



Early Mobility Interventions in Australia: Surveying Infant Treadmill Use in Children with Disabilities Aged Four and Under

Prepared by Dr Nicola Postol, Dr Sabrina Schaly, Dalal Dawood Baumgartner,
Prof Alistair McEwan and Dr Petra Karlsson

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Executive Summary

Children with cerebral palsy (CP) and other childhood-onset disabilities often experience delayed walking onset and reduced independent mobility. Early mobility interventions, such as treadmill training, can accelerate walking development and improve endurance, gait, and participation. Despite strong international evidence supporting infant treadmill use, Australia currently lacks Therapeutic Goods Administration (TGA)-approved devices suitable for children aged four and under.

This report presents findings from a national survey of physiotherapists and exercise physiologists working with young children with disabilities. Fourteen clinicians participated, providing insights into current practice, barriers, and desired features for infant treadmill technology.

Key Findings

- Only five clinicians had used infant treadmills; all cited increased walking practice as the main benefit.
- Lack of access to suitable devices was the most common barrier.
- Clinicians would use infant treadmills weekly if available, particularly for children aged 12 months and older who can bear weight and take assisted steps.
- Desired features include very slow speed, small speed increments, adjustable railings, emergency stop, and portability.
- Preferred price range: AUD 750–1500, with funding primarily through NDIS or charitable sources.

Implications

There is strong clinical demand for infant treadmills as early mobility tools. Engineering solutions for safe, slow-speed, portable devices are feasible and urgently needed. Co-design with clinicians and families will ensure usability and safety in both clinic and home settings.

Recommendations

- Develop a TGA-approved infant treadmill with adjustable speed, safety features, and portability.
- Establish equipment loan pools to improve access and reduce funding delays.
- Clarify TGA pathways for low-cost, small-demand pediatric technologies to encourage innovation.
- Support clinician training and caregiver education for safe home-based treadmill use.
- Conduct feasibility trials to determine optimal dosage and outcomes for early mobility interventions.

Conclusion

Infant treadmill training is a desirable early mobility intervention for children aged 12 months and older who can bear weight and take assisted steps. The absence of approved devices is the main barrier to adoption. Streamlined regulatory processes and collaborative design could enable equitable access to this promising technology across Australia.

Background

Children with cerebral palsy (CP) and similar disabilities often take longer to start walking than their typically developing peers and/or have difficulty with walking independently (Valentín-Gudiol et al., 2017).

Interventions to support mobility in very early childhood aim to give a child as much opportunity as possible to move under their own volition (Valvano & Rapport, 2006), and it is widely accepted that motor learning requires massed practice of task-specific activities (Leech et al., 2021). The ON-Time mobility framework (Sabet et al., 2022) advocates that mobility is a human right, and that interventions to support mobility should commence as soon as is developmentally appropriate, i.e., within the same timeframe as a typically developing child.

There is evidence to support the use of treadmill training with children with CP to improve mobility in terms of speed and endurance (Novak et al., 2020), stride length and gait pattern (Cherng et al., 2007), and evidence that it can accelerate walking onset in children with Down syndrome (DS) (Kamińska et al., 2023; Kinaci-Biber et al., 2022). Research has shown that this intervention can commence in very early infancy (Siekerman et al., 2015). The international clinical practice guideline for physical function for children with CP, recommends the implementation of motor interventions within the home setting in partnership with parents (Jackman et al., 2022). This supports the concept of high volume of practice, and varying practice settings, whilst maintaining time with their family, as advised in the F-words framework (De Campos et al., 2024).

While research from North America and Europe has explored the efficacy of treadmill training in infants, little is known about its uptake and application in Australia. The availability of suitable devices, clinician awareness, and integration into early intervention programs remain largely undocumented. Currently, to our knowledge, there is no commercially available treadmill in Australia to suit children aged four and under (often known as ‘infant treadmills’), with Therapeutic Goods Administration (TGA) approval, for use within either a clinical or home setting. Therefore, despite this being an evidence-based intervention, there are barriers to its implementation in children aged four and under in Australia.

Physiotherapists and exercise physiologists deliver mobility focused interventions in Australia, for children with physical disabilities, therefore we aimed to conduct an online survey of Australia-based physiotherapists and exercise physiologists to identify whether and how infant treadmills are currently used in clinical practice with children aged four and under. We wanted to understand the motivations and perceived benefits behind their use, explore barriers to implementation, and gather clinician perspectives on desirable features for future treadmill designs tailored to infants, to answer the research question: ***What are the experiences and perspectives of Australia-based physiotherapists and exercise physiologists regarding the use of treadmills to provide mobility-focused interventions for children aged four and under, and what do they see as the optimal design for an infant treadmill?***

Methods

The goal of this online cross-sectional survey, conducted in partnership with The University of Sydney between June and October 2025, was to:

- Identify current use and perceived benefits of infant treadmill training.
- Explore barriers to implementation.
- Gather clinician perspectives on desirable features for future treadmill designs.

Method	Detail
Participants	14 clinicians (physiotherapists and exercise physiologists) working with children aged ≤4 years with disabilities
Data collection	Closed and open-ended questions on treadmill use, barriers, and design preferences
Analysis	Descriptive statistics and thematic analysis of qualitative responses

Findings

Area	Detail
Current Use	Only 5 of the 14 clinicians had used infant treadmill training with clients. All reported using it to increase walking practice volume, and two described it as a novel intervention.
Alternatives	Clinicians used walkers, gait trainers, adult treadmills, parallel bars, or environmental setups to simulate mobility practice when infant treadmills were unavailable.
Clinical Reasoning	• All participants considered treadmill training appropriate for children under four with CP. • 93% would use it in clinic and 79% at home by age two. • Most felt readiness depended on being able to stand with support and take assisted steps, not diagnosis alone.
Barriers	• Lack of access to suitable treadmills was the most common barrier (9 participants). • Other challenges included manual handling difficulties, device portability, and safety concerns.
Device Features	Clinicians prioritised: • Very slow speed and small speed increments. • Adjustable railings and emergency stop. • Lightweight, portable design with wheels. • Safety manual and caregiver training for home use.
Additional Considerations	• Dosage varied among the 5 clinicians with experience in this intervention. • 11 of 14 clinicians would use an infant treadmill weekly if available. • Clinicians estimated that for home use: ○ 72% of families would have suitable home environments ○ 72% of caregivers would have capacity to use them at home ○ 56% of caregivers would be able to comply with the clinicians’ recommendations • Preferred price range: AUD 750–1500 (12 of 14 participants), with funding mainly through NDIS or charities.

Implications

Strong clinical demand exists for infant treadmills as early mobility tools. Lack of TGA-approved devices limits implementation of evidence-based practice. Engineering solutions for safe, slow-speed, portable treadmills are feasible and urgently needed. Co-design with clinicians and families could ensure usability and safety in both clinic and home settings.

Recommendations

- Develop a TGA-approved infant treadmill with adjustable speed, safety features, and portability.
- Establish equipment loan pools to improve access and reduce funding delays.
- Clarify TGA pathways for low-cost, small-demand pediatric technologies to encourage innovation.
- Support clinician training and caregiver education for safe home-based treadmill use.
- Conduct clinical trials to determine optimal dosage of infant treadmill training.

Conclusion

Infant treadmill training is a desirable early mobility intervention for children aged 12 months and older who can bear weight and take assisted steps. The absence of approved devices is the main barrier to adoption. Streamlined regulatory processes and collaborative design could enable equitable access to this promising technology across Australia.

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1300 888 378



research@cerebralpalsy.org.au



Cerebral Palsy Alliance Research Institute,
Program of Technology
cerebralpalsy.org.au



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