware of the benefits of both **one-to-one** and **group** sessions
 - Teaching someone **separately** from their established group (eg class) can lead to a **sense of exclusion**
 - On the other hand, some individuals may find the level of activity in a group intimidating and upsetting and may prefer a **one-to-one** scenario where **concentration** is easier
 - **Age** may also be a factor, with individuals of different ages feeling **embarrassed** to be with younger learners
- A trainer should be aware that, at times, it may be appropriate for the trainer to assist a trainee to achieve an action by **physical manipulation**, eg pushing pedals. This exercise should be performed where the person accompanying the trainee can clearly see and should be done only with the agreement and within the comfort zone of the trainee
 - Have the learner stand with the front of their foot on the trainer's toes and resist the trainer's upward push as an introduction to pedalling pressure
 - A fixed bike-training device can be beneficial by giving support to the trainee on the bike while allowing them to perform the cycling action, assisted by the trainerWith the agreement of the person learning the trainer may;
 - ~ Push the learner's foot, in contact with the pedal, through the full pedal cycle, by holding the foot in position

- ~ Hold the foot in place on the downstroke (pushing phase), easing hold on the upstroke
- ~ When an effective pedalling motion is achieved, apply gentle pressure to the knee when, and if, reinforcement of a continuous pedalling action is needed.

TECHNIQUES



Pre-checks

- ✓ Bicycle Check
- ✓ Helmet Check
- ✓ Saddle Height
- ✓ Clothes Check
- ✓ Conditions Check



Trainers should encourage the bicycle pre-checks and should assist each trainee and those working with them to perform these checks for their safety.



LEARNING TO CYCLE WITH DISABILITY

SUGGESTED PRACTICES



- If the trainee is in any way **nervous**, or has any **mobility issues** (dyspraxia, cerebral palsy etc.) it is best to **remove the pedals** from a standard bike, or to use a balance bike or a bike with **folding pedals**.
- The trainee should be taught the **different functions of the brakes** before getting on the bike
 - **Back brake** to slow
 - **Front brake** to stop fully
 - Linking the verbal instruction **"STOP"** to brake action
 - Practising a **walking stop**

Brake Check

Moving the bike along with the hands positioned ready to pull the brakes



Pulling only the back brake causes the back wheel to skid, but will not stop the bike straight away



Pulling only the front brake will cause the front wheel to stop and the back wheel to lift off the ground



Pulling both brakes, back just before the front, should stop the bike smoothly and quickly

Getting on the bike

- **Both hands on the handlebars**, hold the brakes, to prevent bike roll.
 - **Getting on from the left**, lean the bicycle slightly **towards the left leg** and swing the **right leg over the back wheel**.
 - **Getting on from the right**, lean the bicycle slightly **towards the right leg** and swing the **left leg over the back wheel**.
 - If this is physically difficult, lower the saddle to allow walking onto the bike from back to front and then sitting
- When **sitting** on the saddle, the trainee
 - needs to be able to **reach the ground** with feet flat and
 - with **knees flexed** (initially this position will look too low, but is needed to facilitate confidence in balance at the outset)
 - if the saddle is too high side-to-side shifting will cause discomfort and hinder progress to the scooting movement

Moving

- Staying **seated and looking straight ahead** while **sitting upright**, the trainee should **move in a walking motion with alternative feet**, looking to **build up speed** and to feel the sensation of the **moving bike and balance**
 - keep **long, but relaxed arms**
 - ~ bent arms will make the handlebars swing from side to side
 - ~ this will make the trainee feel unbalanced
 - the **pace is set by the learner** rather than the assistant walking beside them
 - ~ if the assistant is moving faster, the learner may stand out of the saddle to gain speed
- Once the trainee is **moving smoothly** (balancing and gliding) in the seated position
 - **feet are staying off the ground** consistently for 5 seconds or so at a time
 - the bike is travelling in a straight line
- the **pedals can be reintroduced**



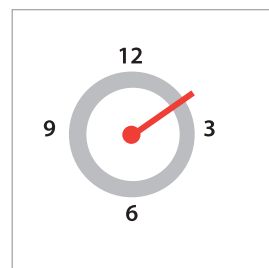
LEARNING TO CYCLE WITH DISABILITY

Starting off and keeping control of the bike

The start is critical in the learning process

- Keep **one foot firmly on the ground, with the weight leaning to this foot**
- Place the sole of the **pushing foot on the pedal**, in the **2 O'Clock Pedal Ready** position, ready to push down and quickly away
- Generally, **start from a sitting position**.
- **Push strongly** to bring the other pedal up, place this foot on the other pedal **without looking down**
- Keep the **head up and the eyes forward**, not looking down at the pedals.
- Press the **ball of the free foot** firmly to the pedal keeping the toes pointing forward in the line of travel.
- Keep **looking in the direction of travel**, keep the **arms long** but relaxed, **sit upright** and push the pedals with a **steady rhythm**.
- Keep feet on the pedals through the **whole circle**.
- This may take some **practice** to master.

**Pedal Ready or
2 O'Clock Start Position**



Getting used to the movement of the bike

- Moving the bike
 - **Arms long**, but flexed
 - **Looking** in the direction of travel
 - **Pushing pedals** down alternatively as they come up
- Initially the trainee may try to compensate for the bike's movement by leaning in the opposite direction to the way the bike is leaning
- They may also try to compensate by leaning in the direction the bike is leaning
- The trainer needs to emphasise the goal of remaining centred with head still, eyes ahead and little or no movement from the hips up
- Any lean of the bike should be countered by gently turning the handlebars in the same direction
- In time and with practice, these movements will become less pronounced as the trainee gets used to the movement of the bike and how it balances

Guiding a trainee by **holding clothing** at the back during this balance and steering stage can be a very helpful support, and while the trainer/assistant will be jogging beside the trainee to facilitate this it is important not to


- Hold the handlebars in anyway
- Hold the saddle
- Support the weight of the trainee, as the goal of the process is to give the trainee the sense of balancing themselves, which necessarily involves allowing some movement





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STAGES OF PROGRESSION are always a **BALANCE BETWEEN STABILITY AND EFFICIENCY**

- 
- Bike Setup – should favour **STABILITY** and be low enough for the learner to reach the ground with flat feet, rather than positioned for efficient pedalling
 - Movement - emphasis on steady **STABLE** upper body, pushing through the legs for **EFFICIENCY**
 - Pedalling - once sufficient speed (fast walking) is achieved with **EFFICIENT, STABLE** upper body, the learner is likely to be ready to move to pedalling
 - Always attend to the head position (up) and where the eyes are looking (in direction of travel)

Stopping

- The trainee should **stop by**
 - pulling the **back brake**
 - followed by the front brake
 - **staying seated** on the saddle
 - **keeping feet on the pedals**
 - placing the **feet to the ground** just before the bike comes to a complete stop.
 - When stopped, bringing the **pedal to the 2 O'Clock Pedal Ready** position in preparation for starting again.

Getting off the bike

- **Feet to the ground** once the **bike has stopped**,
- **Stand astride the bike, lean the bike** towards the standing leg and **swing leg over the back wheel**.
 - **Hold the brakes while dismounting to prevent the bike rolling forward.**
 - If this is physically difficult, lower the saddle to allow walking back off the bike from front to back and then standing – it is likely that difficulty will have been experienced getting on the bike which will have been sized to allow a walk on mount.



LEARNING TO CYCLE WITH DISABILITY

PROGRESSING SKILLS



As trainees grow in skill and confidence, the trainer should look to progress through the core skills

Shoulder checking, riding one handed, freewheeling, back pedalling and cornering

Shoulder Checking

- **Steady** and controlled pace
- **Sit upright** with hands on the handlebars – thumbs under and fingers over – looking ahead.
- Hold the **pedals still**
 - Hold the **handlebars**, keep the **arm of the checking shoulder** quite **straight** and steady for control and look smoothly back. Soften the opposite arm/elbow to help keep the handlebars straight.
 - Practise until comfortable shoulder checking to either side while cycling in a straight line.
 - If nervous, freewheel and then look behind.

Riding One Handed

- **Steady** and controlled pace, possibly freewheeling.
- **Sit upright** with hands on the handlebars looking ahead.
- Start by **easing a hand** so only the finger tips touch the handlebar.
- Next, **hover** the hand just above the handlebar.
- Gently **remove** the hand fully off the handlebar, initially for a very short time.
- **Look ahead** to maintain a straight line.
- **Shift the body weight** between the saddle and the supporting arm to keep control.
- Keep a good, but relaxed, **grip** on the handlebar with the **supporting hand**.
- Place the **hand back on** the handlebar after 3 to 4 seconds.
- Practise until comfortable riding one-handed on both the left and right side.

Freewheeling

- **Stop pedalling**, keep both feet on the pedals, leading to a steadying and gradual slowing

Back Pedalling

- **Push the pedals back** instead of forward, just once, **keeping both feet on the pedals** to change pedal position without pushing the bike forward

Cornering

- **Control speed** into the corner.
- **Look forward** and **move the head to look through** and **round the corner** on approach.
- Keep **both hands on the handlebars** for control when cornering.
- Generally, take a corner with a small, smooth movement of the handlebars.
- Keep the **inside pedal** (on the turning side) up to ensure balance and readiness to cycle out the far side of the corner, and to avoid the pedal hitting the ground while leaning.
- Generally, **freewheel through**, and then **pedal out** of, the corner
- If the inside pedal is down, back pedal to bring it up just before entering the corner.



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GAMES AND ACTIVITIES



As individual trainees become more mobile and move to cycling independently, the trainer can introduce games to further develop bike-handling skills, for example;

- Going in and out (opposite sides of alternating cones) through cones. Spacing between cones can be varied according to the ability of individuals or according to the increasing skill level of a trainee
 - Turning left and turning right – following curving lines of cones will introduce trainees to the concepts of turning. The curve can be made more acute, until it becomes an actual turn, as trainees' skill progresses
 - At all stages, trainees should be prompted to let their head lead, by looking ahead to where the curve/turn is leading
 - As a progression to turning, trainees can complete exercises in freewheeling between points, so that they learn the link between movement, speed and pushing pedals
 - As the skill level of trainees increases, point-to-point areas (start to finish) can be used to introduce concepts such as looking behind and raising a hand off the handlebars
 - It is important that games and skills exercises challenge each individual to achieve within their own stage of learning and skill level eg ONE TWO THREE RED LIGHTS
 - This game focuses on pedalling and braking
 - The trainer stands at one side of the yard/hall, which is the finish line
 - All the riders are on their bikes facing him or her on the other side, this is the start line
 - The trainer turns their back on the riders and shouts "One, Two, Three", during which time the riders cycle as quickly as they can towards the trainer in a straight line
 - The trainer turns around, and shouts "Red Light"
 - At this point the riders need to brake correctly
 - ~ If the rider pulls their back brake too hard the back wheel will skid
 - ~ if the rider pulls the front brake too hard the back wheel will pop up
- The winner is the first person to reach the finish line.

For additional exercises, refer to the CYCLE RIGHT resource SKILLS AND GAMES FOR LEARNING



LEARNING TO CYCLE WITH DISABILITY

FEEDBACK AND EVALUATION



Over the course of the session the trainer should continuously monitor trainees for progress towards the target outcomes, and should give individual feedback to trainees (and those assisting them as appropriate), as required, to help improve technique.

At the end of each session the trainer should review to gauge whether the content delivery has been successful and whether trainees have achieved the required outcomes. To help analyse this, the trainer can pose questions to him/herself, samples of which follow. Trainers may also rephrase these questions directly to the trainees to prompt their knowledge on the topics.

- Do trainees display knowledge of which lever controls front and back brakes?
- Can trainees hold the bike in a safe position preventing roll before getting on?
- Are trainees getting on the bike safely and correctly?
- Can trainees reach both feet flat to the ground with ease?
- Are trainees taking up a position on the bike that will lead to effective movement – sitting upright, eyes looking ahead, arms straight out to the handlebars and relaxed?
- Can trainees move comfortably and easily with feet walking on the ground, while sitting on the saddle and maintaining balance?
- Are trainees gaining enough momentum to maintain balance for a length of time when both feet are off the ground?
- With pedals on the bike are they taking up a safe, effective starting position?
- Can trainees start off independently?
- Can trainees pedal increasing distances independently while maintaining balance?
- Can trainees use their brakes to stop safely and in a controlled way?

At the end of each session, the trainer should emphasise the importance of practice as an essential part of learning and should encourage participants to get out and practise their skills on the bike before the next session