

CHAMPPS: Filling the Preschool Curriculum Gap

Katherine Aronson-Ensign
University of
Massachusetts Boston

Hsiu-wen Yang
University of Illinois at
Urbana-Champaign

Paddy C. Favazza
University of
Massachusetts Boston

Yusuf Akamoglu
University of Alabama

Melissa V. Stalega
University of Connecticut

W. Catherine Cheung
University of Illinois at
Urbana-Champaign

Michaelene M. Ostrosky
University of Illinois at
Urbana-Champaign

Abstract

Many preschool teachers may be aware of the need to support motor skills and physical activity for their students but they are not sure how to actually achieve this goal. Often preschoolers' only motor time includes recess or a short movement with music activity during circle time, with limited or no structured motor curriculum. This article highlights *CHildren in Action: Motor Program for PreschoolerS (CHAMPPS)*, a structured preschool motor program that utilizes UDL embedded lessons to support school readiness (e.g., social, language, motor, pre-academics) and elevated physical activity levels for children. First, we discuss the importance of structured motor programs for preschoolers with and without disabilities. Second, we describe how CHAMPPS is responsive to national guidelines regarding motor play. Third, the components of CHAMPPS are described.

Keywords: *Disability, inclusion, motor development, physical activity, preschool*

The preschool years are the ideal time to increase motor skills through engagement in physical activities. During this time, preschoolers (3-5 years of age) use their bodies in a variety of ways as they learn how to jump, hop, throw and catch, which require motor skills such as locomotion, motor control, coordination, balance, and object manipulation. In addition, while motor development is important in and of itself, it also supports other areas of development including school readiness (Clark, 1994; Haiback-Beach, Reid, & Collier, 2018; Haywood & Getchell, 2014). School readiness represents a combination of *interrelated* skills such as physical well-being and motor development, socioemotional development, language development, cognitive and general

knowledge skills (e.g., pre-math and pre-reading), and approaches to learning (e.g., curiosity, sustained attention) (Ackerman & Barnett, 2005; Howard, 2011; National Education Goals Panel, 1995). Active motor play leads to exploration and stimulation within one's environment, which supports growth in motor skills as well as other school readiness skills (Burdette & Whitaker, 2005; Iverson, 2010; Oja & Jürimäe, 2002; Piek, Dawson, Smith & Gasson, 2008; Wassenberg, Feron, Kessels, Hendriksen, Kalff, & Kroes, 2005).

Supporting school readiness skills, including motor skill development, is an important part of the preschool curriculum, particularly for young children with disabilities who often experience deficits in this area (e.g., Emck, Bosscher, Beek, & Doreleijers, 2009; Goodway, Crowe, & Ward, 2003; Provost, Heimerl, & Lopez, 2007; Provost, Lopez, & Heimerl, 2007; Wuang, Wang, Huang, & Su, 2008). Provost, Heimerl, and Lopez (2007) and Provost, Lopez, and Heimerl (2007) found that preschoolers with disabilities showed significant delays in motor skills that required balance and motor planning. Moreover, growing up in poverty can have long-term negative impacts on many areas of development such as cognitive, socio-emotional, language, health, and motor development (Ginsburg, 2007; Goodway & Branta, 2003; Venetsanou & Kambas, 2010). Therefore, motor skill development is *especially* important within *inclusive* preschool classrooms and among preschoolers of *low socioeconomic status*.

Because motor skills are viewed as "building blocks" for many areas of development, delays in early motor skill development can lead to a wide array of difficulties in other skill areas that are dependent upon these skills such as peer interactions, handwriting, physical well-being (Brown, Pfeiffer, McIver, Dowda, Addy, & Pate, 2009b; Cahill, 2009; Seymour, Reid, & Bloom, 2009), or cognitive development and early academic achievement (Becker, McClelland, Loprinzi, & Trost, 2014; Fedewa & Ahn, 2011). Therefore, it is important that children are provided with *direct and intentional instruction* for motor skill development during the preschool years (Brian, Goodway, Logan & Sutherland, 2017; Brian & Taunton, 2018; Green, Charman, Pickles, Chandler, Loucas, Simonoff, & Baird, 2009; Marton, 2009; Pan, Tsai, & Chu, 2009; Provost et al., 2007) as well as *multiple opportunities to be engaged in physical activities* to develop these skills (Clark & Metcalfe, 2003; Goodway & Branta, 2003).

Despite the importance of supporting motor development in inclusive preschool classrooms, support is often lacking in early childhood education (Horn & Kang, 2012). In a systematic review of preschool motor interventions, Riettmuller, Jones, and Okely (2009) highlighted the limited number of motor interventions that had both a sound theoretical base to their development and high research standards to evaluate their efficacy. Not only do a limited number of quality preschool motor programs exist, but the current preschool landscape is one in which most children spend an inadequate amount of time in physical activities and do not receive intentional support for motor skill development (Cohen, Morgan, Plotnikoff, Callister, & Lubans, 2014; Guthold, Cowan, Autenrieth, Kann, & Riley, 2010; Tucker, 2008). In

typical early childhood settings, there are three types of motor activities: unstructured motor play, structured motor interventions, and unstructured motor and music movement activities. *Unstructured motor play* includes activities such as daily recess monitored by teachers and paraprofessionals while *structured motor interventions* include physical therapy (PT), occupational therapy (OT), and adapted physical education (APE) for children with disabilities once or twice a week led by a physical therapist, occupational therapist, or adapted PE teacher. The third type, *unstructured motor and music movement activities*, includes brief motor experiences for the whole class led by teachers who often lack extensive background knowledge in motor skill development. What is clear is that children with disabilities participate on a limited basis in motor movement activities designed to support motor skill development and physical activity (Murphy & Carbone, 2008). The interaction of these realities (an inadequate amount of time and a lack of intentional support) illustrated the need for structured preschool motor programs such as CHildren in Action: Motor Program for PreschoolerS (CHAMPPS). CHAMPPS was developed to fill a gap in preschool programs by providing a step-by-step, comprehensive physical activity curriculum designed to be implemented by preschool teachers (as opposed to physical educators or motor specialists). Unique aspects of CHAMPPS include a focus on increasing physical activities and motor skill development through repeated lessons embedded with Universal Design for Learning (UDL) strategies to ensure child engagement and supports to address social, communication and pre-academic skills for preschoolers with and without disabilities. The purpose of this paper is to describe CHAMPPS, which was developed by key stakeholders (teachers, assistant teachers, parents) with specialists (adapted physical education, occupational therapy, speech therapy, early childhood special education). Stakeholders field-tested individual lessons and physical activities from the 7 CHAMPPS units, providing recommendations for revisions. The results yielded a multi-component preschool motor program which is described later in the paper.

Development of CHAMPPS

CHAMPPS was developed using an iterative process, divided into three phases with review, feedback, and revisions occurring with each phase. The phases were: (1) the *manualization of CHAMPPS* as a preschool motor program with UDL lessons and corresponding physical activities; (2) an *examination of the usability, feasibility and fidelity of implementation of CHAMPPS*, and (3) a *pilot study of CHAMPPS* to examine its impact on motor, social, and cognitive development and the level of physical activity exhibited by preschoolers with disabilities. During development as each new unit was created, the activities (and instructions for all motor activities) were vetted by a team with expertise in motor development, physical activity for preschoolers, adapted physical education, and early childhood special education. After field testing the activities several times, data were collected related to operational and technical feasibility, usability, recommendations for revisions, physical activity level of a sample of children and observations of observed changes in children (i.e., motor, language, social, approach-

es to learning). Throughout implementation, teachers were provided initial training and ongoing support and feedback, as needed. A Fidelity of Implementation Checklist was utilized throughout the program to ensure completion of each aspect of the CHAMPPS lessons with preliminary data indicating over 90% fidelity of implementation.

Consistency with Professional Guidelines for Preschool Motor Programs

One important and foundational aspect of CHAMPPS is its alignment with national and professional guidelines. To that end, the CHAMPPS team reviewed guidelines that could inform the development of a motor program for preschoolers with and without disabilities. These guidelines represented leading organizations such as the National Association for Sport and Physical Education (NASPE, 2002; 2010), the National Association for the Education of Young Children (NAEYC, 2003), the Division on Early Childhood (DEC, 2009) and the American Academy of Pediatrics (2012). Examples of these guidelines and recommendations from the leading professional organizations that were used to inform CHAMPPS are highlighted in Table 1.

Table 1
Guidelines and Recommendations

Organization	Guidelines/Recommendations
National Association for Sport and Physical Education (NASPE)	Every day, preschoolers need: 60 minutes of structured motor activity 60 minutes or more of unstructured physical activity Outdoor time for motor play, supervised by an adult in a safe child-friendly setting Access to developmentally appropriate equipment to support physical activity and motor skill development
National Association for the Education of Young Children (NAEYC)	Principles of child development and learning that inform practice: All developmental domains (physical, social and emotional, and cognitive) are important and interrelated Children's learning and development follow well-documented sequences, with later abilities, skills, and knowledge building on those already acquired Development and learning proceed at varying rates from child to child and at uneven rates across different areas of a child's individual functioning
DEC and NAEYC Joint Position Statement on Early Childhood Inclusion	Recommended practices to support instruction and full access: Use strategies such as UDL to ensure full access and meaningful inclusive programming Identify skills to target for instruction to help child become adaptive, competent, socially connected and engaged, and that promote learning in natural and inclusive environments Provide the level of support, accommodations, and adaptations needed for each child to access learning within and across activities Use systematic instructional strategies with fidelity to teach skills and to promote child engagement and learning Implement the appropriate frequency, intensity and duration of instruction needed to address the child's phase and pace of learning

Table 1 (continued)

<p>American Academy of Pediatrics, American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education</p>	<p>All children, birth to 6 years, should participate: In two or more structured, teacher-led, activities or games to promote movement over the course of each day (indoor or outdoor) In continuous opportunities to develop and practice age-appropriate gross motor and movement skills Teachers should: Lead structured activities to promote children’s activities two or more times per day Provide prompts for children to be active (e.g., “Throw the ball to Alice.”) Have orientation and annual training opportunities to learn about age-appropriate gross-motor activities and games that promote children’s physical activity</p>
--	---

Guidelines regarding evidence-based practices. A critical feature of high-quality preschool motor programs is the need for them to be informed by evidence-based practices (Logan, Robinson, Wilson, & Lucas, 2011). CHAMPPS was developed with the following three features in mind: (1) a comprehensive scope and sequence linked to motor skill development theory (Clark, 2005, 2002), (2) an appropriate duration and intensity, consistent with professional guidelines, and (3) evidence of rigorous research that employs a randomized experimental design, strong methodological quality, valid measures with the child as the unit of analysis, and demonstrated effectiveness. The first two features were addressed during the development of CHAMPPS while the last feature was addressed in a subsequent pilot study.

Guidelines for physical activity for preschoolers. Because of the NASPE guidelines, one of the goals of CHAMPPS is to increase physical activity in preschoolers. NASPE recommends that preschool children engage in at least 60 minutes of structured physical activity per day with children remaining physically active for at least 50% of the time (NASPE, 2002). There are three ways in which CHAMPPS was designed to meet the benchmark for physical activity level: internal structure, music videos, and pre-planning for smooth transitions.

Internal structure. CHAMPPS has a built-in internal structure that minimizes wait time during activities to ensure high levels of physical activity throughout the lessons. For example, during activities that require waiting for a turn (i.e., obstacle course) teachers are encouraged to have 2-3 children go through the course at one time while 2-3 children engage in brief activities until it is their turn at the obstacle course. Examples of wait-time activities include: tossing a bean bag to self or a peer; doing long jumps or hopping from one floor marker to another; and cheering on peers by clapping, using egg shakers or musical instruments. Another example of the internal structure that supports increased physical activity level is the attention given to structuring CHAMPPS with a variation in group sizes. Simply put, children spend less time waiting (being sedentary) when they are working in small groups, pairs, or doing independent practice. Because of this, there is a gradual shift across the seven units from whole group activities to small group, partner, or independent practice. Having said that, even in whole group activities, teachers find ways to engage all students. For example, in the Core Activity, Rabbits and Foxes, teachers introduce

various animals and movements. The class jumps and sings the song “Jumping Bunnies” until the teacher rings a bell and the children go back to their floor markers. Teachers can call out different animals, show their movements and then ask the class to demonstrate the movements of each new animal while singing. Sometimes, children are encouraged to balance on one foot after each round, or jump in place, before choosing another animal movement to keep their physical activity level high with built-in mini-breaks.

Music videos. Another strategy used to support physical activity occurs as a result of the use of music videos. CHAMPPS units include one or two 2- to 4-minute videos with the expectation that children’s duration of engagement or stamina increases over time. In addition, using UDL suggestions (explained in the next section), children are encouraged to do modified versions of movements (i.e., speed walking or walking in place instead of jogging in place) to sustain movement during the longer 4-minute music videos. Teachers are reminded to keep sustained physical activities under 5 minutes, as this represents an appropriate duration for preschoolers (Brown, Googe, McIver, & Rathel, 2009).

Pre-planning for smooth transitions. Several strategies are employed to ensure smooth transitions that maintain child engagement and high physical activity levels during CHAMPPS. This is important because within each CHAMPPS lesson there are five transition moments across the six activities: Warm-Up, Core Activity 1, Core Activity 2, Core Activity 3, Music Video, Cool Down. Because some of these activities are implemented with the whole class (Warm Up, Music Video, Cool Down), while others require children to work in small groups, pairs or alone (Core Activities 1, 2, 3), advanced planning helps minimize wait time and increases time in actual activities.

Prior to starting CHAMPPS, teachers and their assistants decide which children will be in each small group, which children will be partners, and which adult will supervise which group of children. In addition, the stations for each activity are arranged to ensure that there is enough variation and appropriate adapted equipment for all students. Finally, to ensure smooth transitions and maximize a high physical activity level during CHAMPPS, quick references to lesson activities are provided in two ways: a lesson summary is posted on the wall and a hand-held Walk Around Card is used by teachers so they can move smoothly from one activity to the next. The Walk Around Cards were developed by creating an abbreviated version of the full lessons.

Components of CHAMPPS

CHAMPPS is a structured preschool motor program that utilizes UDL embedded lessons to support school readiness (e.g., social, language, motor, pre-academics) and an elevated physical activity level by children. The *class-wide* program is designed for use 2-3 days a week in *inclusive preschool classes*, addressing the seven fundamental motor skills through fun motor activities, music videos, a home component, and teacher training. A brief overview of all the components of CHAMPPS can be found in Table 2; the primary components are described next.

Table 2
Core Components of CHAMPPS

Components	CHAMPPS
Lessons	Six repeated lessons for each of the seven fundamental motor skills units ($n = 42$) with UDL strategies to support children with diverse abilities
Music Videos	Choice of 1-2 vigorous/moderately vigorous music videos, which correspond with the CHAMPPS motor units thereby providing an opportunity to utilize motor skills during fun and engaging activities
Home Component	Weekly communication cards that describe that week's CHAMPPS activities for families to implement at home
Training Materials	CHAMPPS manual with background information on motor skill development and the importance of physical activity, detailed procedural instructions, 42 UDL lessons and corresponding physical activities, Walk-Around Cards for each unit (provides lesson summary), CHAMPPS family communication, the Classroom Inventory for Motor Play, and online videos of each unit and strategies to support school readiness skills

CHAMPPS units. CHAMPPS includes seven units that represent the following fundamental motor skills: 1) introductory skills (i.e., motor imitation, visual tracking, body awareness), 2) walking and running; 3) balance, jumping, and hopping; 4) catching; 5) throwing; 6) striking; and 7) kicking. These seven skills are the basic motor skills often taught in elementary physical education and are foundational for many youth sports (e.g., soccer, t-ball). Each unit includes repeated lessons designed to increase physical activity levels while supporting development in motor, social, language and pre-academics. Next, we discuss three essential elements of the CHAMPPS curriculum in more detail: repeated lessons, UDL and school readiness supports.

Repeated lessons. Each unit has six repeated lessons and two optional review days, that target a specific fundamental motor skill. Each lesson includes a warm-up activity, three core motor activities, music videos and a cool down activity. Teachers are provided with a Lesson Walk Around Card that contains an abbreviated version of the lesson and can be used as a “cheat sheet” during motor lessons.

The lesson begins with a warm-up, aimed at getting children ready for CHAMPPS by increasing their heart rate. To support language and signal the beginning of CHAMPPS, children sing along with their teacher and move their bodies (i.e., jog, gallop, skip, sway, balance) with each new song verse. The warm-up activity is followed by three core motor activities. This internal lesson structure is repeated throughout the curriculum. Core Activity 1 is a whole group activity whereas Core Activities 2 and 3 are typically done in small groups. CHAMPPS intentionally starts as whole group and transitions into activities for small groups (half the class), partners (paired with a peer) and independent practice as the class moves through the seven CHAMPPS units.

UDL strategies. CHAMPPS is based on the philosophy that every child has the right to be fully engaged in their world, including the right to daily opportunities for physi-

cal activity. This philosophy is consistent with the tenets of UNICEF’s Conventions on the Rights of Persons with Disabilities (CRPD) (UNICEF, 2006), the National Center for Physical Development and Outdoor Play (2010) and the Right to Play (2017), which emphasize the need to support all children in the context of play.

Each CHAMPPS lesson is embedded with UDL strategies to support the needs of all children based on each child’s level of ability during each activity (CAST, 2011; Horn, Palmer, Butera, & Lieber, 2016). For example, every activity addresses *multiple means of representation* (i.e., offers differences in task complexity and/or expectations in response to different ability levels), *multiple means of engagement* (i.e., suggests a variety of ways to motivate children in response to different learning styles, interests, and preferences), and *multiple means of expression* (i.e., includes a variety of response modes that children can use to demonstrate skills in response to different ability levels).

A closer look at UDL strategies in one core activity, *Obstacle Course*, reveals that the obstacle course consists of children walking, running, side-stepping, lunging or tip-toeing through a course lined with hurdles. Teachers incorporate multiple means of representation by providing verbal cues, modeling the movement and using visual support cards to demonstrate the movements. During this unit one teacher noted, “H. likes to read on the visual cards what is next.” Teachers also employ multiple means of engagement by alternating between novel and familiar movements. Teachers incorporate multiple means of expression by allowing children to walk beside the obstacle course, walk on the obstacle course, or complete only part of the course. Several teachers noticed that children’s independence increased during the obstacle course, “T. went through the obstacle course instead of waiting for prompts.” “A. left the ‘waiting’ activity and got in line for the obstacle course.” These examples show the importance of using UDL strategies to ensure that children with a range of abilities can participate in each activity.

Supporting school readiness skills. With evidence supporting the interdependence of motor skills in other areas of development (i.e., language, social, cognitive) (Favazza & Siperstein, 2016), CHAMPPS lessons are focused on fundamental motor skills that support language, social, and pre-academic skills. Table 3 illustrates how school readiness skills are addressed in the several core activities. For example, in *Hungry Horse* children use pool noodles as horses and apples, balancing “apples” on the pool noodles as they walk along a balance beam and over hurdles through the obstacle course. Children go through the obstacle course while peers cheer them on with egg shakers, emphasizing social and language skills. To enforce math skills such as measurement, counting and pattern recognition, children choose the length of the horse (noodle) they want to use, and the number and pattern of colors of the “apples” to balance on top of the noodle, at the teacher’s discretion as longer (noodles) horses and more apples (small noodle pieces) are more challenging. Some teachers also teach positional concepts, asking children to determine which is more difficult: holding the noddle at the top, middle or bottom. Prior to playing, the teacher typically leads a discussion about horses’ names

Table 3
Sample School Readiness Skills

	Warm-Up	Core 1 Rabbits & Foxes	Core 2 Hungry Horsey	Core 3 River Jump	Cool Down
Mathematics	√	√	√	√	√
Number Recognition (count, one-one correspondence)	Count moves instead of singing		Count number of apples balanced	Count number of jumps	Stretch for number of seconds
Positional Words		Around, in, on top of	Over, on top of, beside	In-between, over, around	Bend side to side
Ordinal Language (first, second, etc.)	Use numbered bibs 1–8 to stress first through eight. During opening, practice saying ordinal numbers with matching numerals.		Order in line (first, second, etc.) →		Order of moves
Categorize & Sort Objects		Rabbits can be pets. What other animals can be?		What other animals live in the water?	
Patterns (recognize, describe, reproduce)	Create movement pattern (walk back 5 steps, forward 5 steps)		Create color pattern with apples		
	Warm-Up	Core 1 Rabbits & Foxes	Core 2 Hungry Horsey	Core 3 River Jump	Cool Down
Approaches to Learning	√	√	√	√	√
Transitions in/out of Activities	Return to floor marker →		Switch between course & cheering →		
Listens/Follows Directions	Listen and imitate movements →				
Focused Attention	Listen for next movement	Listen for bell	Watch/Cheer peers		
Sustained Attention	Stay with whole group	Stay within activity space	Stay at course →		
Active Engagement in Small/Large Group	Move around room with whole class →		Stay with same small group →		
Active Engagement in Small/Large Task			Move through independently →		

(horse, pony, colt), habitats (barns, fields), movements (gallop, walk, trot), and food (apples, carrots, grain, hay) to support language skills. Motor skills (i.e., dynamic balance, visual tracking) are encouraged as children navigate the obstacle course, retrieving fallen apples along the way. Lastly, approaches to learning are supported by encouraging children to stay on task (“Stay on the path to the barn”) while moving through the obstacle course independently.

Visual supports. Because learning needs and styles may vary, visual supports or picture cards can help enforce a concept. These visual supports show locomotion (i.e., type of large motor movement such as jog or march), body awareness (i.e., what to do with your arms, feet), and body movements (i.e., what small motor movement to use such as grasp scarf or play the drums). Teachers can choose to use these supports during CHAMPPS to help visually communicate an action, body part, or movement to a specific child, small group, or the entire group. These supports are designed for all children but can be especially helpful for children who speak different languages and who have disabilities.

Home component. While CHAMPPS is designed to be implemented within a school setting, engaging parents and guardians is key to reinforcing the skills learned during CHAMPPS. A 1-page home component is sent home three times per unit and consists of one warm-up activity, one core motor activity, and one cool down activity. The equipment needed is listed for each activity; this equipment includes everyday household items such as napkins or kitchen towels for scarves, rolled-up socks for beanbags, and a laundry basket for a soccer goal. Each home component also provides suggestions of one interactive preschool-level motor book that can be found at most community libraries and one preschool-level YouTube music video, corresponding to the motor skill unit. Moreover, the home components are available in several languages (i.e., Spanish, French, Portuguese, Haitian Creole) to ensure the inclusion of families who speak different languages. In some schools, teachers choose to post the home component online or send it to families in their home language and English, to support English acquisition of children and their families.

Interactive motor books. Each CHAMPPS unit highlights three interactive preschool-level movement books for use at school and home. Books were carefully selected to ensure they are age-appropriate for preschoolers in terms of content, length, and vocabulary (Ostrosky, Favazza, Yang, McLaughlin, & Stalega, 2018). These motor books are intended to support and encourage children to use various body parts to move in new and different ways. The stories incorporate positional words (i.e., over, under, up) and action words (i.e., kick, catch, gallop). Not only do these stories reinforce school readiness skills, but also social-emotional skills as the stories emphasize cooperative play as opposed to competition.

What We Learned

While providing opportunities to support the development of fundamental motor skills was important in the program, for the first year of CHAMPPS we focused on the intensity of physical activity levels of children in the program

to ensure that children were physically active for the majority of the time. Specifically, children with disabilities wore accelerometers attached to an elastic belt which was placed around their waists. We were interested in the duration and level of physical activity (i.e., sedentary, light, moderate, vigorous). Across eight classrooms (five inclusive, three segregated), children with disabilities were physically active on average 52% of each lesson. These data revealed that CHAMPPS exceeds the Active Start guidelines of children remaining active at least 50% of the time during structured physical activities (Goodway, Getchell, Raynes, & National Association for Sport and Physical Education, 2009). These data also indicate that CHAMPPS is successful in ensuring this level of physical activity for children with a wide range of abilities.

Project staff along with key stakeholders developed CHAMPPS, building on theories of motor development (Clark, 2002; 1994; Clark & Metcalfe, 2002) and guided by the national and professional recommendations regarding motor movement and physical activity for preschoolers. Prior to implementing CHAMPPS, no schools with whom we worked reported having a structured preschool program for all preschoolers. Feedback from teachers indicated that CHAMPPS had strong usability in their settings and possessed operational and technical feasibility. For example, teachers reported that the manual (units, lessons, UDL strategies, school readiness tables) were easily understood and could be implemented in their schools. In addition, teachers provided many valuable recommendations for improving the activities within each unit, all of which were added to the CHAMPPS manual. For example, teachers thought the number of repeated lessons per unit provided enough repetition, which helped children master the skills.

In addition, parents and teachers liked the home component and music videos, which correspond to each motor skill unit. Teachers also observed many positive changes in children such as an increase in motor skill development (i.e., balance, hop, throw, catch), reinforcement of pre-academic knowledge (i.e., number recognition, animal habitats, modes of transportation), improvement in language and social skills (i.e., vocabulary, positional concepts, sharing, taking turns), and improvement in approaches to learning (following directions, sustained attention, following the routine) during CHAMPPS. Teachers recognized that CHAMPPS provided more than motor skill development. For example, children congratulated and cheered on their friends (social skills). “K. said ‘Nice job’ when a friend knocked over his bowling pins”; “J. spontaneously cheered, ‘Go Gabe, Go!’” Teachers observed, after completion of the first two CHAMPPS units, an increase in student engagement and an improved ability to sustain attention in independent activities (approach to learning): “The use of motor skills has helped certain students to be able to follow whole group directions for a longer duration, with less teacher prompting, and supported peer modeling.” Even students who had difficulty with motor skills were able to perform skills independently as is evident from these teacher comments: “J. is doing the motor tasks (skills) a lot better. When he dropped eggs from under his arms it was amazing to see him pick them up and put them

back under his arms independently because he is not motivated to do motor activities”; “K. was able to sway independently a few times during the warm-up.”

Conclusion

CHAMPPS not only focuses on increasing engagement and levels of physical activity, it also addresses readiness skills in the areas of social, communication, motor and pre-academic skills in preschoolers with and without disabilities through repeated lessons embedded with UDL strategies. Prior to developing CHAMPPS, a review of preschool motor program curricula revealed a lack of preschool structured physical activity programs that possessed the following high-quality indices: a sound theoretical base, adherence to professional guidelines, attention to the development of both readiness skills and sustained physical activity for all preschool-age children and the need for structured motor opportunities. Collectively, stakeholder feedback confirmed that CHAMPPS fills a gap in preschool programming, is user friendly, and complements existing preschool curriculum while addressing school readiness skills and physical activity levels using UDL strategies. CHAMPPS shows promise as a preschool program that supports physical activity and school readiness skills. It is in the final stages of development and will be available soon. It is our hope that preschool teachers will consider how they can embed readiness skills into active motor play so that all children realize the benefits that curricula like CHAMPPS afford them.

Acknowledgment

This research was made possible by grant number R324A150074 from the Institute of Education Sciences, U.S. Department of Education. The contents are solely the responsibility of the authors and do not represent the official views or endorsement by the funding agency.

References

- Ackerman, D. J., & Barnett, W. S. (2005). *Prepared for kindergarten: What does “readiness” mean?* New Brunswick, NJ: National Institute for Early Childhood Research.
- American Academy of Pediatrics, American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education. (2012). *Preventing childhood obesity in early care and education programs: Selected Standards from Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, 3rd Edition. Retrieved from <http://cfoc.nrckids.org/WebFiles/PreventingChildhoodObesity2nd.pdf>
- Becker, D., McClelland M., Loprinzi P., & Trost, S. (2014). Physical activity, self-regulation, and early academic achievement in preschool children. *Early Education and Development*, 25(1), 56–70.
- Brian, A., Goodway, J. D., Logan, J. A., & Sutherland, S. (2017). SKIPing with teachers: An early years motor skill intervention. *Physical Education & Sport Pedagogy*, 22(3), 270–282.
- Brian, A., & Taunton, S. (2018). Effectiveness of motor skill intervention varies based on implementation strategy. *Physical Education & Sport Pedagogy*, 23(2), 222–233.
- Brown, W., Googe, H., McClelland, M., Loprinzi, P., & Trost Iver, K., & Rathel, J. (2009). Effects of teacher-encouraged physical activity on preschool playgrounds. *Journal of Early Intervention*, 31(2), 126–145.
- Brown, W., 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.
- Burdette, H. L., & Whitaker, R. C. (2005). Resurrecting free play in young children: Looking beyond fitness and fatness to attention, affiliation, and affect. *Archives of Pediatrics and Adolescent Medicine*, 159, 46–50.
- Cahill, S. (2009). Where does handwriting fit in? Strategies to support academic achievement. *Intervention in School and Clinic*, 44(4), 223–228.
- Center for Applied Special Technology (CAST). (2011). *Universal Design for Learning (UDL) guidelines: Full-text representation*. Retrieved from <http://www.udlcenter.org/aboutudl/udlguidelines/downloads>
- 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.
- Clark, J. E. (2005). From the beginning: A developmental perspective on movement and mobility. *Quest*, 57(1), 37–45.
- Clark, J. E., & Metcalfe, J. S. (2002). The mountain of motor development: A metaphor. *Motor development: Research and Reviews*, 2, 163–190.
- Cohen, K. E., Morgan, P. J., Plotnikoff, R. C., Callister, R., & Lubans, D. R. (2014). Fundamental movement skills and physical activity among children living in low-income communities: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, 11(1), 11–49.
- DEC & NAEYC. (2009). *Early childhood inclusion: A joint position statement of the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC)*. Chapel Hill, NC: The University of North Carolina, FPG Child Development Institute.
- Emck, C., Bosscher, R., Beek, P., & Doreleijers, T. (2009). Gross motor performance and self-perceived motor competence in children emotional, behavioral, and pervasive developmental disorders: A review. *Developmental Medicine & Child Neurology*, 51(7), 501–517.
- Favazza, P. C., & Siperstein, G. N. (2016). Motor skills interventions for young children with disabilities. In B. Reichow, B. Boyd, E. Barton, & S. Odom (Eds.), *Handbook on early childhood special education* (pp. 225–246). Switzerland: Springer International Publishing.
- 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. doi: 10.1080/02701367.2011.10599785
- Ginsburg, K. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, 119(1), 182–191. Retrieved from <http://www.aap.org/pressroom/play-FINAL.pdf>
- Goodway, J., & Branta, C. (2003). Influence of a motor skill intervention on fundamental motor skill development of disadvantaged preschool children. *Research Quarterly for Exercise & Sport*, 74(1), 36–46.
- Goodway, J., Getchell, N., Raynes, D., & National Association for Sport and Physical Education. (2009). *Active start: A statement of physical activity guidelines for children from birth to age 5*. Reston, VA: National Association for Sport and Physical Education.
- Goodway, J. D., Crowe, H., & Ward, P. (2003). Effects of motor skill instruction on fundamental motor skill development. *Adapted Physical Activity Quarterly*, 20(3), 298–314.
- 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.
- Guthold, R., Cowan, M. J., Autenrieth, C. S., Kann, L., & Riley, L. M. (2010). Physical activity and sedentary behavior among schoolchildren: A 34-country comparison. *Journal of Pediatrics*, 157(1), 43–49.
- Haiback-Beach, P., Reid, G., & Collier, D. (2018). *Motor learning and development* (2nd ed.). Champaign, IL: Human Kinetics.
- Haywood, K., & Getchell, N. (2014). *Lifespan motor development* (6th ed.). Champaign, IL: Human Kinetics.
- Horn, E. M., & Kang, J. (2012). Supporting young children with multiple disabilities: What do we know and what do we still need to learn? *Topics in Early Childhood Special Education*, 31(4), 241–248. Retrieved from <http://doi.org/10.1177/0271121411426487>
- Horn, E. M., Palmer, S. B., Butrea, G. D., & Lieber, J. (2016). *Six steps to inclusive preschool curriculum: A UDL-based framework for children’s school success*. Baltimore, MD: Brookes Publishing.
- Howard, E. C. (2011). *Moving forward with kindergarten readiness assessment: A position paper of the early childhood state collaborative on assessment and student standards*. Washington, DC: Council of Chief State School Offices.
- Iverson, J. (2010). Developing language in a developing body: the relationship between motor development and language development. *Journal of Child Language*, 37, 229–261.
- Logan, S., Robinson, L., Wilson, A., & Lucas, W. (2011). Getting the fundamentals of movement: A meta-analysis of the effectiveness of motor skill intervention in children. *Child: Care, Health and Development*, 38(3), 305–315.
- 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.

- Murphy, N. A., & Carbone, P. S. (2008). Promoting the participation of children with disabilities in sports, recreation, and physical activities. *Pediatrics*, 121(5), 1057–1061. doi: 10.1542/peds.2008-0566
- National Association for the Education of Young Children (NAEYC). (2003). *Early childhood curriculum, assessment, and program evaluation: Building an effective, accountable system in programs for children birth through age 8*. Position statement.
- National Association for Physical Education (NASPE). (2002). *Active start: A statement of physical activity guidelines for children birth to five years*. Oxon Hill, MD: AAHPERD Publications.
- National Association for Physical Education (NASPE). (2010). *Appropriate practices in movement programs for children ages 3-5* (3rd ed.). Position statement. <http://www.naspeinfo.org>
- 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*. Head Start National Center for Physical Development and Outdoor Play.
- National Education Goals Panel. (1995). *Reconsidering children's early development and learning: Toward common views and vocabulary*. Washington, D.C.: National Education Goals Panel Planning Group.
- 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.
- Ostrosky, M. M., Favazza, P. C., Yang, H. W., McLaughlin, K., & Stalega, M. (2018). Let's get moving: Children's literature that supports physical activity and readiness skills. *Palaestra*, 32(2), 39–44.
- 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.
- 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.
- 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.
- Riethmuller, A., Jones, R., & Okely, A. (2009). Efficacy of interventions to improve motor development in young children: A systematic review. *Pediatrics*, 124(4), 782–792.
- Right to Play. (2017). Right To Play 2017 Annual Report. Retrieved from https://issuu.com/righttoplayintl/docs/2017_annualreport_allpages_northame?e=31025504/63676367
- Seymour, H., Reid, G., & Bloom, G. A. (2009). Friendship in inclusive physical education. *Adapted Physical Activity Quarterly* 26, 201–219.
- Tucker, P. (2008). The physical activity levels of preschool-aged children: A systematic review. *Early Childhood Research Quarterly*, 23(4), 547–558.
- UNICEF. (2006). *Conventions on the Rights of Persons with Disabilities (CRPD)*. Retrieved from <http://www.un.org/disabilities/default.asp?id=150>
- Venetsanou, F., & Kambas, A. (2010). Environmental factors affecting preschoolers' motor development. *Early Childhood Education Journal*, 37(4), 319–327.
- Wassenberg, R., Feron, F., Kessels, A., Hendriksen, J., Kalf, A., & Kroes, M. (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.
- Wuang, Y., Wang, C., Huang, M., & Su, C. (2008). Profiles and cognitive predictors of motor functions among early school-age children with mild intellectual disabilities. *Journal of Intellectual Disability Research*, 52(12), 1048–1060.

Katherine Aronson-Ensign is a doctoral student at the University of Massachusetts-Boston. She served as a research assistant on CHAMPPS.

Paddy C. Favazza is a professor of Special Education at Stonehill College and senior research fellow at University of Massachusetts Boston. She serves as the Co-PI on CHAMPPS.

Melissa V. Stalega is a project coordinator at the University of Connecticut. She is the project coordinator on CHAMPPS.

Michaelene M. Ostrosky is a Grayce Wicall Gauthier Professor of Education and Department Head at the University of Illinois at Urbana-Champaign. She is the Co-PI on CHAMPPS.

Hsiu-Wen Yang is a doctoral student at the University of Illinois, Urbana-Champaign. She is a research assistant on CHAMPPS.

Yusuf Akamoglu is an assistant professor of early childhood special education at the University of Alabama. He served as a data collector for CHAMPPS.

W. Catherine Cheung is a doctoral student of Special Education at the University of Illinois at Urbana-Champaign. She served as a data collector for CHAMPPS.