

PHYSICAL EDUCATION

Increasing Physical Activity During the School Day Through Physical Activity Classes: Implications for Physical Educators

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Abstract

Across the nation schools are adopting health and wellness policies, specifically physical activity (PA) initiatives that aid healthy long-term lifestyles. Interest has been generated about the inclusion of physical activity classes to complement existing physical education classes. Furthermore, discussion has evolved as to if additional instructional resources are needed for physical educators to be adequately equipped to instruct physical activity classes. In this study, we evaluated the instruction and classroom management of physical education teachers instructing a physical activity class over 10 weeks. The purpose of this study was to identify specific instructional constructs that limit movement time. Implementation barriers were identified and used to create techniques to enhance professional education practice and transition a physical education teacher successfully into instructing a physical activity class. With the development of the program Mission Possible: Physical Activity Every Day and the new Physical Activity Leader (PAL) initiative developed by SHAPE America (formally known as AAHPERD) through a partnership with Let's Move! Active Schools, strategies

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provided in this article will help children obtain the goal of reaching 60 min of physical activity a day.

In the United States, a challenge exists of how to engage children in a day of moderate to vigorous physical activity (MVPA) when individual, interpersonal, environmental, and demographic factors are affecting the opportunity and amount of time children are able to be involved in physical activities (Centers for Disease Control and Prevention [CDC], 2011). Children can receive a variety of benefits by being physically active throughout their lives. Children can gain muscle and improve bone strength as well as have a decreased risk of developing type 2 diabetes or even high blood pressure (CDC, 2011). Continued involvement in physical activity (PA) of children has been shown to improve academic success and enhance psychological health (Active Living Research, 2007; Basch, 2010; Hillman et al., 2009; Trudeau & Shephard, 2008; Sulemana, Smolensky, & Lai, 2006; U.S. Department of Health and Human Services [USDHHS], 2010a, 2010b).

School settings have been identified as an evidence-based opportunity to increase PA among school children (USDHHS, 2010a, 2010b). The CDC and the Society of Health and Physical Educators (SHAPE America) have collaborated to develop the Comprehensive School Physical Activity Program (CSPAP), which provides school-based PA opportunities to help improve the overall health and wellness within the constraints of the school environment (CDC, 2011; National Association for Sport and Physical Education, 2008).

The CSPAP was developed to help meet the national recommendation of 60 min of MVPA every day (Physical Activity Guidelines for Americans Midcourse Report Subcommittee of the President's Council on Fitness, Sports, and Nutrition, 2012). The CSPAP model includes (a) high-quality physical education (PE), (b) PA opportunities during school, (c) PA before and after school, (d) staff involvement, and (e) family and community engagement. This multicomponent approach is needed because PE weekly requirements are decreasing and it is necessary for the SHAPE America (2014) standards to be the focus of curriculum time. "The goal of a quality PE class is to develop physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity" (SHAPE America, 2014, p. 11). Furthermore, there are specific grade outcomes and objectives geared to help students' cognitive, affective, and psychomotor development.

Time spent in MVPA often decreases in PE to obtain the goals and standards required, and other opportunities to obtain MVPA should be discovered.

The primary purpose of this study was to determine if an alternative PA opportunity for schools, provided during the school day, could be implemented in a structured PA class. The secondary purpose was to evaluate the percentage of time spent in movement during PA class taught by qualified PE teachers.

Method

Sample and Participant Selection

Schools. Three low socioeconomic Title I elementary schools, defined as having a school population with a poverty level (determined by free and reduced-price meal counts) at or above 40% (U.S. Department of Education, 2013), were selected as implementation sites for the Mission Possible: Physical Activity Every Day program. Selection of the schools was a result of past research findings completed by the research staff that showed evidence of low-income families having higher obesity rates with less active children. This concurs with research completed by Ogden, Lamb, Carroll, and Flegal (2010). School administrators and teachers strategically allocated time from their existing curriculum to create a 20- to 25-min PA class on days PE was not offered. PA time allotments were a product of teachers identifying areas within the curriculum for which minutes could be reassigned. Schools developed individual PA schedules to emulate the PE schedule to maintain a routine for students. PA class time ranged from 20 to 25 min depending on grade level and curriculum flexibility and did not diminish time in recess or other extracurricular activities (art, music, etc.).

PA instructors. Three individuals were hired to instruct PA classes. Hired instructors were concluding their collegiate coursework and formally trained to be PE teachers but had never been professionally employed. Each teacher had experience teaching PE (as a student teacher) but had never instructed a PA class. PA instructors were assigned to one elementary school to teach multiple PA classes 2 days per week over the first half of the school year.

Difference between PE and PA. The purposes and objectives between PE and PA classes are distinctively different. The two terms, *physical education* and *physical activity*, are used similarly but constitute different meanings. PA, defined as “any bodily move-

ment produced by skeletal muscles that results in energy expenditure” (Caspersen, Powell, & Christenson, 1985, p. 126), developed into a curriculum class has a primary objective of students moving with limited instruction. One goal during PA class is to keep the activity at an MVPA level for a significant portion of the class time. A quality PE program should include the MVPA format least 50% of class time along with other psychomotor, cognitive, and affective development activities (USDHHS, 2010a, 2010b). The purpose of PE classes is to provide instruction and practice of skills for activities and movements in relation to the SHAPE America (2014) standards and grade outcomes, not just focus on MVPA.

Training. Prior to teaching PA classes, PA instructors were given information about the PE curriculum, data collection procedures, and the expectations of teaching PA. The main expectation for the PA instructors was to implement activities related to the PE curriculum the students were learning each week. Activities allowed additional movement time, reinforcing PE concepts. No additional training was provided as we assumed that the PA instructors were adequately prepared from the physical education teacher education (PETE) program they had completed.

After direct observations during Week 1, we determined additional training was needed because the delivery of instruction resembled a PE class rather than a PA class structure. The PA classes at all three sites, for the first week, included a warm-up, introduction, skill instruction, progress to develop the skill taught, enrichment activity, and closure. Movement time was less than 50% of class time; therefore, modifications and additional instruction were needed to engage the students successfully (see Figure 1).

We met with the PA instructors and school PE teachers for a detailed training session. Training was focused on distinguishing the difference between PE and PA and consisted of determining the amount of time dedicated to skill development, instruction, and PA. Additional training was concentrated on ensuring PE and PA curriculums linked concerning skills and activities to reinforced instructional concepts, but no new skill development was taught. Training strengthened the understanding and purpose of PA class and curriculum routine. We provided the PA instructors guided assistance on how to design PA class curriculum based on a class outline (see Table 1). Last, we gave PA instructors instructional autonomy and encourage them to use curriculum development skills acquired from PE training.

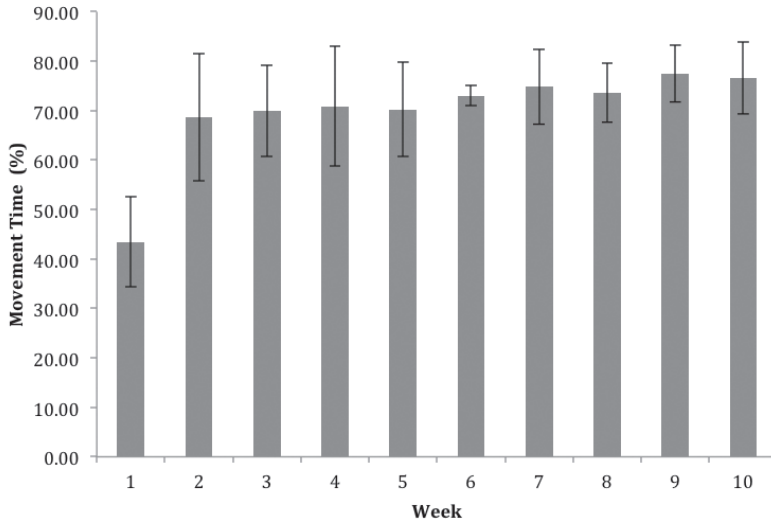


Figure 1. Summary of movement time means of physical activity class implementation. This graph represents weekly means and standard deviations over 10 weeks.

Table 1
Physical Activity Class Online

Time	Step
30 s	Students enter into the gym and begin walking around the “out-side track.”
4 min	Early Bird/Instant Activity: Students arrive at the class and quickly read about the activity they are going to perform, or teachers may meet them at the door and explain what they are to do. Upon completion of the activity, the heart rate of the students should be elevated.
30 s	Transition time to the middle of the circle: Students movement from one activity to the next.
1 min 30 s	Explanation of the activity for the game: Rules, etc. are stated.
30 s	Transition to set up the game/activity.
XX min	Activity.
1 min	Closure/Transition: Students exit the classroom (students circle up and walk the circle and the teacher selects one individual as the line leader).

Data Collection

Movement time. Data assessing total student movement time were collected and were represented as a percentage of the total class time. Movement time was quantified using a stopwatch and manual timing when students were active and established when the entire class was moving. During instruction, transition time, or addressing behavioral issues, movement time recording was stopped. Three individuals from the research team collected movement time data. Interrater reliability tests were performed to ensure stopwatch management reliability. Interrater reliability was significant, $r(22) = 0.985, p < .001$.

PA instructor checklist. After Week 1, we developed a checklist for the PA instructors to complete at the conclusion of each class. Instructors completed a self-report checklist on which they identified what they liked most about the lesson, liked least about the lesson, and what they would change for future implementation. PA instructors reported barriers that limit PA instruction, games that worked well, and aspects of PA class that could be changed to help make PA class more active. Because instruction and lesson/activity themes were different among grade levels, we asked instructors each question twice concerning kindergarten to second grade and third to fifth grade. Last, we asked PA instructors to record how students received the activity of the day. We coded themes and used them to establish techniques and strategies to help deliver instruction more efficiently. We used combinations of quantitative and qualitative data to create strategies that can be used to help PE teachers successfully teach PA classes with high amounts of PA levels from the children the majority of the class time.

Results

Transition time and classroom management were identified through the PA checklist and movement time data as being the two areas of most concern during Week 1. Before Week 2 began, we met with the PA instructors met to address transition time and classroom management. As a result, movement time increased from Week 1 (43.42%) to Week 2 (68.62%) by 25.2%. Movement time steadily increased over the following weeks, resulting in 6 additional movement minutes in PA class (see Table 1).

Thematic categories, identified in PA instructor checklists, revealed instructors believed PA lessons were easy to implement once modifications were made from observational feedback and main-

tained student attentiveness. PA instructors noted that “kids were engaged” and “constantly moving.” On the other hand, PA instructors also concluded that they had a difficult time explaining activity rules in a quick time frame and identified that the amount of space required for PA class played a vital role for successful implementation. Last, PA instructors concluded that rules of activities were different between PE and PA classes. Explanation needs to be quick and efficient with simple variations of a single game rather than a progression of skill development.

Discussion

In this study, we identified an alternative way for schools to deliver PA to students during the school day by allocating 20 to 25 min for a PA class on days PE was not offered. All three schools integrated the additional PA class without eliminating existing PA opportunities, such as recess. Principals and teachers believed the project would benefit students enough to warrant additional time and restructured schedule. Teachers gave 1 or 2 min from core classes to create the PA time slot. Minutes transferred from core classes provided classroom teachers additional time to work on their daily core curriculum lessons and activities. Time management, a PA outline, teaching techniques, behavior management, and the relationship between PE and PA were vital aspects to integrate a PA class successfully and to help prepare PE teachers to instruct PA classes.

Time Management

Differentiating PA curriculums from PE curriculums, although the same skill themes were used, is important for class planning. PA instructors noted that PA classes were simple to plan and implement. However, PE teachers used transition times to regroup and organize classes. Transition time in PA class should be quick switches, allowing students to be movement free for minimal time. We calculated and observed that PA instructors spent significantly more time during transitions between activities, spent excessive time explaining activities, and were not efficient at closing the lesson decreasing movement time during Week 1 prior to the training. With additional training and consistent messaging, transition time decreased from over 2 min during Week 1 to less than 30 s in Week 10. Decreased transition maximized class time by allowing for more movement time.

PA Outline

PA instructors were provided a general outline during the preimplementation training. After Week 1, we identified the need to provide a more specific outline of how much time PA instructors should spend on lesson components including instant activity, transitions, instructions for the activity, and closure to maximize class time (see Figure 1). Tactics to help PA instructors modify their curriculum were discussed in weekly meetings face-to-face or via electronic mail conversations during the first three weeks of implementation. In addition, PA instructors were provided access to SPARK, for curricular ideas for class activities. The PA class outline proved to be a valuable source that instructors used to maximize movement time and organize PA class.

Teaching Techniques

Mosston's Spectrum of Teaching Styles for teaching PE has been taught and implemented in many PE curriculums to help meet the diverse needs of students and the SHAPE America (2014) standards and outcomes outlined for each grade level (Mosston & Ashworth, 2002). The Spectrum has no single superior teaching style (Goldberger, Ashworth, & Byra, 2012; Mosston & Ashworth, 2002). The use and significance of each style is expended to relate to the teaching objectives, in this case high MVPA levels. The command teaching style was used in the PA classes to engage students quickly in an MVPA level. Command style, defined as teacher-directed teaching, has been shown to increase movement time and level of student involvement in PA (Mosston, 1992; Sanchez, Byra, & Wallhead, 2012). Command style is a style of teaching in which the teacher establishes most of the decision making on what to do, how to do it, and the level of achievement expected (Mosston & Ashworth, 2002; Nichols, 1994; Sanchez et al., 2012). For example, in a jumping lesson on jump roping, in PE, a teacher would demonstrate and describe the correct technique to hold the rope and complete the forward jump rope skill, and after the demonstration, the students would begin practicing by mimicking what was taught to be more successful in the action demonstrated. In PA class, the students would be told to complete the jump roping activity taught in PE and explain the expected level of achievement or activity correlated with the skills taught.

PE and PA

CSPAP and Let's Move! Active Schools recommend PE and PA. Administrators and school district officials need to understand how PE and PA relate to each other, how they can be equally addressed in a time-constricted environment, but cannot be used synonymously.

As stated prior, the definition of PA is different than that of PE. When PA instructors develop PA classes, the primary objective of students is to be physically active with limited instruction by the teacher. Educational preparation for a certified PE teacher encompasses PA promotion by having the goal of developing "physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity" (SHAPE America, 2014, p. 11). Furthermore, there are specific grade outcomes and objectives geared to help students' cognitive, affective, and psychomotor development. With these attributes, PE teachers are qualified to help develop PA opportunities, but the curriculum structures between PE and PA classes vary significantly.

Understanding that instructional differences exist between PE and PA and findings from this study led us to conclude there are necessary steps required to enhance instruction. We recognized in the early stages of this study that simply providing another PE day did not meet the goal for PA movement time, thus why we added PA classes geared toward MVPA only to the school curriculum.

Although PE and PA classes are different, some collaboration between PE and PA are necessary to leverage instruction and skill development time in PE class, leading to a greater effect on the students and the school. Incentives implemented in PE class should be spread across PA classes. Individual and class incentives could serve as a means to engage and reinforce PA concepts. For instance, a positive class behavior chart could be developed in PE and PA to reward students with a favorite PA after a certain amount marks are met. Skill development taught in PE can continue to occur indirectly through the games played in PA class as well. We found that many PE-trained teachers need additional educational interventions and trainings, but with proper training, a PE teacher can successfully instruct a PA class.

Limitations

Coordination of activities and communication between the PE teacher and the PA instructor was an issue and could conceivably be a problem for future teachers using the model developed. Experi-

ence and educational backgrounds convey unique qualities that are beneficial and different among PA instructors. Instructor uniqueness results in different teaching capacity, yielding varying and potentially additional training. We evaluated movement time, not MVPA. A next step for the Mission Possible: Physical Activity Every Day program is to evaluate the intensity level of PA during PA classes.

Conclusion

As PE time has decreased in schools, the need for daily PA for children has increased. Schools are a key setting to increase PA among children. Administrators are working to identify alternatives within the school day when PA can be disseminated. The implementation of a PA class provides a viable strategy for administrators to consider to help meet the recommended 60 min of MVPA a day for children and help improve time on task, behavior, and academic scores in the regular classroom (Active Living Research, 2007; Basch, 2010; USDHHS, 2010a, 2010b). The mission to increase PA of children can be made possible with the creativity of the principal to modify the school schedule and with the help of the PE teacher. Additional resources and training may be needed to implement this type of program successfully into a school depending on the capabilities of the teacher to understand the difference between PE and PA teaching.

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