

Appraisal

Critically appraised paper: A task-specific sit-to-stand training program for children with cerebral palsy improves mobility and self-care function

Synopsis

Summary of: Chaovalit S, Dodd KJ, Taylor NF. Sit-to-stand training for self-care and mobility in children with cerebral palsy: a randomized controlled trial. 2021; epub ahead of print.

Question: Does a task-specific sit-to-stand training exercise program for children with cerebral palsy with moderate to severe mobility limitations improve self-care, independent upright mobility, and sit-to-stand performance, and reduce caregiver strain? **Design:** Randomised controlled trial with concealed allocation. **Setting:** Rehabilitation centre, Thailand. **Participants:** Children with cerebral palsy aged 4 to 12 years, gross motor function classification level III to IV (have moderate to severe difficulty with sit-to-stand), who could follow simple verbal instructions and had not received botulinum neurotoxin in the previous 6 months. Randomisation of 38 participants allocated 19 to the task-specific sit-to-stand exercise program and 19 to the standard care group. **Interventions:** Both groups received routine physiotherapy for 30 minutes, five times per week (two sessions with a physiotherapist in an outpatient setting, three sessions supervised by caregiver at home) for 6 weeks consisting of balance and gait training. In addition, the intervention group received 30 minutes of sit-to-stand training using principles of task-specific training, whilst the control group had a hot-pack applied to the lower limbs following the physiotherapy session. **Outcome measures:** The primary outcome was the change in the self-care (six items) and

mobility (five items) domains of the Functional Independence Measure for Children (WeeFIM), where each item is scored from 1 (total assistance) to 7 (complete independence). Secondary outcome measures were sit-to-stand performance (Five Times Sit-to-Stand Test) and caregiver strain (Modified Caregiver Strain Index). **Results:** All participants completed the study. At the end of the follow-up measurement period (7 weeks), the WeeFIM self-care domain was improved more in the treatment group, by 2.2 units (95% CI 1.3 to 3.1), along with the WeeFIM mobility domain by 2.2 units (95% CI 1.4 to 3.0). The total WeeFIM score and sit-to-stand performance were also improved, whilst caregiver burden reduced for the intervention group compared with standard care. **Conclusion:** A 6-week task-specific sit-to-stand program for children with cerebral palsy and moderate to severe mobility limitations led to small improvements in self-care, mobility and sit-to-stand performance, and reduced caregiver strain.

Provenance: Invited. Not peer reviewed.

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Commentary

Sit-to-stand movement is a precursor skill for mobility and self-care. Children with cerebral palsy with moderate to severe mobility limitations can have difficulty performing functional activities that involve sit-to-stand, including transferring to a wheelchair and bathing, thus making these activities a target of therapy. Prior to this trial, little evidence existed regarding the effectiveness of sit-to-stand training for improving functional activities in this population. Two previous randomised controlled trials tested sit-to-stand training in children with cerebral palsy; however, participants primarily had mild to moderate mobility limitations and the dosage of training was relatively low.^{1,2}

To date, research is limited on children with cerebral palsy who experience moderate to severe mobility limitations.³ This is the first randomised controlled trial to assess whether sit-to-stand training improved self-care and mobility function, along with sit-to-stand performance and caregiver strain, in children with cerebral palsy who had moderate to severe mobility limitations. The training program involved a minimum of 2,250 sit-to-stand repetitions across 30 sessions over 6 weeks, including 18 home sessions. Assessment of caregiver strain is important, given the expectations on caregivers to deliver home sessions versus the potential longer-term benefit of improved functional activities. This study found small improvements in self-care and mobility function, sit-to-stand performance, and

caregiver strain following the program compared with a control group. However, the mean between-group differences were less than the respective minimum clinically important differences for each outcome measure.

While some components of the control intervention (eg, hot packs) may not commonly be considered 'routine', and the absence of goal setting/measurement is notable, given the evidence supporting its role in improving function,³ this study provides guidance to physiotherapists that high-dose sit-to-stand training may lead to small improvements in functional activities in this population.

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References

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