



ENHANCING
Physical Education
with a Supplemental
Physical Activity
Program

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Schools have played a pivotal role in providing physical activity education to children. Elementary physical education has been the “go-to” class to enhance children’s motor skills and movement patterns; develop knowledge and skills about fitness and activity; apply concepts, principles and strategies to movement and performance; develop responsible personal and social behavior; and actively engage in physical activity while recognizing the value of being active for health, enjoyment and for oneself (SHAPE

America – Society of Health and Physical Educators, 2014). Along with physical education, supplemental physical activity (PA) opportunities are commonly used in schools to increase activity time (e.g., recess, classroom PA breaks).

Over the past 25 years, for various reasons, many schools have reduced or eliminated recess and/or physical education time, thus decreasing the amount of physical activity provided daily to children. Decreased physical activity opportunities in schools have especially affected low-income community children who have low fundamental movement-pattern proficiency levels because of socio-environmental factors (de Vet, de Ridder, & de Wit, 2011; Vandendriessche, Vandorpe, Vaeyens, Malina, & Lefevre, 2012). A potential solution to increase physical activity time during the school day is to create additional opportunities for students to practice fundamental movement patterns. This may be accomplished through the development of a structured physical activity class taught during the school day in addition to physical education and recess.

This article describes a physical activity class implemented by researchers in three low socioeconomic schools in central Nebraska to supplement physical education. The goal of the physical activity class was to engage students in moderate-to-vigorous physical activity (MVPA) for at least 75 percent of the class time. The physical activity class was provided to students on days that physical education was not offered (two or three days per week). The pilot project was aimed at providing additional physical activity time to children classified as low-income in grades K–5 with a focus on fundamental movement-pattern development while enhancing minutes of MVPA.

Physical Activity

According to the National Coalition for Promoting Physical Activity (NCPA, 2014), children spend approximately 1,300 hours each year in school. For this reason, utilizing school time to provide opportunities for children to be physically active who may not otherwise receive additional physical activity time outside of the school day is something for administrators to consider (NCPA, 2014). In the past few years, organizations have recommended physical activity frameworks for schools that have been successful in increasing the amount of MVPA time for students (Carson et al., 2014; Centers for Disease Control and Prevention [CDC], 2011). Moderate-to-vigorous physical activity is defined as follows: 3.5–7 kcal/min = moderate activity and more than 7 kcal/min = vigorous physical activity (U.S. Department of Health and Human Services [USDHHS], 2009). Active Schools (formerly *Let’s Move!* Active Schools; <http://www.shapeamerica.org/prodev/lmas.cfm>) and the comprehensive school physical activity program (CSPAP; <http://www.shapeamerica.org/cspap/>) are two sample frameworks that are supported by SHAPE America, and additional information can be found on their webpage.

Active Schools began as part of First Lady Michelle Obama’s campaign to help schools develop a culture in which physical activity and physical education are foundational to academic success.

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Table 1.
Criteria for a High-quality Physical Education Program

- A high-quality PE teacher encourages skill development, improves students' knowledge of activities, and enhances students' confidence levels to be physically active for a lifetime (SHAPE America, 2014).
- A quality PE teacher uses instructional practices and deliberate-practice tasks that support the goals and objectives defined in the school district's or school's physical education curriculum (e.g., differentiated instruction, active engagement, modified activities, self-assessment, self-monitoring; SHAPE America, 2015).
- A quality PE teacher evaluates student learning continually to document teacher effectiveness (SHAPE America, 2015).
- A quality PE teacher employs instructional practices that engage students in moderate-to-vigorous physical activity for at least 50 percent of class time (CDC, 2011; SHAPE America, 2015).
- A quality PE teacher provides the opportunity to learn through a meaningful yet challenging curriculum, as well as appropriate and effective instruction, while assessing the students and evaluating the program (SHAPE America, 2014).
- A quality PE teacher teaches toward the five SHAPE America National Standards for K–12 Physical Education and relates the curriculum to the grade-level outcomes and objectives while engaging students in physical activity during at least 50% of class time (CDC, 2011; SHAPE America, 2014).

The CSPAP model was developed to help meet the CDC's national recommendation of 60 minutes of MVPA every day (CDC, 2013). The CSPAP model includes: (1) high-quality PE, (2) physical activity opportunities during school (i.e., supplemental activities), (3) physical activity before and after school, (4) staff involvement, and (5) family and community engagement (CDC, 2011; SHAPE America, 2015; USDHHS, 2012).

Schools are actively utilizing both frameworks to help increase PA time, and with the passing of the *Every Student Succeeds Act* (ESSA), additional funding will be available to schools in 2017–2018, which embraces physical education as one of the curricular areas needed to develop a well-rounded student. However, until schools are able to allocate more time for physical education, school personnel may want to consider additional physical activity programs, such as the physical activity classes described in this article. In order to succeed in offering a physical activity class, it is necessary for a high-quality physical education (PE) program to already exist that encompasses all five SHAPE America National Standards for K–12 Physical Education, along with district, state and school-based curriculum components, and that fulfills the criteria set forth by SHAPE America (see Table 1). Additionally, support from principals and teachers and access to supplemental opportunities for additional PA time should also be available.

According to SHAPE America (2015) and CDC (2011), a high-quality PE program is characterized by providing students the opportunity to learn meaningful content with appropriate instruction, assessing students' progress, and ensuring that students are engaged in MVPA during at least 50 percent of class time. According to the latest *Shape of the Nation Report* (SHAPE America, 2016), 44 out of 51 states require PE, but only 19 out of 51 states require a specific number of minutes per week, which means students may not be given adequate time to be physically active each week with PE alone. Various school-based programs have been explored to determine how to increase daily physical activity time during the school day, beyond PE classes, and what could be considered impact factors.

Numerous research studies have found evidence of effective school-based physical activity interventions across the country (Carson et al., 2014; Cochrane Collaboration, 2013). However, the evidence of increased physical activity opportunities and the

positive effect on fundamental movement patterns (FMPs) development is less convincing. For instance, the FMP of skipping is not “naturally” learned by children, especially at the low-income level (Goodway & Branta, 2003; Goodway, Suminiski, & Ruiz, 2003). Although physical activity programs are being implemented in schools, without a focus on FMPs at the elementary level some FMP skills may not be developed enough for the student to be proficient. This could increase the likelihood of higher rates of physical inactivity in the adolescent years, whereas competency in FMP may serve as a defense mechanism against this trend (Barnett, Beurden, Morgan, Brooks, & Beard, 2009; Lopes, Rodrigues, Maia, & Malina, 2011). Thus, additional physical activity time with a focus on FMPs could reinforce motor skill development.

To help provide additional physical activity time and opportunities for low-income children to practice their FMPs, the Mission Possible program was developed to provide children with additional physical activity time during the school week on days when PE was not offered. The structured physical activity class was geared toward maintaining MVPA levels, while developing FMPs. Physical activity classes reinforced the activities and movement patterns taught during the PE classes.

Mission Possible, Physical Activity Every Day

A principal and physical educator in central Nebraska conceptualized the Mission Possible, Physical Activity Everyday program. The idea was brought to a local university, and a research team made up of physical education and exercise science faculty developed the program with the help of the local schools that would be participating. A pilot study was conducted at one school for one year prior to the expansion into three schools, to determine logistics and to ensure quality physical activity instruction that would engage students in higher MVPA levels, which was one of the requirements developed by the research team.

The main objective throughout the pilot program was to effectively train physical activity instructors to become highly qualified in their job of creating activities high in MVPA (Adkins, Bice, Bar-tee, & Heelan, 2015). A quality physical activity instructor was defined as an individual who was able to teach quality lessons and develop FMPs corresponding to the content taught in PE. Addi-

tionally, to achieve quality physical activity status, which is defined as 50 percent or more MVPA time in PE (SHAPE America, 2015), the specialist had to keep classes at a MVPA level of 75–80 percent of class time. The research team discovered a preexisting, timed lesson-plan structure, and direct observation of students' time on task helped PA specialists achieve the goals of the program, which were: (1) to engage students in MVPA during 75–80 percent of the class time, and (2) implement activities related to the fundamental movement patterns taught in PE. Once quality lessons were developed and delivered, and MVPA levels were sustained over the course of the class, it was determined that the program could be implemented in two additional low-income schools in the Midwest Nebraska school system the following year (Adkins et al., 2015).

Implementation and Logistics

School administrators and classroom teachers in grades kindergarten to fifth grade strategically allocated 20–25 minutes of their existing core curriculum to create physical activity class-time slots on days that PE was not offered (Adkins et al., 2015). Physical activity time allotments did not diminish class time for recess or other extracurricular activities (e.g., art, music). Instead, the time was “found” by teachers identifying areas within the curriculum for which minutes could be reassigned. In this instance, two minutes were taken from each core subject. The rationale from the principal for doing this was that there is probably some down time in the classroom anyway, and a small reduction in class time could help teachers work on teaching more efficiently. Schools developed grade-specific PA schedules to emulate the PE schedule, to maintain a consistent routine for students. Each class received 2–3 days a week of PE, and the physical activity class was taught the other days. This meant that all students received either physical education or physical activity class all five days of the school week. With the additional days of physical activity class, children had 150 minutes, plus recess time, to be physically active on a weekly basis, thus reaching the goal of increasing physical activity levels each day.

Quality Physical Education and Complementary Physical Activity Classes

Implementing complementary physical activity classes taught by a qualified physical activity instructor to further develop FMPs already learned within PE classes and to potentially reach physical activity goals was the foundation for implementing this program. The research team from the local university and the school staff determined who would be qualified for the physical activity position. It was determined that physical activity instructors would need to be senior-level college students or certified physical education teachers who had been prepared in a physical education teacher education (PETE) program accredited by the National Council for Accreditation of Teacher Education. Physical activity instructors were required to follow the lesson-plan format developed and piloted by the research staff to maintain high levels of physical activity and submit the lessons to the research team for evaluation prior to teaching the lesson. Additionally, the research team completed five direct observations evaluating the physical activity time of the children in the first week of the program. Training was provided to physical activity instructors who did not meet the 75–80 percent of MVPA time while practicing fundamental movement skill activities. Once the desired MVPA levels were achieved, physical activity

instructors were observed once a week by the research team to determine if 75–80 percent of MVPA was continuously being met. Findings of class activity levels and FMPs taught were discussed with the principal on a weekly basis.

Physical Education and Physical Activity Class

Importantly, the difference between a physical activity class and a PE class is that the physical activity classes primarily focus on maintaining high MVPA levels throughout the majority of the class. Physical education classes were taught by a certified elementary physical education teacher and were geared toward developing the students' skills by addressing the five SHAPE America National Standards while working to spend 50 percent of the class time on MVPA (SHAPE America, 2015).

Physical education teachers and physical activity class instructors communicated each week over the course of the school year to ensure that the activities taught in physical activity class aligned with the fundamental skills and themes taught in the PE classroom. Each grade's activities related to the competencies described in the National Standards (SHAPE America, 2014). Additionally, SHAPE America has outlined grade-level outcomes in the *National Standards & Grade-level Outcomes for K–12 Physical Education* book that indicate that “by the end of Grade 5, the learner will demonstrate competence in fundamental motor skills and selected combinations of skills” (SHAPE America, 2014, p. 26). Although fundamental skills and combination patterns differ for each grade level, developing skills in each grade block during a physical activity class can serve as a supplement to help in the progression of students' development of motor skills through the grade levels.

An example of an activity (see Figure 1) that can be taught in both a PE and physical activity class in the same week could be a first-grade PE class in which students learn how to properly throw a ball to a target. The lesson teaches proper skill development and ends with a small-sided throwing game. The next day, when this same first-grade class attends physical activity class, they complete high-MVPA movements focusing on throwing balls at the target. An additional example implementing a fundamental movement pattern in a third-grade PE and PA class is described in Figure 2.

Conclusion

The integration of physical activity opportunities and the development of fundamental movement patterns have become common endeavors in schools. Some schools seem to be more successful than others due to organization, intervention structure, and administrative support from the school district, principal and staff/personnel. The degree of program buy-in is another factor that can affect student interest and success. Additionally, each physical activity program must fit the needs and wants of the particular school and students.

The team that conducted the research described in this article and the administration learned many lessons about successfully completing the program. Informal interviews were conducted at the schools by the research team. Principals reported that program integration positively affected student behavior. Classroom teachers noticed that students were able to focus on work longer and showed improved levels of self-esteem through informal one-on-one conversations. The Test of Gross Motor Development–2 was utilized as an assessment in the fall and spring to determine the changes in proficiency levels of K–2 students in FMPs with evi-

Fundamental Movement:

Dribbling
3–5th grade

Physical Education

Unit: Basketball — Skill Dribbling
30 minutes class time

National Standards/Objectives: 1, 2, 3, 4

Equipment: Basketballs for each student, 4 cones

Psychomotor: The students will (TSW) demonstrate hand dribbling with 75% efficiency.

Cognitive: TSW review and recall the critical elements of hand dribbling.

Affective: TSW demonstrate safe, respectful and responsible behavior during class activities.

Warm-up (5 min): Fitness components

Introduction and Transition (2 min)

Fundamental Movement Development (18 min):

1. Students each have a basketball and find their own space in the gym.
2. Students are provided with the critical elements of how to dribble the basketball in a whole-part-whole (WPW) format. Students practice the skill with the teacher and then practice individually with their right hand for 30 sec. and then their left hand (4 min).
 - Whole: Show the dribble
 - Part: Break down the key elements of dribbling: a) Ball waist high, b) push the ball down, c) use finger pads.
 - Whole: Show the dribble
3. The teacher moves the students to the baseline and all students dribble down the court to the other side using proper technique with the right hand. When the whistle blows, students dribble in place. When the whistle blows again the students continue dribbling down the court. Complete the same task with the left hand on the way back down the court (3 min). Quality, not quickness, is the key element of the activity.
4. The teacher talks about defending the ball while dribbling and why it is important (2 min).
5. Students are divided into pairs and complete the same activity as #3 but this time a defender is in front of the dribbler. The “job” of the defender is *not* to take the ball away but be in front of the dribbler to make them aware of keeping their hand up to defend (3 min).
6. Students are then taught how to crossover in the WPW format. Students practice the skill with their partner while finding their own space in the gym (1 person is the defender for 30 sec., then students switch on the teacher’s cue. Repeat for 3 min).
7. Students complete the same activity as #5 but the defender moves toward a side of the dribbler so they work on the crossover (3 min).

Activity (4 min):

8. Dribble Knockout: All students have a ball. Students are divided into two groups, one in one activity area, one in the other. Students dribble around using the key elements taught and try and knock out other students’ basketballs without losing control of their own. If a student loses the basketball, he or she joins the other group game.

Closure (1 min)

Physical Activity

Dribbling: “Dribbling Speedway”
20 minutes class time

National Standards/Objectives: 1, 2, 3, 4, 5

Equipment: 25 cones in 4 different colors. One ball for each student. 4 Task cards. Signs to display at each pit stop

Psychomotor: TSW demonstrate hand dribbling with 75% efficiency during the activity.

Cognitive: TSW recall all critical elements of hand dribbling taught in PE class.

Affective: TSW demonstrate safe, respectful and responsible behavior during the class activity.

Health-Related Fitness: TSW engage in moderate-to-vigorous physical activity for 80% of class time.

Warm-up: Cardiovascular only (2 min)

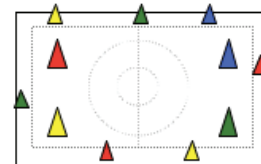
- Race Track Fitness: 1 song is played and the fundamental movement patterns are practiced

Transition (1 minute)

Introduction and Transition (1 min 30 sec.)

Activity (15 min):

- Each student has a ball and is scattered on the “speedway” playing area. The boundaries for the activity can be approximately the size of a basketball court.
- On the inside of the speedway are 4 stations (pit stops). Place the stations close to each corner of the speedway. Each station is a fitness challenge students must perform in order to get out of the pit stop and move back out to the speedway.
- If a student dribbles out of the playing area, or goes off the road, the student must go to the nearest pit stop.
- Cones (speed bumps) are placed sporadically around the speedway throughout the playing area. If the student’s ball hits a speed bump (cone) they must bring their “car” (body) to a pit stop station for repairs.
- Each pit stop station is color coordinated with the color of the speed bump. If a student hits a red speed bump, they must go to the red pit-stop station.
- When students complete the task, they return to the playing area.
- When the music starts, students dribble their ball around the speedway. Every minute the teacher stops the music the students must go to the nearest pit stop and complete the fitness task.
- When the music begins again the students switch hands to practice dribbling.
- Play continues during the duration of the “activity” portion of the lesson.



Closure (30 sec)

Figure 1.

Sample physical education and physical activity class lesson plan for dribbling

Fundamental Movement:
Underhand Throw
K-2 grade

Physical Education

Unit: Throw and Catch — Underhand Throw
25 minutes class time

National Standards/Objectives: 1, 2, 3, 4

Equipment: Basketballs for each student, 4 cones

Psychomotor: TSW demonstrate hand dribbling with 75% efficiency.

Cognitive: TSW review and recall the critical elements of hand dribbling.

Affective: TSW demonstrate safe, respectful and responsible behavior during class activities.

Complete the warm-up (5 min): Fitness components

Introduction and Transition (2 min)

Fundamental Movement Development (11 min):

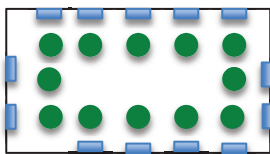
- Students each have a bean bag and stand 5 ft. away from the wall on a poly spot.
- The teacher talks about how to properly complete an underhand throw in a whole-part-whole format (3 min).
Whole: Show underhand toss to the wall
Part: Teacher shows the key steps: a) swing the arm back, b) step with the opposite foot, and c) follow through to the target.

Whole: Show the underhand toss again.

- Teacher explains to the students how they will throw to a target on the wall, retrieve their bean bag, and practice again. Students begin (3 min).
- Students move back to the next poly spot and the teacher asks if the students need to throw the bean bag lighter or stronger. The students practice again (3 min).
- Transition (2 min): The teacher then pairs the students to play Angry Birds throwing.

Activity (6 min):

- One student is by the wall and sets up short noodles in a creative building pattern.
- The other student stands on the polyspot and completes an underhand throw to try and knock down the noodles. They get three tries to try and knock the structure down and then the partners switch positions.
- The person by the wall practices their underhand throw and tries to throw the bean bag back to the polyspot after each attempt by the angry bird thrower.



Closure (1 min)

Physical Activity

Underhand Throw: Bullseye
20 minutes class time

National Standards/Objectives: 1, 2, 3, 4, 5

Equipment: 4 cones, 3-4 colored hula hoops, 1 poly spot for each hula hoop, 50+ bean bags or other throwing objects (yarn balls)

Psychomotor:

- TSW demonstrate underhand throw with correct fundamental movement patterns 75% of the time while throwing to the target.
- TSW demonstrate progress in various locomotor skills.

Cognitive: TSW recall all critical elements of the underhand throw taught in PE class.

Affective: TSW demonstrate safe, respectful and responsible behavior during the class activity.

Health-Related Fitness: TSW engage in moderate-to-vigorous physical activity for 80% of class time.

Warm-up (3 min): Cardiovascular

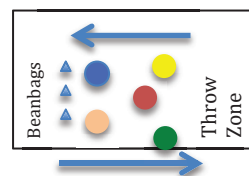
- Race Track Fitness: 1 song is played and the fundamental movement patterns are practiced

Transition (1 minute)

Introduction and Transition (1 min 30 sec.)

Activity (14 min):

- One end of the gym (coned area, see figure below) is the throwing zone.
- On the other end of the gym, bean bags are laid out (opposite end of coned area, see figure below).
- In the middle of the gym, hula hoops are scattered on the floor to serve as targets
- Each student begins in the throwing zone.
- Students complete the locomotor movement the teacher states (e.g., jog, skip, gallop) around the outside of the gym “track” to retrieve the object they will throw.
- Students take the object and complete the same locomotor movement on the track, back to the “throwing zone.”
- Students use the underhand throw to toss the bean bags and try to land them in the hula-hoop targets.
- After throwing, students move down the track to get another bean bag and complete the same activity.
- When the music begins, the students start the activity. When the music is paused, a different locomotor movement is stated by the teacher for the students to complete.
- Complete the activity for as long as you have bean bags. Once the bean bags are gone, students help throw the bean bags back into the bean-bag zone and the game starts again. If the students are able to do simple math, students can be asked to keep track of how many points they make each round.
- Play continues for the duration of the “activity” portion of the lesson.



Closure (30 sec)

Figure 2.

Sample physical education and physical activity class lesson plan for the underhand throw

dence of a significant difference ($p \leq .05$). The FITNESSGRAM® PACER cardiovascular fitness test was also completed in the fall and spring by grade 3–5 students to assess changes in fitness, also showing a significant difference ($p \leq .05$). The main concern was the program’s ability to sustain implementation with quality physical activity instructors and to find funds to continue to pay physical activity instructors the equivalent of district substitute pay. For the first three years, grant money was utilized to complete the program. The grant funds were acquired from a variety of sources, including Nebraska Blue Cross Blue Shield and the Braitmayer Foundation.

As the schools began the fourth year, the three active schools in the program developed various plans to pay for an additional person on staff to teach the class. One school selected to hire a transitional certification student who was completing the last two semesters of coursework to be a NE-certified physical education teacher. Another school hired a past physical activity instructor who now is a certified physical education teacher in the district and has a 50 percent teaching load. Contracts with the specialist were for a one-year guaranteed appointment to the position. The third school had no funds for the program so they collaborated with the University of Nebraska at Kearney (UNK) physical education student teacher program. The PE teacher receives a new student teacher every eight weeks who teaches the physical activity class as part of their student-teaching experience. With the passing of ESSA, funding that was not previously available for these types of projects could now be a means to sustain the program. Although the program is no longer funded by research, the UNK research team continues to conduct observations, check physical activity levels, and complete fundamental movement skill tests to maintain a high-quality physical activity program at each of these locations.

Another issue addressed was what to do if or when the physical activity instructors were going to be gone from school. Since the school did not contract the specialist, a sub from the school system could not be used. Additionally, a specific skill set was needed to successfully teach the students in the program due to the timed lesson plan and expected levels of MVPA. The research team and schools relied on the physical education graduate student to substitute at any of the schools when needed.

No official survey was given to all involved parties, but overall the school principal, physical educator, teachers and research staff involved in the program from the university all believed the success of the program far outweighed the complications (e.g., cost, coverage of the PA class when the teacher had to be absent) that arose during program implementation. Children were excited to spend the extra time in physical activity at their school. Teachers and administrators were happy with the positive changes they saw in their students. The research staff concluded that the structured physical activity class in the program Mission Possible, Physical Activity Everyday successfully helped low-income children to increase their physical activity, and they had additional opportunities to enhance fundamental movement patterns through quality lesson planning by the physical educator and physical activity instructor.

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