JOURNAL OF RESEARCH IN CHILDHOOD EDUCATION
2016, VOL. 30, NO. 1, 113–127
http://dx.doi.org/10.1080/02568543.2015.1107157

Routledge
Taylor & Francis Group

The Young Athletes Curriculum: Impact on Children With Disabilities in Kenya

Paddy C. Favazza[a], Gary N. Siperstein[a], Kathleen Ghio[a], Jane Wairimu[b], and Susan Masila[c]

[a]Center for Social Development and Education, University of Massachusetts Boston, Boston, Massachusetts; [b]Kenyatta University, Nairobi, Kenya; [c]Special Olympics Kenya, Nairobi, Kenya

ABSTRACT

Research consistently demonstrates that children with developmental disabilities exhibit motor skill deficits, but motor skill interventions can positively affect motor abilities and other areas of development. These findings have particular relevance for children with disabilities in developing countries, where there is limited access to early intervention and education. In these settings, motor skill interventions may provide a means to address delays in development and positively affect perceptions of family and community members about their capacity to learn. To that end, this study examined the adaptability, feasibility, and effectiveness of implementing a motor skills intervention, the Special Olympics' Young Athletes Curriculum (YA), in Kenya. Eighteen preschool-age children with intellectual and developmental disabilities participated in the YA intervention, which consisted of 187 motor activities delivered in 24 lessons across 8 weeks. The findings indicate that the YA intervention is adaptable and can be feasibly implemented with high fidelity. In addition, significant motor gains were demonstrated on the pre- and posttest of the Test of Motor Development and a positive and multi-level impact on inclusion of children with disabilities was found.

ARTICLE HISTORY
Submitted 30 January 2015
Accepted 12 July 2015

KEYWORDS
Motor skills; preschool children with disabilities

The recent report *Children and Young People With Disabilities* (UNICEF, 2013) estimates at least 15% of the world's population (more than one billion people) have a disability, and 80% of these individuals live in developing countries such as Kenya; of these, 90% do not have access to education, making individuals with disabilities the largest, most marginalized minority in the world. These startling statistics paint a bleak picture for children with disabilities in this global context where factors such as persistent stigma, negative attitudes, and an underlying belief that children with disabilities cannot learn have short- and long-term consequences. As a result, early in life, young children with disabilities are often isolated within their homes and communities and are surrounded by a society that holds low expectations about their capacity to learn.

However, if there is any area of development that is universally salient in demonstrating the capacity of children to learn, it is the area of motor development. Regardless of culture or country of origin, parents can see signs of early motor development, such as when their young child rotates his head to follow the movements of a caregiver, rolls over, reaches for objects, and crawls. These benchmarks of early motor behavior signal to parents that their child is developing in a typical and timely fashion; consequently, parent expectations are met. However, when the child has an intellectual or developmental disability, delayed motor development can be one of the first signs that the child is not "typically developing," which leads to concerns and, perhaps, changes in expectations of what the child can and cannot do. These early observations are confirmed by the research; these

CONTACT Paddy C. Favazza patricia.favazza@umb.edu Center for Social Development and Education, University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, MA 02125.

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/ujrc.

© 2016 Association for Childhood Education International

children experience delays in a multitude of motor skills. For example, young children with developmental delays and autism often exhibit impairments in motor skills that involve balance and motor planning (Provost, Heimerl, & Lopez, 2007; Provost, Lopez, & Heimerl, 2007), object manipulation, and locomotion (Favazza et al., 2013). Likewise, children with emotional and behavioral disorders exhibit balance problems and poor object manipulation abilities, such as throwing, catching, or kicking a ball (Emck, Bosscher, Beek, & Doreleijers, 2009). When parents see young children with developmental delays or disabilities, it sets the stage for lowered expectations. Therefore, it is critical to intervene with "direct and intentional instruction" for motor skill development during the preschool years (Green et al., 2009; Marton, 2009; Pan, Tsai, & Chu, 2009; Provost, Lopez, & Heimerl, 2007). Access to effective preschool motor skill interventions has the potential to send a different message, a message that children with intellectual and developmental disabilities (IDD) can learn and can improve upon their abilities. Research has consistently found a compelling link between motor skill development and other developmental areas (Favazza et al., 2013).

Early motor skills are considered "building blocks" for many areas of development. During motor play, children have opportunities to hone not only their motor skills as they interact with peers, but also their social skills (Bransford, Brown, & Cocking, 2000; Burdette & Whitaker, 2005; Provost, Heimerl, & Lopez, 2007; Provost, Lopez, & Heimerl, 2007; Sage, 1984). In addition, development in other skill areas has been linked to motor skills and physical activity, such as handwriting, physical well-being (Brown et al., 2009; Cahill, 2009; Seymour, Reid, & Bloom, 2009), cognitive development, and early academic achievement (Becker, McClelland, Loprinzi, & Trost, 2014; Fedewa & Ahn, 2011). In the context of motor play, children also develop a sense of belonging, enhanced self-esteem, and improved personal confidence (Calfas & Taylor, 1994; Dykens, Rosner, & Butterbaugh, 1998), all of which are vital to children's success in school (Bredekamp, 2004; Shonkoff & Phillips, 2000). For example, motor performance in young children has been linked to working memory; verbal fluency; understanding of spatial, temporal, and sequential concepts (Jensen, 2005; Rapoport, Van Reekum, & Mayberg, 2000; Wassenberg et al., 2005); later cognitive performance (Iverson, 2010; Piek, Dawson, Smith, & Gasson, 2008); and prereading, prewriting, and premath skills—all of which are considered precursors to kindergarten readiness (Iverson, 2010; Oja & Jürimäe, 2002). More recently, Becker et al. (2014) found that active motor play is associated with preschool children's self-regulation and early academic achievement. Clearly, the benefits of motor interventions expand beyond motor skill acquisition, but a critical question remains to be answered: Are these interventions effective with young children with disabilities? One intervention that addresses that question is discussed next.

The Young Athletes (YA) Curriculum (Favazza, Zeisel, Parker, & Leboeuf, 2012) is a Special Olympics motor skills intervention that shows promise for use with young children with IDD. The YA Curriculum is based on the *Young Athletes Activity Guide*, developed by Special Olympics in 2004 as a motor skills program for children (age 3–7 years) with IDD. The YA Curriculum expands upon the series of motor play activities introduced in the *YA Activity Guide*, to create structured lessons for use in preschool classes.

Using the YA Curriculum, teachers implement lessons that utilize motor play activities to support visual tracking and motor imitation, as well as balance, running, jumping, catching, throwing, striking, and kicking. In a study of the 8-week program, the motor skills of preschool children with disabilities who participated in YA were compared to children who represented a control group (did not participate in YA) (Favazza et al., 2013). The pre- and posttest scores on the Peabody Developmental Motor Subscales (PDMS; Folio & Fewell, 2000) revealed that children who participated in YA made gains of 7 to 9 months on the PDMS, whereas children from the control group made gains of 3 to 5 months. Moreover, teachers reported notable changes in children's school readiness skills, such as sustained attention, following directions, and participation in whole-group activities and social/play skills (e.g., turn taking, waiting your turn, and appropriate toy play).

When implemented in the United States, this intervention clearly demonstrated that the motor skills of children with developmental challenges can be improved in a relatively short time with direct instruction and motor play activities that focus on fundamental motor skills. Moreover, the findings of both studies demonstrated that without intervention the motor skills of children (in the control group) did not make substantive gains. In other words, intentional motor intervention is necessary to support motor skill acquisition of children with developmental disabilities and those considered at-risk. In addition, the YA study demonstrated the collateral benefits of motor intervention on other areas of development. However, the adaptability, feasibility, and impact of the program have not been examined in other countries.

In the global context, documenting the impact of such interventions on motor skills and other areas of child development could strengthen the push for early education and inclusion of young children with IDD in developing countries. In these contexts, the potential of children with disabilities is at greatest risk due in part to persistent stigma, negative attitudes, and an underlying belief about their limited capacity to learn (Britto, Yoshikawa, & Boller, 2011). Simply put, motor skills intervention for these children is not a luxury, but rather a necessity given the links between active motor play and brain development, self-regulation, language and social development, self-esteem, and sense of belonging. In a global context, young children with disabilities are readily excluded from early education, invisible to and absent from the wider community and many (educators, social workers, health care providers) lack first-hand experiences with and knowledge about children with disabilities. Without intervention to demonstrate otherwise, this scenario becomes a dismal embodiment of a self-fulfilling prophecy; the child's development remains grossly understimulated, erroneously confirming the notion that children with disabilities cannot learn.

On the other hand, research consistently demonstrates that motor skill deficits in young children are malleable and can change through comprehensive, ongoing motor skills interventions, which in turn can positively affect other areas of development. Taken collectively, all of these findings have particular relevance for children with disabilities in developing countries, where early lowered expectations result in limited or no access to educational opportunities. In these settings, motor skill interventions may provide an avenue to address early delays in motor skill development and other areas of development, which, in turn, could signal that children with disabilities can learn, affecting the trajectory of the child from exclusion to inclusion.

Although motor skill interventions have shown promise when implemented in the United States, three critical questions still need to be examined: Can an evidence-based motor intervention from the United States be adapted for use in a different cultural context? Is it feasible to implement a motor intervention with a high level of fidelity in a resource-poor country? Last, if a motor intervention were implemented with young children with disabilities in another country, would the same results be found? Therefore, the purpose of this study was to examine the impact of the YA Curriculum in Kenya, a country where young children with disabilities are largely excluded from routines within their own family and community and excluded from early childhood programs. Specifically, this study examined the adaptability of the YA motor intervention, the feasibility of implementation, and the impact on children, families, and communities when implemented in Kenya.

Method

Settings and participants

Before beginning the YA intervention, research staff in Kenya visited three local schools to ask teachers about their knowledge of families who had young children (age 3–6 years) with intellectual or developmental disabilities in the community. Teachers identified 18 families who were known to have a preschool-age child with this diagnosis. Once families were identified, the staff went to the homes of identified families to meet with parents, to provide an explanation of the YA intervention,

and ask the parents if they were interested in having their child in the motor intervention. All identified parents expressed interest in their child participating in the program and provided consent for participation in YA and for assessments associated with the study. Several steps were then taken to confirm that the child had a diagnosis of intellectual or developmental disability. First, parents were asked to confirm their child's disability diagnosis by answering the following question, "What is the diagnosis of your child given to you by your physician?" Different from Western countries where children with disabilities have school records indicating their disability diagnosis, preschoolers with disabilities in Kenya often do not attend school and do not possess such written documentation. All 18 families reported that their physician indicated that their preschool-age child had an IDD. In addition, five of the children had a dual diagnosis of autism, and one had a diagnosis of cerebral palsy. The initial parent report of a disability diagnosis was used to establish if the child had a disability. Next, the parents completed the Multiple Indicator Cluster Survey (MICS) (UNICEF, 2008) and the ABILITIES Index (AI) (Simeonsson, Bailey, Smith, & Buysse, 1995) with the research staff to confirm the presence and severity of developmental deficits. Last, parents were asked if their child could meet the following criteria for inclusion in the YA intervention: walk independently, follow simple directions, and attend to a brief task. As part of the intake in the home, the child was observed walking independently, following simple directions (i.e., come here, sit down, stand up), and attending to a task for about 10 to 15 minutes (i.e., singing a song with mom, playing a simple game). If the child could perform the three tasks and developmental deficits were confirmed by the MICS and the AI, the child was included in the study and pretesting on the motor assessments was scheduled. All 18 recruited children met these criteria. Participants included 14 boys and 4 girls, ranging in age from 3.4 to 6.5.

At the onset of the study, none of the children was attending school. Therefore, the three sites selected for the intervention were selected based on geographical proximity to the child's home. The sites also represented the three most common educational settings for preschool-age children in Nairobi: an early childhood development center (Little Rock), a public school (Baba dogo), and a community center (Christ the King). In these settings, space was borrowed for the implementation of the YA intervention during times of the day when the space was not being used. The children were assigned to the site closest to their home, and one adult was identified at each site to serve as the YA Leader. Therefore, the children were distributed as follows: Baba dogo (n = 3), Christ the King (n = 5), and Little Rock (n = 10).

Baba dogo primary school is located in a low-income area in the northern part of Nairobi. The government-funded public school has a special (separate) class for young children with intellectual disabilities in response to the Education for All bill sponsored by the Kenyan government's vision to have 100% inclusion by 2015. In addition, older children with disabilities attend inclusive classes in which they receive individualized supports as needed. Because the families in the Baba dogo area vary from low-income households to informal settlements, children face many challenges, such as access to early intervention and education and safe places for play.

The Christ the King Unit/Class is a special (separate) class within the Christ the King Primary School located in the eastern part of Nairobi and operated by the Catholic Parish in Embakasi, Nairobi Archdiocese. The special class was founded by a parent of a child with disabilities and is run by family members and one professional special education teacher. The class has children with intellectual disabilities and developmental delays of all ages from the surrounding community. Because the special class is donor funded and the households in the area represent low-income to middle-income families, the children do not pay school fees.

Little Rock Inclusive Early Childhood Development Center is situated in the informal settlements of Kibera in the southern part of Nairobi. The center is unique as it represents one of the few inclusive early childhood development schools in Kenya and serves children with hearing impairments, intellectual disabilities, and developmental delays. The center is donor funded, and the families of children with disabilities do not pay school fees as the majority of the households in the Kibera informal settlements live below poverty level. Most children are from very poor

and vulnerable backgrounds and lack access to early intervention and safe places to play and socialize.

Intervention

The YA Curriculum (Favazza et al., 2012) is a motor skill intervention that consists of 24 comprehensive lessons addressing the fundamental motor skills (Clark, 1994). The structure and content is consistent with recommendations for preschool motor interventions (National Association for Physical Education, 2002; Newell, 1984, 1986; Riethmuller, Jones, & Okely, 2009; Trawick-Smith, 2010) occurring across an 8-week period of time for a minimum of 90 minutes per week. The 30-minute lessons occur two to three times a week and include opening and closing motor movement songs before and after 187 motor activities.

Prior to beginning the study, the research team provided training to the YA Leaders at each site that focused on motor development in general, research on the importance of motor development for other areas of development, and the YA intervention specifically. In addition, the importance of making adaptations to the YA intervention was stressed to ensure that the curriculum was culturally relevant while not compromising the essential motor skill activities at the core of the intervention. All YA Leaders and research staff agreed that the essential core of the intervention, the motor skill activities, needed to remain consistent across all lessons. However, they were encouraged to think about ways in which to adapt the intervention so as to meet the needs of the child, family, and culture without losing fidelity to the essential core of program (i.e., motor skills taught through the 187 activities). Last, the YA Leaders were asked to document any adaptations made to the intervention.

Fidelity of implementation

The fidelity of implementation was evaluated in three ways. First, a record of attendance documented the amount of the intervention received by each child. Second, the duration of each 30-minute YA lessons was recorded, with the total amount of time spent in YA lessons equivalent to 720 minutes (24 lessons x 30 minutes = 720 minutes). Third, the YA Leader Log (YALL) was used by the YA Leader each week to document the consistency with which the YA Leader implemented the 187 YA activities that were embedded within the 24 YA lessons and to record adaptations made to the intervention. The YALL lists all of the YA activities for each week with follow-up probes about changes made to the YA activities, equipment, structure, and content. In addition to the YALL, during one on-site visit, the YA Leaders were observed by the authors leading YA and interviewed about the types of adaptations used. Collectively, these sources provided information about both the fidelity of implementation and the aspects of YA that were adapted.

Measures

The MICS (UNICEF, 2008) and the AI (Simeonsson et al., 1995) were used to document the presence and severity of disability in each recruited child. The MICS is a 10-item questionnaire used to identify children with congenital and developmental disabilities related to vision, hearing, motor, language, health, and activity limitations. It has been used in numerous cultural contexts, including Kenya, in an interview format with a parent or caretaker (UNICEF, 2008). Likewise, the AI has been used in many countries as a tool to provide information about a child's abilities across nine major areas: **A**-Audition, **B**-Behavior & Social Skills, **I**-Intellectual Functioning, **L**-Limbs, **I**-Intentional Communication, **T**-Tonicity, **I**-Integrity of Physical Health, **E**-Eyes, **S**-Structural Status. A rating for each child in each area is provided, using a scale ranging from 0 (*no impairment*)

to 6 (*profound disability*). The AI has demonstrated adequate test–retest reliability of .70 (Bailey, Simeonsson, Buysse, & Smith, 1993) and validity (Buysse, Smith, Bailey, & Simeonsson, 1993).

The Test of Gross Motor Development (TGMD) (Ulrich, 1985) was used to assess children's motor skills prior to and after participating in the YA program. The TGMD is a standardized test designed to measure a child's gross motor skills on two subtests: Locomotor (run, hop, jump) and Object Control (catch, kick, throw). The TGMD has demonstrated validity and high reliability (content sampling exceeds .8, time sampling exceeds .88; test scorer reliability .98) and has been used in several countries.

A Post Intervention Interview was used with parents regarding the impact of the intervention on the child and the family. Specifically, parents were asked, "What, if any, benefits did the child experience as a result of being in the YA program? What, if any, benefits did the family experience as a result of being in the YA program?" In addition, the YA Leaders and the university research staff who worked with the study were asked, "What are the challenges of young children with disabilities and their families in Kenya? How, if at all, did YA participation address some of these challenges for children? How, if at all, did YA participation address some of the challenges for families?"

Procedures

Training

One YA Leader and one university partner from Kenya were provided with training prior to implementation of the program using a train the trainer model. The training focused on typical and atypical motor development, common motoric challenges experienced by young children with IDD, information about the YA Curriculum, an overview of the data collection tools and procedures, and discussion of their ideas about appropriate adaptations for the YA program in their setting. They then used the same training materials to train YA leaders at each site where the program was to occur.

Pretesting and implementation of YA

Parents who confirmed they had a child with a diagnosis of IDD and who expressed interest in participating in YA completed a parental consent form. They also completed the MICS and the AI with the YA Leader and special educator. Subsequently, the parents brought their child to the site closest to their home where the motor abilities of each child were assessed individually using the TGMD before and after implementation of the YA program. The YA leaders implemented the YA program at the three sites, with the program occurring three times each week for a total of 8 weeks.

Results

Presence and severity of disability

The research staff identified 18 children who had been given a diagnosis by their physician of IDD, five of whom also had autism and one who had cerebral palsy. The results of the MICS and the AI confirmed that all participants had mild disability in the areas of intellectual functioning and mild to suspected disability in the areas of social skills, behavioral skills, and communication. In addition, the results from the AI indicated that participants' scores varied from normal to suspected disability in the areas of hearing, vision, use of limbs, muscle tone, and physical health. Collectively, these results indicated that participants had disabilities and, at the same time, they also confirmed that participants had adequate mobility and the sensory abilities (hearing and vision) needed to participate in motor testing and the YA program.

Fidelity of implementation

Attendance records indicated that all children were present for 90% or more of the YA lessons. In addition, YA Leaders at the three sites completed 98% of the YA activities (183 of the 187 activities). Also, reports from the YALL indicate that the YA sessions lasted, on average, 32 minutes for each of the 24 lessons. Collectively, these three measures of child attendance, number of YA activities completed, and duration of YA indicate that the motor intervention program was implemented with a high level of fidelity.

Adaptations

During the training, the YA Leaders were instructed to follow the 8-week program while adapting aspects of YA to accommodate the needs of the specific children and family members. Although sites varied in the type of adaptations made, YA leaders across all three sites made similar adaptations. For example, it was common for the delivery of YA to be changed from 3 days a week to 2 days a week to accommodate children and parents who traveled long distances to attend YA. In these instances, two YA lessons occurred on one day, with a snack and water break between the lessons. Another programmatic change was the expansion of the content in response to the needs of families and children. For example, all programs added an informal parent education component for mothers who were not aware of how to support motor development. Content on hygiene and safety was added, reinforcing community-wide health and safety initiatives. For example, children were taught how to thoroughly wash their hands before and after a snack break and sang closing songs that distinguished private body parts. Other adaptations included equipment substitutions/additions and disability-related accommodations, such as adjusting the level of difficulty of motor activities in response to the individual needs of the children. Adaptations were also made to the YA program to ensure that the YA Curriculum was culturally relevant, such as adding the Kenyan national anthem as the opening song and incorporating more kicking-related activities, as soccer is a popular sport in Kenya. The adaptations were grouped into five categories: variation in delivery, expansion of content, cultural adaptation, disability accommodation, and equipment addition or substitution. See Table 1 for adaptations.

Table 1. Adaptations.

Types	Examples
Variation in delivery	Placed the YA participants into small groups for ease in managing the children Conducted YA activities both inside and outside Extended the length of time for YA lessons as they needed more time for children to learn some of the motor skills
Expansion of content	Added content for families that included family support and informal education about child development and motor milestones Added hand-washing routines at snack break to teach good hygiene Stressed the importance of nutrition and hydration during snack break
Cultural adaption	Included culturally Kenyan national anthem Included songs teaching children about body parts and about personal and physical boundaries Included motor play (more kicking/soccer-related activities) reflective of soccer, a locally popular sport
Disability accommodation	Added sign language Adjusted the level of difficulty of motor activity (i.e., distances for throwing) Adapted the give and go activity to teach children the names of peers Adapted the throwing by including scarves and obstacles Added more fine motor/hand-eye coordination skills based on child needs
Equipment substitution or addition	Added additional balls of different sizes to match the different ability levels of children Used a piece of wood and tires for balance beam Used handkerchiefs for scarves Used imaginary goals for kicking a ball through the goal

Motor skill development

The TGMD raw scores were first converted to standard scores and then the standard scores were converted to the Gross Motor Quotient, a composite of the results of the two subtests (Locomotion and Object Manipulation). The Gross Motor Quotient scores at pre- and post-YA intervention were examined in relation to what each child should be achieving given his or her age and gender. Before participating in YA, 11 of 18 children (61%) were performing below the norm on gross motor abilities. Specifically, eight children were performing more than two standard deviations below the norm, and three children were one to two standard deviations below the norm. The other seven children were within one standard deviation of the norm for their age for their age and gender. After participating in YA, all children had improved on their motor abilities, performing above the mean score or within one standard deviation of the mean score (the norm) for their age and gender. Even the seven children who were within the norm on their pretest motor skills showed postintervention improvements.

As a group, children improved their motor skills as a function of participation in YA. There was a significant difference from the preintervention to postintervention on the Gross Motor Quotient (t = 12.44, p < .001). To further explore the differences in the Gross Motor Quotient, the Locomotor and Object Control subtest scores were examined, revealing a significant difference between the preintervention and postintervention on both Locomotion (t = 9.23, p < .001) and Object Manipulation (t = 12.96, p < .001) subtests. Collectively, these results indicate that the children significantly improved in their overall gross motor skills and in locomotion and object control skills as measured by the TGMD. See Table 2 for mean scores. Graphs of the TGMD pre- and post-Locomotion and Object Manipulation scores are provided in Figures 1 and 2, and the TGMD total gross motor quotient scores are provided in Figure 3.

Table 2. Means and standard deviations of standard scores for test of gross motor development subscales.

Test of Gross Motor Development	Pre	Post
Locomotor subscale	6.67 (4.67)	14.67 (4.56)
Object manipulation subscale	7.11 (3.71)	15.06 (3.47)

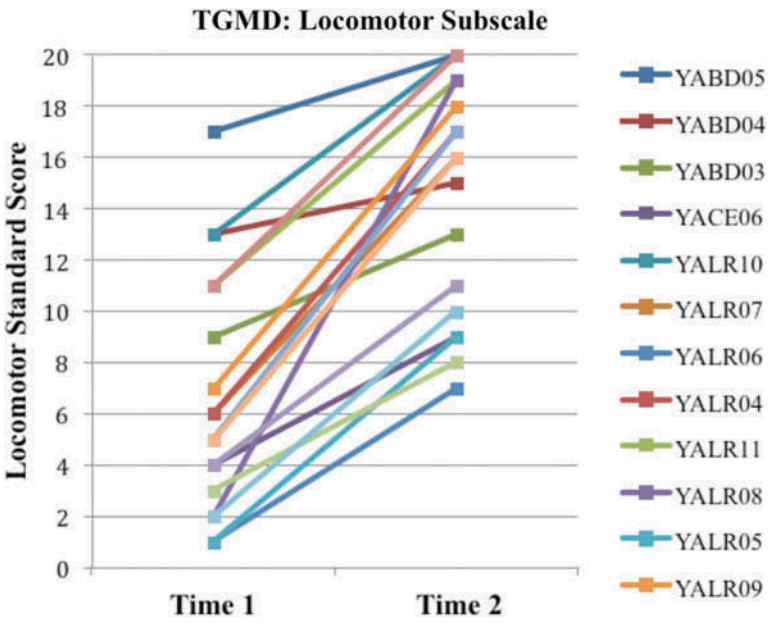

Figure 1. Pre and postscore on the Test of Gross Motor Development (TGMD) Locomotor Subscale. *Note.* YABD = Young Athletes from school in Baba dogo; YACE = Young Athletes from Catholic school Embakasi; YALR = Young Athletes from school in Little Rock.

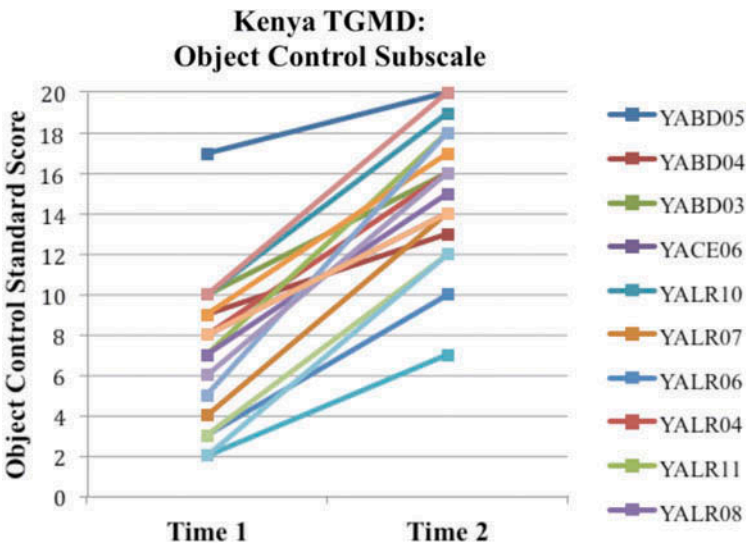

Figure 2. Pre and postscore on the Test of Gross Motor Development (TGMD) object manipulation subscale. *Note*. YABD = Young Athletes from school in Baba dogo; YACE = Young Athletes from Catholic school Embakasi; YALR = Young Athletes from school in Little Rock.

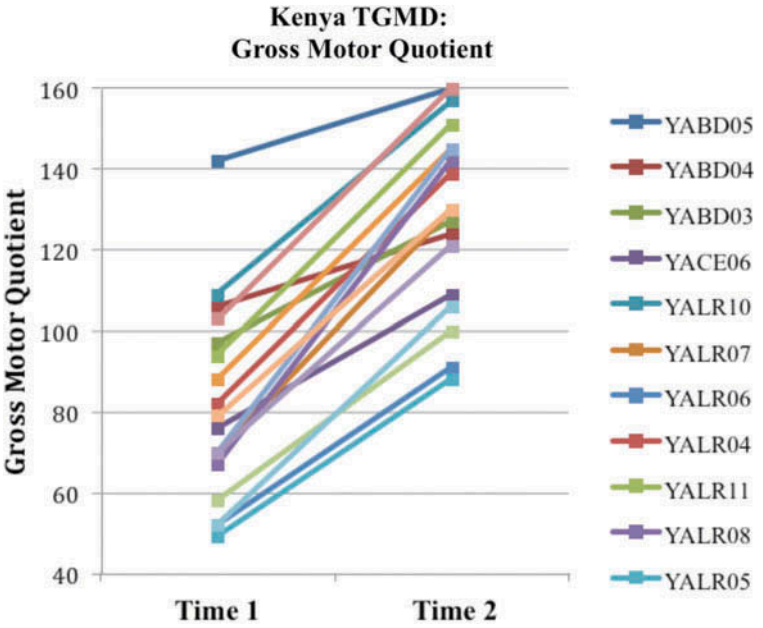

Figure 3. Pre and postscore on the Test of Gross Motor Development (TGMD) gross motor quotient. *Note*. YABD = Young Athletes from school in Baba dogo; YACE = Young Athletes from Catholic school Embakasi; YALR = Young Athletes from school in Little Rock.

Perceived benefits

All YA leaders and all parents of children in the YA program reported on benefits that the children derived from participating in the program. In general, gains were reported in several developmental areas. In addition, families reported benefits such as feelings of social support because of connecting

Table 3. Perceived benefits.

	What, if any, benefits did you observe as a result of participation in YA?
Young Athletes leader	"The impact of YA was tremendous for the children and families. It very much improved the motor skills for the children; [they] made friends with other children and families they didn't know before. The children are very eager to join school." "The kids look totally different from day one. Some children who stumbled were now walking more steadily; some children who were withdrawn, not socializing, not communicating are now talking and playing with other children." "S. changed dramatically. She no longer runs around and is troublesome. She listens and joins in the activities." "Parents have gone out of their way to help their child succeed. Some parents bought balls to play with their child at home." "Parents are now playing with their child and their child now knows how to play." "The parents indicate that they feel relieved after learning that having a child with ID is not a personal issue. They have come to realize that many children have disabilities; that it is common in the community. The parents made friends with each other, started to lead YA, help other parents."
Parents	"We have seen that L. likes school and he is less ashamed of himself." "He can express himself better when he wants something!" "Now he likes to exercise more and play football." "Now he can attend church, and he likes to greet elder people." "The family has benefited by seeing that he can depend on himself and he likes to be involved in house work." "He is less hyperactive." "Through YA, our family benefited by having more knowledge about people with intellectual disability and how to live with them." "We now know that we need to give him more freedom to participate in social activities in the community."

with other families of children with disabilities and gaining a better understanding of persons with disabilities. Examples of specific comments from the YA leaders and families are reported in Table 3.

Moreover, parents and YA Leaders reported numerous changes that had occurred because of participation in the YA intervention. These changes represented multilevel impact on inclusion of the child within their family and the wider community. Examples of these changes are provided in Table 4.

Discussion

This study was an important first step in examining the adaptability, feasibility, and efficacy of the YA intervention in a developing country. The findings clearly demonstrate that the YA intervention can be adapted within the Kenyan culture and fully implemented with a high level of fidelity. Adaptations were made in response to the individual needs and culture of the children and families. For example, the YA program met one afternoon a week and one Saturday a week to ensure that all lessons were implemented while accommodating the needs of the families to meet on the weekend. Equipment was adapted as needed, and opening and closing songs were adapted to include the national hygiene and safety initiatives. In addition, the family content was added seamlessly, connecting the motor intervention to families' needs for informal education, support, and advocacy training. With these adaptations, the study demonstrated that YA could be implemented with high fidelity within the resource-poor landscape of Kenya. In addition, the family content was added seamlessly, connecting the motor intervention to families' needs for informal education, support, and advocacy training.

An equally important finding from this study is the motor skill gains by the YA participants. These findings are consistent with previous studies of YA when implemented in the United States (Favazza et al., 2013). Specifically, YA participants made significant gains in locomotion skill, object manipulation skills, and overall motor abilities. Also, similar to the previous study of YA, postinterviews with parents and YA leaders indicated that children had observable changes in social and school readiness skills. Collectively, these findings indicate that YA is adaptable to cultures and communities outside of the

Table 4. Summary of multilevel inclusion.

Family
Parents' perceptions changed as they realized that their child with IDD could learn and go to school.
Some mothers indicated that they are able to go to work, resulting in increased family resources as a result of their children getting to go to school.
Parents spoke of support they receive from connecting with and talking to other parents, realizing that their child is not the only one with a disability.
Parents indicated that they have more knowledge about causes of disability and greater understanding of how to relate to, communicate with, and play with their child. Parents reported that: • their extended family now sees how to relate to their child. • their child (with a disability) is more engaged in family routines (wash dishes, clean house, helping daddy put on his slippers). • family members no longer despise their child; that siblings now have greater respect for the child. • members now talk more to the child, play with him/her, and the family in general is more expressive of affection and love of the child.
Community: Neighborhood
The child is more confident and able to demonstrate his/her abilities (speak, play with others); because of this, he/she now leaves the house to play with neighborhood children.
Neighborhood children invite their children to play, resulting in new friendships.
Many parents indicated that they now send their child to the market for the family, giving support to the whole family.
Parents became change agents, speaking up on behalf of others with disabilities in their community.
Community: School
YA began in borrowed space, which led to the children getting into early childhood classrooms.
YA is now being used a recruitment tool for children to come out of hiding and go to school.
An increasing number of children with disabilities were identified and are now receiving education.
As a result of participating in the assessment process, the YA leader reported learning about assessment and observing children with disabilities.
YA leaders reported being better able to support children's development and utilize new skills learned from YA participation in the classroom.
Community: University
University students learned that children with IDD could learn, change, and develop.
University faculty requested that experiences and disability content be required in the university curriculum, particularly given that early motor development undergirds other areas of development.
University faculty is now providing training about working with children with disabilities for future teachers.

Note. YA = Young Athletes; IDD = intellectual and developmental disabilities.

United States, YA can be fully implemented with high fidelity in resource-poor countries, and the YA motor intervention is a viable and efficacious program for use in a global context.

Furthermore, the unexpected finding from this study was that YA had an added value in the context of Kenya, where it is common practice to exclude children with developmental and intellectual disabilities from family activities, schools, and society in general. Parents and YA leaders reported that YA had a notable impact on the inclusion of children with disabilities within their families, schools, and communities. For example, after seeing what their child could do during YA, parents reported that they began interacting more with their child and including their child in the family routines. As a result of YA, parents indicated that they had a better understanding of their child's abilities and how to interact with their child. Parents also reported that because their children became more social, they began playing (for the first time) with children from their neighborhood and village. Moreover, YA Leaders and parents successfully advocated for the previously unschooled children to attend the local early childhood classes by inviting village and school leaders to observe YA. As a result, the children who participated in YA are in school for the first time, with YA being used as part of their curriculum. In addition to impacting inclusion within the family, neighborhood, and school, YA also impacted inclusion needs of the community.

Because individuals with disabilities are excluded from Kenyan society in general, there is lack of information and experiences with individuals with disabilities. In response to this need, the YA training was extended to university students and led to a high level of volunteerism among them. As a result, university faculty made a formal request for more content and experiences in the university curriculum for future physical education teachers and educators. Collectively, the findings of this

study demonstrated that YA is relevant to the needs of young children with IDDs in Kenya, especially given the exclusion and isolation experienced by these children within their families, neighborhoods, and in the communities. This last point speaks to the broader impact of YA for the children and families in Kenya and has implications for the use of YA in other countries that have similar practices of excluding children with disabilities. Although all of these findings are significant, some limitations to the study are discussed next.

Limitations

Riethmuller et al. (2009) advocated for preschool motor interventions that have a strong theoretical basis, an adequate intervention with regard to scope and components (such as training and family involvement), and a robust research design. According to Riethmueller et al., robust research design includes randomized procedures with comparable groups of children, the individual child as the unit of analysis, and valid and reliable motor and fidelity measures. The YA intervention possessed all of these indices: strong theoretical underpinnings, developmentally appropriate practices, and adequate scope including training and family involvement. With regard to "robust research," the absence of a control group and the lack of random assignment limits the findings of this study. Although significant motor gains were found, follow-up data were not collected to ascertain if the gains were sustained over time. We acknowledge these limitations and strongly recommend future studies of the YA intervention in similar contexts address these shortcomings. Specifically, an important next step is to demonstrate that these gains are strong when compared to a non-intervention control group and that the motor gains are sustained across time.

Implications

Clearly, the impact of the YA intervention shows promise for changing not only the motor skills of children but also the educational trajectory of the child, family, and community as it provides a broad impact on the inclusion opportunities.

Like in the United States, children from Kenya who have IDD have delays in motor skill development, as evident by the pretest motor scores. And, similar to the findings in the United States (Favazza et al., 2013), children from Kenya with IDD who participated in the 8-week YA program made significant gains in motor skills. In addition, consistent with previous research, parents and educators reported improvements in social skills and school readiness. The implications of these findings point to the need for measuring the impact of motor programs like YA on other areas of development. Moreover, an added value of implementing YA in the global context is that, for the first time, children with IDD were identified and counted by the local school district, received developmental screening, and gained access to preschool. This has important implications in the global context for using motor play programs such as YA as a gateway to receiving developmental screening and access to preschool.

Unlike in the United States, families of young children with disabilities in developing countries are in dire need of information, support, and programming for themselves and their child. Because of the adaptations made to the program when implemented in Kenya, many of these needs for families who experience acute social isolation were addressed. Therefore, an added value of such programs in the global context, as reported by parents, is they now realize that their child can learn, has value, and can be a part of family rituals and routines and participate in typical activities such as playing with neighbors and going to school.

Unlike in the United States, communities in the global context typically exclude children with disabilities and their families from every aspect of life. As a result of YA, family members and community teachers gained new insights about children with IDD. An added value of such programs in the global context is the realization by family, school, and community leaders that children with IDD can and should go to school. YA participants first attended the motor skill program in "borrowed

space" at schools; eventually, they gained access to preschool. Because they went to school, more teachers were hired and more parents of children with IDD went to work, affecting the economic resources of the family and the community. It is also notable that the YA Curriculum is adaptable for use in Kenya, filling a gap in early childhood programs for young children with disabilities (African Network for the Prevention and Protection Against Child Abuse and Neglect, 2005).

Last, the findings from this study are promising, adding to the documented benefits associated with early motor programming on children's development that can be used in the global context (National Center for Physical Development and Outdoor Play, 2010; Trawick-Smith, 2010). For example, more needs to be done in light of the lack of early childhood programs for young children with developmental disabilities in low- and middle-income countries. Significant and sustainable improvement in motor development cannot rest on an 8-week motor intervention alone. Preschool motor programs should be viewed as just one of the many strategies needed to engage young children with developmental disabilities in learning and physical activities (Brown et al., 2009; Riethmuller et al., 2009). Moreover, change in parent and community expectations about the abilities of children with developmental disabilities will require sustained involvement of families and community members in physical activities and early childhood programs. Currently, leaders from impoverished countries are actively seeking effective early childhood programs for children with developmental disabilities to counter the negative impact of poverty on development, and as a solution to the stigma and isolation young children with developmental disabilities often face (Britto et al., 2011). Motor programs could be one strategy used as a springboard toward greater inclusion of children with disabilities in the global context.

Funding

Funding for this research was provided by Special Olympics International, Washington, DC.

ORCID

Gary N. Siperstein http://orcid.org/0000-0002-0439-1665

References

African Network for the Prevention and Protection Against Child Abuse and Neglect. (2005). *Annual report: Review of the status of provision of education to all children in Kenya*. Nairobi, Kenya: Author.

Bailey, D. B., Simeonsson, R. J., Buysse, V., & Smith, T. (1993). Reliability of an index of child characteristics. *Developmental Medicine & Child Neurology*, *35*, 806–815. doi:10.1111/j.1469-8749.1993.tb11732.x

Becker, D. R., McClelland, M. M., Loprinzi, P., & Trost, S. G. (2014). Physical activity, self-regulation, and early academic achievement in preschool children. *Early Education & Development*, *25*(1), 56–70. doi:10.1080/10409289.2013.780505

Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn*. Washington, DC: National Academies Press.

Bredekamp, S. (2004). Play and school readiness. *Educational Perspectives*, *38*(1), 18–26.

Britto, P. R., Yoshikawa, H., & Boller, K. (2011). The quality of early childhood development programs in global contexts: Rationale for investment, conceptual framework and implications for equity. *Social Policy Report*, *25*(2), 1–30.

Brown, W. H., Pfeiffer, K., McIver, K., Dowda, M., Addy, C., & Pate, R. (2009). Social and environmental factors associated with preschoolers' nonsedentary physical activity. *Child Development*, *80*(1), 45–58. doi:10.1111/j.1467-8624.2008.01245.x

Burdette, H. L., & Whitaker, R. C. (2005). A national study of neighborhood safety, outdoor play, television viewing, and obesity in preschool children. *Pediatrics*, *116*(3), 657–662. doi:10.1542/peds.2004-2443

Buysse, V., Smith, T., Bailey, D. B., & Simeonsson, R. J. (1993). Consumer validation of an index characterizing the functional abilities of young children with disabilities. *Journal of Early Intervention*, *17*(3), 224–238. doi:10.1177/105381519301700302

Cahill, S. (2009). Where does handwriting fit in? Strategies to support academic achievement. *Intervention in School and Clinic*, *44*(4), 223–228. doi:10.1177/1053451208328826

Calfas, K. J., & Taylor, W. C. (1994). Effects of physical activity on psychological variables in adolescents. *Pediatric Exercise Science*, *6*, 406–406.
Clark, J. E. (1994). Motor development. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (3rd ed., pp. 245–255). New York, NY: Academic Press.
Dykens, E. M., Rosner, B. A., & Butterbaugh, G. (1998). Exercise and sports in children and adolescents with developmental disabilities. Positive physical and psychosocial effects. *Child and Adolescent Psychiatric Clinics of North America*, *7*(4), 757–771.
Emck, C., Bosscher, R., Beek, P., & Doreleijers, T. (2009). Gross motor performance and self-perceived motor competence in children with emotional, behavioural, and pervasive developmental disorders: A review. *Developmental Medicine & Child Neurology*, *51*(7), 501–517. doi:10.1111/dmcn.2009.51.issue-7
Favazza, P. C., Siperstein, G. N., Zeisel, S. A., Odom, S. L., Sideris, J. H., & Moskowitz, A. L. (2013). Young athletes program: Impact on motor development. *Adapted Physical Activity Quarterly*, *30*, 235–253.
Favazza, P. C., Zeisel, S. A., Parker, R., & Leboeuf, L. (2012). *The young athletes curriculum*. Boston, MA: University of Massachusetts, Center for Social Development and Education, Boston and Special Olympics International.
Fedewa, A. L., & Ahn, S. (2011). The effects of physical activity and physical fitness on children's cognitive outcomes: A meta-analysis. *Research Quarterly for Exercise and Sport*, *82*(3), 521–535. PMid:21957711 10.1080/02701367.2011.10599785
Folio, M., & Fewell, R. (2000). *Peabody developmental motor scales* (2nd ed.). Austin, TX: Pro-Ed.
Green, D., Charman, T., Pickles, A., Chandler, S., Loucas, T., Simonoff, E., & Baird, G. (2009). Impairment in movement skills of children with autistic spectrum disorders. *Developmental Medicine & Child Neurology*, *51*(4), 311–316. doi:10.1111/dmcn.2009.51.issue-4
Iverson, J. (2010). Developing language in a developing body: The relationship between motor development and language development. *Journal of Child Language*, *37*, 229–261. doi:10.1017/S0305000909990432
Jensen, E. (2005). *Movement and learning in teaching with the brain in mind* (2nd ed.). Beaufort, SC: Association for Supervision & Curriculum Development.
Marton, K. (2009). Imitation of body postures and hand movements in children with specific language impairment. *Journal of Experimental Child Psychology*, *102*(1), 1–13. doi:10.1016/j.jecp.2008.07.007
National Association for Physical Education. (2002). *Active start: A statement of physical activity guidelines for children birth to five years*. Oxon Hill, MD: AAHPERD Publications.
National Center for Physical Development and Outdoor Play. (2010). *From playpen to playground: The importance of physical play for the motor development of young children*. Reston, VA: Head Start Body Start National Center for Physical Development and Outdoor Play.
Newell, K. (1984). Physical constraints to development of motor skills. In J. Thomas (Ed.), *Motor development during preschool and elementary years* (pp. 105–120). Minneapolis, MN: Burgess.
Newell, K. (1986). Constraints on the development of coordination. In G. Wade & H. T. Whiting (Ed.), *Motor development in children: Aspects of coordination and control* (pp. 341–360). Dordrecht, Netherlands: Nijhoff.
Oja, L., & Jürimäe, T. (2002). Physical activity, motor ability, and school readiness of 6-yr.-old children. *Perceptual and Motor Skills*, *95*(2), 407–415.
Pan, C., Tsai, C., & Chu, C. (2009). Fundamental movement skills in children diagnosed with autism spectrum disorders and attention deficit hyperactivity disorder. *Journal of Autism & Developmental Disorders*, *39*(12), 1694–1705. doi:10.1007/s10803-009-0813-5
Piek, J., Dawson, L., Smith, L., & Gasson, N. (2008). The role of early fine and gross motor development on later motor and cognitive ability. *Human Movement Science*, *27*(5), 668–681. doi:10.1016/j.humov.2007.11.002
Provost, B., Heimerl, S., & Lopez, B. (2007). Levels of gross and fine motor development in young children with autism spectrum disorder. *Physical & Occupational Therapy in Pediatrics*, *27*(3), 21–36. doi:10.1080/J006v27n03_03
Provost, B., Lopez, B., & Heimerl, S. (2007). A comparison of motor delays in young children: Autism spectrum disorder, developmental delay, and developmental concerns. *Journal of Autism & Developmental Disorders*, *37*(2), 321–328. doi:10.1007/s10803-006-0170-6
Rapoport, M., Van Reekum, R., & Mayberg, H. (2000). The role of the cerebellum in cognition and behavior: A selective review. *Journal of Neuropsychiatry and Clinical Neurosciences*, *12*, 193–198. doi:10.1176/jnp.12.2.193
Riethmuller, A. M., Jones, R., & Okely, A. (2009). Efficacy of interventions to improve motor development in young children: A systematic review. *Pediatrics*, *124*(4), e782–e792. doi:10.1542/peds.2009-0333
Sage, G. (1984). *Motor learning and control: A neuropsychological approach*. Dubuque, IA: William C. Brown.
Seymour, H., Reid, G., & Bloom, G. A. (2009). Friendship in inclusive physical education. *Adapted Physical Activity Quarterly*, *26*, 201–219.
Shonkoff, J., & Phillips, D. (2000). *From neurons to neighborhoods*. Washington, DC: National Academy Press.
Simeonsson, R. J., Bailey, D., Smith, T., & Buysse, V. (1995). Young children with disabilities: Functional assessment by teachers. *Journal of Developmental and Physical Disabilities*, *7*(4), 267–284. doi:10.1007/BF02578431
Trawick-Smith, J. (2010). *From playpen to playground: The importance of physical play for the motor development of young children*. Reston, VA: Head Start Body Start National Center for Physical Development and Outdoor Play.

Ulrich, D. A. (1985). *Test of gross motor development*. Austin, TX: PRO-ED.
UNICEF. (2008). *Monitoring child disability in developing countries: Results from the multiple indicator cluster surveys (MICS), University of Wisconsin*. New York, NY: Author.
UNICEF. (2013). *Children and young people with disabilities: Fact sheet*. Retrieved from www.unicef.org/disabilities
Wassenberg, R., Feron, F. J., Kessels, A. G., Hendriksen, J. G., Kalff, A. C., Kroes, M., & Vles, J. S. (2005). Relation between cognitive and motor performance in 5-to 6-year-old children: Results from a large-scale cross-sectional study. *Child Development*, *76*(5), 1092–1103. doi:10.1111/j.1467-8624.2005.00899.x

Copyright of Journal of Research in Childhood Education is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.