

**Title:** Systematic dissemination of a preschool physical activity intervention to the control preschools

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**Highlights:**

- A multi-component preschool activity intervention was collaboratively refined for dissemination to the control preschools.
- Preschool teachers found the modified intervention to be acceptable and sustainable, and reported positive child outcomes.
- Involvement of control participants in experimental trials can help to inform future dissemination of interventions.

**Abstract:** For public health interventions to have a meaningful impact on public health, they must be disseminated to the wider population. Systematic planning and evaluation of dissemination efforts can aid translation from experimental trials to larger dissemination programs. The Study of Health and Activity in Preschool Environments (SHAPES) was a group-randomized intervention trial conducted in 16 preschools that successfully increased the physical activity of preschool age children. Following the completion of the research study protocol, the intervention was abbreviated, modified and implemented in four preschools who participated as control preschools in the original research study. The purposes of the current study were to describe the process of refining the intervention for dissemination to the control preschools, and to assess the acceptability of the resulting abbreviated intervention delivery. Five overarching behavioral objectives, informed by process evaluation, data from the original trial and collaboration with intervention teachers, were used to guide the implementation. Teachers in the dissemination classrooms reported high levels of acceptability, potential for sustainability of the program, and positive results in knowledge, skills, and child outcomes. Researchers can include a systematic approach to dissemination of effective intervention elements to the control participants in experimental studies to inform future dissemination efforts and begin to bridge the dissemination gap.

**Keywords:** physical activity, young children, intervention, preschool, implementation, translation, dissemination

**Abbreviations:** MVPA, moderate to vigorous physical activity; PA, physical activity; SHAPES, Study of Health and Activity in Preschool Environments; SHAPES-D, SHAPES dissemination program; SHAPES-I, SHAPES intervention; TIRE, time intensity reach encouragement

## **Systematic Dissemination of a Preschool Physical Activity**

### **Intervention**

*“I have been impressed with the urgency of doing. Knowing is not enough, we must apply.” - Leonardo da Vinci*

Greater than half of children aged three to six attend community-based preschools (Federal Interagency Forum on Child and Family Statistics, 2012), and a large number of them are not meeting physical activity recommendations (Institute of Medicine, 2011). Preschools are an ideal setting for promoting and increasing physical activity, and researchers have targeted those settings to increase children’s physical activity (Hesketh & Campbell, 2010; Monasta et al., 2011; Reynolds & Spruijt-Metz, 2006; Schoenwald & Hoagwood, 2001; Ward et al., 2010). In a recent study, the Study of Health and Activity in Preschool Environments (SHAPES), we successfully increased moderate-to-vigorous physical activity (MVPA) of children in preschools (Pate et al., under review).

Interventions that increase physical activity need to be disseminated successfully to improve public health (Brownson & Jones, 2009; Owen et al., 2006). For this study, dissemination was defined as the active and planned dispersal of an intervention, as opposed to diffusion, which is passive and informal (Greenhalgh et al., 2004). Despite the need for dissemination, a longstanding dissemination gap exists, with effective interventions developed as part of research studies not being widely disseminated (Green et al., 2009). Hence, more information is needed on how to disseminate public health interventions effectively. While researchers should not have the sole responsibility for dissemination (Kreuter & Bernhardt, 2009), they should be involved in the process. Dissemination planning should start from the

beginning of the research process, with the design of interventions (Butler et al., 2010; Oldenburg & Glanz, 2008).

Successful physical activity interventions often include multiple components and do not account for varying contextual environments, which makes them difficult to disseminate widely (Bopp et al., 2013; Dobbins et al., 2013; Luckner et al., 2012). Additionally, funds and resources for implementing and disseminating intensive multi-component interventions have been limited. SHAPES was an effective multi-component intervention that included a plan to disseminate the intervention; after the formal trial, schools randomized to the control condition were given the opportunity to participate in the intervention. The researchers used a modified albeit systematic approach for refining and delivering the intervention to these dissemination preschools. These efforts served as a pilot for future dissemination of SHAPES. The refined intervention retained the essential elements needed for program success, yet required fewer resources to implement and was of significantly shorter duration, thus making it more feasible and acceptable for future dissemination. The purposes of the current study were to describe the process of refining the intervention for dissemination to the control preschools and to assess the acceptability of the resulting abbreviated intervention delivery.

## **Methods**

### **SHAPES Intervention**

The original SHAPES intervention (SHAPES-I) was a group-randomized trial with the primary goal to increase physical activity in preschool children (Pfeiffer et al., 2013).

Classrooms in eight preschools received intervention materials and interventionists' support across the school year for three consecutive school years (2008-2011). SHAPES-I was a multi-component intervention designed to increase the physical activity of preschoolers in 4-year old

preschool classrooms. The intervention was flexible and adaptive, meaning that individual teachers could modify the intervention for their classrooms while adhering to the essential elements (Bopp et al., 2013). The intervention components and the intervention approach used to deliver the components are described in detail elsewhere (Howie et al., 2014; Pfeiffer et al., 2013). Briefly, they included three components: Move Inside (indoor physical activities without a traditional academic component), Move Outside (outdoor recess), and Move to Learn (movement integrated into classroom learning activities). It also addressed the social and physical classroom environments. SHAPES-I was implemented using group workshops and individual classroom site visits throughout the school year. Teachers received intervention materials including printed resources, physical equipment, and newsletters to be distributed to parents. Children in the intervention schools had higher levels of moderate-to-vigorous physical activity after the intervention (Pate et al., under review).

### **Dissemination Planning**

After the completion of the SHAPES-I, the investigators and interventionists reviewed process evaluation data, teacher feedback, and interventionists' experiences to refine the intervention implementation in order to create an approach that could be implemented with fewer interventionists' supports (e.g., less time in workshops, fewer site visits) while adhering to the essential elements. Intervention delivery to dissemination preschools was based on existing literature on the dissemination and sustainability of health interventions. Quality training, capacity building, and collaboration, which previously have been shown to be important for the continued success of interventions (Butler et al., 2010; Chorpita & Nakamura, 2004; Hoelscher et al., 2001; Kreuter & Bernhardt, 2009; Osterling & Austin, 2008), were incorporated into the SHAPES dissemination program (SHAPES-D). These evidence-based practices guided the

development of the intervention approach for implementation in the dissemination schools, as seen in Figure 1. The dissemination approach included the following five principles, which were adapted from the original intervention:

*1. Innovative program compatible with current practices*

SHAPES-D intervention components were flexible and adaptive and included both interventionist-developed and teacher-developed activities. Interventionists worked to highlight the innovative aspects of SHAPE-I in SHAPES-D (Hoelscher et al., 2001). For SHAPES-D, only the activities and materials that were developed during SHAPES-I from the collaboration between interventionists and preschool teachers, and not activities from other sources, were included in the materials. The dissemination study also emphasized adapting and integrating SHAPES-I concepts and activities into the teachers' and schools' day-to-day operations. Teachers were encouraged to create and modify activities to be incorporated into their existing lessons, while adhering to the overall components of the intervention. For example, part of the training was to select an existing lesson and to "ACTIV-ate" it, or include high-quality physical activity in it. Teachers also were encouraged to observe their current daily practices to see how physical activity could be added to their current practices.

*2. Collaborative development*

To create an intervention that was compatible with current practices, interventionists collaborated with teachers throughout the implementation of SHAPES-I (Gouldner, 1960; Osterling & Austin, 2008). At the end of the original SHAPES-I three-year study, participating preschool teachers provided their recommendations for future dissemination of SHAPES-D. Additionally, three preschool teachers who participated in the original intervention were identified to continue participating as "SHAPES Enthusiasts" for the dissemination. Their



participation included reviewing materials and attending group workshops as peer role-models for the new teachers (i.e., to provide advice and real-world examples).

### *3. Capacity building and collaboration*

The intervention emphasized collaboration and capacity development (i.e., building teacher problem solving with respect to physical activity), which have been identified as critical components of successful implementation and dissemination ( Bopp et al., 2013; Hoelscher et al., 2001; Osterling & Austin, 2008). The intervention approach for SHAPES-D was designed with five training modules to achieve the behavioral objectives. Activities to build teacher capacity included discussing and analyzing videotapes of example activities to identify ways to improve and develop their own activities.

For programs to be effectively implemented, disseminated, and sustained, strong partnerships are necessary ( Baumann et al., 2006; Butler et al., 2010; Chorpita & Nakamura, 2004; Kreuter & Bernhardt, 2009; Osterling & Austin, 2008). Hence, the interventionists planned partnerships among participating teachers as a “community of practice” beyond the duration of the formal SHAPES-D intervention. Interventionists supported the exchange of contact information among other teachers at the workshops. Workshop activities included brainstorming with teachers about how they could obtain resources for their classrooms, including partnerships within their school (e.g. borrowing equipment from the physical education teacher, garnering parent volunteers to lead recess activities) as well as beyond their schools (e.g. the local physical activity coalition, a nearby fitness expert).

### *4. Quality training*

For SHAPES-D, quality training in the form of two workshops and a site visit, was designed to achieve five behavioral objectives (TABLE 1 and described below) during the first

two months of SHAPES-D (Hoelscher et al., 2001; Ringeisen et al., 2003). In addition, onsite and ongoing assistance was provided for six months after the second workshop. To achieve the behavioral objectives, the training was divided into five modules: (1) Initial Contact Visit, (2) Workshop I, (3) Site Visit, (4) Workshop II, and (5) Ongoing Assistance. The modules are described in Figure 2. Workshops were designed to be enjoyable for participants by engaging them in hands-on-activities and providing food, childcare, and classroom activity supplies. In-person workshops were supplemented with a SHAPES Guidebook, which included a self-assessment tool, example activities, and other printed material to assist with achieving the behavioral objectives.

#### *5. Evaluation plan*

To better understand the dissemination process, an evaluation of the process was planned and implemented (Baumann et al., 2006; Kreuter & Bernhardt, 2009; Owen et al., 2006). Internal evaluation in the form of self-assessment, was implemented for the participating teachers. The Guidebook included a self-assessment tool for assessing current physical activity opportunities in their classrooms (both quantity and quality), and afforded teachers a method for developing an action plan to improve physical activity opportunities. While budget constraints did not allow for objective measurement of children's physical activity, study staff conducted teacher surveys and interviews to assess the level of implementation of the intervention by the dissemination school teachers, as well as to evaluate the acceptability of dissemination activities.

### **SHAPES-D Implementation**

The eight control preschools from the original SHAPES-I study were invited to participate in the SHAPES-D study. Of these, four agreed to participate, for a total of 12 classrooms in four preschools. There were five overarching behavioral objectives that the training to guide the design of material to include, guide evaluation of the training, and facilitate learning (Duchastel et al., 1972) These included (1) knowledge about SHAPES-D, (2) knowledge about physical activity, (3) development of opportunities for high quality physical activity, (4) development of preschool physical activities, and (5) facilitated community partnerships and resource obtainment (see in Table 1). The three components of SHAPES-I were included in SHAPES-D: Move Inside, Move Outside, and Move to Learn. To clearly define the intervention to be implemented, as well as provide the background and rationale for the necessity of intervention (Baumann et al., 2006; Schoenwald & Hoagwood, 2001), the interventionists developed an explicit “SHAPES Philosophy” which outlined the essential beliefs for the SHAPES-D program. All participants were provided with a “SHAPES Guidebook” which outlined the SHAPES philosophy, background and approach of SHAPES-D, and provided illustrative activities. SHAPES-D was delivered in five modules as seen in Figure 2 which included, two workshops, a classroom site visit, and 6-months of additional assistance. During classroom site visits, intervention staff provided feedback on a teacher-led activity, assisted with problem solving, or helped other teacher-requested evaluation or planning activities.

SHAPES-D implementation was evaluated as described above through teacher surveys, interviews, and detailed interventionists notes. Interventionists documented workshop attendance and site visits and conducted workshop evaluations. Detailed descriptions of site visits were maintained, including teacher quotes, activities the interventionists participated in, and suggestions made by teachers. The average minutes of opportunity for physical activity provided

by teachers were calculated from the teacher-reported frequency and duration of each component (Move Inside, Move Outside, and Move to Learn) and the total physical activity provided per week, as well as if the teachers met the intervention targets for each component. The total minutes of physical activity opportunities provided per week were also calculated. Comparisons were made between the SHAPES-D teachers and the results from the intervention teacher surveys from the spring of the final year of SHAPES-I.

Teachers participating in dissemination were invited to complete a brief survey, modified from SHAPES-I teacher surveys, that assessed implementation, acceptability, and feasibility of the dissemination. [Close-ended, multiple choice](#) Survey items [developed specifically for the SHAPES intervention](#) included self-report of providing intervention activities (Move Inside, Move Outside, and Move to Learn), barriers to implementation, and assessment of the SHAPES-D program [and the survey questions can be found in the supplementary materials](#). In addition, a subset of teachers participated in semi-structured interviews administered by an independent evaluator. Questions covered reactions to the SHAPES-D program, implementation barriers, technical support, and sustainability of the program [and the question prompts are found in the supplementary material](#). Interviews were transcribed and analyzed for themes in an iterative process between the interviewer, interventionist, and an additional expert in the field of health intervention process evaluation.

## Results

Ten out of 16 teachers in the four participating preschools attended Workshop I. Two out of four directors attended, for a total of 17 participants from the dissemination preschools (including additional participants that were extracurricular teachers or teachers from other grade-levels). Ten out of 16 teachers attended Workshop II, with two directors and a total of 18

participants from dissemination preschools. Participants rated both workshops highly on usefulness, applicability, confidence and excitement in participating in SHAPES. Attendees enjoyed the “hands on” activities and interacting with other teachers. As one teacher wrote, “I really enjoyed this class and have already started planning new activities.”

Interventionists visited the four participating dissemination schools for an average of 3.5 visits per classroom, compared to 19 visits per classroom per year during the original SHAPES intervention. One classroom teacher included a demonstration of a game of monkey in the middle, where students took turns picking an exercise move for the whole class to participate in. As the teacher reported on her evaluation:

The actual demonstration, when they came in and showed me how to do the Monkey in the Middle, and the kids just loved that, and that was something I really did not believe that the children would be able to do, that they would be able to take turns like that and think of different moves and things like that but they did.

Sometimes we underestimate the kids, I guess, we’re so attuned to what they’re doing academically. That’s not always the same as what they’re doing with their physical activity so that was kind of an eye opener for me.

**Acceptability.** Eleven teachers of the dissemination classrooms completed the teacher surveys. Of the 11 teachers, 6 had a 4-year college degree; the teachers had an average of 13.1 years of experience teaching. Overall, teachers found support from both SHAPES staff and their administrators to be “very adequate.” Eight of the 11 teachers felt “very prepared” to implement SHAPES, with the remaining teachers reporting feeling “somewhat prepared.” Teachers found

participation in SHAPES to be “very worthwhile” and all reported being “very likely” to continue using SHAPES. Of the resources provided, all the participants reported each resource to be “very useful” or “somewhat useful.” ~~Ninety-one~~Ten out of eleven teachers percent found the equipment to be “very useful,” ~~55%~~six out of eleven reported the classroom activity examples and mailings to be “very useful,” ~~46%~~five out of eleven found the guidebook to be “very useful” and ~~27%~~three out of eleven found the self-assessment tool to be “very useful.”

**Implementation.** *Move Inside.* Teachers reported providing an average of 103.6 (SD 59.8, range 50-240 minutes) minutes of Move Inside opportunities per week (~~R = 50–240 minutes~~). The goal for the intervention was 50 minutes of Move Inside opportunities per week; and 100 percent of teachers reported that they met or exceeded this level. Four out of 11 teachers reported that Move Inside activities were “somewhat easy” or “easy” to implement, while 5 reported they were “somewhat difficult” or “very difficult.” The most common barrier to implementing Move Inside activities was “limited space” (eight out of eleven73%) followed by “administrator barriers” (five out of eleven55%).

*Move Outside.* Teachers reported providing an average of 180.0 (SD 97.7, range 30-300 minutes) minutes of Move Outside opportunities per week (~~R = 30–300 minutes~~). The goal for the intervention was 200 minutes of Move Outside opportunities per week; and ~~45%~~five out of eleven of teachers reported opportunities that met or exceeded this level. ~~Forty-five percent~~Five out of eleven reported teacher-led activities at least 5 times per week and ~~45.5%~~five out of eleven reported teacher-led outdoor activities 1-3 times per week. The most common barrier was “lack of equipment” (three out of eleven36.4%).

*Move to Learn.* Teachers reported providing an average of approximately 56.6 (SD 39.1, range 24-160 minutes) minutes of Move to Learn opportunities per week (~~R = 24–160 minutes~~).

The goal for the intervention was 50 minutes of Move to Learn opportunities per week, and 55%six out of eleven of teachers reported opportunities that met or exceeded this goal. The most common barriers were “limited space” (seven out of eleven63.6%) and “not enough time” (six out of eleven54.5%).

*Comparison of intervention and dissemination teachers.* There were no differences in self-reported minutes of opportunity or percentage of classrooms meeting the intervention targets between the dissemination teachers and the intervention teachers, based on data collected at the end of the original SHAPES intervention, as seen in Table 2.

**Interviews.** Six teachers from 3 schools participated in interviews following dissemination of the program. Five themes emerged from the interviews: (1) support from SHAPES program, (2) benefits from physical activity, (3) results of SHAPES, (4) barriers, and (5) sustainability.

*Support for SHAPES-D program.* Teachers commented favorably about SHAPES-D support opportunities including interventionists’ responsiveness and encouragement through workshops, e-mails, and visits, supplies, flexible approaches, and newsletters. Teachers discussed how the support site visits helped them to increase accountability, as well as identify barriers and solve problems to implementing physical activity. For example, one teacher said, “I love the workshops. I love them. They were very interesting. We were up and moving in the workshops the same way we have them up and moving in the classroom.”

*Benefits from physical activity.* Teachers reported benefits from increasing physical activity opportunities in their classrooms and participating in the SHAPES-D program. They also discussed benefits for teachers, and one teacher noted, “Once they get up and move around,

they're ready to work. Whereas if we just sat, they're not as calm and everything, they have to get their energy out before they do their work.”

*Results of SHAPES-D.* Teachers reported that the knowledge and skills they learned through SHAPES-D were valuable. They discussed how they changed their own classroom routines to include more physical activity. In addition, teachers reported learning how to overcome barriers, the importance of physical activity for young children, how to incorporate physical activity into learning, and that physical activity can be fun. They also translated this knowledge into other settings, including home and personal lives. For example, one teacher noted:

I had always thought that my classroom was really active and that I tried hard to make sure there was a lot of action, quiet, action, quiet. I tried to not have them sit too long. It made me even more aware that it's just not having a break time, it's getting enough physical activity throughout the day. I'm a lot more aware when on they're on the playground, are they actually moving and running and getting that activity. It's taught me a lot about what children need and how to try to motivate them to do more of that kind of stuff.

*Barriers.* The most frequent barrier reported was a lack of time, often related to scheduling or curriculum constraints. Other barriers included lack of space, teacher health, weather challenges, and concerns about behavior management. One teacher said “Time – not enough time to get, you know, as much done as we want to do because, of course, we have to do our curriculum, so not as much time to incorporate as much movement as we would like.”



*Sustainability.* Teachers reported that they intended to continue SHAPES-D practices in the future and discussed their individual plans for including physical activity. Teachers were asked how to increase the communication and delivery method of intervention materials. Several teachers reported not using e-mail often, but that they liked seeing videos to get ideas for classroom activities. A teacher noted:

I really liked when we were in the SHAPES program and they showed the video clips and we actually saw children doing things. When we did it, I wish I had a way to share this. [...] But anyway, actually seeing those activities and things I think that's really good. I don't know if those kinds of things could be emailed or if you could make a CD to share with everybody, things like that. That really helps when you see.

### **Lessons Learned**

While including randomized non-treatment or waitlist control groups eliminates selection bias to increase study validity, there are accompanying drawbacks with this study design. One issue with randomized trials is the ethical dilemma of how to interact with individuals or groups randomized to serve as controls, and thus do not receive the treatment (Shadish et al., 2002). Researchers should plan study protocols so that participants in control conditions also benefit from participation in studies. This study was a successful example of how control participants can be engaged in dissemination activities. For example, one teacher in a control preschool expressed how happy she was to finally receive the training and resources from the intervention after 3 years of participating in measurement but with no intervention. Because of the ethical

dilemma, it is becoming more common in public health to offer control participants a version of the intervention. Unfortunately, due to limited funding, the control participants often receive a reduced intervention, and the process is not carefully monitored and analyzed. The SHAPES dissemination to control schools included evaluation, both self-assessment by the participants for internal evaluation, and surveys and interviews to assess implementation, acceptability and feasibility of the intervention. By implementing a modified, less resource intensive intervention and measurement protocol, we were able to systematically evaluate the dissemination program. Researchers who employ randomized protocols should study subsequent dissemination processes, perhaps adding to the efficiency of the research while providing a better understanding of dissemination.

### **Conclusions**

Very few researchers have described the process of disseminating an intervention to the control participants at the end of the study protocol. This systematic effort was based on literature, information from the original intervention, and input from teachers, to refine a multi-component intervention for dissemination. Teacher report and qualitative analysis showed the dissemination efforts were successful and acceptable. Nevertheless, this small dissemination study was limited by insufficient resources to examine the effects of the intervention on child-level physical activity using objective measures (e.g., accelerometers, direct observation). In addition, this preliminary study was conducted with a limited convenience sample of personnel from four preschools who volunteered to participate. Personnel at the participating schools may have had higher levels of readiness to change physical activity practices than those who did not participate in the dissemination.

Based upon the findings from the current study, further dissemination and translational research efforts with SHAPES are planned (Pate et al., 2015). Future dissemination will include implementation in additional preschools as well as alternative methods of dissemination (e.g., on site consultation, online training modules). Researchers should include a systematic approach to dissemination of effective intervention elements to the control participants so that future dissemination efforts might begin to bridge the dissemination gap.

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**Table 1: Behavioral Objectives of SHAPES Dissemination Training? Modules**

	<b>Module I</b>	<b>Module II</b>	<b>Module III</b>	<b>Module IV</b>	<b>Module V</b>
<i>SHAPES Knowledge</i>	<ul style="list-style-type: none"> <li>Identify at least 1 SHAPES goal (e.g. Move to Learn)</li> </ul>	<ul style="list-style-type: none"> <li>Identify 3 of the 5 “What is SHAPES?” components</li> <li>Name a benefit of integrating PA into preschool day</li> </ul>	<ul style="list-style-type: none"> <li>Name the 3 environments in which SHAPES targets PA in the school day (Move Inside, Move Outside, and Move to Learn)</li> </ul>	<ul style="list-style-type: none"> <li>Identify “What is SHAPES?” components</li> </ul>	<ul style="list-style-type: none"> <li>Identify “What is SHAPES?” components</li> </ul>
<i>PA Knowledge</i>		<ul style="list-style-type: none"> <li>Identify 3 activity intensity levels (sedentary, light, MVPA) via video recognition</li> </ul>	<ul style="list-style-type: none"> <li>Report observation of:                             <ul style="list-style-type: none"> <li>- total time children participate in PA per school day</li> <li>-child reaction to PA</li> </ul> </li> <li>Identify one benefit PA contributes to school day</li> </ul>	<ul style="list-style-type: none"> <li>Identify 3 activity intensity levels (sedentary, light, MVPA)</li> </ul>	<ul style="list-style-type: none"> <li>Identify 3 activity intensity levels (sedentary, light, MVPA)</li> </ul>
<i>Quality Development</i>		<ul style="list-style-type: none"> <li>Identify at least 3 characteristics of high quality PA via video recognition</li> </ul>	<ul style="list-style-type: none"> <li>Report observation of:                             <ul style="list-style-type: none"> <li>- MVPA within school day</li> <li>-teacher encouragement within school day</li> <li>-children not participating in PA</li> <li>-average time spent in various PA per school day</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Identify 4 parts of TIRE</li> <li>Describe 4 parts of TIRE</li> <li>Assess and practice classroom PA examples using SHAPES assessment tool/items via 3 incremental support activities</li> </ul>	<ul style="list-style-type: none"> <li>Identify 4 parts of TIRE.</li> <li>Describe 4 parts of TIRE.</li> <li>Assess classroom PA using SHAPES assessment materials.</li> <li>Participants’ classroom PA will display characteristics of TIRE</li> </ul>
<i>Activity Development</i>		<ul style="list-style-type: none"> <li>Participants will be able to identify at least 1 of the Top 10 SHAPES activities given demonstration/participation.</li> </ul>	<ul style="list-style-type: none"> <li>Participants will report practice of at least 1 of the provided SHAPES activities from Module II</li> </ul>	<ul style="list-style-type: none"> <li>Practice development of their own Move In, Move Out, Move to Learn opportunities</li> <li>Complete action plan for current classroom’s goals</li> <li>Report efficacy for developing their own PA opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Report efficacy for developing their own Move In, Out, to Learn opportunities</li> <li>Report development of their own Move In, Move Out, Move to Learn opportunities</li> </ul>
<i>Facilitated Community</i>	<ul style="list-style-type: none"> <li>Report welcome to the SHAPES community</li> <li>Report intention to attend SHAPES training</li> </ul>	<ul style="list-style-type: none"> <li>Report welcome into the SHAPES community</li> <li>Report intention to return for Training Part 2</li> <li>Report intention to complete homework</li> </ul>	<ul style="list-style-type: none"> <li>Report welcome into the SHAPES community</li> <li>speak with at least 1 other SHAPES participant about SHAPES</li> <li>Report receipt of follow-up/support prompt from SHAPES</li> </ul>	<ul style="list-style-type: none"> <li>Report welcome into the SHAPES community</li> <li>Identify potential school partner for sustaining SHAPES, outside of SHAPES staff</li> <li>Report intention to participate in ongoing assistance resources</li> </ul>	<ul style="list-style-type: none"> <li>Report welcome into the SHAPES community</li> <li>Participate in ongoing assistance resources</li> <li>Identify as a SHAPES teacher/team member</li> </ul>

PA, physical activity; MVPA, moderate to vigorous physical activity; TIRE, time intensity reach encouragement

**Table 2:** Comparison of control dissemination and original intervention self-reported minutes of opportunities for Move Inside, Move Outside, Move to Learn and total physical activity.

	Average opportunities (min/week)		<i>t-test</i>	% Teachers Meeting Target		<i>Chi-sq</i>
	<i>Control Dissemination</i>	<i>Original Intervention</i>	<i>p- value</i>	<i>Control Dissemination</i>	<i>Original Intervention</i>	<i>p- value</i>
<b>Move Inside</b> (goal 50 minutes)	103.6 (59.8)	125.0 (76.2)	.44	100	82.4	.14
<b>Move Outside</b> (goal 200 minutes)	180.0 (97.7)	184.7 (101.7)	.91	45.5	70.6	.88
<b>Move to Learn</b> (goal 50 minutes)	56.6 (39.1)	76.6 (45.3)	.26	54.5	47.1	.57
<b>Total minutes of PA opportunity</b> (goal 300 minutes)	318.7 (107.5)	386.3 (176.9)	.27	72.7	76.5	.82

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## **SHAPES TEACHER Survey:**

### **CONTROL SCHOOLS**

This survey asks questions about the physical activity opportunities provided to your students. Please answer each question, thinking about your classroom over the current school year.

Thanks again for your participation in the SHAPES Project!

**The following questions ask about *Move In* or indoor physical activity break activities. Please think about these activities only when responding to these questions.**

1. Which one of the following best describes how often indoor physical activity break activities (*Move In*) were carried out in your classroom each week, during this semester?
  - A. 4 to 5 times most weeks
  - B. 3 times most weeks
  - C. 2 times most weeks
  - D. 1 time most weeks
  - E. 0 times most weeks
  
2. Which one of the following best describes how much time was spent each day, on average, in indoor physical activity break activities (*Move In*) in your classroom, during this semester?
  - A. 60 or more minutes, most weeks
  - B. 40-59 minutes, most weeks
  - C. 20-39 minutes, most weeks
  - D. 1-19 minutes, most weeks
  - E. Not at all
  
3. Who usually provided indoor physical activity break activities (*Move In*) in your classroom? (*check one*)
  - A. Lead teacher
  - B. Assistant teacher
  - C. Physical education teacher
  - D. CD, DVD, or other recorded instruction
  - E. Other (please specify): \_\_\_\_\_
  - F. No one
  
4. How difficult was it to provide indoor physical activity break activities (*Move In*) adding up to 50 minutes each week? (*check one*)
  - A. Very difficult
  - B. Somewhat difficult
  - C. Neither difficult nor easy
  - D. Somewhat easy
  - E. Very easy

5. Which of the following best describes the adult leader during indoor physical activity break activities (*Move In*) in your classroom?

- A. Adult provides supervision
- B. Adult sometimes encourages children to be active
- C. Adult frequently encourages children to be active
- D. Adult encourages and sometimes joins in activity
- E. Adult encourages and frequently joins in activity

6. In general, how did the children feel about indoor physical activity break activities (*Move In*)? (*check one*)

- A. They hated it
- B. They did not like it
- C. They didn't dislike or like it
- D. They liked it
- E. They loved it

7. What problems, if any, did you have in carrying out the indoor physical activity break activities (*Move In*) each week? (*check all that apply*)

- A. None
- B. Not enough time in the school day
- C. Comfort level with activities
- D. Limited (or lack of) space for activities
- E. Lack of familiarity with the activities
- F. Lack of equipment
- G. Lack of administrative support
- H. Administrative barriers in school (i.e. schedule changes/scheduling space)
- I. The children didn't like the *Move In* activities
- J. Other (please specify): \_\_\_\_\_

**The following questions ask about *Move To Learn* or physical activity included in regular, daily lessons. Please think about these activities only when responding to these questions.**

8. Which one of the following best describes how often physical activity was included in regular, daily lessons (*Move to Learn*) in your classroom activities each week, during this semester?

- A. 8 or more times, most weeks
- B. 6-7 times, most weeks
- C. 4-5 times, most weeks
- D. 2-3 times, most weeks
- E. 0-1 times, most weeks

9. Which one of the following best describes how much time was spent in physical activity during regular, daily lessons (*Move to Learn*) in your classroom activities, during this semester?
- A. 20 or more minutes, most days
  - B. 15-19 minutes, most days
  - C. 10-14 minutes, most days
  - D. 5-9 minutes, most days
  - E. 0-4 minutes, most days
10. Who usually provided physical activity included in regular, daily lessons (*Move to Learn*) in your classroom activities? (*check one*)
- A. Lead teacher
  - B. Assistant teacher
  - C. CD, DVD, or other media
  - D. Other (please specify): \_\_\_\_\_
  - E. No one
11. How difficult was it to provide physical activity included in regular, daily lessons (*Move to Learn*), adding up to 50 minutes each week? (*check one*)
- A. Very difficult
  - B. Somewhat difficult
  - C. Neither difficult nor easy
  - D. Somewhat easy
  - E. Very easy
12. Which of the following best describes the adult leader during physical activity included in regular, daily lessons (*Move to Learn*)?
- A. Adult provides supervision
  - B. Adult sometimes encourages children to be active
  - C. Adult frequently encourages children to be active
  - D. Adult encourages and sometimes joins in activity
  - E. Adult encourages and frequently joins in activity
13. In general, how did the children in your class feel about physical activity included in regular, daily lessons (*Move to Learn*)? (*check one*)
- A. They hated it.
  - B. They did not like it
  - C. They didn't dislike or like it
  - D. They liked it
  - E. They loved it

14. What problems, if any, did you have in carrying out physical activity included in regular, daily lessons (*Move to Learn*) classroom activities each week? (*check all that apply*)

- A. None
- B. Not enough time in the school day
- C. Comfort level with activities
- D. Limited (or lack of) space for activities
- E. Lack of familiarity with the activities
- F. Lack of equipment
- G. Lack of administrative support
- H. Administrative barriers in school (i.e. schedule changes/scheduling space)
- I. The children didn't like the *Move to Learn* activities
- J. Other (please specify): \_\_\_\_\_

**The following questions ask about *Move Out* or outdoor and recess activities. Please think about these activities only when responding to these questions.**

15. Which one of the following best describes how often outdoor active play time (*Move Out*/recess) activities were provided for your classroom each week, during this semester?

- A. 10 or more times, most weeks
- B. 7-9 times, most weeks
- C. 4-6 times, most weeks
- D. 1-3 times, most weeks
- E. Not at all

16. Which one of the following best describes how much time was spent each day, on average, in outdoor active play time (*Move Out*/recess) activities during this semester?

- A. 30 or more minutes
- B. 20-29 minutes
- C. 10-19 minutes
- D. 0-9 minutes

17. Which one of the following best describes how often active games or teacher-led activities (*structured activities*) were provided for your class during recess during this semester?

- A. 10 or more times, most weeks
- B. 7-9 times, most weeks
- C. 4-6 times, most weeks
- D. 1-3 times, most weeks
- E. Not at all

18. Who usually provided active games or teacher-led activities (*structured activities*) during recess? (*check one*)

- A. Lead teacher
- B. Assistant teacher
- C. Other (please specify): \_\_\_\_\_
- D. No one

19. Which of the following best describes the adult leader during outdoor active play time (*Move Out/ recess*) activities?

- A. Adult provides supervision
- B. Adult sometimes encourages children to be active
- C. Adult frequently encourages children to be active
- D. Adult encourages and sometimes joins in activity
- E. Adult encourages and frequently joins in activity

20. What problems, if any, did you have in carrying out active games or teacher-led activities (*structured activities*) at recess? (*check all that apply*)

- A. None
- B. Not enough time
- C. Lack of familiarity with the activities
- D. Lack of Equipment
- E. Limited (or lack of) space for activities
- F. Administrative barriers (scheduling/space)
- G. Comfort level with activities
- H. The children didn't like to do the activities
- I. The children were active enough
- J. Lack of administrative support
- K. I didn't want to interrupt the children's play
- L. Other (please specify): \_\_\_\_\_

**General Thoughts About the SHAPES Program.**

**Please think about this school year (2011-2012) when responding to these questions.**

21. How would you rate the adequacy of the support you received from your school's administration to incorporate the SHAPES program?

- A. Very adequate
- B. Somewhat adequate
- C. Neither adequate nor inadequate
- D. Somewhat inadequate
- E. Very inadequate

22. How would you rate the adequacy of the support you received from the SHAPES intervention team from USC to incorporate the SHAPES program?

- A. Very adequate
- B. Somewhat adequate
- C. Neither adequate nor inadequate
- D. Somewhat inadequate
- E. Very inadequate

23. To what extent did you feel prepared to carry out the SHAPES program?

- A. Very prepared
- B. Somewhat prepared
- C. Neither prepared nor unprepared
- D. Somewhat unprepared
- E. Very unprepared

24. How worthwhile was the SHAPES program for your classroom?

- A. Very worthwhile
- B. Somewhat worthwhile
- C. Neutral
- D. Not worthwhile
- E. Not at all worthwhile

**The following questions ask about provided supply and resources given at SHAPES trainings. Please think about your classroom use of these resources when responding to these questions.**

25. At training, participants received a SHAPES Guidebook of written support materials and equipment suggestions for carrying out SHAPES practices. How useful have you found this SHAPES Guidebook?

- A. Very useful – I refer to it often.
- B. Somewhat useful – I have looked through it more than once since training.
- C. Neutral.
- D. Not useful – I have not looked through it since training.
- E. Not at all useful – I did not find it useful even at training.
- F. I did not receive this resource for my classroom.

26. At training, participants received classroom activity samples (activity materials and instructions) to support classroom physical activity. How useful have you found these classroom activity resources? (E.g. SHAPES Top 10, 100 Healthy Hearts, SHAPES Stations How-To Book, Active ABCs book, and Mission Impossible resources)

- A. Very useful – I refer to them often.
- B. Somewhat useful – I have used them more than once since training.
- C. Neutral.
- D. Not useful – I have not used them since training.



- E. Not at all useful – I did not find them useful even at training.
- F. I did not receive these resources for my classroom.

27. At training, participants received activity equipment (i.e. balls, scarves, cones, music, etc) to support classroom physical activity. How useful have you found this equipment?

- A. Very useful – my class uses them often.
- B. Somewhat useful – my class has used them more than once since training.
- C. Neutral.
- D. Not useful – my class has not used them since training.
- E. Not at all useful – I did not find them useful even at training.
- F. I did not receive these resources for my classroom.

28. At training, participants practiced assessment of physical activity using T.I.R.E. quality targets (Time, Intensity, Reach and Encouragement) to identify and improve classroom physical activity. How useful have you found this strategy?

- A. Very useful – I understand T.I.R.E. components and recognize them in classroom physical activity.
- B. Somewhat useful – I understand most T.I.R.E. components and recognize them in classroom physical activity.
- C. Neutral.
- D. Not useful – I do not understand most T.I.R.E. components.
- E. Not at all useful – I did not understand T.I.R.E. components at training.

29. At training, participants practiced assessment of physical activity using T.I.R.E. quality targets (Time, Intensity, Reach and Encouragement) using self-assessment worksheets to take note of, identify, and improve classroom physical activity. How useful have you found this resource?

- A. Very useful – I have referred to the self-assessment worksheets and/or poster to assess classroom physical activity often.
- B. Somewhat useful – I have referred to the self-assessment worksheets and/or poster to assess classroom physical activity more than once since training.
- C. Neutral.
- D. Not useful – I have not used the self-assessment worksheets and/or poster since training.
- E. I did not receive these resources for my classroom.

**The following questions ask about you to help us get a sense of how well SHAPES applies to various school participants.**

30. How many training sessions or workshops have you attended with the SHAPES program? (do not include support visits at your school).

- A. 1 training workshop

- B. 2 training workshops
- C. More than 2 training workshops
- D. Other \_\_\_\_\_

31. How many times have you received support from the SHAPES intervention team from USC (e.g. a support visit at your school or via telephone or email)?

- A. 1 support experience
- B. 2 support experiences
- C. 3 or more support experiences
- D. Other \_\_\_\_\_

32. Please describe your current school role. (*check **all** that apply*)

- A. 4 year old lead teacher
- B. 4 year old assistant teacher
- C. School principal
- D. Early childhood program director
- E. Other \_\_\_\_\_

33. How long have you been in your current school role.

- A. Less than 1 year
- B. 1 to 2 years
- C. 3 to 5 years
- D. 5 to 10 years
- E. 10 or more years

34. How many years have you been teaching, in total? \_\_\_\_\_

35. Which of the following best describes your highest level of education?

- A. Some high school
- B. High school graduate
- C. Associates degree
- D. College graduate
- E. Post graduate degree

36. What did you like most about SHAPES? Please **rank the following** in order of importance to you (with **1 being most important**).

- SHAPES provides our classroom with physical activity knowledge
- SHAPES provides our classroom with skills to integrate physical activity into everyday
- SHAPES is a valuable school resource
- SHAPES provides community network opportunity (i.e. fellow teachers, etc)
- SHAPES supports **child** health and wellness
- SHAPES supports **adult** health and wellness
- Other \_\_\_\_\_



37. Do you intend to continue practicing SHAPES activity?

- A. SHAPES strengthens our classroom with physical activity knowledge
- B. SHAPES strengthens our classroom with skills to integrate physical activity with daily ...
- C. SHAPES is a valuable school resource
- D. SHAPES provides community network opportunity
- D. SHAPES supports child health and wellness
- E. SHAPES supports adult health and wellness

**Thanks for completing this survey and your participation in SHAPES!**

Please use the space provided to tell us anything else about physical activity in your classroom or school.

## SHAPES TEACHER Interview: CONTROL SCHOOLS

This interview seeks to learn more about the Control School dissemination experience by asking open-ended questions to a sample of volunteering participants about the physical activity opportunities that they provided to their classrooms over the school year, under SHAPES training and support.

Participant name: \_\_\_\_\_ School: \_\_\_\_\_ School Role:  
\_\_\_\_\_

### About SHAPES

1. How would you describe SHAPES in your own words (i.e. to a fellow teacher)?
2. At last contact, your physical activity classroom goal was \_\_\_\_\_. Is this your current goal now?
  - *If yes*, how are you working toward achieving the goal?
  - *If no*, did you achieve your goal? How? What is your current classroom physical activity goal?

### Implementation Barriers

3. Since training, what was your greatest challenge in providing SHAPES quality physical activity opportunities for your classroom? Why?

### Technical Support

4. After training, how would you describe your preparedness to carry out SHAPES in your class? (*E.g. Motivation, encouragement, activity examples, supplies*)
5. In the months after training, did you feel you received the support that you needed from SHAPES intervention staff to practice SHAPES activity?
  - *If yes*, what do you think helped you the most?
  - *If no*, how could SHAPES staff have supported you better (e.g. resources, supplies, monthly contact, training, etc)?



6. Did you feel you received the support that you needed from your school's administration to incorporate the SHAPES program?
  - *If yes*, what do you think helped you the most?
  - *If no*, how do you think school administrations could be more helpful in the future?
  - Did you feel you received the support you needed from school peers? Please describe.
  
7. During the monthly contact period, intervention staff noticed low response in classroom update from many classrooms, post training. If staff cannot visit each classroom for one-on-one updates each month, what else could they do to promote teacher report/share?

#### **SHAPES Sustainability**

8. How would you compare your classroom physical activity before and after SHAPES?
  - Child activity?
  - Child behavior/perceptions?
  - Adult behavior/perceptions?
  
9. Do you think SHAPES works? Why or why not?
  
10. Do you intend to continue SHAPES activity after this year? *If yes, how?*