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DESCRIPTIVE REPORT

Occurrence of gross motor behaviors and attainment of motor objectives in children with cerebral palsy participating in conductive education

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ABSTRACT

This exploratory study investigated the frequency of occurrence of gross motor behaviors by nine children with cerebral palsy (CP) participating in an 11-month conductive education (CE) program and the attainment of their gross motor objectives. The intervention team determined gross motor objectives for each child. Activities to achieve those objectives were fully integrated into the child's daily routines. Interval by interval recording was used to observe eight stability, seven mobility, and six transfer behaviors during four school days for each child. The interrater reliability using a kappa statistic was 0.73–0.93 for the observed behaviors. An independent evaluator determined that the children achieved 83% of their gross motor objectives for the first term and 89% for the second term of the year. Of the objectives initially not achieved, three related to stair climbing, an activity not observed being practiced. Stability behaviors, mainly sitting, occurred at substantially higher rates than all mobility and transfer behaviors. All stability and transfer objectives that were practiced were achieved. The children spent the majority of their day in sitting. While the children achieved the majority of their motor objectives, the limited active mobility seen in this and other preschools warrants further investigation.

INTRODUCTION

The need to practice a motor skill to acquire and develop fluency in performing that skill has "face validity" and is certainly accepted in the fields of musical performance and athletics. Adolph and colleagues (Adolph and Berger, 2006; Adolph, Vereijken, and Denny, 1998) have documented that infants without disabilities practice their gross motor skills with great variety and intensity. They found that the duration of experience in belly crawling predicts proficiency in creeping on hand-knees (Adolph, Vereijken, and Denny, 1998) and that early walkers walk more than 29 football fields per day (Adolph and Berger, 2006). Practice of a motor skill is also important in the provision of interventions for children with disabilities (Valvano, 2005). Recent research on the use of constraint-induced therapy (Charles and Gordon, 2005; Deluca, Echols, Lawn, and Ramey, 2006) and partial body weight-supported treadmill training (LaForme Fiss and Effgen, 2006; Ulrich et al, 2008; Ulrich, Ulrich, Angulo-Kinzler, and Yun, 2001) suggests that the intensive practice that is the foundation of these interventions does aid in motor skill acquisition.

There are few studies that indicate the most effective and efficient frequency, intensity, and duration of intervention for children with disabilities to learn gross motor skills. In addition, comparing the few studies that address these issues is difficult because they use different variables. Bower, McLellan, Arney, and Campbell (1996) found that just 2 weeks of intensive physical therapy intervention (1 hour/day for 5 days/week) for children with cerebral palsy (CP) had a positive effect on their Gross Motor Function Measure (GMFM) scores. A later study by Bower et al (2001) with a similar intensity and frequency of intervention, but for 6 months' duration, found little difference in performance on the GMFM, and therapists and parents reported feeling tired and stressed because of the intensive nature of the program. Trahan and Malouin (2002) found improved performance on the

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GMFM after a period of intensive physical therapy (45 minutes, 4 times/week for 4 weeks) for children with severe forms of CP. A case study by Schreiber (2004) reported positive outcomes when the intensity, frequency, and duration of intervention were increased from 1 hour/week to 1 hour, 4 days/week for 4 weeks. He suggested that the success was probably tied to the intensive intervention occurring during a critical/sensitive period of skill development. These few studies imply that 6 months of intensive intervention was not more effective than less frequent intervention but that 2–4 weeks of intensive intervention might be appropriate for children to achieve gross motor skills.

Preschool children with disabilities are expected to practice the gross motor skill objectives in their physical therapy plan of care. Practice is necessary for acquisition, fluency, and generalization of motor skills. Integration of gross motor objectives into the classroom curriculum allows classroom opportunities to practice motor objectives that are critical for skill development; however, research on the occurrence of gross motor behaviors in children with disabilities in preschool classrooms is minimal (Ott and Effgen, 2000).

One educational curriculum that was developed specifically to meet the overall needs of children having CP is Conductive Education (CE). CE, developed in the 1940s by Professor Andras Peto, a neurologist and educator in Budapest, Hungary, is a holistic approach to the development and education of children with neurological dysfunction. It is not a therapy system but a system of education that aims to teach and motivate the child to function in society. Emphasis is placed on motivation; developing self-esteem; emotional and cognitive growth; and motor function. CE involves an integrated curriculum encompassing cognitive, motor, personal care, psychological and communication learning in real life and age-appropriate contexts (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007; Cheng, 1999).

The CE classrooms in Hungary and many other parts of the world are led by a "conductor" trained at the Peto Institute in Hungary. Conductors are educated in a college program focusing on medicine, education, physiotherapy, and psychology to meet the needs of children with physical disabilities (Hari and Tillemans, 1984). However, in Hong Kong and parts of Australia and the United States (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007), CE programs have been developed without full-time supervision by conductors, with professional staff being trained by conductors instead. This modified form of CE was offered in Hong Kong, for example, in part because there were already therapists and educators to meet the children's needs. There was no perceived need to replace these professionals, just a desire to have them learn the integrated curriculum provided by CE. The CE programs in Hong Kong are fully endorsed by the Peto Institute.

In CE the teaching, including motor activities, is carried out in groups. Groups work collectively as a social unit within a well-structured learning environment. Tasks are meant to be goal-directed, meaningful, and functional and are done in the natural environment (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007), as is advocated for any early childhood education program (Guralnick, 2001). For example, a task of picking flowers would include the gross motor skill of moving to the flowers, naming the flowers and naming the colors of the flowers, and perhaps a song about the flowers, followed by the fine motor skill of picking the flowers and putting them into a basket. There is extensive practice of the desired skills/tasks; in fact, one of the criticisms of CE is that the repetition of the tasks can become boring.

The American Academy of Cerebral Palsy and Developmental Medicine (Darrah, Watkins, Chen, and Bonin, 2004) and the Alberta Heritage Foundation for Medical Research (Ludwig, Leggett, and Harstall, 2000) have completed systematic reviews for the effectiveness of CE. These reviews suggest that CE is no more effective than "traditional educational and therapeutic intervention" and "there is no good scientific evidence to support the use of CE in place of other treatment programs for children with CP" (Ludwig, Leggett, and Harstall, 2000).

Continued research, comparing CE to "traditional" therapy programs where the program's intensity and frequency were similar to CE, found minimal differences. Stiller, Marcoux, and Olson (2003) investigated providing similar hours of programming of CE (provided by conductors and aids), special education (teacher and aides carried out program activities), and intensive therapy (individual physical therapy, occupational therapy, speech therapy, if needed, and group therapy) but different amounts of therapeutic intervention for children with CP. They found no statistical difference in all outcomes among groups receiving the different interventions. There were, however, within-group differences with the intensive therapy group improving significantly more on the self-care and social function scales of the Pediatric Evaluation of Disability Inventory (PEDI) and on the crawling and kneeling dimensions of the GMFM. Studies by Ödman and Öberg (2005, 2006) found no major differences on the GMFM, PEDI, and self-reported individualized goal measures between two groups of children: one group who received "traditional health care" that included "eclectic" intensive training with a physiotherapist or teacher and group activities and another group of children who participated in a modified CE program.

Further investigation of the effectiveness of CE is required, particularly because of the favorable light in which parents perceive this program. Parents are the major force behind establishing CE programs (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007; Wright, Boschen, and Jutai, 2005), recognizing the need for comprehensive educational programs and intensive practice of desired skills by their children. Parents of children in CE programs "appreciate the intensive training and found it motivating and enjoyable for the child" (Lind, 2000).

Given the plethora of research on the effect of practice of motor skills for children with disabilities, the limited research on the direct teaching of a motor skill, the restricted research on the most effective frequency and intensity of physical therapy intervention, and the need to continue to investigate the effectiveness of CE, this study was undertaken. The purpose of this exploratory investigation was to study the frequency of occurrence/practice of gross motor behaviors in a CE preschool program and the attainment of individualized gross motor objectives in preschoolers with CP.

METHODS

This was a systematic, observational research study with no manipulation of variables. and was approved by the Human Subjects Ethics Sub-committee Committee of the Hong Kong Polytechnic University. Written informed consent was received from the children's parents.

Setting

This study took place at a preschool for children with CP and other developmental disabilities in Hong Kong. The CE curriculum was developed in close, ongoing consultation with the Peto Institute in Hungary; however, instead of conductors providing the intervention program as is usually done, the program was provided by an interdisciplinary professional staff of teachers, occupational therapists, physical therapists, and speech-language pathologists who were supported by parents and all center employees (Kolucki, 2002). Conductors from Hungary would visit periodically to monitor the program. The children participated in a full-day CE program, 5 days a week for 11 months each year. The children were in two classrooms having similar curricula and each classroom generally had six students. The CE curriculum was tailored to the needs of the children individually and as a group. There was a set structure to the daily routine, and as the children learned skills, the curriculum was modified for the achievement of more advanced skills. The preschool was on one level, with several classrooms each having an observation room, a bathroom down the hall from the classrooms, a gross motor area, and a large, wide entrance and hallway. There was no therapy room. Children ate their lunches and took naps in their classrooms. See O'Connor and Yu (1998) for more extensive details on the CE preschool curriculum used at this center.

Participants

Nine children with a diagnosis of CP participated in the study. Their ages ranged from 42 to 72 months ($X = 56$; $SD = 11.53$) at the start of the study. They were all learning to walk. Their average and median Gross Motor Classification System Score (Palisano et al, 1997) was level III (walks with assistive devices; limitation walking outdoors and in the community) (Table 1).

Procedures

In September, at the beginning of the school year and in January at the end of the first term, the entire intervention team, including experienced physical therapists, met and determined two measurable gross motor objectives for each child, which was part of the center's standard routine practice. By October the objectives had been developed and the child's performance on the objectives were evaluated by the team and for purposes of this study, by an independent, experienced physical therapist not involved in the CE program, four times during the year (October, January, May, and July). See Table 1 for the objectives for the first and second terms. The gross motor objectives were predominantly dynamic mobility activities involving transferring, walking, and stair climbing. In January at the end of the first of the two yearly terms, if a child achieved an objective, a new objective was determined. A child could have four gross motor objectives throughout the year. Mobility, stability, and transfer activities were integrated throughout the child's day into activities (task series) that teach the child to gain control over movements and learn new movements that will result in improved functioning (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007) with a focus on the child's specific gross motor objectives. Consistent with a CE philosophy, all staff and volunteer parents facilitated these activities. Professional boundaries are superseded in the common goal of creating the optimum learning environment (Kolucki, 2002).

Children were not taken out of their classroom for therapy, and therapy activities were integrated into the classrooms routines. For example, when a child needed to go to the bathroom, a therapist or anyone else would assist the child in walking to the bathroom. If the child was unable to walk all the way to the bathroom, a potty

TABLE 1 Child characteristics, gross motor objectives, and gross motor behaviors

Subjects	Gross motor objectives by term	When achieved	Gross motor behaviors summarized
♯1	1st Term		
39 months Spastic diplegia GMFCS**III	-Walk with assistance of ladder frame or K-walker for a distance of half classroom (2.4 m/8 feet) and under the supervision of adult.	January	*In/out of standing* and *assisted walking* occurred with increased frequency from October to May. A*ssisted sitting* decreased while *independent sitting* increased over the year.
	-Pivot on stool independently at least 90° with verbal cues.	January	
	2nd Term		
	-Transfer from stool to floor by hands pressing on floor with minimal manual assistance.	May	Rate of occurrence of *arrival/departure* decreased from October to May, whereas the overall *transitions* and *gross motor* time increased.
	-Transfer from ring sitting to quadruped with minimal assistance.	May	
♯2	1st Term		
40 months Spastic diplegia GMFCS III	-Pick up objects from floor or from two sides in stool sitting and back to erect sitting posture.	January	*Transfers* and *mobility* remained stable over, as did most *activities*. A*ssisted sitting* decreased slightly with an increase in *independent sitting* by July.
	-Transfer from chair to floor (bend trunk forward, hands press on floor, bend knees to quadruped) and floor to chair (side-sitting to kneeling to half-kneeling to standing up) with manual assistance.	January	
	2nd Term		There was a decrease in *potty* time between October and May.
	-Pivot on stool for 360° independently, keeping feet flat on floor.	May	
	-Stand up from stool sitting using K-walker with minimal manual assistance.	May	
♯3	1st Term		
56 months Spastic quadriplegia GMFCS IV	-Sit upright on stool for at least 20 seconds, with head in midline, both hands held on furniture, feet flat apart on floor and with verbal cues.	January	A*ssisted sitting* and *independent sitting* increased between October and January and then no *independent sitting* during the May observation. *Transfers* remained stable over time. In January there was the most *assisted walking;* there was never any *independent walking*. L*esson* time and *transitions* decreased over time.
	- Stand up from stool sitting by first pushing the ladder frame forward, keeping head down (trunk bend forward) with verbal cues.	January	
	2nd Term		
	-Walk with walker for 4–6 steps with manual assistance (keeping trunk in midline most time).	July	
	-Side stepping for 5–10 steps with legs and arms adducting and abducting alternately, with manual assistance to stabilize the pelvis for facilitating lifting of the legs.	July	

(*Continued*)

TABLE 1 Child characteristics, gross motor objectives, and gross motor behaviors (continued)

Subjects	Gross motor objectives by term	When achieved	Gross motor behaviors summarized
♯4	1st Term		
63 months Spastic quadriplegia GMFCS III	-Pivot on stool 45° and keep balance on stool sitting with manual assistance.	January	A*ssisted sitting* increased with a decrease in *independent sitting* from October to July. *Assisted walking* increased slightly between October and July; there was never any *independent walking*. *Transfers* were stable along with *activities*. *Potty* time increased slightly, whereas *transitions* consumed the most time in January.
	-Walk for 1–2 steps with the assistance of ladder frame independently.	Not achieved	
	2nd Term		
	-Walk for 1–2 steps with the assistance of ladder frame independently.	Not achieved	
	-Holding onto furniture, side stepping for 2–3 steps with alternating hip abduction and adduction, with the manual assistance to stabilize the upper trunk.	July	
♯5	1st Term		
64 months Ataxia GMFCS III	-Stand on both feet with both hands held on ladder frame for at least 10–15 seconds with verbal cues (elbows, knees, and hips keep straight).	January	*Assisted walking* increased between October and July. Spent more time in *assisted sitting* than any other child. The amount of *assisted standing* decreased somewhat over time.
	-Sidewalk for a long-table distance (2 m/6 feet) with hands on table and with verbal cues	January	
	2nd Term		
	-With the verbal cues and manual assistance over the pelvis, walk for 5 steps with the arms straight, hands on walker and both feet apart.	May	
	-Transfer from standing to floor by holding the ladder frame with manual assistance (push the ladder frame forward, then bear stand, then kneel and climb down the ladder frame with hands).	May	
♯6	1st Term		
68 months Spastic diplegia GMFCS III	-Walk independently and keep balance for at least a distance of two classrooms (9.6 m/32 feet) in the center (both hands on waist and with AFO).	January	*Assisted walking* decreased with an increase in *independent walking*. A*ssisted standing* decreased with a slight increase in *independent standing*. Amount of time in *sitting* was fluctuating between *assisted* and *independent*.
	-Walk up and down stairs for 3–5 steps independently with one hand on handrail. (Up stairs: step over step, down stairs: step by step).	Not achieved	
	2nd Term		
	-Walk up and down stairs for 3–5 steps independently with one hand on handrail. (Up stairs: step over step, down stairs: step by step).	May	
	-Keep balance for 5 minutes in walking outdoors using one cane.	May	

(*Continued*)

TABLE 1 Child characteristics, gross motor objectives, and gross motor behaviors (continued)

Subjects	Gross motor objectives by term	When achieved	Gross motor behaviors summarized
♯7	1st Term		
40 months Spastic diplegia GMFCS III	-Pivot on stool for 90° by hip abduction and adduction, with her both hands held on stool and manual assistance by adult.	January	Fluctuated between *assisted* and *independent sitting*. Amount of *assisted walking* was similar in October and July. *Arrival/departure* occurrence decreased from October to May, with a slight increase in *transition*s.
	-Transfer from stool sitting to floor with manual assistance.	January	
	2nd Term		
	-Standing holding the ladder frame for about 20 seconds with arms and legs straight, feet apart, and minimal manual assistance.	May	
	-Keeping knees straight during stance when walking 5 steps with minimal manual assistance to stabilize the pelvis.	May	
♯8	1st Term		
60 months Spastic diplegia GMFCS III	-Walk up stairs for 3–5 steps (step over step) with both hands on handrail or one hand on handrail and the other hand supported by an adult.	January	*In/out of standing* and *assisted walking* increased over time, with no independent walking. Would *lie, kneel,* and be in *quadruped*. Both *assisted* and *independent sitting* occurred.
	-Walk upright with a pair of sticks for a gait mat distance (3.6 m/12 feet) with verbal cues, step at least 2 inches high.	January	
	2nd Term		
	-Independently stand for at least 3 minutes without any assistance.	May	
	-Walk downstairs step by step for 3–5 steps, with both hands on handrail and good control of both knees.	Not achieved	
♯9	1st Term		.
48 months Spastic diplegia GMFCS II	-Walk up slope not less than 15 steps with manual assistance.	January	There was twice as frequent *independent walking* as *assisted walking* during the year. Fluctuated between *assisted* and *independent sitting* with an increase in *independent sitting* by July. Amount of *potty time* decreased throughout the year
	-Walk up and down stairs for 2–3 steps (step over step) with one hand held on handrail.	Not achieved	
	2nd Tern		
	-Walk up and down stairs for 2–3 steps (step over step) with one hand held on handrail.	May	
	-Walk backward independently for 1 classroom (16 feet) without falling down.	May	

*First term went to January and the second term to July.
**GMFCS = Gross Motor Function Classification System.

was brought to where the child had stopped. The child would receive only as much assistance as required to complete the toileting process and would then have assistance walking back to the classroom. Everyone was instructed in how to assist the child in moving and performing activities of daily living.

Each child was observed for a full school day (from approximately 9:00 to 4:00), four times during the 11-month school year (October, January, May, and July) by an independent, experienced pediatric physical therapist, not involved in the CE program. The 36 observation days started when each child arrived at school in the morning and stopped at the end of the day when the child left the classroom. There was no observation recording during lunch and nap time (approximately 2 hours/day). The majority of the time the observer was in an observation room with full view of the classroom. When the child being observed left the classroom, the observer would leave the observation room to continue viewing the child from a distance. The randomly selected observation days were typical school days not involving any special activities.

Classroom activities were observed to understand when and under what context there were opportunities for the children to practice gross motor behaviors. A classroom activity was defined as a specific, routinely scheduled activity the child participated in during the school day. Lunch and nap time, routinely scheduled classroom activities, were not observed because of their predictable, consistent nature, and decreased opportunities during these activities to perform motor skills.

The methodology used was interval by interval recording. The individual child was watched for a 15-second observation interval followed by a 15-second recording interval when the observations were recorded. These intervals were signaled by a CD recording listened to by the observer. The observed behaviors and activities are in italics and are described in Appendix A: Operational Definitions. The class activity the child was engaged in was recorded (*arrival/departure, lesson, fine motor/art/sensory, gross motor, free play, story time, tea time, clean-up, toilet, transition*). The gross motor behaviors observed included eight stability behaviors (*lying, assisted sitting, independent sitting, kneeling, quadruped, assisted standing, independent standing, and squatting*), seven mobility behaviors (*rolling, creeping, knee walking, assisted walking, independent walking, other movement, and dependent mobility* such as being carried) and six transfer behaviors (*rolling, in and out of floor sitting, in and out of chair sitting, in and out of standing, other transfers, and dependent transfer* such as being transferred by an attendant). The first classroom activity, and the first stability, the first transfer, and the first mobility gross motor behavior that occurred in the 15-second observation interval was recorded during the 15-second recording interval. A maximum of three gross motor behaviors were possible, such as *independent sitting, transferring in and out of chair sitting*, and *assisted walking*. The system for observation of gross motor behaviors and the operational definitions were similar to that reported in Ott and Effgen (2000).

Interrater reliability using two independent viewers for the observation of these behaviors was conducted before and during each of the four data collection periods to ensure standardized and consistent observation procedures and findings (Kennedy, 2005; Ottenbacher, 1986). Acceptable interrater reliability must be maintained throughout data collection and was therefore done during each of the data collection periods.

Data analysis

A kappa statistic was calculated for interrater reliability. Raw data, in the form of frequency counts, was transformed into incidences per hour for observations of occurrences of gross motor behaviors. The transformations were necessary because of slight variations in the length of daily observation of each child because of differences in the length of lunch, nap, and arrival time. Descriptive statistics were used to report the findings on objective achievement, the occurrences of classroom activities, and gross motor behaviors. A Freidman test was used to determine differences in the frequency of behaviors across observation days with a Bonferroni correction.

RESULTS

The interrater reliability, as determined by using a kappa statistic, was 0.67 before the start of the study and was 0.73–0.93 during the observations. These levels of agreement suggest substantial agreement (Landis and Koch, 1977). The average number of observation intervals observed during the four observation days was 437 (range 429–459). When the time for the recording intervals is added to the observation interval times, and the 15-second intervals are converted to hours, the average child was observed for 3.65 hours each day with a range from 2.93 to 4.10 hours. A Friedman test was used to compare the rate of gross motor behaviors and daily activities across the school year. There were no statistically significant differences ($p < 0.05$) among the different observation days; therefore, the data were combined for the 4 days. The descriptive data of the incidences per hour of the motor behaviors and classrooms activities for all children for each of the observation months and yearly average are presented in Figures 1–4.

Gross motor objectives

Between October, when the individualized gross motor objectives were determined, and January, the end of the first term when their achievement was assessed,

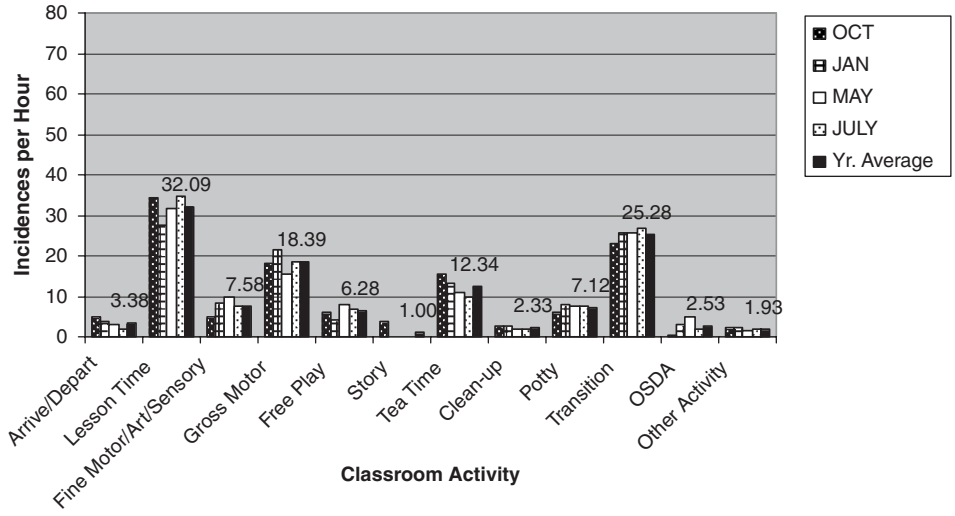

FIGURE 1 Average incidences per hour of classroom activities.

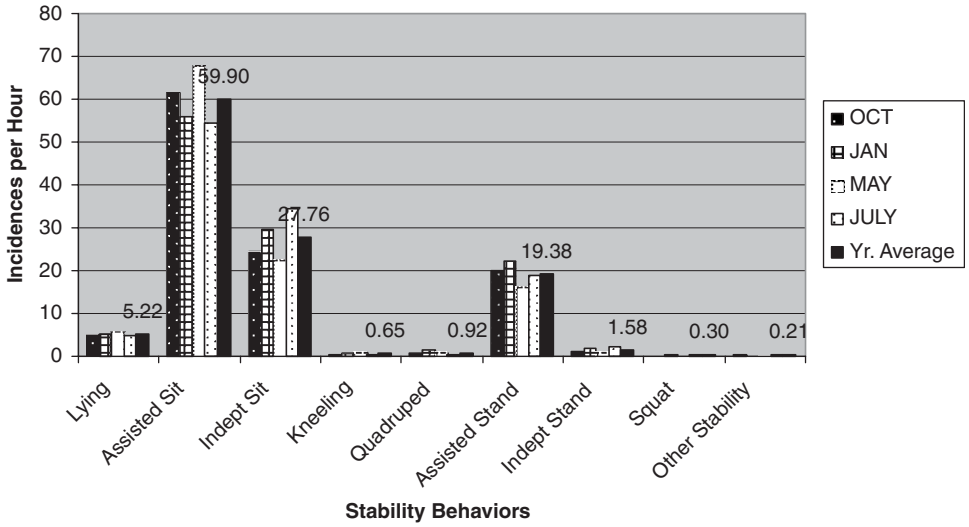

FIGURE 2 Average incidences per hour of stability behaviors.

15 of the 18 (83%) individual gross motor objectives had been achieved by the children (Table 1). By July, 17 (94%) of the original 18 objectives had been achieved. In May, 13 of the children's 18 (72%) objectives were achieved. Of the 15 new objectives from January, 11 were achieved and 2 of the original 3 objectives not achieved in January were also achieved. In July, 16 of the 18 (89%) objectives from the second term were achieved.

In January, two of the objectives not achieved involved stair climbing and one with walking independently with a ladder frame. By July, the two subjects not climbing stairs in January did achieve their objective of climbing stairs, but another subject with a new stair climbing objective from January did not achieve the objective. The original objective involving independent walking by subject 4 was not achieved during the year.

Classroom activities

Lesson time (32.1 incidences/hour) was the predominant classroom activity (Figure 1) followed by *transitions* (25.3 incidences/hour) and then *gross motor* time (18.4 incidences/hour). Many of the *lesson* activities included a fine motor component, but only those activities that were specifically directed toward use of the hands and fingers or sensory activities were coded under *fine motor*. This was followed by *tea time*

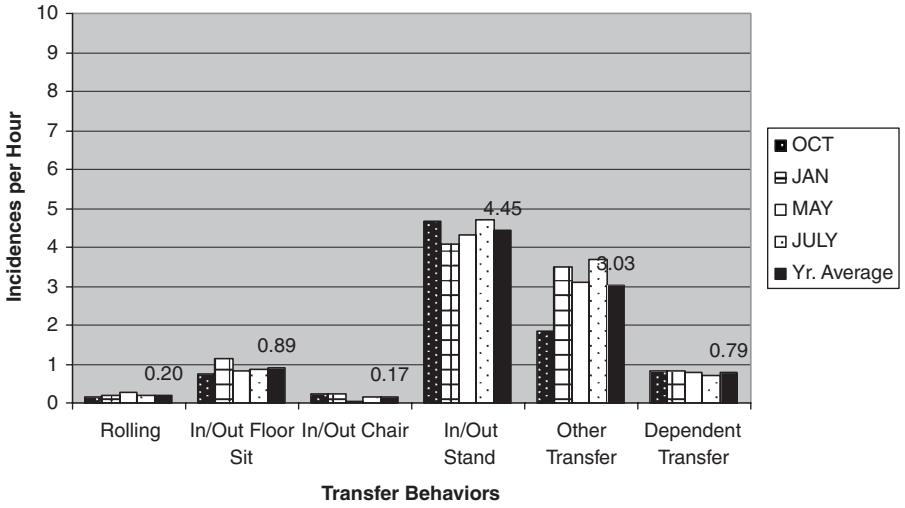

FIGURE 3 Average incidences per hour of transfer behaviors. Note scale only goes to 10 incidences per hour.

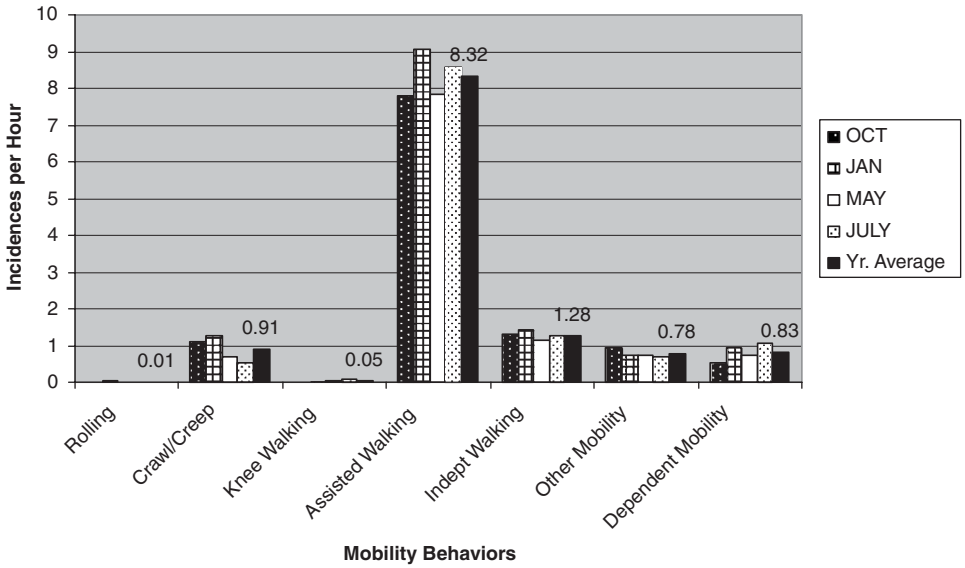

FIGURE 4 Average incidences per hour of mobility behaviors. Note scale only goes to 10 incidences per hour.

(12.3 incidences/hour). The other activities such as *other staff directed activities* (OSDA) were relatively equal in occurrences. The occurrences of *lesson* time decreased in January, with a related increase in *gross motor* time. There was a reverse of this trend in May and July when *lesson* time again increased and *gross motor* time decreased. The incidence of time devoted to *arriving* and *departing* decreased from October (5.1 incidences/hour) to July (1.9 incidences/hour), which was significant at the $p < 0.05$ level, but was not significant when the Bonferroni correction was applied. Therefore, there was no significant difference in the amount of time devoted to each classroom activity across the school year.

Gross motor behaviors–stability

The dominant stability behavior (Figure 2) during all observation periods was *assisted sitting* (59.9 incidences/hour), followed by *independent sitting* (27.8 incidences/hour), and *assisted standing* (19.4 incidences/hour).

Rarely did *lying, kneeling, quadruped, independent standing* or *squatting* occur. There was no significant difference across observation months; however, a decrease in *assisted sitting* occurred in January, accompanied by an increase in *independent sitting*. Thus, the amount of sitting remained consistent in January, but how the children sat changed. By May, the incidence of *assisted sitting* (67.7 incidences/hour) again went up with a slight decrease in *independent sitting* (22.6 incidences/hour), although by July (the end of the year) the greatest amount of *independent sitting* (34.4 incidences/hour) for the year was observed with the least amount of *assisted sitting* (54.6 incidences/hour).

Gross motor behaviors–transfers

The dominant transfer behavior (Figure 3) for the year was getting *in and out of standing* (4.5 incidences/hour) followed by *other transfers* (3.0 incidences/hour). The category of *other transfers* was used when the transfer did not fit any of the operational definition categories. Although not significant across months, *other transfers* increased considerably from October to January and then decreased slightly in May. These were followed in occurrence by *in/out of floor sit* and *dependent transfers*. *In/out of chairs* (from one chair to another chair) and *rolling* rarely occurred.

Gross motor behaviors–mobility

By far the major mobility behavior (Figure 4) was *assisted walking* (8.3 incidences/hour or 2.1 minutes/hour), which was observed being done by all of the children. If the children also were walking during the 15-second recording interval after each observation interval that means the children were engaged in *assisted walking* 4.2 minutes/hour. Occasionally, the children would *crawl or creep, walk independently*, use *other methods of mobility* or there was *dependent mobility* when the child was carried. *Rolling* and *knee walking* were rarely observed.

DISCUSSION

Children with disabilities are receiving educational and therapeutic interventions in preschools around the world, yet there is a dearth of data indicating the most effective interventions. Exploratory research can define and describe what is done and achieved while waiting for the gold standard of randomized controlled trials. This study systematically observed four typical school days of children participating in a CE preschool program to get a clearer understanding of the occurrence of motor behaviors and classroom activities throughout the day. The children's achievement of their gross motor objectives throughout the year was independently evaluated, and possible relationships among the occurrence of motor behaviors throughout the day and achievement of motor objectives are discussed, although no direct correlations can be made.

As noted in Results and as follows in Discussion, the children achieved all but one of their original gross motor objectives. Those behaviors that were practiced were achieved and were validated by independent observers and systematically reported. The most frequent classroom activity was *lesson time*, followed by *transition*, *gross motor*, and *tea time*. All those activities, except gross motor, generally involved sitting. The major motor behaviors that were observed across the year were stability behaviors with 87.7 incidences/hour of *assisted* and *independent sitting* compared to just 9.6 incidences/hour of mobility behaviors, such as *assisted* and *independent walking*. The children did practice transferring *in and out of standing* (4.5 incidences/hour) at least every hour.

Gross motor objectives

Between October and January, 83% of the individual gross motor objectives had been achieved by the children. By the end of the year, 94% of the original objectives were achieved, and by the end of the second term, 89% of the objectives were achieved. This rate of objective achievement is appreciably better than that reported by Wright, Boschen, and Jutai (2005) in their study of outcome measures of a CE program and the 53% achievement rate in early intervention and schools in Nebraska (Stuberg and DeJong, 2007). The objectives achieved were related to those behaviors observed being practiced. All objectives related to stability and transfer behaviors were achieved. As noted, *assisted sitting, assisted standing*, and *transferring in and out of sitting and standing* were commonly observed behaviors throughout the school day.

During the year, two of the objectives not initially achieved related to walking and three to stair climbing. Walking with and without assistance and assistive devices was observed throughout the year, however, for less than 5 minutes per hour (4.2 minutes/hour *assisted walking* and 0.6 minutes/hour *independent walking*). Stair climbing was not a gross motor activity that was observed being practiced on any of the 36 observation days. Although no correlations can be made with such limited data, the objectives that were practiced were achieved and the objectives related to stair climbing that were not observed, were not achieved. Stair climbing is a high level gross motor skill

that requires access to stairs and perhaps more practice than other gross motor skills.

Classroom activities

The total predominance of *lesson time* is consistent with usual preschool curricula and was expected to be the dominant activity. The second most common activity of *transition* was also not surprising. *Transitions* occurred between structured and unstructured activities or tasks. Sometimes the *transition* merely involved waiting for new materials, a new activity at the same location, or movement to a new location for a new activity. Perhaps more time was allowed for movement from one activity to another in CE which is reflected in the minimal *dependent transfers* and *dependent mobility behaviors* in the CE setting compared to the intervention settings studied by Ott and Effgen (2000). The opportunity for active participation in transfers support the principle of an integrated curriculum in which the movement activities involved in getting to another lesson/activity are also valued for the movement practice opportunities afforded, whereas children with disabilities in traditional preschools are taught to get from one place to another as quickly as possible (Bailey and Wolery, 1992).

The third most common classroom activity was *gross motor* (18.4 incidences/hour) and was similar (17.6 incidences/hour) to that seen in United States preschool classrooms (Ott and Effgen, 2000). This is not as high an incidence as one would anticipate in a CE program with an emphasis on functional activities done in a natural environment. This might be a reflection of parent and program emphasis on preacademic skills common in Hong Kong (Olmsted and Weikart, 1995), and the findings might be different in other CE programs around the world.

The next most frequent activity was *tea time*, where not only was independent feeding encouraged but also fine motor development, social skills, and language skills. The remaining activities occurred with much lower frequencies. *Potty* activities were consistent throughout the observations, whereas the amount of time devoted to *arrival and departure* activities decreased consistently from October to July. This reduction in time/occurrences is probably an indication of increased efficiency on the part of the children or staff in getting into or out of the center. The two children who learned to walk independently also influenced the length of time spent in this activity.

Gross motor behaviors

The children spent the majority of the day *sitting with assistance* or *independently* (Figure 2), which is similar to the findings in children with CP in preschools in the United States (Ott and Effgen, 2000). In preschool classrooms children are expected to sit and learn table tasks, which raise a concern whether enough time is spent practicing the gross motor mobility skills that are identified as areas requiring intervention for these children. CE programs are supposed to allow time to practice and repeat motor tasks (Bourke-Taylor, O'Shea, and Gaebler-Spira, 2007). Although children did walk to and from their classroom and bathroom and there were also lessons that involved walking or marching as the children counted, sitting during lessons was a predominant occurrence. This might be anticipated in preschool programs in the United States because motor development is not listed as a knowledge and skill base for beginning and advanced special education professionals in early childhood special education (CEC/DEC, 2007); however, it was not expected in a CE preschool classroom to the extent documented. This might also be the reason that systematic reviews of CE do not indicate a benefit of CE over traditional programs (Darrah, Watkins, Chen, and Bonin, 2004; Ludwig, Leggett, and Harstall, 2000).

The occurrence and type of transfer motor behaviors were consistent with expectations. The children rarely were carried in a *dependent transfer*, unlike in a study of preschool children with CP in the United States where *dependent transfers* were the most common transfer behavior occurring on average 4.0 times /hour (Ott and Effgen, 2000). On the few occasions when the children in the CE program were carried, it was generally to rush to the school bus or toilet.

All of the children were learning how to walk to varying degrees, and two children eventually *walked independently*. Therefore, it was expected that the predominant mobility activity was *assisted walking*, but walking an average of less than 5 minutes/hour is not very much practice in walking during a program that values motor skill development. The children learning to walk certainly did not cover the 29 football fields per day like the early walkers without disabilities reported by Adolph and Berger (2006). The children were not carried as frequently as observed in the Ott and Effgen (2000) study, which reflects the CE philosophy of encouraging independence.

Limitations and future research

This is an exploratory study that involved only one CE preschool with detailed observations of just nine children without use of standardized, comprehensive pre and post-intervention assessments or a control group. Use of assessments such as those done by Wright, Boschen, and Jutai (2005) were not possible because of the limitations in culturally appropriate measures for

this age group and the loss of instructional time for assessments. The results cannot be generalized, but they do provide guidance for further research and highlight the importance of consideration of movement opportunities and practice for children with disabilities in any preschool classroom. The observational methodology and operational definitions have been used successfully across cultures with good reliability (Ott and Effgen, 2000). Although very labor intensive, an objective accounting for classroom activities and child behaviors can assist in providing greater insight into classrooms and the beginning of future research on the relationship of activities, practice of skills, and achievement of skills.

There is a need for further research to understand the frequency and type of motor behaviors that occur throughout the child's day at school and in the home. The frequency of task-specific practice related to a child's gross motor objectives needs to be investigated. Correlations between amount of practice and achievement of objectives could then be made. Are objectives/tasks that are practiced more frequently achieved more quickly? Does the location of practice or who is assisting with the practice influence achievement?

CONCLUSIONS

While professionals and parents expect children with disabilities to achieve their annual objectives, this does not always occur (Wright, Boschen, and Jutai, 2005), and there are little data suggesting what frequency, intensity, and duration of interventions lead to objective achievement. This exploratory study sought to document achievement of gross motor objectives in children with CP participating in a CE program and relates the achievement of those objectives with the occurrence of gross motor behaviors throughout the school day. The children achieved most of the objectives practiced throughout the school year and, conversely, did not achieve objectives that were not practiced, suggesting a relationship between practice and achievement of gross motor objectives. This study provides preliminary evidence that CE preschool programs might provide sufficient opportunities to practice gross motor skills such as independent sitting and assisted walking necessary to achieve related individualized gross motor objectives. Further research is needed in this area to help determine the most effective frequency, duration, and type of intervention to improve gross motor skills in children with CP.

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REFERENCES

Adolph KE, Berger SE 2006 Motor development. In: Damon W, Lerner RM, Kuhn D, Siegler RS (eds) Handbook of Child Psychology, vol. 2, Cognition, Perception and Language, 6th ed, pp 161–213. Hoboken, NJ, John Wiley & Sons Inc

Adolph KE, Vereijken B, Denny MA 1998 Learning to crawl. Child Development 69: 1299–1312

Bailey DB, Wolery M 1992 Teaching Infants and Preschoolers with Disabilities, 2nd ed. New York, Merrill184

Bourke-Taylor H, O'Shea R, Gaebler-Spira D 2007 Conductive education: A functional skills program for children with cerebral palsy. Physical and Occupational Therapy in Pediatrics 27: 45–62

Bower E, McLellan DL, Arney J, Campbell MJ 1996 A randomized controlled trial of different intensities of physiotherapy and different goal-setting procedures in 44 children with cerebral palsy. Developmental Medicine and Child Neurology 38: 226–237

Bower E, Michell D, Burnett M, Campbell MJ, McLellan DL 2001 Randomized controlled trial of physiotherapy in 56 children with cerebral palsy followed for 18 months. Developmental Medicine and Child Neurology 43: 4–15

Carta JJ, Greenwood CR, Atwater JB 1992 ESCAPE: Eco-behavioral System for Complex Assessment of Preschool Environments. Kansas City KS, Juniper Gardens Children's Project

Charles J, Gordon AM 2005 A critical review of constraint-induced movement therapy and forced use in children with hemiplegia. Neural Plasticity 12: 245–261

Cheng C 1999 The Practice of the Principles of Conductive Education in Hong Kong. 3rd nternational Peto Congress

Council for Exceptional Children (CEC)/Division of Early Childhood (DEC). 2007 Knowledge and Skill Base for all Beginning Special Education Professional in Early Childhood Special Education/Early Intervention and Knowledge and Skill Base for Advanced Special Education Professional in Early Childhood Special Education/Early Intervention. Missoula, Montana, Division for Early Childhood. Available at: http://www.dec-sped.org/position-papers.html

Darrah J, Watkins B, Chen L, Bonin C 2004 Conductive education intervention for children with cerebral palsy: An AACPDM evidence report. Developmental Medicine and Child Neurology 46: 187–203

Deluca SC, Echols K, Lawn CR, Ramey SL 2006 Intensive pediatric constraint-induced therapy for children with cerebral palsy: Randomized, controlled, crossover trial. Journal of Child Neurology 21: 931–938

Guralnick MJ 2001 Early Childhood Inclusion. Baltimore, Paul Brookes

Hari, M., Tillemans, T., 1984. Conductive education. In: Scrutton D (ed), Management of the Motor Disorders of Children with Cerebral Palsy. Clinics in Developmental Medicine 90: 19–35.

Kennedy CH 2005 Single-Case Designs for Educational Research, p 113. New York, Allyn and Bacon

Kolucki, B., 2002. From driver to therapist to orphanages: Conductive education spreads from Hong Kong throughout China. Disability World 13. Available at: http://www.disability-world.org/04-05_02/children/china.shtml. Accessed July 14, 2008

LaForme Fiss AC, Effgen SK 2006 Outcomes for young children with disabilities associated with the use of partial body weight supported treadmill training: An evidence based review. Physical Therapy Reviews 11: 179–189

Landis JR, Koch GG 1977 The measurement of observer agreement for categorical data. Biometrics 33: 159–174

Lind L 2000 Parents' views of the efficacy of conductive education in Sweden. European Journal of Special Needs Education 15: 42–54

Ludwig S, Leggett P, Harstall C 2000 Conductive Education for Children with Cerebral Palsy. Edmonton, AB, Canada, Alberta Heritage Foundation for Medical Researchii

O'Connor J, Yu E 1998 Moving Ahead: A Training Manual for Children with Motor Disorders. Singapore, Springer-Verlag

Ödman PE, Öberg BE 2005 Effectiveness of intensive training for children with cerebral palsy— A comparison between child and youth rehabilitation and conductive education. Journal of Rehabilitation Medicine 37: 263–270

Ödman PE, Öberg BE 2006 Effectiveness and expectations of intensive training: A comparison between child and youth rehabilitation and conductive education. Disability and Rehabilitation 28: 561–570

Olmsted PP, Weikart DP 1995 The IEA Preprimary Study: Early Childhood Care and Education in 11 Countries. Oxford, Pergamon Press

Ott DAD, Effgen SK 2000 Occurrence of gross motor behaviors in integrated and segregated preschool classrooms. Pediatric Physical Therapy 12: 164–172

Ottenbacher KJ 1986 Evaluating Clinical Change: Strategies for Occupational and Physical Therapists. Baltimore, Williams & Wilkins

Palisano RJ, Rosenbaum PL, Walter SD, Russell DJ, Wood EP, Galuppi BE 1997 Development and reliability of a system to classify gross motor function in children with cerebral palsy. Developmental Medicine and Child Neurology 39: 214–223

Schreiber J 2004 Increased intensity of physical therapy for a child with gross motor developmental delay: A case report. Physical and Occupational Therapy in Pediatrics 24: 63–78

Stiller C, Marcoux BC, Olson RE 2003 The effect of conductive education, intensive therapy, and special education services on motor skills in children with cerebral palsy. Physical and Occupational Therapy in Pediatrics 3: 31–50

Stuberg W, DeJong SL 2007 Program evaluation of physical therapy as an early intervention and related service in special education. Pediatric Physical Therapy 19: 121–127

Trahan J, Malouin F 2002 Intermittent intensive physiotherapy in children with cerebral palsy: A pilot study. Developmental Medicine and Child Neurology 44: 233–239

Ulrich DA, Lloyd MC, Tiernan CW, Looper JE, Angulo-Barroso RM 2008 Effects of intensity of treadmill training on developmental outcomes and stepping in infants with Down syndrome: A randomized trial. Physical Therapy 88: 114–122

Ulrich D, Ulrich B, Angulo-Kinzler R, Yun J 2001 Treadmill training of infants with Down syndrome: Evidence-based developmental outcomes. Pediatrics 108: e84–90

Valvano J 2005 Neuromuscular system: Plan of care. In: Effgen SK (ed) Meeting the Physical Therapy Needs of Children, pp 245–282. Philadelphia, FA Davis

Wright FV, Boschen K, Jutai J 2005 Exploring the comparative responsiveness of a core set of outcome measures in a school-based conductive education programme. Child: Care, Health & Development 31: 291–302

APPENDIX A: OPERATIONAL DEFINITIONS

During each 15-second observation interval, the first stability, transfer, and mobility activity that occurs will be recorded. Therefore, there is a maximum of three gross motor activities possible. The first classroom activity observed in the 15-second interval will be recorded, so only one is possible. *Can't score* was used when the observer cannot see child well enough to score.

STABILITY ACTIVITY

Stationary motor activity involving maintaining a posture against gravity with or without some assistance. Stability activities include keeping one's head or trunk upright and in vertical position such as sitting or standing. These activities do not include moving from one position to another.

Lying

If merely lying without any antigravity activity, check ***Other Stability*** item. Lying includes supine, prone, and sidelying with some antigravity activity, as described below:

Supine: Child positioned lying on back with head, arms, or legs raised off supporting surface. Assistance may be provided. Includes assisted sitting reclined more than 45° with head, arms, or legs held off the support surface.

Sidelying: Child lying on either right or left side. The child can be provided with support as long as he or she is moving his or her arms or body against gravity.

Prone: Child is lying on stomach, lifting at least one of the following against gravity: head, arms, or legs. Rolls or wedges may be used for support as long as at least one body part is lifted off the support surface (i.e., the child is lifting his or her head.)

Assisted sitting

Child sitting upright or reclined (less than 45°) with physical assistance from a chair, other piece of equipment, or another person to maintain the posture against gravity.

Independent sitting

Child sitting without physical assistance from another person or supportive equipment. The child may prop on his or her upper extremities. Sitting unsupported includes long, ring, or 1/2 ring sitting, sidesitting, W-sitting or bench sitting without leaning on a support surface such as a table.

Kneeling

Child kneels or attempts to kneel upright mainly weight bearing on the anterior aspect of his lower leg and his buttocks are raised at least 1 inch (2.54 cm) off his heels. Assistance may or may not be provided.

Quadruped

Child weight bears on at least two extremities with buttocks and abdomen raised at least 3 inches (7.62 cm) off the supporting surface. Some assistance can be provided.

Assisted standing

Child stands on both feet with assistance from another individual and/or a solid object (i.e., piece of furniture, ladder frame, assistive devices, or adaptive equipment).

Independent standing

Child stands on both feet without physical assistance from a person or an object (except braces/AFO).

Squat

Child is upright with hips and knees flexed more than halfway (90° or greater), feet on floor and hands off the floor. The child's upper extremities may be supported but not on the floor.

Other stability

This includes whenever the child is in another position, either with or without support. This includes but is not limited to when there is **no** antigravity activity, and when the child is seated and reclined more than 45° without antigravity movement.

TRANSFER ACTIVITY

Motor activity involving moving from one posture to another, it does not involve moving an exact linear distance; rather, it specifies a change in posture. These activities may be performed with or without physical assistance as specified below.

Rolling

Child moves from one lying posture into another lying posture. If the child rolls more than 1 foot (30.48 cm), it is not recorded as a transfer activity but as a mobility activity. Posture changes might include supine to sidelying; supine to prone; sidelying to prone; sidelying to supine; prone to supine; and prone to sidelying

Into/out of floor sit

Includes any method of moving into or out of sitting on the floor. This includes changing sitting postures and transfers such as:

Sit <-> Quadruped: Child moves from or into sitting on floor into quadruped.

Into/out of chair

This includes moving from the floor or another chair into or out of sitting on a chair of any type (includes wheelchair, potty, or bench). If the child moves through standing the ***In/Out of Stand*** code is used. Moving into or out or a chair includes the following:

Into chair: Child moves from sitting on floor, from hands and knees, from a chair into a chair of any type.

Out of chair: Child moves from sitting in a chair of any type into another position such as sitting on floor or onto hands and knees.

In/out of stand

This includes any method of moving into or out of standing with or without assistance. If the child moves to or from the floor into a chair though sitting and then standing, then standing is coded. Other examples include the following:

Sit <-> Stand: Child moves from sitting on a chair, bench, potty or on the floor into a standing position or from standing to sitting.

Kneeling <-> Stand: Child moves from kneeling or half kneeling (kneeling with one hip extended and the opposite flexed) into standing or does the reverse.

Squat <-> Stand: Child moves from squatting (hips and knees flexed fully, both feet on floor, hands off the floor) into standing upright.

Other floor <-> Stand: Any method of moving from lying or sitting on the floor into standing with or without support and vise versa.

Other transfer

The child moves in a way that does not fit the other definitions, such as the child moving from sitting on floor or quadruped into kneeling or creeps/crawls or steps less than 1 linear foot. This includes if a child is pushed over or loses balance and falls. Another example is if the child turns about 90° in sitting or standing. This includes turning a wheelchair, scooter, mobile prone stander, etc. 90°.

Dependent transfer

The child is lifted completely by an individual into another position. There is no obvious effort on the part of the child to participate in the transfer.

MOBILITY ACIVITY

Motor activity involving moving the entire body across a distance of at least 1 foot (30.48 cm). The child may move with or without assistance unless otherwise specified.

Rolling

Child changes position from one lying posture into another, moving a distance of at least 1 foot (30.48 cm). This may involve consecutive posture changes (i.e., prone <-> supine repeated over and over) or one roll from prone <-> supine as long as the distance covered is 1 foot or greater.

Crawl/creep

Child moves forward 1 foot (30.48 cm) in prone or quadruped with or without assistance. The abdomen may or may not be in contact with floor.

Knee walking

Child moves forward in a kneeling position, with arms off floor and buttocks at least 1 inch (2.54 cm) off heels with or without support.

Assisted walking

Child walks upright either with assistance of another person and/or an assistive device.

Independent walking

Child walks upright independently without assistance of another person or an assistive device. Child may wear braces.

Other mobility

Child moves actively in a manner not fitting the above definitions, for a distance of at least 1 foot (30.48 cm).

Dependent mobility

The child is moved more than 1 foot (30.48 cm) by someone, and child makes no apparent effort to participate.

Classroom activity

Routinely scheduled activity a child engages in.

Arrival/departure

Time that includes coming into or out of the school. Arrival begins with crossing through the doorway into the school. Departure begins with getting ready to leave and ends with crossing through the front door.

Lesson time

Lesson time involves a structured activity with the child or several children led by a staff member (can be executed by a parent). This structured time begins when the staff member starts the activity and continues until the study child has left the area or the lesson ends. Lesson time does not include the time involved in getting to or from the area or singing at end of the lesson which is **Transition**.

Fine motor/hand/art/sensory

Children or child is engaged in organized activities involving use of hands and fingers for projects such as cutting, pasting, coloring, painting, or other activities. Sensory activities include manipulating objects of different textures or sensory integration therapy.

Gross motor

Gross motor activities planned for the children and led by a staff member. May be 1:1. Activities may include going up and down steps, ball games, throwing, swinging, climbing, or mat activities (including exercise and stretching). This time begins when the children become engaged in these activities and ends when the child is no longer engaged in the gross motor activities. Walking on the gait mat may be part of **Gross Motor** or **Transition** if the lesson/activity is changing.

Free play

The child is free to play and is not directed by the staff. There are no prearranged groupings of children. The child can be in solitary play. This time begins when the child arrives at an area in which he chooses to play or is an observer in an activity.

Story

Child or children are read a story by a staff member/parent or are encouraged to look at books on their own. This time begins when the story starts and ends when the story is over.

Tea time

Time designated for sitting at the table and eating or drinking. Pretend picnics are not included. This time begins when food utensils or washcloths are presented and ends when the child finishes eating and cleans up.

Cleanup

The children put away their toys or materials. This time begins when the staff announces it is cleanup time and ends when the materials are put away; includes packing and unpacking schoolbags. This code should be used even if the child cannot participate in cleanup.

Toilet

Time coded starting when the child is at the toilet/potty chair and ends when the child is not on the potty and clothing is in place; includes lowering, raising, and adjusting clothes.

Transition

"Transition is defined as the time between activities/tasks when the target child is engaged in:- (1) getting materials for a new activity, (2) moving to a different activity or location to begin a new activity, or (3) waiting for a cue to begin a new activity" (Carta, Greenwood, and Atwater, 1992). Transitions are changes of activities and might be clearly cued by staff such as when directly instructed or a song is used. Sometimes the target child will make an individual transition (e.g., when the child moves from one activity to another.) This includes when the child moves independently or with assistance, including being carried, from one designated activity to another. When the child moves from one area to another to put away materials, the ***Clean Up*** code should be used.

OSDA (other staff-directed activity)

Any structured activity in which an individual child or a group of children are involved that is led by a staff member for purposes other than described above. (Might include dressing)

Other activity

The activity does not fit the above definitions.