

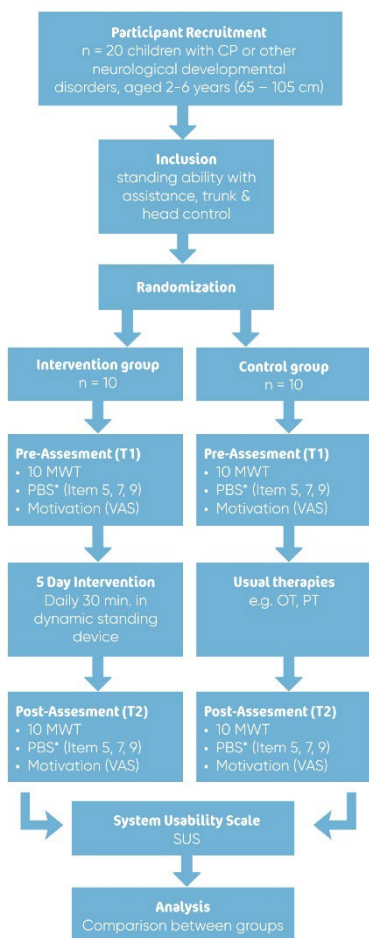
Effects of Dynamic Standing Training on Walking Ability and Balance in Children with Neurological Developmental Disorders and Cerebral Palsy

1 Background.

- Children with cerebral movement disorders struggle with balance (Elshafey et al. 2022).
- Balance difficulties are more noticeable during dynamic activities (Hsue et al. 2009).
- Regular standing programs can improve motor skills and have positive effects (Audu et Daly 2017).
- Static standing is currently best practice. It is unclear whether dynamic standing provides additional benefits.
- The study aims to investigate dynamic standing and support device development.



2 Methods.



*PBS = Pediatric Balance Scale

3 Outcome measures.

Effect on motor skills

- Balance (PBS)
- Walking ability (10MWT)

Usability

- SUS (completed by therapists)

4 Results.

- At T2: Significant improvements in walking ability compared to the control group.
- At T2: significantly improved performance in basic balance tasks (PBS 5)
- No effect on complex balance tasks (PBS 7, 9)
- Motivation improved in both the intervention and control groups.
- Therapists rated the usability of the dynamic standing device excellent (SUS 88,6).

5 Conclusion.

- Dynamic standing training may improve selected aspects of walking ability and balance
- Dynamic standing training showed high usability.
- Larger studies need to confirm and further investigate these effects

6 References.

- Impaired balance and walking ability in children with CP (Rose et al., 2002)
- Secondary musculoskeletal complications in CP (Hefti, 2009; Strobl et al., 2021)
- Insufficient evidence on dynamic standing devices (Goodwin et al., 2018)
- To date, unclear effects of dynamic standing devices (Schmidt-Lucke et al., 2019)
- Lack of evidence for new assistive devices/prototypes (Center for Evidence-Based Policy, 2019)
- Research gap, particularly in GMFCS levels II and III (Goodwin et al., 2018)