

Choice and measurement of equipment:

Please ensure that measurements for equipment are accurate. Ask a volunteer to assist with measuring. Use a rigid tape measure if possible. Use 2 solid flat surfaces at right angles on either side of the body for width measurements; and below the bottom (pelvis) for height measurements from the pelvis up. Make sure the child is aligned as best as possible. Much time and material is wasted if equipment has to be re-adjusted because of faulty measurements.

A. Standing frame:

Why is standing important/ beneficial?

1. Development of a stable hip joint. Weight bearing helps the formation of the acetabulum into a deep socket. For standing to benefit hip development it is very important that the child stand with the hips extended – i.e. standing with the hips in some flexion does not help hip development. Thus standing is important for the prevention of hip subluxation and dislocation.
2. Increase of bone density through weight bearing.
3. Prolonged stretching of the hip flexors, knee flexors and plantar flexors – thus preventing contractures.
4. Assist emptying of the bladder and bowels.
5. Beneficial for circulation – blood pressure and heart has to adjust to pump blood against gravity.
6. Can help to reduce unwanted movements and muscle tone due to weight bearing in a well aligned position.
7. Psychologically good for the child.

When does a child need a standing frame?

A normal child will start standing at the age of 1 year or often even earlier. So at this age standing already becomes an important factor in growth and joint development. It is therefore important that all children older than 1 year should be standing daily. Thus a standing frame should be recommended for any child older than 1 year who cannot stand independently or when holding on to furniture or the hands of the carer.

Children with pronounced foot deformities or contractures (especially hip flexion, knee flexion, windswept position) cannot be placed in a standing frame. Such cases will need special adaptations or another positioning device needs to be considered. First consult with the orthotist before ordering a standing frame in such a case.

Children with some muscle shortness can be placed in a standing frame – it is probably the most effective way to get prolonged and daily stretching in a well aligned position of the shortened muscles. Standing time will have to be adjusted considering how much discomfort the child is experiencing as a result of muscle stretch. Settings of the standing frame might be adjusted over time to increase the stretch.

Caution should be taken when older and especially heavier children are placed in a standing position for the first time. Reduced bone density might already be present. Pay special attention to the feet – often the feet collapse medially into a very poor position because it has never been prepared and is too weak to carry all that weight. Such a child may require foot orthoses and supportive shoes before being able to stand.

The child's blood pressure may also drop and some time needed to adapt to the new position – take notice of how the child is feeling.

How much should the child stand?

2 hours+ a day is ideal

Children need some time to get used to standing so start with short times and gradually increase. For example: at first let the child stand for 10 minutes 4X per day. Increase weekly with 5 minutes per session until the child can stand for 30 minutes 4X per day.

Instructions to the parents

Explain to the parents why it is important that their child stands every day. Also point out that if the child is not positioned well, that much or all of the benefits are lost. Therefore take time to teach the parents how to put the child in the standing frame. Let them do it more than once to make sure they can do it well. Even if the whole session is spent on this, it is not time wasted – in fact, if it results in the child standing daily in a good position it will probably be much more beneficial to the child than a session of therapy would have been!

Children should wear shoes, preferably shoes that give good support to the foot, when placed in the standing frame. More severely disabled children did not develop normally – their foot muscles and arches has not been prepared for the upright position as in a normal baby.

The parent must make sure that the child is standing with equal weight bearing on both feet. To test they must try to move the feet while the child is standing. If a foot can be moved easily the child is not weight bearing on it. The problem should not be corrected by pulling on the feet! The problem usually starts at the hips. If the child is only weight bearing on 1 foot, the hips are not centered. The carer must put her hands on the child's hips and try to align them by slight rotation or pressing the side that is elevated down. Check again for equal weight bearing on the feet until correction has been obtained.

If the child is not weight bearing at all – that is actually hanging in the standing frame, it might be best to open the standing frame and position the child again from scratch.

A child can be fed in a standing frame.

Older children who has always been fed in a semi-reclining position might have severe difficulty to swallow in the upright position. They always had the help of gravity to let food move to the back of the mouth in order to swallow and has never learned to do this with their tongue. Pay attention to any distress the child may be in. Such children will need a gradual change of feeding position and might only much later cope in a standing position.

If the child is very stiff it may be necessary to teach the carer some simple techniques to loosen up the child in preparation for placing her in the standing frame.

Place some toys on the tray table for the child to look at or play with . The standing frame is also a good place to do upper limb activities taught to the carer by the therapist, and to practice head control.

As the child grows, the standing frame needs adjustment. Tell the parents to bring the standing frame back if it becomes too small or if any repairs are needed. It might be good to have a quarterly or 6 monthly check to adjust the standing frame, depending on how fast the child is growing.

B. Sidelyer

Why is a sidelyer beneficial?

Unless positioned in a special seating device, children who are unable to sit, often spend most of the day lying in a poor position - most often in supine. This position leads to an increase in muscle tone and asymmetry which over time leads to contractures and deformities. The child is probably looking at the ceiling and is not able to see or use her hands for function. Increased muscle tone makes it even more difficult for the child to perform any active and functional movements. The patterns of spasticity are constantly reinforced.

1. A sidelyer places the child in a position of symmetry. Thus preventing contractures and deformities of the limbs, spine and chest.
2. The child's hands are together and she can see them - it can thus encourage hand function and is beneficial for vision.
3. Because the child is in a well aligned position, it helps to reduce muscle tone, thus making it more possible for the child to move actively and more easy to handle the child - for the carer and the therapist.
4. Serial positioning can be used in a sidelyer to gradually stretch shortened muscles - in order to prepare the child for another functional position such as sitting in a supportive seat or standing in a standing frame.

When does a child need a sidelyer?

Find out in which positions the child spends most of her day. Look at the effect of these positions on her muscle tone and function.

Recommend a side positioned for a child that spends a lot of time in a poor lying position or where placing the child in a lying position results in asymmetry and malalignment. This is often also the case in a very floppy child due to the effect of gravity.

Even if the child has a buggy and/or standing frame it is possible that she still spends much time in lying because she gets tired after sitting for a long time. This child can still benefit much from a sidelyer - time spent in a well aligned and functional position is always preferable to time spent in a poor position!

Children who cannot be positioned well in a seating device or standing frame due to shortened muscles, can be placed in a sidelyer and pillows and sandbags used to improve range of motion through progressive stretching.

How much time should the child spend in the sidelyer?

Any time not spent in another positioning device - thus much or all of the time the child would have been laid down on the bed, mattress or couch.

If the child finds the sidelying position uncomfortable, the time can be gradually increased. Be sure to show the parent a more helpful way of positioning the child in supine or prone for when the child is not in the sidelyer - using pillows, blankets or towels.

Change sides regularly. Every 1-2 hours. A good supine or prone position can also alternatively be used when changing position.

If possible the child must also sleep in the sidelyer at night.

Where the sidelyer is used for gradual stretching 6-8 hours of stretching is needed daily.

Instructions to parents

AGAIN: Explain to the parents why it is important that their child uses a sidelyer. Also point out that if the child is not positioned well, that much or all of the benefits are lost. Therefore take time to teach the parents how to put the child in the sidelyer. Let them do it more than once to make sure they can do it well. Check that they can do it on both sides. Even if the whole session is spent on this, it is not time wasted – in fact, if it results in the child lying daily in a good position instead of the usual harmful position, it will probably be much more beneficial to the child than a session of therapy would have been!

As the child grows, the sidelyer needs adjustment. Tell the parents to bring it back if it becomes too small or if they struggle to achieve a good position. It might be good to have a quarterly or 6 monthly check to make adjustments depending on how fast the child is growing. New pillows may be needed or even a new sidelyer, once the child has grown too tall.

Where the sidelyer is used for gradual stretching follow-up has to be every 1-2 weeks to progress positioning.

C. Bench

Why is it used?

It is often very difficult to let a child with CP sit on the floor in a good position. This is often because of muscle shortness – especially hamstrings. Short hamstrings results in posterior pelvic tilt. This makes it very difficult to maintain an upright trunk. Posterior pelvic tilt is part of the extension pattern of the lower limbs and increased extensor muscle tone may further cause the trunk to push back.

Cross legged sitting means a lot of flexion of all joints of the lower limb. This flexion pattern may make it difficult for the child to get her trunk upright.

Many children resort to w-sitting because it provides them with enough stability to sit independently and to freely use their hands. This can be allowed from time to time, but the child should be provided with an alternative functional sitting position. W sitting is harmful for the hip, knee and foot joints – can lead to contractures and deformity. It also feeds in to a flexor pattern of the lower limbs which will make standing and walking more difficult for the child due to increased muscle tone. The stability in the sitting position is “passive” – the child does not use her muscles for postural control. Therefore this position does not help her to develop postural control for sitting in any other position.

A bench gives the child a stable surface to sit on with her feet flat on the floor. Often the child can sit much better on the bench than on the floor and therefore have the opportunity to use her hands for function. It is also easier for a carer to provide some postural support to the child as she can sit behind the child on the bench.

The bench can also be useful to do activities such as:

- getting up from sitting into standing,
- transferring sideways on the bench
- getting from the floor onto the bench – a transition that encourages much weight bearing, rotation, and dissociation!
- Dressing – it is much easier for the child to assist with and learn independence in dressing when sitting on a bench – rather than on the floor or a soft mattress on the bed with feet unsupported.

A small table can also be made to use with the bench to provide a surface at the ideal height on which to play.

Instructions to the parents

Use therapy sessions to work with the child on the bench. See what works best and which way of supporting and assisting the child helps most. Then teach that position and activity to the carer. Demonstrate and explain to her why it is helpful for her child. Then let her try it. Guide her hands if necessary. Be patient and let her try a few times until she is familiar with it. Rather just teach one activity that works really well at a time, than overwhelm the carer with too much. She will be more motivated to do it if she feels confident and understands how it helps her child.

D. Soft splints

Why are soft splints used?

Soft splints help to keep knees or elbows, which are always in a flexed position due to increased muscle tone, straight. It is only made out of a medium density foam covered with cloth and fastened with valcro straps around the limb. It is nonetheless quite effective. It does not cause the child discomfort. There is no rigid surface to push against – therefore no chance of actually increasing muscle tone. The mild heat caused by it, could also contribute to muscle relaxation or even some miofascial release??

Which children need soft splints?

Children with elbows or knees constantly in a position of flexion, due to increased muscle tone. The soft splint cannot stretch out fixed deformities or contractures, but where some degree of movement is still possible out of the habitual position it could still be helpful, to at least prevent aggravation.

Instructions to parents

It should be worn as much as possible. Parents should check the skin daily for any skin irritation. It is advisable to gradually increase the time for which the splint is worn, as some chafe wounds can occur, especially over the elbow. The splint must be positioned correctly – from just above the hand/foot to the axilla/groin – not over the hand/foot. The narrower part of the splint should be at the distal end. The splint should be removed for function or positioning where a bent elbow/knees are required. E.g. positioning in a buggy (bent knees); upper limb activities (bent elbow/(s)). It is probably good to wear the splints at night, unless the mother says that the child's limbs become relaxed and straight when sleeping. If it is very hot, the splints could be very uncomfortable. Try then to wear it during the cooler times of the day and at night.