

Online Journal Club-Article Review

Background/Overview	
Article Citation	Guerette, P., Furumasu, J., & Tefft, D. (2013). The positive effects of early powered mobility on children's psychosocial and play skills. <i>Assistive Technology</i> , 25(1), 39-48. DOI: 10.1080/10400435.2012.685824
Study Objective/Purpose (hypothesis)	<p>"...our goal in the current study is to document additional objective and subjective evidence on the impact of the provision of early powered mobility on children's social skills, verbal and mobility interactions, interaction with toys/objects during play, and developmental level of play—factors typically delayed secondary to impaired movement." P. 40</p> <p>"We hypothesized that the provision and regular use of a powered wheelchair would: (1) increase parents' positive perceptions of their child's social skills, (2) increase the number of mobility activities during free play, (3) increase the number of interactions with toys/objects during free play, and (4) enhance development in the child's qualitative level of play activities and verbal interactions." P. 40</p>
Methods	
Study Design	Single group, pre-test, post-test intervention study (32 children recruited, 23 completed pre- and post-tests)
Target Population	Children with Cerebral Palsy or orthopedic conditions that severely limit independent mobility between 18 months and 6 years old
Interventions (if applicable):	Provision of powered mobility device
Outcome Measures	Adaptive Social Behavior Inventory (ASBI) – social skills for kids 18 months to 3.5 years old Preschool & Kindergarten Behavior Scales (PKBS) – social skills for kids 3 – 6 years old Survey of Technology Use (STU) – parental perceptions of social skills Observational Data: (evaluated from video recordings of 12 minute play period(s)) Quantitative - motor play activities and interactions with toys/objects Qualitative - quality of play and verbal activities
Results	
Summary of Primary and Secondary Outcomes: note results that were statistically significant	<ul style="list-style-type: none"> • Average time between pre-test²(wheelchair delivery) and post-test was 5.9 months (SD 2 mos) • Social Skills: ASBI scores showed significant increases in positive social skills ($p=.02$) with a

	<p>moderate effect size ($\delta=.57$); PKBS results also indicated increased parental ratings of positive social behaviors ($p=.04$; $\delta=.72$).</p> <ul style="list-style-type: none"> • STU indicated significant difference in child’s ability to remain engaged in a task ($p=.03$; $\delta=1.06$). Children actually required more support to remain engaged in a task after receiving power wheelchairs; Self esteem, self-confidence, and composure were all rated higher by parents after wheelchair delivery ($p=.05$, $.00$, and $.02$ respectively) – all with moderate to large effect sizes • Observational data – quantitative data: significant increase in mean number of mobility play activities observed ($p=.02$) with use of power wheelchair; qualitative data: significant increase in quality of interactive play from pre to post test ($p=.04$) effect size was 1.8 indicating a large effect.
Authors’ Conclusions	
Authors’ Conclusion	<p>“In summary, through the current study we suggest that powered mobility increased parents’ positive perceptions of their child’s social skills, increased the number of mobility activities during play, and may have positively impacted the quality of play for the children. These findings may be helpful in justifying the recommendation of powered mobility to young children and in justifying medical necessity of powered mobility for reimbursement by third party payers. Mobility is associated with the acquisition of important cognitive and perceptual skills in children without disabilities. Young children with physical disabilities should be given the same opportunities through powered wheelchair mobility. By providing a means to spontaneously explore the environment, satisfy their curiosity, and provide a means for more interactive play, powered mobility can have positive effects on a young child’s psychosocial development.” P. 46</p>
Reviewer’s Discussion and Conclusion	
Study Strengths	<p>Use of kids with CP and other mobility impairments; $n=23$ Use of multiple measures to objectively assess outcomes related to social skills of young children All measures used had proven reliability and validity – carefully described by the authors Researchers trained clinicians in the 4 sites involved to assure consistency in all observational measures. Longitudinal follow up of children from pre-test 1 (wheelchair evaluation), pre-test 2 (wheelchair delivery) to 6 months post-delivery (post-test) Sound statistical analysis of outcomes, including presentation of effect size information.</p>
Study Limitations and Potential for Bias	<p>Convenience sampling of children Relatively small sample size (23)</p>

	<p>No control group for comparison</p> <p>Limited time for follow up – followed up to 6 months post delivery when changes may have required more time.</p> <p>12 minute observations for interactions with toys and people – may not have adequately captured these behaviors in this brief observation</p>
<p>Applicability:</p> <ul style="list-style-type: none"> • Types of patients (dx) that results apply to • Types of settings or patient acuity that the results apply to • Can interventions be reproduced? Can results be applied to other pt populations? 	<p>Results from this study may be generally applicable to young children (as young as 18 months) with severe mobility impairments – study included children with CP as well as children with a variety of other conditions including arthrogyriposis, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfecta and spina bifida). Since the study focused on the effect of the mobility device on the development of various social skills, it is potentially applicable to any diagnosis that limits locomotion in young children.</p> <p>This study is applicable to community dwelling children who are accessing both indoor (e.g. school) and outdoor setting in which they engage in social interactions or play with other children. It may be applicable to children residing in other types of settings as long as they have the capacity to interact with other children and engage in play activities. It may not apply to children who are acutely ill and therefore limited in their ability to interact.</p> <p>While there are challenges in obtaining funding for powered mobility for young children, these results could be reproduced through the introduction of powered mobility for children in this age group.</p>
<p>How will study results impact PT management of this patient population?; List suggestions for how to implement changes in your clinic/department to integrate study findings into patient care</p>	<p>Physical therapists practicing with young children with significant mobility/locomotion impairments should seriously consider evaluating and prescribing appropriate powered wheeled mobility devices as part of the plan of care to encourage social skill development in their young patients.</p> <p>This study (along with substantial previous literature) helps to support the justification of early use of powered wheelchairs for this population and may enhance the funding of this equipment.</p> <p>Young children with mobility impairments (not functionally ambulatory) should be evaluated for appropriate wheeled mobility including powered mobility devices; and these devices should be recommended if applicable.</p>