

Can Adults with Multiple Disabilities Demonstrate Gains in Functional Mobility? Evaluation of a Pilot Project Incorporating Components of the MOVE® Program

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I. Introduction

A. Overview of the MOVE ® program

The MOVE® program or “Movement Opportunities Via Education” program was originally developed in the early 1980’s by Linda Bidabe, special educator, in an effort to improve functional movement and daily living skills for students with multiple disabilities. Through her work at Kern County Schools in California, Bidabe strived to integrate repeated motor activities with the assistance of graded physical assistance of staff and appropriate adapted equipment (Barnes and Whinnery, 1997). Educators and therapists worked with the students to incorporate repeated opportunities for sitting, standing and walking within natural educational and home environments (Barnes and Whinnery, 2002). The result was the development of a systematic curriculum designed to work collaboratively with parents, educators, therapists and children. The curriculum provides specific outcome-based tools for mobility assessment, collaborative goal setting with families, and planning of appropriate functional activities (Whinnery and Barnes, 2007). Today, the MOVE program continues to celebrate success by improving the quality of life for children with multiple disabilities and their families. Through the efforts of MOVE International, training, research and development of the MOVE program continue to be expanded in the U.S. and throughout the world (www.move-international.org).

The MOVE program represents a revolution in educational services for children with multiple disabilities as demonstrated by several key elements. First, the MOVE program uses a “Top-Down” perspective to assess a student’s current motor skills for sitting, standing, and walking. This departs significantly from the traditional “deficit” medical model of evaluation and the developmental motor milestone framework which requires the mastery of basic pre-requisite skills prior to attempting more complex functional skills (Whinnery and Whinnery, 2004). Second, the MOVE program is based on a belief that all students are capable of learning no matter their current level of function, and caregiver expectations should challenge and not limit a student’s potential. Students at all levels of function are assumed to have emerging skills that require support or staging to develop. As these skills strengthen over time with meaningful repetition, the level of outside support and caregiver assistance are reduced (Barnes and Whinnery 1997). And finally, the MOVE curriculum departs from traditional intervention models by incorporating family-centered goals through a structured six-step process of assessment

and planning. Researchers have demonstrated that while many practitioners embrace a family-centered philosophy, they often struggle to consistently carry out these principles in daily practice (Whinnery and Whinnery, 2007). The MOVE program has proven to be an invaluable tool by providing a consistent framework to operationalize family-centered practices, and holds significant potential for research in the effectiveness of community-based, family-centered intervention practices.

While the MOVE program has produced remarkable personal success stories, more research is required to establish its effectiveness at a program level and to promote its wide spread adoption. In a school based comparison study of children with multiple disabilities ages three to twenty-two, Elkin found that the MOVE program was more beneficial than traditional methods for teaching sitting, standing, and walking skills (Elkins, 1994). Research involving implementing the MOVE program with students in the St. Joseph Sams School described that students participating in the MOVE curriculum experienced a decreased incidence of absence from school due to respiratory illness, decreased hospitalizations, and improved nutritional status (Carr, 2005). Research and training efforts continue at The William Patrick Day Early Childhood Center, an established MOVE® Model Site operated by the Cuyahoga County Board of Developmental Disabilities (CCBDD). In a study involving 32 students with multiple disabilities ages 2 ½ to 6 years, 91% achieved significant positive outcomes over the course of the school year, with 28 of the children achieving progress in all target skill areas (Welch, 2003). In 2006, Cook reported that the majority of the students participating in the MOVE program gained more than one level of functional care required in more than one area of assessment, thus effectively reducing the demands on caregivers (Cook, 2006). Parent responses to the annual Parent Program Evaluation Survey, conducted as part of the model program, have indicated a very high degree of satisfaction with the MOVE program and positive findings have been influential in leading the staff at William Patrick Day Center to continue to use the curriculum and refine their practices (Welch, 2003, 2005).

Similar success stories with the MOVE program in adult facilities have also been reported among adults who have been immobile for many years. (Whinnery & Whinnery, 2004). In the fall of 2003, a pilot study was initiated at the Chesapeake Care Resources adult day program in northeast Maryland to develop “Movement Opportunities Via Experience” or the MOVE for Adults program (Whinnery & Whinnery, 2004). The MOVE for Adults program, much like its school-age focused predecessor, diverts from traditional intervention programs for adults with multiple disabilities in a significant manner. First, MOVE for Adults views the participants as “Adult Learners”, drawing from the adult education literature to incorporate the individual’s experiences, learning style, and motivation in programming. The adult participants are viewed not merely as “children with bigger bodies” but as adults with a variety of social and cognitive skills, life experiences, and physical needs (Zaffuto-Sforza, 2005). Second, traditional medical rehabilitation programs often perceive that adults with disabilities have “plateaued” in their physical and developmental skills and are not good candidates to benefit from ongoing intervention. Medical services have nearly completely neglected health promotion, and wellness programs to address the needs of adults with disabilities (Rapp & Torres,

2000). MOVE for Adults works to provide a structure to build meaningful movement activities in an individual's day which results in cognitive stimulation, physical strengthening, and emotional support. And finally, MOVE for adults does not assume that an individual must pass through certain developmental stages as a prerequisite to participate in more advanced activities. As in the school-age curriculum, MOVE for Adults incorporates a "Top Down" model of assessment, and builds skills by providing physical supports matched to the needs and reducing supports as progress is achieved.

B. Overview of the Need

With the advancement of medical technology and increased life expectancy of the general population, the number of individuals with multiple disabilities living into adulthood has increased significantly. Although estimates vary, figures from the United Cerebral Palsy Association indicate that there are approximately one-half million adults with cerebral palsy (C.P.) in the United States (Murphy, 1999). And although cerebral palsy and developmental disabilities have been predominantly treated as a pediatric condition, the evolution of the effects of the impairments and progressive secondary medical conditions greatly impact the health and quality of life of adults with disabilities (Bottos et. al., 2001).

Chronic medical conditions, typically associated with aging in adults, may occur earlier in life for individuals with disabilities. Contributing factors include repeated physical stress on joints and spine, generalized weakness leading to respiratory and cardiac complications, decreased bone integrity and risk of fracture, complications from long term use of medications, earlier onset of swallowing disorders, and gastrointestinal disorders (Haddad, Coover & Faulkner, 2007). In a survey of adults with disabilities, Jahnsen et al. found that 44% of the adults with disabilities reported deterioration of functional physical skills before the age of 35. Musculoskeletal pain was a pronounced problem among adults with multiple disabilities and was significantly associated with chronic fatigue and low life satisfaction (Rapp & Torres, 2000). Adults with cerebral palsy are at a much greater risk for osteoporosis, bone fractures, and joint and spinal deformity. Their bone integrity is significantly compromised by their impaired dietary intake, limited or no weight bearing activities, spasticity, and complications from medication and anticonvulsants (Rapp and Torres, 2000). Miyazaki et. al. also found a deterioration of swallowing and respiratory functions among adults with severe cerebral palsy, with 45% of the subjects losing the ability to sit independently during the early stage of adult life with a significant loss of independence in activities of daily living (Miyazaki et. al., 2004). Complications in bowel and gastrointestinal function also pose an increased risk for death due to bowel obstruction among this population. Individuals with disabilities are at greater risk for aspiration, serious complications from pneumonia and respiratory disease due to impaired respiratory function and decreased endurance (Rapp and Torres, 2000). In a study investigating the health status of women with cerebral palsy, Turk et. al. also found a significant incidence of pain, hip and back deformities, bowel and bladder problems, poor dental health, and gastroesophageal reflux (Turk et al., 1997)

Despite these observations, there is a lack of information in the literature and limited focus on specialized services to address the needs of adults with multiple physical disabilities (Murphy, 1999). Through their work at the Center for Adults with Developmental Disabilities in Philadelphia, one of the few comprehensive medical centers for adults, Rapp and Torres have found that a large number of patients do not have access to appropriate wheelchairs and adapted equipment. Contact with health and rehabilitation services radically reduces once individuals reach adulthood (Rapp and Torres, 2000). Rapp and Torres also found that approximately one third of adults with cerebral palsy lived at home, many with elderly parents with limited physical ability to meet the demands of caring for adults. The neglect in our society to recognize the significant needs of caregivers in the home has led to undue suffering of adults with disabilities and their families, and increased costs to society as a whole.

Given the above information, the following questions arise: If the MOVE program is an effective method to improve the mobility skills and quality of life for children with disabilities, can the MOVE program result in positive outcomes for adults with multiple disabilities? How can existing programs serving adults with disabilities in the community adapt current services and utilize available resources to implement and develop the MOVE program for adults? And, how can research efforts be advanced in order to advocate for services for adults with multiple disabilities by conducting research within community agencies? These are the questions that staff at the Brooklyn Adult Activity Center (BrAAC) of the CCBDD attempted to address through the BrAAC Pilot Project.

CCBDD provides vocational and habilitation services and supports to over 2,300 adults through 8 Adult Activity Centers, 6 leased community-based centers, and 23 community contracted agencies. The Brooklyn Adult Activity Center (BrAAC) is one of the Adult Activity Centers operated by CCBDD in the Northwest portion of Cuyahoga County in Ohio and is one of the largest centers serving adults with multiple disabilities. BrAAC serves over 250 adults with disabilities, with approximately 70 individuals who are non-ambulatory and use power or manual wheelchairs. Some students participated in the MOVE program at the school-age level and their families are anxious that they continue these activities in their adult day programs.

C. Purpose

The purpose of the BrAAC Pilot Project was to evaluate the effectiveness of implementing specific components of the MOVE program on the functional motor skill level of adults with multiple disabilities. The hypothesis was that adults with multiple disabilities will demonstrate improvement in sitting, standing and assisted walking activities carried out as part of the daily program routines. The project attempted to explore the feasibility of adopting a MOVE program for adults among existing resources in a community-based agency. In addition, the BrAAC Pilot Project attempted to investigate if the Top-Down Motor Milestone Test™ (TDMMT) of the Motor Assessment Profile of the MOVE program was an effective tool in evaluating functional skill levels among adults with various significant motor limitations and medical conditions.

II. Methods

A. Population

Participants in the pilot project were selected through a process involving the direct care staff, therapists, families, and the adult participants. First, the O. T., O.T.A., and P.T. developed a list of possible participants for the project from individuals attending BrAAC who currently used a manual or power wheelchair for mobility. Then, BrAAC administrators worked with direct care staff to identify participants from the list: one participant from each classroom area and one from the work floor area, for a total of 6 participants. BrAAC Administrators also worked to identify one staff person from each area to work as a primary support person for each participant. Thus, the project team consisted of O.T., O.T.A., P.T, site Assistant Manager, site Manager, and 6 direct care staff. All 6 of the identified individuals agreed to participate in the Pilot Project, and a written consent for participation and photo release was obtained from their guardians/families. All the participants in the project attended the center five days per week and were transported to the center by CCBMRDD sponsored transportation.

The following table summarizes related data regarding each of the six project participants:

Overview of BrAAC Move for Adults Pilot Project Participants

Participant	Sex	Age	Primary Diagnosis	Residence	Mobility	Funding
P1	Female	38.	Tracheotomy with oxygen dependence, uncontrolled seizure disorder, Profound MR, Quad C.P., non-verbal	Home with family and paid caregivers	Dependent for mobility in manual w/c; maximum assistance for stand pivot transfers	Medicaid I.O. Waiver
P2	Male	33	Spastic Quad., C.P., Scoliosis, uncontrolled seizure disorder, Profound MR, non-verbal	Home with family and paid caregivers	Dependent for Mobility in manual w/c; dependent lift transfers	Medicaid I.O. Waiver
P3	Male	35	Spastic Quad. C.P., non-verbal	Home with family	Independent power w/c in accessible areas. Max. assist in stand pivot transfers	Medicaid
P4	Female	46	Athetoid Quad C.P., MR,, non-verbal	ICFMR with 24 hr. caregivers	Sup. power w/c in accessible areas. Mod. Assist to total lift for stand pivot transfers	Medicaid
P5	Male	26	Spastic Quad. C.P., dislocated bilateral hips, Larry Jones	Home with family	Dependent manual w/c; dependent for lift transfers	Medicaid
P6	Female	55	Spastic Quad. C.P., MR, scoliosis, arthritis, limited expressive verbal skills	Supported Living with 24 hr. care givers	Indep. manual w/c with feet, max assist for stand pivot transfers	Medicare/ Medicaid

B. Procedure

All project activities were carried-out at BrAAC from 6/18/07 through 8/10/07 for a total of eight weeks, with no activities conducted the week of 7/2/07 due to scheduled summer break. No additional financial or staff resources were utilized to carry out the pilot project. Each direct care staff collaborated with the therapist to identify a targeted motor activity for each participant. The activity was integrated into a functional goal to address overall social, physical, and vocational goals. For example, the activity may include walking in the Pacer with staff hands-on assistance to deliver attendance sheets to the front desk. Or the activity may include standing in an Easy Stand or Pacer to read a magazine with staff assistance or to complete piece work. The goal of the program was to assist each participant with their targeted skill at least 3 times per week and progress as tolerated. One therapist, in collaboration with at least one BrAAC staff, assisted the individual to be positioned in the adapted equipment for the activity and monitored the individual's tolerance and progress.

O.T. and P.T. staff worked closely with direct care staff to develop the goals and functionally related activities for each individual. The staff was instructed in utilization of equipment and specific techniques for use with each individual. A total of five Rifton Pacers were utilized by participants in the program, (3 borrowed from school-based sites, one donated, one previously purchased by BrAAC, one on loan by OT/PT Department). One adult size Gunnel "Ring" walker was also used by a project participant. Direct care staff and therapists shared observations to problem solve of the participant's abilities to perform the activity in order to adapt the equipment used and the activity to most appropriately match the individual's strengths and needs.

C. Instrumentation

A pre-test and post-test was completed by the therapists for each participant using the MOVE "Top Down Motor Milestone Test" (TDMMT) The TDMMT provides an ecological assessment of an individual's current use of functional mobility skills. The TDMMT has been found to be a reliable tool for determining motor functioning in a functional context (van der Putten 2005). Participants' skill levels were evaluated in 12 of the motor categories of the TDMMT. The more advanced areas of the test including stair climbing skills were not addressed due to the participant's inability to attempt these tasks.

III. Results

A. Design

The BrAAC Pilot Project was a single-subject, multiple-baseline design. Individuals served as their own control and the results were compiled by comparing the percent change in each motor skill category as demonstrated by the TDMMT. An average change in pre-test and post-test goal level function for the group was also compiled, as well as evaluation of the targeted goal activity, and observational reports of the direct

care staff and therapists. The TDMMT scores were evaluated by comparing the average pre-test and post-test scores for the group as a whole by motor category. Data was collected through therapist progress notes, documentation of staff observations, and review of achievement of Targeted Goal Activity by the end of the project period, and the change or reduction in level of physical prompts needed by participants to participate in targeted activity.

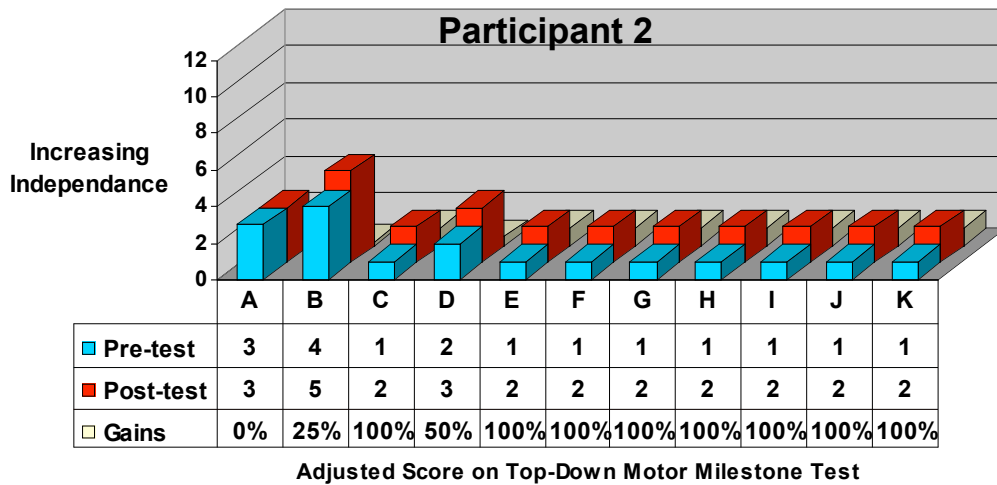
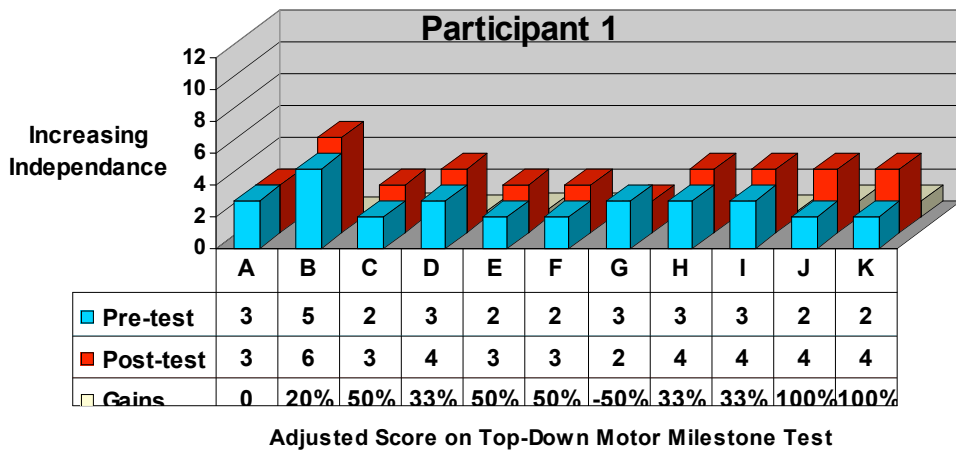
The frequency of performance of targeted motor activity was documented by staff data sheets and therapist progress notes. Three out of the six participants achieved the identified Targeted Activity Goal, with two participants partially achieving their goal. One participant did not achieve her initial goal, and she worked with the direct care team and therapy staff to revise her goal for supported standing (she did achieve her revised goal by the end of the project period).

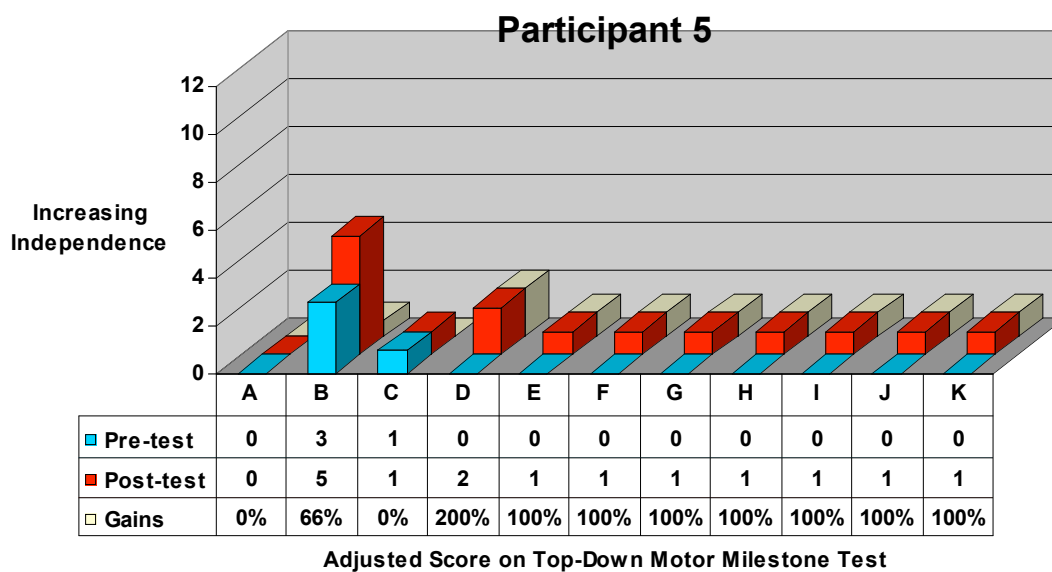
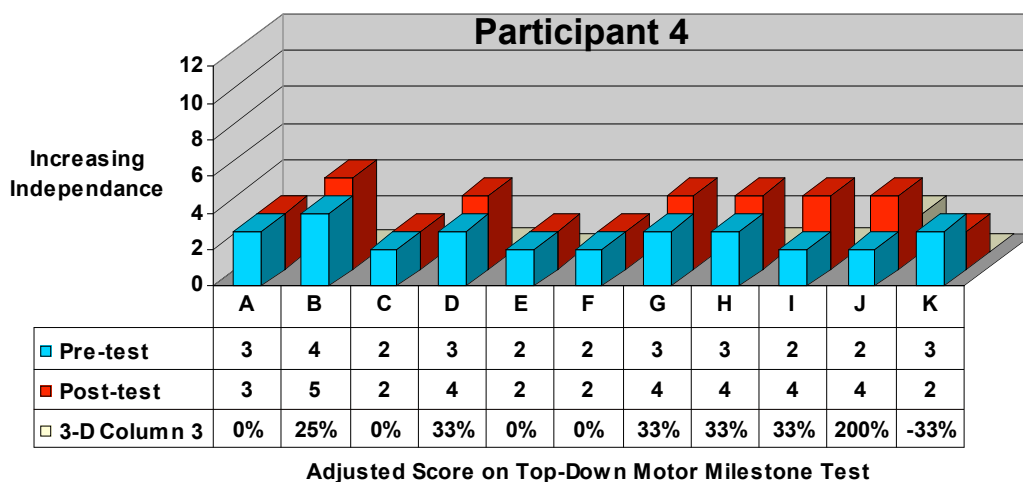
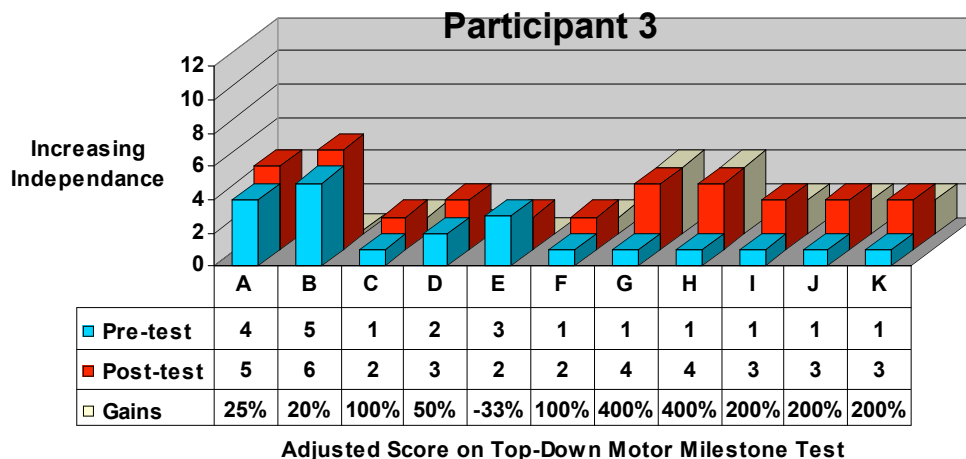
The following table summarizes the functional motor activity and identified goal for each of the six project participants:

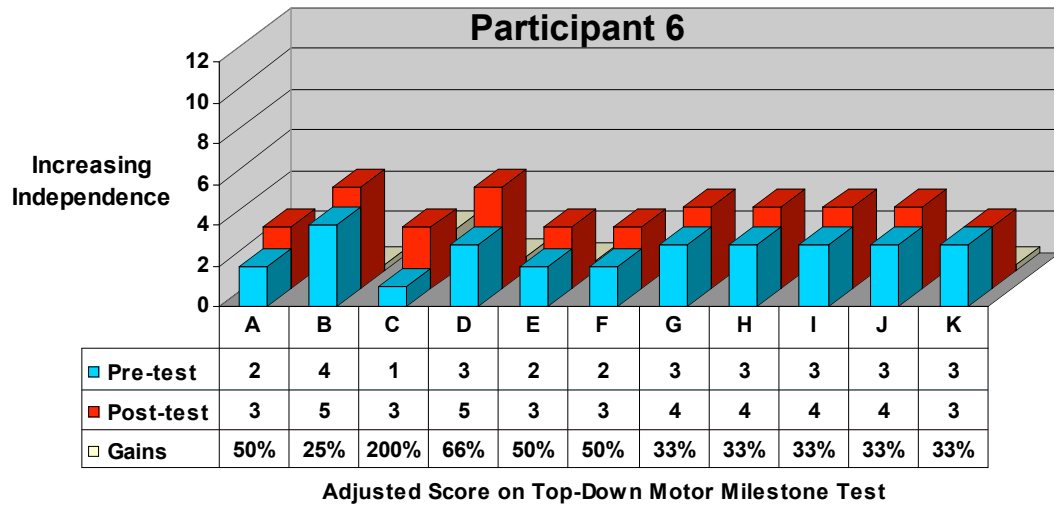
Targeted Activity Goals

Participant	Equipment Used	Targeted Activity Goal	Total interventions/project period	Achievement of Targeted Activity Goal
P1	Large Pacer with chest, forearm prompts (no use of straps) and hip prompts. Portable oxygen tank positioned on Pacer.	P1 will walk with Pacer and hands on assistance of staff to control walker around classroom hallway area to transfer with two person assistance into the recliner.	16 times over 8 weeks Average of 2 x/week	Achieved
P2	Large Pacer with chest, forearm and hip prompts	P2 will stand in the Pacer for 20 minutes to interact in classroom activities and initiate active push-off of legs to initiate movement.	12 times over 8 weeks Average of 1.5x/week	Achieved
P3	Large "Gunnel" style ring walker with hip prompt	P3 will transfer with minimal assistance of one staff into adapted walker to walk with supervision from work area to visit friend in classroom area. .	12 times over 8 week Average of 1.5 x/week.	Partially Achieved- Required Mod. Assistance of staff to advance walker and control direction.
P4	Large Pacer with chest, forearm and hip prompts (new model with adjustable tilt to chest prompt)	P4 will walk to Leisure Recreation area to play games, with increased head and trunk stability and control, decreased assistance of staff	20 times over 8 weeks Average of 2.5 x/week	Not Achieved- Goal revised during Pilot Project to include 20 minutes of standing in Pacer during table-top classroom activity.
P5	Large Pacer with chest, forearm and hip prompts	P5 stand in Pacer with initiation of weight bearing through both legs and attempt to push off with feet to initiate forward movement.	17 times over 8 weeks Average of 2.1 x/week	Achieved
P6	Large Pacer with chest, forearm, and hip prompts	P6 will walk with Pacer gait trainer with supervision to deliver messages from classroom to front desk area.	16 times over 8 weeks Average of 2/week	Partially achieved- required minimal/moderate assistance of staff for control when walking around corners

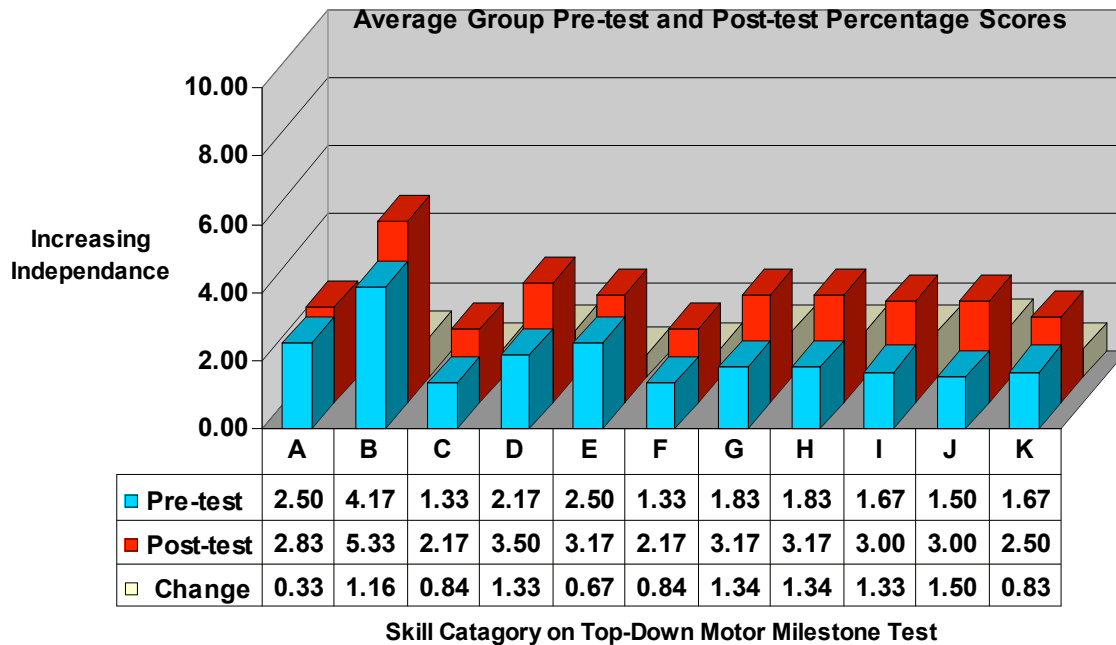
All participants demonstrated functional motor gains as measured by the TDMMT in nearly all areas. Participant # 3 demonstrated the most notable gains, except for a decrease in one area. Gains in functional activity for this individual were highly valued by this participant, and were a matter of significant personal pride. His increased motor skills also significantly increased opportunities for socialization among peers at BrAAC and recognition by staff of his achievements. His increase in functional motor skills also supported his independence in living at home with his parents. Participant # 5 also demonstrated significant gains in motor skills, except in the areas of static sitting and standing. This is particularly significant due to the fact that Participant # 5 did not even achieve the most basic skill level on the pre-test TDMMT in 10 of the 12 areas evaluated. in the pre-test.







As a group, the largest gains were experienced in the areas of: standing, transitioning from sitting to standing, pivots in standing, walks forward, transitions from standing to walking and walks backward. As a group, gains in these areas ranged from 39% to a very impressive 50%. These skills are key functional components for transferring, weight bearing and walking with assistance. They are significant in decreasing dependence on caregivers, and build endurance and respiratory capacity. These skills also provide a basis to experience increased social opportunities and learning experiences.



Average Change in Pre-Test and Post-Test Goal Level Function

<u>Motor Skill Category</u>	<u>Adjusted Gain Score</u>	<u>Percentile Score Gain</u>
A. Maintains Sitting Position	+ 0.33	+ 12%
B. Moves While Sitting	+ 1.16	+ 22%
C. Stands	+ 0.84	+ 39%
D. Transitions from Sitting to Standing	+ 1.33	+ 39%
E. Transitions from Standing to Sitting	+ 0.67	+ 21%
F. Pivots while Standing	+ 0.84	+ 39%
G. Walks forward	+ 1.34	+ 42%
H. Transitions from Standing to Walking	+ 1.34	+ 42%
I. Transitions from Walking to Standing	+ 1.33	+ 44%
J. Walks Backward	+ 1.50	+ 50%
K. Turns While Walking	+ 0.83	+ 33%

III. Discussion

Five out of the six participants in the project achieved or partially achieved their targeted Activity Goal. Given the short project period, the complex physical limitations among the participants, and the low incidence of the intervention frequency, this gain is very significant. The fact that this project was carried out by staff level therapists and direct care personnel as a part of their work related activities demonstrates efforts to advance research and program development in a cost effective manner. The TDMMT also proved to be an effective tool in evaluating a wide range of motor skills among a diverse and complex population.

Several antidotal findings also proved to be beneficial during the project period. Traditional walkers do not provide sufficient support for individuals during seizures. The use of the Rifton Pacer, however, allowed individuals with uncontrolled seizures to be safely supported in standing. At least one participant experienced seizure activity during the intervention without injury. Activities incorporated in the MOVE program also can play a beneficial role in a behavior support plan to reduce self-injurious behavior. One participant had experienced significant self-injurious behavior, involving dislodging her eye with her finger twice in one week prior to participation in the program. Following the incorporation of increased movement activities as a part of her daily routine, no incidents of self-injury were reported during the project period.

Administrative support and the dedication and skills of direct care providers are crucial to successful program implementation. Administrative support is required to provide

necessary staffing schedules, training, and management for problem-solving when facing barriers. And without consistent, companionate, and creative daily support provided by the direct providers to individuals, no programs could function beneficially.

IV. Limitations

Limitations of this study include a small sample size, short project duration, and difficulty in establishing a cause and effect relationship between motor gains and the intervention. Limitations of design were reduced by the use of repeated measurements over time and multiple baselines. Further, there were no gains in functional mobility skills for any participant until after the intervention was introduced. The initial frequency goal of participating in the target activity at least 3 times per week was not achieved. The average participation was actually from 1.5 to 2.5 times per week. In reality, this is often the frequency of traditional therapy activities. Another limitation identified in the BrAAC Pilot Project was that it did not implement the formal MOVE Curriculum, but rather incorporated targeted components of the MOVE program. Implementing an entire program, as previously stated, requires a comprehensive commitment and integration of activities throughout the day. This Pilot Project was an attempt to introduce parts of the MOVE program using currently available resources to evaluate effectiveness and build support for the systematically introducing the MOVE Curriculum within the activity center.

V. Implications for future research

It is important to pursue further research to replicate the initial findings of the benefits of the MOVE program for adults with multiple disabilities as well as qualitative evaluations relating to the process of programmatic change in adopting the MOVE philosophy among adults. Qualitative and quantitative studies would be beneficial to identify barriers, both physical and attitudinal, for implementing the MOVE program for adults. Long-term studies would also be instrumental in identifying carry-over and maintenance of motor skills over time and throughout the aging process. Further investigation to explore the impact of participation in the MOVE program on caregivers could reveal valuable information on appropriate support to families and paid caregivers and explore effective programs to reduce physical and monetary costs. This type of project lends itself to support through grant funding for equipment and research. It would be highly beneficial for government agencies to collaborate with foundations or private funding sources to promote research and services for adults with multiple disabilities using the MOVE ® for Adults curriculum.

IV. Conclusion

Clearly, adults with multiple disabilities are a growing population with grossly underserved needs in the areas of health promotion. On-going research is necessary to identify specific medical needs and appropriate adapted programs to maintain their functional mobility, optimize socialization, and promote independence throughout the aging process. In a pilot project incorporating components of the MOVE program by a

multidisciplinary team in an adult activity program, all 6 participants with multiple disabilities demonstrated significant gains in functional motor skills. The MOVE program offers much promise to advance the health and quality of life among this significantly underserved population. More research as to the benefits of the MOVE for Adults program and recommendations for implementing the MOVE program within existing services for adults needs to be advanced in collaboration with consumers, families, direct care providers and rehabilitation specialists.

Attachment:

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BrAAC MOVE for Adults Project Participants:

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- P2. Davis, Scott
- P3. Hammond, Thomas
- P4. Hursh, Debbie
- P5. Lewis, Ronny
- P6. O'Brien, Mary Ann

REFERENCES

- Barnes, S.B. (1999) *The MOVE Curriculum: An Application of Contemporary Theories of Physical Therapy and Education*
- Barnes, S.B. and Whinnery, K.W. (2002) Effects of *Functional Mobility Skills Training for Young Students with Physical Disabilities*, *Exceptional Children*. Vol. 68, No. 3, pp. 313-324,
- Barnes, S. B. and Whinnery, K.W. (1997) *Mobility Opportunities Via Education (MOVE): Theoretical Foundations*, *Physical Disabilities*, Vol. 16, No. 1,
- Bidabe, D.L., Barnes, S.B. & Whinnery, K.D. (2001). *M.O.V.E.: Raising Expectations for Individuals with Severe Disabilities*, *Physical Disabilities: Education and Related Services*, vol. XIX, No. 2.
- Bottos, M., Feliciangeli, A., Sciuto, L., Gericke, C. & Vianello, A. (2001) *Developmental Medicine and Child Neurology*, Aug; 43(8):516-28.
- Carr, L. (2005) *MOVE at The Joseph Sams School*, *Exceptional Parent Magazine*, 35(9), Sept. 2005. 26-1.27
- Cook, C.E. (2006) Move® Curriculum Achievement Data, Cuyahoga County Board of d Developmental Disabilities, William Patrick Day Early Childhood Center, Cleveland, OH
- Damiano, D.L. (2006). Activity, activity, activity, activity: Rethinking our physical therapy approach to cerebral palsy. *Physical Therapy*; 86(11), 1-7.
- Darrah, J., Law, M. & Pollock, N. (2001) Family-centered functional therapy: A choice for children with motor dysfunction. *Infants & young Children*, 13(4), 79-87.
- Elkins, K.M. (1994) *A Comparison Between the Achievement of Students With Severe Multiple Disabilities Using a Functional Mobility Curriculum Versus Traditional Programs*, unpublished dissertation, University of La Verne
- Rapp, C.E. and Torres, M.M. (2000) The adult with cerebral palsy. *Archives of Family Medicine* May; 9(5):466-72.
- Overview of the MOVE Assessment Profile, (1996) Kern County Superintendent of Schools, a California (USA) public education agency. 1300 17th Street City Centre Bakersfield, CA 93301-4533
- Welch, Margery A. (2005) MOVE ® Curriculum Outcome Data-2005, Cuyahoga county Board of Developmental Disabilities, William Patrick Day Early childhood Center

Welch, Margery A. (2003) MOVE ® Curriculum Outcome Data-2003, Cuyahoga county Board of Developmental Disabilities, William Patrick Day Early childhood Center

Whinnery, S.B. and Whinnery, K.W. (2004) MOVE: *Hope for People with Significant Movement Disorders*, (Exceptional Parent Magazine, 34(9), Sept. 68-71

Whinnery, K. W. and Barnes, S.B. (2002) *Mobility Training Using the MOVE Curriculum, A Parent's View*, Teaching Exceptional Children, 34(3), 44-50.

Whinnery, K.W. and Whinnery, S.B. (2007). *MOVE Systematic Programming for Early Motor Intervention*, Infants and Young Children, Vol. 20, No. 2.

www.move-international.org

www.rifton.com

Zaffuto-Sforza, C.D. (2005) Physical Medicine and Rehabilitation Clinics of North America. Feb; 16(1):235-49.