



**LECKEY**

# MyWay+

Clinical Workbook

Adventure in every step



Supporting Children



# LECKEY MyWay+

## The Benefits of Walking

Moving about independently plays a key role in a child's physical, social, cognitive and psychological development. When a child starts initiating their own movements, they start to gain their own personal autonomy, learning that they are agents of their own change. This much-celebrated milestone instigates a series of transformative changes to their brain, developing new sensory and motor pathways, forming new spatial and verbal pathways which can't be gained through other means. Without this opportunity to learn, the potential for physical and psychological growth is restricted. This is why supporting early independent mobility is a key focus of the MyWay+.

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Walking is a complex task. Toddlers generally learn to walk over many months, stepping as much as 14,000 times per day with numerous falls in between [1]. Physically, walking requires not just bones which are strong enough to support weight, and muscles which can generate power, but heart and lungs which can cope with the increasing demands of exercise and a nervous system which can coordinate the complex motor patterns which generate a safe and efficient gait. However, with all this said, walking is the most energy efficient way for human beings to mobilise.

The general benefits of walking, such as improved cardiovascular fitness and maintenance of a healthy weight, are widely known and accepted [2].

However, the quality of evidence surrounding the use of walking frames/ gait trainers for children with additional needs is generally quite low and a lot of it is descriptive or anecdotal, meaning that it is hard to draw definitive conclusions. However, in a large systematic review of children using walking frames at school and home, numerous positive outcomes that were described included: an increase in walking distance, number of steps achieved, as well as an improvement in participation and overall enjoyment [3].

[1] Adolph, K. E., Cole, W. G., Komati, M., Garciguire, J. S., Badaly, D., Lingeman, J. M., ... & Sotsky, R. B. [2012]. How do you learn to walk? Thousands of steps and dozens of falls per day. *Psychological science*, 23(11), 1387-1394.

[2] Kelly, P., Murphy, M., & Mutrie, N. [2017]. The health benefits of walking. In *Walking*. Emerald Publishing Limited.

[3] Paleg, G., & Livingstone, R. [2015]. Outcomes of gait trainer use in home and school settings for children with motor impairments: a systematic review. *Clinical Rehabilitation*, 29(11), 1077-1091.



# Benefits of Walking



Increases leg muscle strength and mobility



Supports family and peer participation



Improves bone density and hip joint development



Develops problem-solving skills, independence and confidence



Improves cardiovascular fitness and digestion



Aids communication, cognition and psychosocial wellness





# Let's get started!

## Start with a warm up

Imagine that you have been sitting down for a long period of time like after a long car journey, and then you try to move, it is automatic to stretch or move in some way before you start walking. In the same way, taking a moment to help children prepare their body for movement before using a walking frame helps wake up the muscles and ensure the most effective movement is achieved.

The purpose of these movements isn't to increase muscle length per se, but to provide an opportunity to work through the available range of motion, stimulating muscles, tendons and joints to wake up.

You could also try giving the child's legs and feet some **deep pressure** by squeezing them or some **light pressure** by running a soft brush or vibrating toy up and down. This proprioceptive input can help with their movement once in the frame.

# Leg movements

The exercises on the next page are beneficial for children with high and low tone and also to just wake up any non-active muscle. This is not a definitive list and each child might need to focus on some areas more than others.



**Top tip:** Some children struggle with **increased sensitivity** on the soles of their feet and do not like them being touched, sometimes called tactile defensiveness. This is common in children who have had limited experience of standing as weight-bearing activities help to desensitise the nerves. A great way to help with this is to regularly and repeatedly expose the areas to lots of different textures. The list is endless but ideas to reduce sensitivity inside include: crinkly paper, soft furnishings and carpet, and when outside: grass, sand, pebbles, soft bark and smooth paving stones. This will all reduce sensitivity so that when they are ready to stand it feels more comfortable.

Lying on a mat or firm bed is a good starting position, it is also the best position for putting on the MyWay+ harness, so try these exercises before you get started. Encourage children to be active and join in with the movements as much as they can.

## Hip movements

1



Or



Encourage the child to bend one knee up towards their chest and wrap their hands around that shin. Then get them to pull that knee closer to their chest. Support the opposite leg to remain flat on the bed, as this helps with elongating the hip flexors on that leg. Complete on both legs.

2



Or



If a child can straighten out their legs then encourage it as above, if not help them to bend one leg so the hip and knee joints are as close to right angles as possible. Keeping the thigh stationary, gradually straighten the knee by gently moving the lower part of the leg up towards the ceiling until the leg comes to a stop. Repeat on the other leg.

3

With one leg straight and the other one bent up. Encourage the straight leg out to the side, whilst keeping the knee straight. Complete on both legs.





## Knee movements

4

Place a small rolled up towel or cushion under the child's knee. Hold around their ankle and slowly bring their leg straight. Complete on both legs.



5



## Ankle movements

With the child's splints off, slowly move their ankle upwards and then downwards. Then slowly move their ankle round in a circular motion clockwise and then anticlockwise.



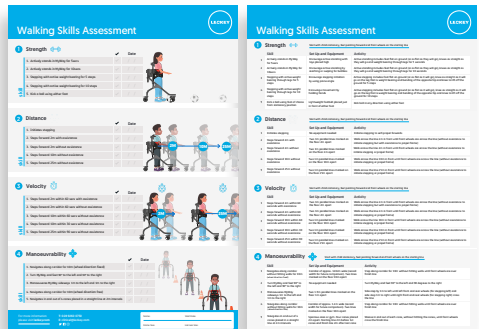


Supporting Children

# From first steps to fast feet - Our pathway to progression

When a child first tries out a walking frame, they may not be able to walk or take steps straight away. This can be disheartening for everyone involved and may lead to questions around the child's potential ability to use a walking frame. As discussed before, walking is a difficult skill that requires many different systems in the body to work together. Being able to move in a walking frame takes practice but it also requires the muscles in the legs to have enough **strength** to move the body forward (**distance**) at a certain speed (**velocity**) and also combined with enough muscle control to be able to **manoeuvre** the frame to where the child wants to go.

The Leckey Walking Skills Assessment on the following pages, breaks down these skills into achievable targets and provides examples of how to practise them. This helps to reframe expectations and also helps the child to work on smaller, more achievable goals rather than being expected to walk in a walking frame straight away.



A printable version is available here:



## Strength

Standing involves using the large muscles of the lower limbs to stand up tall against gravity. Although supportive standing can be active (using muscles) or passive (using the frame), it is important that in preparation for efficient walking, standing becomes an active task working hard to overcome gravity.



Once a child can comfortably actively stand, the next stage is to take a step. This requires standing on one leg while the other moves or steps forward. Weakness around the hip joint, particularly the hip abductors, makes control of the stationary hip and leg (single leg stance) often the hardest part of the movement to achieve. The body also needs to be able to selectively control each lower limb so that when one leg moves forward, the other leg stays on the ground. The skills and games below work on developing muscle strength.



Raising the frame height so feet are off the floor, place a water tray or shallow paddling pool under the frame (A lot of children will kick their legs in the water so letting the saddle take their weight enables them to freely initiate movement)



Put paint inside plastic wallets and seal tight with tape. Encourage squishing the paint with wheels or feet.



Reach up to pop bubbles or swipe at toys on an overhead mobile.



Play football using the frame or feet to kick or push whatever ball is available.

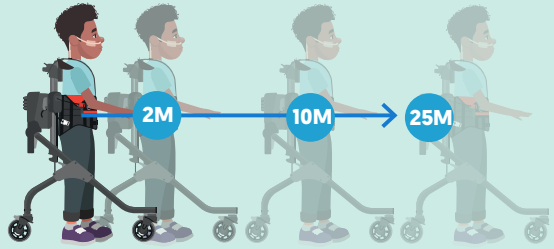
# 1 Strength

skill

	✓	Date
1. Actively stands in MyWay+ for 5secs	✓	/ /
2. Actively stands in MyWay+ for 10secs	✓	/ /
3. Stepping with active weight bearing for 5 steps	✓	/ /
4. Stepping with active weight bearing for 10 steps	✓	/ /
5. Kick a ball using either foot	✓	/ /

Start with child stationary, feet pointing forward and front wheels on the starting line

	Skill	Set Up and Equipment	Activity
1	Actively stands in MyWay+ for 5secs	Encourage active standing with toys placed high	Active standing includes feet flat on ground (or as flat as they will go), knees as straight as they will go and weight bearing through legs for 5 seconds
2	Actively stands in MyWay+ for 10secs	Encourage active standing by reaching or swiping for bubbles	Active standing includes feet flat on ground (or as flat as they will go), knees as straight as they will go and weight bearing through legs for 10 seconds
3	Stepping with active weight bearing through legs for 5 steps	Encourage stepping initiation by using prone angle	Active stepping includes foot flat on ground (or as flat as it will go), knee as straight as it will go on the leg that is weight bearing and bending of the opposite hip and knee to lift off the ground for 5 steps
4	Stepping with active weight bearing through legs for 10 steps	Encourage movement by holding hands	Active stepping includes foot flat on ground (or as flat as it will go), knee as straight as it will go on the leg that is weight bearing and bending of the opposite hip and knee to lift off the ground for 10 steps
5	Kick a ball using foot of choice from stationary position	Lightweight football placed just in front of either foot	Kick ball in any direction using either foot



## Distance

Muscle strength goes hand in hand with a child's ability to move a walking frame. Moving even a few steps forward requires considerable physical effort. It's important to help children associate those initial attempts with a positive outcome and the best way to do this is to reinforce early efforts by gently pushing the frame forward. The 'prize' of reaching a new toy or classmate will soon turn these 'assisted steps' into moving independently. Small cause = big effect. As muscles get stronger, they are able to work for longer without fatiguing and the body's cardiovascular system gradually improves to keep up with the increased demand.



Take shoes and splints off, if it is OK to do so, and have something that really interests the child 2m away. Gently **move the frame forwards** when the child moves their legs (helping the child to understand "if I move my legs I move forward"). Do this until they reach their goal.

**Top tip:** Don't be tempted to move the goal further away when the child reaches it as this can be frustrating.



**Scavenger Hunt:** Hide items/ toys around the room at different distances away from each other.



**Relay Race:** Children in teams walk/run to each other to receive an object which could be placed in a basket tied to the walker if the child is not able to carry it.

## 2

## Distance

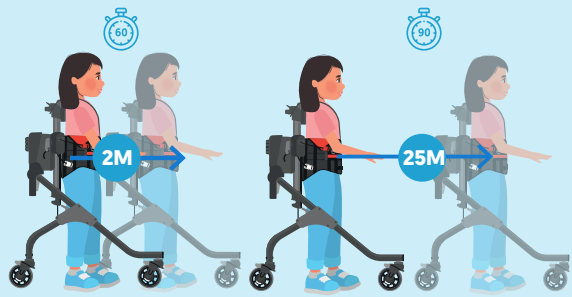


skill

	✓	Date
1. Initiates stepping	✓	/ /
2. Steps forward 2m with assistance	✓	/ /
3. Steps forward 2m without assistance	✓	/ /
4. Steps forward 10m without assistance	✓	/ /
5. Steps forward 25m without assistance	✓	/ /

Start with child stationary, feet pointing forward  
and front wheels on the starting line

	Skill	Set Up and Equipment	Activity
1	Initiates stepping	No equipment needed	Initiate stepping to self-propel forwards
2	Steps forward 2m with assistance	Two 1m parallel lines marked on the floor 2m apart	Walk across the line 2m in front until front wheels are across the line (without assistance to initiate stepping but with assistance to propel frame)
3	Steps forward 2m without assistance	Two 1m parallel lines marked on the floor 2m apart	Walk across the line 2m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)
4	Steps forward 10m without assistance	Two 1m parallel lines marked on the floor 10m apart	Walk across the line 10m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)
5	Steps forward 25m without assistance	Two 1m parallel lines marked on the floor 25m apart	Walk across the line 25m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)



## Velocity

As a child's strength, endurance and confidence improves, their speed will also increase. Walking quicker while still maintaining the most efficient walking pattern will allow children to keep up with friends and the social demands of school. Working on velocity is a great focus for children who enjoy some friendly competition.



**Races:** Have children start at the same time and shout 'ready, steady, go!'. An adult then times when each child crosses the finish line.



**What's the time Mr Wolf?:** A group of children stand along a line facing the 'leader' who stands approx 4m across the room and has his/her back to the children. The children shout 'What's the time Mr Wolf?' and the leader shouts a time e.g. '3 o'clock'. The children then take 3 paces and ask the time again. This goes on with different times until the children are well across the room. After a few rounds when the children ask the time, the leader shouts 'Dinner time!' and turns to catch the children. If a child is caught, they stay with the wolf to help with catching. The last child to miss being caught is the winner.



**Stuck in the mud:** One child is the chaser and they move towards other children to 'tag' them. If a child is 'tagged' then they are 'stuck in the mud' and they can't move until another child comes over and touches either them or the frame.



### 3 Velocity

skill

	✓	Date
1. Steps forward 2m within 60 secs with assistance	✓	/ /
2. Steps forward 2m within 60 secs without assistance	✓	/ /
3. Steps forward 10m within 60 secs without assistance	✓	/ /
4. Steps forward 10m within 30 secs without assistance	✓	/ /
5. Steps forward 25m within 90 secs without assistance	✓	/ /

Start with child stationary, feet pointing forward and front wheels on the starting line

	Skill	Set Up and Equipment	Activity
1	Steps forward 2m within 60 seconds with assistance	Two 1m parallel lines marked on the floor 2m apart	Walk across the line 2m in front until front wheels are across the line (without assistance to initiate stepping but with assistance to propel frame)
2	Steps forward 2m within 60 seconds without assistance	Two 1m parallel lines marked on the floor 2m apart	Walk across the line 2m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)
3	Steps forward 10m within 60 seconds without assistance	Two 1m parallel lines marked on the floor 10m apart	Walk across the line 10m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)
4	Steps forward 10m within 30 seconds without assistance	Two 1m parallel lines marked on the floor 10m apart	Walk across the line 10m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)
5	Steps forward 25m within 90 seconds without assistance	Two 1m parallel lines marked on the floor 25m apart	Walk across the line 25m in front until front wheels are across the line (without assistance to initiate stepping or propel frame)

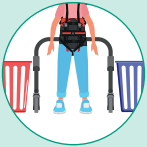


## Manoeuvrability

Moving in a straight line is much easier than moving sideways or turning. However, for a child to be able to get to where they want to go and use their walking frame in a functional way, they need to have the ability to change direction if they want to. Changing direction requires motor planning alongside the physical ability to actually execute the movement.



**Put on some music:** take the child's hands and practice dancing around the room.



**Colour matching:** Have a basket with lots of different objects/toys that are either red or blue. Have a 'red' basket placed 90 degrees to the child's left and a 'blue' basket placed 90 degrees to their right. Get the child to pick an object in front of them and then turn to the left or right to place the object in the corresponding basket.



**Walls are lava:** With the child at one end of a corridor, encourage them to reach the other end without hitting the walls.



**Slalom:** Race in and out of cones at a distance apart that the child can manage.

## 4 Manoeuvrability

skill

	✓	Date
1. Navigates along corridor for 10m (wheel direction fixed)	✓	/ /
2. Turn MyWay+ and feet 90° to the left and 90° to the right	✓	/ /
3. Manoeuvres MyWay+ sideways 1m to the left and 1m to the right	✓	/ /
4. Navigates along corridor for 10m (wheel direction free)	✓	/ /
5. Navigates in and out of 4 cones placed in a straight line at 2m intervals	✓	/ /

Start with child stationary, feet pointing forward and front wheels on the starting line

	Skill	Set Up and Equipment	Activity
1	Navigates along corridor without hitting walls for 10m (wheel direction fixed)	Corridor of approx. 120cm wide (record width for future comparison). Two lines marked on the floor 10m apart	Step along corridor for 10m without hitting walls until front wheels are over finish line
2	Turn MyWay+ and feet 90° to the left and 90° to the right	No equipment needed	Turn MyWay+ and feet 90° to the left and 90 degrees to the right
3	Manoeuvres MyWay+ sideways 1m to the left and 1m to the right	Two 1.5m parallel lines marked on the floor 1m apart	Side step by 1m to left until left front and rear wheels (for stepping left) and side step 1m to right until right front and rear wheels (for stepping right) cross the line
4	Navigates along corridor without hitting walls for 10m (wheel direction free)	Corridor of approx. 1.2m wide (record width for future comparison). Two lines marked on the floor 10m apart	Step along corridor for 10m without hitting walls until front wheels are over finish line
5	Navigates in and out of 4 cones placed in a straight line at 2m intervals	Spacious area or gym. Four cones placed 2m apart. Starting line 2m before 1st cones and finish line 2m after last cone	Weave in and out of each cone, without hitting the cones, until front wheels cross the finish line

# What the research says about hip joint development

At birth, the newborn hip joint is not fully developed. During the first 5 years of life, normal weight-bearing activities like standing and stepping stimulate the femoral growth plates to turn cartilage into bone. Importantly, this muscle activity and the subsequent bone growth is asymmetric. Compared to other muscles, the loading from the hip abductors is greatest, and this plays a significant role in shaping and strengthening the hip joint, causing a decrease in femoral neck anteversion and neck-shaft angle, all of which stabilise the femur deep into the acetabulum of the hip joint.

Unfortunately, lack of normal weight bearing alters the loading pattern across the growth plates, affecting the shape of the hip joint and making it more susceptible to hip migration and dislocation.



Until recently it was commonly believed that, for the majority of children with Cerebral Palsy, spasticity was the primary cause of bony deformities of the hip such as coxa valga, increased internal femoral anteversion and hip displacement. New thinking [4] suggests that, rather than spasticity, it is the muscle imbalance around the hip (particularly hip abductor weakness) and a lack of weight bearing, which are responsible for the primary deformities of the proximal femur and which can lead to hip migration and displacement. As an example, the incidence of hip displacement in children with hypotonic Cerebral Palsy (CP) is similar to the incidence in children with hypertonia, leading us to think that spasticity is not a major contributing factor towards hip displacement [5]. Children with other conditions, such as Spinal Muscular Atrophy, where tone tends to be lower, have also been shown similar levels of hip displacement. So if spasticity is not the main cause of hip migration, what is?



[4] Howard JJ, Khot A, Graham HK. The hip in cerebral palsy. In: Alshyrda S, Howard JJ, Huntley JS, Schoenecker J, editors. *The Pediatric and Adolescent Hip: Essentials and Evidence*. Switzerland: Springer [2019]. p.467–530. doi: 10.1007/978-3-030-12003-0\_18

[5] Soo B, Howard J, MD, Boyd RN, Reid SM, Lanigan A, Wolfe RN, Reddiough D, Graham HK. Hip Displacement in Cerebral Palsy 2006, *Journal of Bone and Joint Surgery*: VOL 88-A

Robin and colleagues in Australia showed that hip displacement is directly related to GMFCS (with the children who cannot mobilise independently, who are classified as being level III, IV or V, at a significantly greater risk of developing hip displacement compared to those who walk independently at levels I or II) [6]. This reinforces the fact **that mobility has a direct link to the likelihood of hip displacement.** This risk of displacement is highest between the ages of 2-5 years in children with GMFCS III, IV and V when the infant hip joint is in rapid development.

So if the main factors that are affecting hip displacement are a lack of weight-bearing and muscle imbalance, then it makes sense that we should be encouraging children to be **weight-bearing as soon as appropriate** and also to be using their muscles in an active way. Activities which strengthen the hip joint could potentially have an impact on hip development, protecting the hip and encouraging optimum bone and joint shaping. As discussed, **the hip abductors have been shown to disproportionately influence the loads across the acetabulum and strengthening these muscles plays a crucial role in protecting the hip joint.** This can be tricky to do for children who need a lot more support to strengthen their hip abductors or for children who might struggle to follow instructions.



Check out this video which explains why and how to target hip abductors.

The new **side-step** \*patent pending function of the MyWay+, locks the wheels of the frame in a sideways position providing opportunity to target and strengthen hip abductor muscles whilst the child is fully supported in the frame. The side-step can be used to:



**Play games which encourage sideways stepping, e.g. place baskets on either side of hall and child must race to collect bean bags from one side and place in basket at opposite side**



**Pretend to be crabs on the beach and side-step to collect shells**



**Move along the kitchen counter at home and help with meal preparation**



**Practise stepping at the parallel bars. See how Willow developed hip strength using this activity.**



All these activities enable the hip abductor muscles to be targeted in a controlled way, enabling the child to work on their muscle strength and potentially influence their hip joint development.

[6] Robin, J., Graham, H. K., Selber, P., Dobson, F., Smith, K., & Baker, R. (2008). Proximal femoral geometry in cerebral palsy: a population-based cross-sectional study. *The Journal of bone and joint surgery, British volume*, 90(10), 1372-1379.

# Goal Setting and Outcome Measures



Scan here to view our F-word goal-setting worksheet

## Goal setting



When it comes to goal setting, ensuring that therapy goals and participation goals are closely intertwined is essential to create an environment where the use of the walking frame becomes part of the child and families everyday life [7]. The six F-words for child development [Functioning, Family, Fitness, Friends,

Fun, Future] provide a great framework to generate child and family focused goals and ensure that the plan for the child's therapy input compliments them. This shifts focus away from what a child 'can't do' to what their strengths are and what really motivates them to move! This can be especially helpful during history taking, where it can seem like the child's difficulties can be at the forefront of conversations.



[7] Bradbury, M., & Tierney, S. (2022). Perspectives of children with physical disabilities, parents and physiotherapists on use of walkers and their potential to increase physical activity. A qualitative exploration. *Journal of Child Health Care*, 13674935221117868.

The set-up of the frame will undoubtedly reflect the goals being pursued. For example if a child has just started using a frame and is still learning cause and effect, i.e. 'if I push my legs I move!', or is young and simply exploring their environment, then the frame will be set-up in a free and easy way in that a small movement by them gains the maximum movement from the frame. However if the child is working on straight line movement or specific training which is focused on repeated gait patterns, then adjustments can be made to the frame to help achieve this. Use our F-word goal-setting worksheet to get you started and to keep the child's and family's goals at the forefront. By asking 'Why' each goal is important, again, the focus is kept on the child's needs and wants.



## Linking goals to outcome measures

Once the goals have been set, it is important to regularly review and objectively measure the child's progress to understand if they are continuing to develop or if additional support is required. Here are some ideas which link goals to outcome measures related to walking:

Example Goals	Outcome Measures
Increase aerobic activity	Record HR/BR at rest and after use of walker
Experience regular movement in an upright posture or daily breaks in sedentary behaviour	Set desired frequency of use and record on an activity chart.
Socialise and play with peers	Daily diary to record achievement [see pg29]
Active participation (attendance and involvement) in school/non-school activities	Participation and environment measure for young children (YC-PEM) or children and youth (PEM-CY) [purchase from <a href="http://www.canchild.ca">www.canchild.ca</a> ]
Cognitive development by explorative play	Daily diary to record achievement [see pg29]
Develop key walker skills such as Strength, Velocity, Distance or Endurance	Leckey Walking Skills Assessment [available from <a href="http://leckey.com">leckey.com</a> ]
Maintenance of walking ability (speed)	Measure the time taken to walk fixed distance or the distance covered over set period of time, at regular intervals e.g. six months
Fun, enjoyment	Children's Assessment of Participation and Enjoyment (CAPE) [purchase from <a href="http://www.pearsonassess.ca">www.pearsonassess.ca</a> ]

This table shows examples of the measures that were used and the pre and post measurements:

Goal	Initial measure	Final measure
Example : Increase speed using frame to keep up with friends	Abby was able to step 3m without assistance in 30s  <b>Date:</b> 06/09/22	Abby stepped 12m in 30s in the playground  <b>Date:</b> 11/12/22

Use the blank table on the next page to record the information.




# Outcome measure record

Goal	Initial measure	Final measure
	Date: ..... / ..... / .....	Date: ..... / ..... / .....
	Date: ..... / ..... / .....	Date: ..... / ..... / .....
	Date: ..... / ..... / .....	Date: ..... / ..... / .....
	Date: ..... / ..... / .....	Date: ..... / ..... / .....
	Date: ..... / ..... / .....	Date: ..... / ..... / .....
	Date: ..... / ..... / .....	Date: ..... / ..... / .....



A daily diary is a useful tool to record qualitative goals such as participating in activities. It is also helpful as a communication aid between home and school or school and therapist. Please see the diary on the next page- feel free to photocopy as many times as required, to make comments to build a fuller picture of how the equipment is impacting the child's life.

MyWay+ Daily Diary	
Date	Total time using MyWay+ (mins)
Where was it used? (e.g. school room, corridor, garden path etc)	
Mood when using (circle one)	
Activities completed	
General Comments (e.g. any changes in or out of MyWay+, changes in ability to use MyWay+, family comments)	
Any issues raised?	

Child's name: ..... Date of birth: ..... / ..... / .....

Completed by: ..... Signature: .....



## Tips and Tricks/ Troubleshooting

Here are some common reasons why children might struggle with stepping and forward propulsion in their MyWay+:

### Reduced heelstrike

Making initial contact with the ground with a flat foot or with the forefoot first is common in children with CP. It is often due to tightness and/or spasticity of the calf muscle and/or weakness of the dorsiflexors, and will cause the foot to point or drop downwards.

Toe walking can also develop as a compensatory mechanism for weakened quadriceps muscles. Reduced heelstrike is

also common in children with neuromuscular conditions such as Duchenne Muscular Dystrophy due to relatively greater weakening of the dorsiflexors compared to plantar flexors.

### Typical therapy practice

- For children with increased tone, AFOs are typically prescribed to try and achieve initial contact/heelstrike.

**Top tip:** Check the height of the frame - if it's too high, it will encourage children to be on their toes. Optimal height is with the child standing with their feet flat and a slight bend in their knees.



Check out how Harry improved his scissoring gait with the saddle drop.



## Scissoring gait

A scissoring gait is common in children who have higher tone due to increased tightness in the hip adductor and hamstring muscles. It is often coupled with femoral anteversion (turning in of the thigh bones) and tightness of the calf muscles.

### Typical therapy practice

- Targeted exercises, use of orthotics, medial tone management such as botulinum toxin and sometimes surgery are options to help reduce scissoring gait in children.

**Top tip:** Try attaching the ankle guides to control the legs distally and prevent them crossing over. And/or try the drop accessory for the saddle to help control scissoring from the level of the hip and thigh.

# Crouch gait

Crouch gait is defined as excessive dorsiflexion at the ankle in combination with excessive flexion at the knee and hip. In children, crouch gait is generally caused by weakness of the antigravity muscles, especially the gastro-soleus, quadriceps and gluteal muscles, coupled with an increased tightness of the hamstrings and hip flexors and result in the child fighting the effects of gravity to remain upright.

## Typical therapy practice

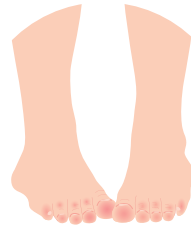
- Orthotics, especially Ground Reaction AFO's (GRAFO's), medical tone management and surgery are all treatment options. Physiotherapy is sometimes recommended to address muscle weakness.
- Using adjuncts to therapy, such as the MyWay Pedal, enables the child to move away from crouch gait to pedal in an upright extended position. The MyWay Pedal accessory, attaches onto the MyWay+ and encourages children to weight-bear through their legs whilst moving their legs in an elliptical pattern. This enables the child to work their anti-gravity muscles which are not utilised through their full range in the flexed position of traditional cycling.

**Top tip:** Check the height of the frame and ensure the red and white straps are secure so the child is getting maximum support from the frame and can focus on using the correct muscles for walking.

For children with fixed lower limb contractures, increasing the prone angle can often help with forward propulsion.







## In-toeing

In-toeing is common in children with CP due to increased femoral anteversion and tightness of the calf, hamstring and adductor muscles. Children who have poor control of the muscles around their hips may naturally fall into this position.

### Typical therapy practice

- Orthotics may help control unwanted movement of the ankle and physiotherapy exercises can help with muscle strengthening.

**Top tip:** Depending on what is causing the in-toeing, the child might just need practice with stepping in a neutral alignment. Hands on facilitation with stepping, practising marching on the spot or games like penguin walking may help.

**Sometimes attaching the ankle guides helps with leg alignment.**

# Out-toeing



Most toddlers start walking with feet pointing outwards, but as hip strength improves, out-toeing naturally reduces. Retained out-toeing is a visible sign of a boney misalignment that may be originating at the foot, ankle or hip joint. It is common in children with low tone (like Down's Syndrome) or who have a developmental delay. Children with low tone adopt this position to increase their base of support and help them feel more stable. It may also be caused by excessive length of the Achilles tendon and rolling in (pronation) of the feet.



## Typical therapy practice

- Physiotherapy can help with specific exercises to strengthen muscles of the hip, thigh, calf and feet.

**Top tip:** Try crossing the groin straps at the front of the MyWay+ harness to control external rotation of the hip joint.

**Removing the MyWay+ saddle will have a similar effect.**

# Lack of reciprocal movement

Some children struggle with achieving reciprocal movement. Children who have spasticity will often struggle to move one limb without the other one joining in. An example is children who ‘bunny-hop’ when trying to walk. On the other hand, children who have low tone might struggle with reciprocal movement as it can be quite effortful to get into moving in a reciprocal way. Children who struggle with muscle weakness, especially of the anti-gravity muscles – hip extensors, quads, calves, may find that keeping themselves up against gravity and then being able to move one foot and then the other is too challenging.

## Typical therapy practice

- Many therapists will facilitate guided movements of the lower limbs to encourage a fluid reciprocal pattern.
- If a child is struggling with achieving any reciprocal movement then using a pedalling device can help get a feel of the movement pattern required which can translate into stepping.



See how using the MyWay Pedal helped Eli improve his motor skills and muscle strength.

**Top tip:** Using adjuncts, such as the MyWay Pedal, will provide a sensori-motor experience which is closer to walking than pedalling on a trike. The pedal can be used passively at first for those who struggle to initiate any stepping, then actively with the ankle straps in place and then for the hardest workout, with pedal ankle straps removed. The MyWay Pedal can be used before or after a MyWay+ session, depending on the individual goal.

## Suitability for MyWay Pedal

Poor lower limb alignment



Scissoring gait



Crouch gait



Lack of reciprocal movement



Lack of momentum



Post intervention (botulinum treatment, lower limb surgery, serial casting, SDR surgery)



# Difficulty with head control

Some children have difficulty with maintaining their head in a neutral position, especially when trying to move. This can be due to issues with tone (lower tone can make it difficult to counteract the effects of gravity and higher tone can encourage an asymmetric neck position), muscle weakness or muscle tightness.

## Typical therapy practice

- Working on a child's ability to control their head is usually a key focus of therapy sessions as head control affects a child's ability to interact, learn and develop their gross and fine motor skills.
- Targeted Training is one approach widely used to help children who are struggling with their head or trunk control.

It is an evidence-based therapy to help children with neurodisability gain upright postural control and improve their functional abilities.

**Scan the QR code to learn more about Targeted Training and how the Squiggles TT standing frame can facilitate this.**



**Top tip:** Ensure that the MyWay+ harness and shoulder straps are positioned and fastened correctly to give the child as much support around their trunk as possible.

Attaching the complex arm rests can help the child support the weight of their upper limbs and prop through their forearms to support their head position.

If the child is still having difficulty with their head control, then attaching the standard head rest or complex head rest may help.



Scan the QR code for tips on how best to set up the MyWay+ for children working on their head control.



# Lack of momentum

Difficulty initiating movement or lack of momentum is often seen in children with low tone. This can be caused by lack of strength, lack of experience stepping, or motivation. Children may just need a slight nudge to bring their centre of gravity over their toes and get them started.

## Typical therapy practice

- Ensuring the child's environment is set-up in such a way that encourages them to move, i.e. interesting toys, family slightly further away etc.

**Remember, forward movement is the last step in the development sequence with lots of time spent exploring all other directions first. All children learn by trial and error how to move forward, and children with additional needs are no different.**

**Top tip:** Review the position of the harness. The harness should be kept as low as possible (lower edge of the harness just covering the ASIS). If the harness is too high then the child's trunk movements will be reduced.

Try increasing the prone angle to encourage a slight forward lean and help with propulsion.

Ensure that the resistance is on the lightest setting possible and try locking the wheel direction, so the child only has to control movement one way.

The anti-roll backs are a great tool for a child who struggles to get themselves moving forwards, acting as a backstop to push off from. Also good to stop backwards movements, if needed.





Scan the QR code for tips  
on how best to set up  
the MyWay+ for children  
with difficulty initiating  
movement.

# Reduced hip extension

Reduced hip flexion is seen during stepping when a when a child tries to step forwards and they have a significant amount of hip flexion and they almost 'paw' at the floor with their toes to try and get themselves to move forward, without really getting any hip extension or their feet flat on the ground. Sometimes it is caused by hip flexor tightness or hip extensor weakness but other times it can be as simple as the child's position on the saddle.

## Typical therapy practice

- Physiotherapy exercises, such as bridges, to work on hip extensor strength alongside stretches or tummy lying to help with hip flexor tightness.
- The use of equipment, such as standing frames, are great ways to provide a more prolonged hip flexor stretch.

**Top tip:** When the red and white straps on the MyWay+ are loose, connect all the buckles together. Then if you anteriorly tilt the child's pelvis, whilst someone else pulls down on the white pulley straps and the red pulley straps, the child's pelvis will be much better positioned and it will give them more opportunity to achieve hip extension.

Also try using the ankle guides to reduce the range that the child can move their legs, setting them quite far back. Sometimes, this inability to overflex at their hips can encourage a child to take more weight through their stance leg.

# Case Stories

Scan the QR code to see how:



Willow



Willow used the new \*side-stepping feature of the MyWay+ to increase her hip muscle strength



Tom



Tom uses his MyWay+ and MyWay Pedal accessory to have fun outside with his family



Harry



The new accessories on the MyWay+ helped Harry improve his stepping ability



Emilia



Emilia can join in with her siblings using the new MyWay+





**To arrange a product demonstration/assessment or for more information, please contact us:**

Date of Preparation: March 2023 LSI223-01



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