

Treadmill Training Results Table

Author, Year, Country, Design, PEDro score, Rating	Sample Size	Intervention	Outcomes and significance: (+) significant (-) not significant
<p>Campbell et al., 2012</p> <p>USA</p> <p>Pilot study - RCT</p> <p>6/10</p> <p>High quality</p>	<p>N = 16 preterm infants with periventricular brain injury</p> <p>Age at enrollment: 2 months</p> <p>CP diagnosis: 6/16 (38%)</p> <p>CP Type: N/A</p> <p>GMFCS (Gross Motor Function Classification System) Level:</p> <p>Level II: n=3 (50% of those with CP, 19% of all participants) Level IV: n=1 (17% of those with CP, 6% of all participants) Level V: n=2 (33% of those with CP, 13% of all participants)</p>	<p>Home exercise program (kicking and treadmill stepping) (n=7)</p> <p>vs.</p> <p>No-training control condition (n=9)</p> <p><u>Intervention details:</u></p> <p><i>Home exercise program:</i></p> <ul style="list-style-type: none"> • Monthly visits from an exercise physical therapist • Therapist provided families with a series of 4 toys to facilitate kicking. They showed parents how to set up and use toys, explained theory behind kicking and treadmill exercises <ul style="list-style-type: none"> - Parents were asked to do the exercise 8 minutes/day, 5 days/week. - A mobile with 1 Velcro tethers attached to the ankles such that kicking or other leg movements created toy movement that provided interesting visual and auditory feedback (2-4 months corrected age). Child was placed in an infant bath seat for mobile training. - A play gym with toys suspended from an overhead bar which when kicked produced lights and sounds (4-6months CA). Child was placed supine. - Toy piano to play with the feet (5-10months CA). Child sat on parents' lap. - Blow up ball attached by a tether to a plastic base for kicking practice that also produced lights and sounds when moved (8-12 months CA). Child could be either sitting or standing. - Parents could facilitate movements, but overall children were encouraged to explore the toys without 	<p>During treatment (at age 4 months, 2 months from baseline):</p> <p><i>Motor development:</i></p> <p>(-) Alberta Infant Motor Scale (AIMS)</p> <p>During treatment (at age 6 months, 4 months from baseline):</p> <p><i>Motor development:</i></p> <p>(-) AIMS</p> <p>During treatment (at age 10 months, 8 months from baseline):</p> <p><i>Motor development:</i></p> <p>(-) AIMS</p> <p>At post-treatment (12 months):</p> <p><i>Motor development:</i></p> <p>(-) AIMS</p>

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		<p style="text-align: center;">additional handling</p> <ul style="list-style-type: none"> • At 4 months stepping practice: parent suspended the child over a portable treadmill at a speed of 0-0.6m/s depending on child's ability <ul style="list-style-type: none"> - Completed for 8 minutes per day, 5 days/week • Parents had a diary to record all exercises information <ul style="list-style-type: none"> - Diary showed typical performance was 2-3x/week. - Better compliance first 7-8 months and less so last 2-3 months • Children were allowed to participate in any other intervention prescribed by their personal caregivers <p>*The interventions were intended to be a supplement to usual PT (because children with perinatal brain injury in Illinois qualify for early intervention services), however only 7/16 children in the study received any PT before 12 months, and only 5 received PT beginning at 5 months.</p> <p>*Those that did receive PT - it was usually 1x60min session weekly at home. Focused on developmental milestones & educating caregivers.</p>	
<p>Mattern-Baxter et al., 2013</p> <p>United States</p> <p>Quasi-randomized controlled trial</p> <p>3/10</p>	<p>N = 12 children with CP</p> <p>Age at enrollment: 21 months (+/-6 months)</p> <p>CP diagnosis: 100%</p> <p>CP Type (%): Hypotonic: 5/12 (42%) Spastic (hemiplegic or</p>	<p>Locomotor treadmill training with typical physical therapy (n=6)</p> <p>vs.</p> <p>Typical physical therapy only (n=6)</p> <p><u>Intervention details:</u></p> <p><i>Locomotor treadmill training:</i></p> <ul style="list-style-type: none"> • 10-20 minutes 2x/day • 6 times/week for 6 weeks • Children were encouraged to walk a minimum of 5 minutes to a maximum of 20 minutes for each session. 	<p>At post-treatment (6 weeks):</p> <p><i>Gross motor function:</i></p> <p>(-) GMF66 - dimension D (-) GMF66 - dimension E</p> <p><i>Mobility</i></p> <p>(+) Functional Mobility Scale (FMS) (+) Peabody Developmental Motor Scales – second edition (PDMS-2) - Locomotion subscale (+) Pediatric Evaluation of Disability Inventory (PEDI) - Mobility subscale</p>

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<p>Poor quality</p>	<p>diplegic): 7/12 (58%)</p> <p>GMFCS Level (%): Level I: 4/12 (33%) Level II: 8/12 (66%)</p>	<ul style="list-style-type: none"> • Small pediatric portable treadmill in their home • Carried out by parents, with weekly supervision by physiotherapist • Children used their custom orthotics • All children used the bilateral side bars mounted on the treadmill • Parents were instructed to assist the children in leg advancement only when needed and to provide as little manual support as needed at the pelvis • Children were encouraged to self-correct their stepping pattern before the parents intervened • Treadmill speed was determined at initial training and increased as quickly as possible throughout the sessions <p><i>Regular physical therapy:</i></p> <ul style="list-style-type: none"> • Once per week • At home or at physiotherapy facility <p>*Intervention group had locomotor training & regular physical therapy*</p> <p>*Control group children were offered the same treadmill intervention protocol after the last assessment for the study was completed.</p>	<p><i>Walking speed</i></p> <p>(-) 10 Minute Walk Test (10MWT)</p> <p>Follow-up (1 month post intervention):</p> <p><i>Gross motor function:</i></p> <p>(+) GMFM-66 - dimension D (-) GMFM-66 - dimension E</p> <p><i>Mobility</i></p> <p>(-) FMS (+) PDMS-2 - Locomotion (+) PEDI – Mobility</p> <p><i>Walking speed</i></p> <p>(-) 10MWT</p> <p>Follow-up (4 month post intervention):</p> <p><i>Gross motor function:</i></p> <p>(-) GMFM-66 - dimension D (-) GMFM-66 – dimension E</p> <p><i>Mobility</i></p> <p>(-) FMS (-) PDMS-2 - Locomotion (+) PEDI - Mobility</p> <p><i>Walking speed</i></p> <p>(-) 10MWT</p>