

**LECKEY<sup>®</sup>**

**KNOW**

**HOW**



- Clinical Set-Up
- Specific Presentations
- Progressing Skills
- Motivation / Participation
- Research and Evidence

**LECKEY<sup>®</sup>**   
**Squiggles+**

## Standing is very important.

An upright posture allows gravity to assist the function of our internal systems. By standing, children bear their weight through their bones and joints, which helps form and shape them while increasing their strength.

The new Squiggles Stander Plus offers new, additional features to the extremely versatile three-in-one Squiggles Stander for children aged 1-5 years.









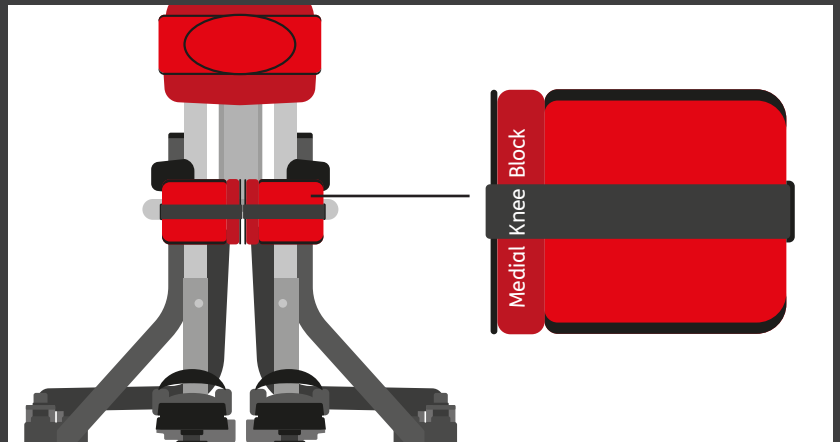




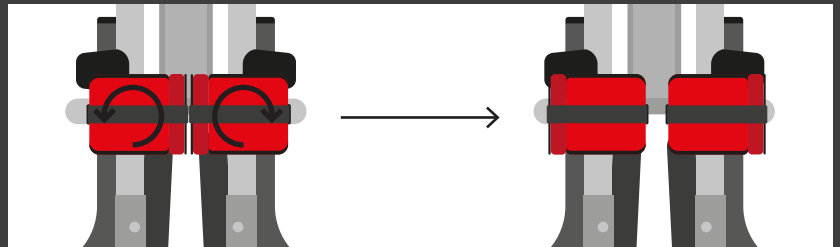
## Specific Presentations

### Increased or fluctuating tone -

Standing in hip abduction can offer a prolonged stretch to hip adductor muscles. The new Squiggles Stander Plus knee block is deeper on its medial aspect and padded so as to distribute pressure over a wider surface area and protect both the knee joint and medial collateral ligament. This feature improves alignment and comfort in abducted standing, particularly in the presence of high tone, where there may be greater forces and pressure imposed on the inside of the child's knee.

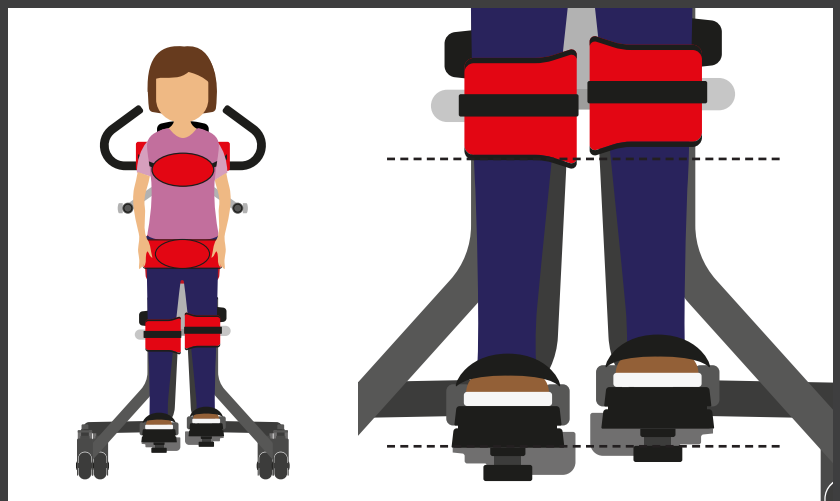


**Low tone** - In the case of a very low toned child who perhaps tends towards a circle sitting posture of the legs, the knee blocks may be turned through 180° so that the deeper aspect is placed laterally on the child's knee to optimise alignment within this clinical presentation.



**Refer to Squiggles Stander Plus user manual for further information on set-up**

**Leg length discrepancy** - the Squiggles Stander Plus now accommodates for leg length discrepancy as the lower limb lever arms and foot plates are separate, they can therefore be set to different heights each side.





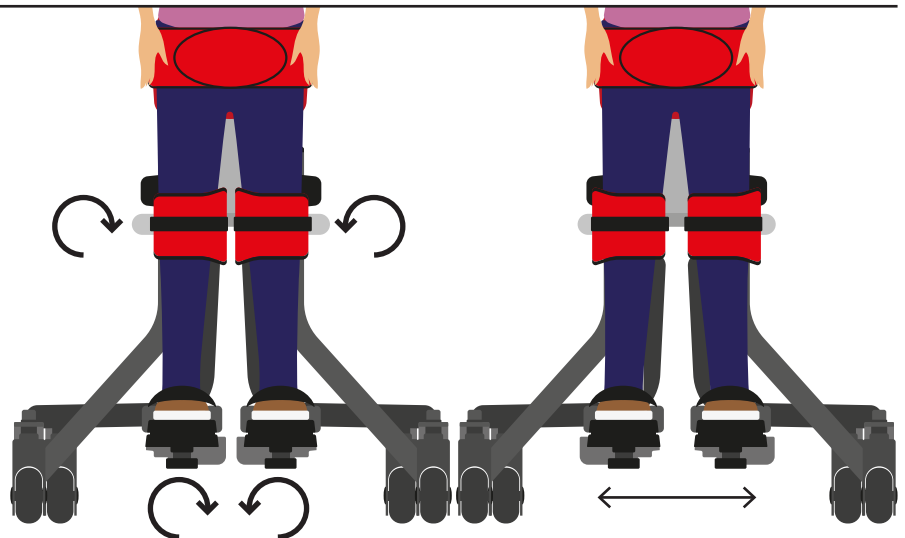
## Hints & Tips

**Hip rotation** – There is currently minimal evidence around optimal hip rotation in positioning to prevent hip displacement. It may therefore be indicated to aim for neutral hip rotation unless advised otherwise by the child's orthopaedic consultant.

**Ankle/ foot position** – should be monitored throughout and optimised for the child. A neutral ankle/ foot position should be maintained where clinically viable, especially where the child does not have the additional support of ankle foot orthoses (AFO's).

### Hip abduction gauge –

To ensure absolute accuracy of the gauge measuring degrees of hip abduction, knee and foot plates need to be positioned centrally on the leg lever arm. If, for example, both are shifted laterally then the child is starting in some degree of abduction already. If a lateral or medial shift of knee and foot plates is indicated in order to achieve a more optimal alignment for the child, then this should take priority but it is worth bearing in mind the potential impact on hip abduction gauge measurements.



## Dosage

### Degrees of hip abduction –

there is limited evidence around the optimal degrees of hip abduction in standing. It has been suggested that the forces acting on the hip whilst standing in zero degrees hip abduction may do more to encourage than discourage hip displacement and therefore some degree of hip abduction to offset these forces in standing is recommended <sup>1</sup>. Studies available vary between 15-30 degrees of hip abduction each side <sup>2,3</sup>.

The Squiggles Stander Plus accommodates up to a maximum of 30 degrees of hip abduction each side i.e. 60 degrees bilaterally. Clinicians should exercise their own clinical reasoning across individual presentations. It seems reasonable to introduce small increments of hip abduction as tolerated<sup>3</sup> and gradually work up towards just shy of a child's maximum range of abduction. Thus, maximising clinical benefits whilst maintaining comfort and tolerance.

### Time spent in standing –

Paeg et al (2013) states that standing programs 5 days per week positively affect bone mineral density (60 to 90 min/d); hip stability (60 min/d in 30° to 60° of total bilateral hip abduction); range of motion of hip, knee, and ankle (45 to 60 min/d); and spasticity (30 to 45 min/d)<sup>3</sup>

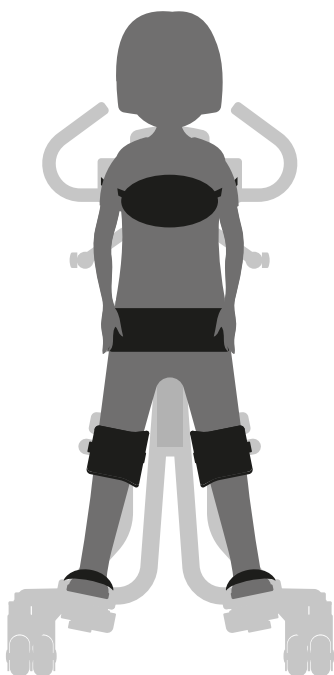


**Recent years have seen a growing research interest around the effectiveness of abducted standing in maintenance of hip integrity. This has in turn driven popularity amongst clinicians in utilisation of this specific therapeutic modality.**

Paleg et al (2013) reviewed 6 papers relating supported standing programmes specifically to hip integrity and concluded on the evidence around abducted standing as *'fair evidence, possibly effective'*. The author summarised the evidence as *'yellow light'*, interpreted as *'minimal evidence; proceed with caution'*<sup>3</sup>.

McClean et al (2014) of Sunny Hill Health Centre for Children Vancouver, reviewed the evidence around *'positioning as a treatment approach in the prevention of hip displacement'* and in turn concluded *'yellow light'* or *'insufficient evidence and an ongoing need to measure outcomes'*<sup>1</sup>.

The authors went on to integrate the research with expert opinion to develop a useful clinical resource tool that illustrates key components to consider when positioning a child with cerebral palsy (GMFCS III-V) to have a positive impact on hip health. Recommendations in terms of supported standing are illustrated below.



### Standing

Continue with standing using a supine, prone or upright configuration.

#### Hip position –

Aim for hip abduction 15-30 degrees.  
Avoid 0 degrees hip abduction

#### Dosage –

Aim for 60 – 90 minutes per day

McClean, L; Magnuson, S; Gasior, S (2014).  
*Positioning for hip health: A clinical resource*,  
Sunny Hill Health Centre for children Vancouver,  
BC, Canada.

Further detail on the evidence base around abducted standing is available within Leckey's literature review and infographic which can also be found within the 'Know-How' section on our website.

As highlighted within this literature review, methodological flaws within studies can reduce the strength of the evidence. Clinicians are required to apply their own clinical reasoning and expertise to deliver best evidence informed practice. Monitoring via hip surveillance programmes and timely surgery remain the standard of care in the management of hip displacement<sup>4</sup>. Introduction of standing in hip abduction to a child's 24hr postural management programme should be agreed in liaison with the child's orthopaedic consultant and wider multi-disciplinary team.

<sup>1</sup> McClean, L; Magnuson, S; Gasior, S (2014). *Positioning for hip health: A clinical resource*, Sunny Hill Health Centre for children Vancouver, BC, Canada.

<sup>2</sup> Gmelig Meyling, C; Ketelaar, M; Kuijper, M-A; Voorman, J; Buizer, A (2018). Effects of postural management on hip migration in children with cerebral palsy: A systematic review. *Pediatric Physical Therapy*, Volume 30, Issue 2, pp. 82-91 DOI: 10.1097/PEP.0000000000000488

<sup>3</sup> Paleg, GS; Smith, BA; Glickman, LB (2013) Systematic review and evidence-based clinical recommendations for dosing of pediatric supported standing programs. *Pediatric Physical Therapy*, Volume 25, Issue 3, pp. 232-247 DOI: 10.1097/PEP.0b013e318299d5e7

<sup>4</sup> Novak, I; Morgan, C; Adde, L; Blackman, J; Boyd, RN; Brunstrom-Hernandez, J; Cioni, G; Damiano, D; Darrah, J; Eliasson, AC; de Vries, LS; Einspieler, C; Fahey, M; Fehlings, D; Ferriero, DM; Fetters, L; Fiori, S; Forssberg, H; Gordon, AM; Greaves, S; Guzzetta, A; Hadders-Algra, M; Harbourne, R; Kakooza-Mwesige, A; Karlsson, P; Krumlinde-Sundholm, L; Latal, B; Loughran-Fowlds, A; Maitre, N; McIntyre, S; Noritz, G; Pennington, L; Romeo, DM; Shepherd, R; Spittle, AJ; Thornton, M; Valentine, J; Walker, K; White, R; Badawi, N (2017). Early, Accurate Diagnosis and Early Intervention in Cerebral Palsy: Advances in Diagnosis and Treatment. *JAMA Pediatrics* Volume 171, Issue 9, pp. 897-907 DOI:10.1001/jamapediatrics.2017.1689

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