*Randomization*

Only 5 studies randomly assigned subjects to groups.19,27,29,33,37 Of these studies, only Jones et al.29 clearly stated how randomization was accomplished (via a random number generator for each matched pair of subjects).

*Inclusion and Exclusion Criteria*

Inclusion and exclusion criteria varied amongst the 5 studies meeting this criterion.26,29,33,38,39 Two studies with stated inclusion/exclusion criteria involved children who did not have motor impairments.26,33 The inclusion criterion for the Huang et al.26 study required that subjects did not have prior experience with a power wheelchair or with specific video games, whilst the sole exclusion criterion related to having an orthopedic or neurological disorder that interfered with joystick use. Inclusion criteria for Linden et al. related to the age of children (5–7 years) and lack of a physical or cognitive impairment, while exclusion was based on prior use of a power wheelchair. Jones et al.29 and Montesano et al.39 only provided inclusion criteria. Criteria for Jones et al.29 were as follows: age (14 -30 months), a motor impairment preventing functional mobility, adequate vision for power mobility use, cognitive abilities at least at the level of a 12 month-old or alertness and interest that warranted a trials of power mobility. Criteria for Montesano et al.39 included a diagnosis (CP), a minimum general intelligence quotient and moderate mental retardation, experience using a manual wheelchair, verbal abilities in Spanish, motor abilities to allow participation, and the ability to understand the tasks. McGarry et al.38 used the following inclusion criteria: age (4-14 years), a diagnosis of CP - Gross Motor Functioning Classification Scale43 Level V, and lack of exposure to a Smart Wheelchair. Exclusion pertained to a lack of parental permission to partake in the study.

*Similarity at Baseline*

Similarity at baseline was addressed by all 5 of the included studies involving randomization of subjects into groups.19,27,29,33,37

*Repeatability of the Intervention Methods*

Consistent with the inclusion and exclusion criteria for this review, all of the included studies provided sufficient detail to allow for replication of power mobility training methods.

*Outcome Measure Reliability and Validity*

Included studies focused on a wide range of outcomes including changes in the execution of specific power mobility skills as well as changes in development, socialization, cognitive skills, etc. Studies also used a variety of outcome measures. Checklists of power mobility skills (the Wheelchair Skills Checklist,18 checklists developed from the Pediatric Powered Mobility Program,22 or the Power Mobility Scale44) were used in 7 studies.18,21,22,28–30,38 Inter-rater reliability was reported for the Pediatric Powered Mobility Program22 skills list used by Furumasu et al.,22 however reliability of the skills lists were not addressed in the other studies, and none of the studies addressed the validity of these checklists. A 12-item functional evaluation rating scale to assess power mobility skills45 and previously validated through expert agreement, was used by Linden et al.33 who reported inter-rater reliability of the scale. Various functional assessment methods were used in 6 studies in which reliability and validity were not reported.17,19,24,26,39,42

Several studies utilized validated standardized tests: the Bayley Scales of Infant and Toddler Development - 3rd edition (Bayley III),46 the Battelle Developmental Inventory (BDI),47 the Pediatric Evaluation of Disability Inventory (PEDI),48 the Pediatric Evaluation of Disability Inventory – Computer Adaptive Test (PEDI-CAT).49 Tools associated with emotional responses (The Early Coping Inventory50 and The Dimension of Mastery Questionnaire51) were also utilized. A quality of life measure (the Caregiver Priorities and Child Health Index of Life with Disabilities52) was used in one study.30 Inter-rater reliability with the BDI47 was established in 2 studies28,29 and for the Bayley III46 in another study.36

Outcomes were assessed via video in 6 studies.25,32,34,35,40,41 Reliability of video coding methods was evaluated in 3 of these studies.35,40,41 Outcome data gathered by an onboard computer were utilized in 4 studies.23,33,36,37 None of the studies in the review reported minimal clinically important difference (MCID) or minimal detectable change (MCD) values for any outcome measures.

*Blind Assessment*

The individual collecting outcome data was blinded to the group assignment subjects in 2 studies.28,29 None of the included studies blinded subjects or intervention providers to group assignment.

*Account for Attrition*

All included studies accounted for attrition.

*Long-term Follow-up (≥ 6 months)*

Only the case report by Douglas & Ryan20 reported observations of long-term follow-up (2 years).

*Adherence to a Home Program*

Six studies reported adherence to a home program.18,21,25,28,29,34 One additional study included a home program but did not report adherence.41