PL5C

Beginning Power Mobility: PMG funded study

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Introduction

Power mobility can allow children with limited mobility opportunities to play and participate with others; however, use in early childhood is often limited. Little is known about how very young children learn to use power mobility devices, or the factors that influence successful use and integration into child and family life.

Objectives

1. Describe at least 3 clinical profiles of children under 6 years of age who may benefit from power mobility interventions
2. Describe change in power mobility skill that may be achieved in four different early power mobility devices
3. Describe patterns, trends or associations between change in young children's power mobility skills, achievement of parent selected activity and participation goals, and parent and therapist device satisfaction

Methods

This pre-post design study explored change in children's driving skills over a six-month loan of one of four early power mobility devices: Wizzybug, Bugzi, Tiger Cub or a switch-adapted ride-on-toy car. Power mobility use was measured using three different standardised power mobility skills measures designed for children: Assessment of Learning Powered mobility (ALP),[1] Powered Mobility Program (PMP) [2] and the Power Mobility Training Tool (PMTT).[3] The primary objective was to determine whether power mobility skills change in young children following a six-month loan, as measured on the ALP. Secondary objectives were to explore whether ALP change scores were associated with change scores on the PMP and PMTT, and whether change in power mobility skill was correlated with change in children's participation and parent and therapist satisfaction with the different devices.

Results

Forty-six children (25 male, 21 female) aged between 13 and 68 months participated in this study with 44 completing a six-month loan. The largest group (n = 33) were diagnosed with cerebral palsy or a cerebral palsy-like condition. Children with neuromuscular (n = 3), neuro-degenerative (n = 2), and other stable conditions (n = 8) e.g. spina bifida, also took part. Power mobility skills changed for most children with a median change score increase of one ALP phase and a range from -2 to +4 ALP phases. One child with a degenerative condition lost skill over the six months while six children remained at the same ALP phase. The remaining 39 children all improved by at least one ALP phase.

Change scores on the ALP were associated with change on the other two measures with good to excellent Spearman's correlations. ALP change scores demonstrate fair positive association with parent-rated change in children's participation as measured using the Wheelchair Outcome

Measure for Young People (WhOM-YP)[4]. Correlations with WHOM-YP change scores were similar for the PMP, but weaker for the PMTT, perhaps influenced by the ceiling effect for some children of that measure.

Parents' and therapists' ratings of device features on the Quebec User Evaluation of Satisfaction with assistive Technology (QUEST 2.0)[5] decreased over the six month loan, likely representing a more realistic evaluation of the devices following use in everyday life. However, parent median satisfaction with device expectation fulfilment on the Individually Prioritized Problem Assessment (IPPA),[6] was 'as expected' and showed fair correlation with ALP change scores and good correlation with WHOM-YP change scores. When comparing parents' and therapists' ratings of device satisfaction, Kruskal Wallis testing suggests similar median ranks for QUEST ratings but a significant difference in IPPA device expectation fulfilment ratings.

Interpretation

This exploratory pre-post design study suggests that young children with a wide range of clinical profiles can make gains in power mobility skills using different types of early power mobility devices within a six-month period. There also appears to be an association between gains in power mobility skill and achievement of meaningful activity and participation goals. Following six months' experience parents' and therapists' will likely be more realistic, but their satisfaction with how well devices assist in achieving goals may vary. Sub-group analyses may be helpful in identifying factors contributing to successful development of power mobility skills and achievement of meaningful goals. Further research using experimental designs is warranted.

References:

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