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Impacting Children's Health and Academic Performance through Comprehensive School Physical Activity Programming

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Abstract

Physical activity is associated with numerous academic and health benefits. Furthermore, schools have been identified as an ideal location to promote physical activity as most youth attend school regularly from ages 5-18. Unfortunately, in an effort to increase academic learning time, schools have been eliminating traditional activity opportunities including physical education and recess. To combat physical inactivity in you, numerous organizations are promoting a Comprehensive School Physical Activity Program to encourage academic achievement and overall health. Comprehensive School Physical Activity Programs include five components and should be centered around 1) quality physical education, 2) physical activity before and after school, 3) physical activity during school (both recess and classroom activity), 4) staff involvement, and 5) family and community engagement.

Keywords: Physical education, recess, youth, CSPAP.

Introduction

Physical activity has been associated with increases in school performance including concentration, memory, and classroom behavior (i.e. Strong et al., 2005). Specifically, elementary school aged girls performed better in math and reading when they had additional physical activity time (Carlson et al., 2008). Furthermore, Sallis and colleagues (1999) have stated that increases in school PA opportunities do not hinder academic performance; in fact they suggest the inverse may be true.

Unfortunately, today's children not accumulating recommended levels of physical activity (i.e. Brusseau, Tudor-Locke, & Kulinna, 2013). Physical inactivity is associated with numerous health risks, including heart disease, cancer, diabetes, hypertension, as well as anxiety and depression (Kohl & Cook, 2013). Lee and colleagues (2012) have

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suggested that the health burden of physical inactivity approaches that of smoking and obesity. The Centers for Disease Control and Prevention (CDC; 2012) has reported that less than half of youth are accumulating the recommended 60 minutes of activity each day. The prevalence of physical inactivity among school aged children has contributed to the substantial rise in overweight and obesity (Tremblay & Willms, 2003). Obesity has increased in the US dramatically over the past ten years with approximately 32% of girls and 37% of boys classified as overweight or obese (Ogden et al., 2006). The obesity epidemic is affecting children of all ages including young children and adolescents and when obesity occurs during adolescents, it tends to persist into adulthood (Deckelbaum & Williams, 2001).

Physical activity (PA) during childhood has shown to be effective in preventing health problems later in life (Strong et al., 2005). PA is associated with strong bones and muscles, decreases in the likelihood of obesity, type 2 diabetes, and heart disease and it promotes positive mental health (USDHHS, 2008). To decrease the risk of overweight and obesity, it is recommended that children engage in moderate to vigorous physical activity (MVPA) for at least 60 minutes each day (USDHHS, 2008) or at least 12,000 steps/day (Colley, Janssen, & Tremblay, 2012). PA peaks at about age 12 (Tudor-Locke et al., 2011) making the elementary school the ideal time to provide PA opportunity and training. Due to the accessibility of children, schools are an ideal setting for promoting PA (CDC, 2011). Most children are in school for 30-35 hours per week. However, the opportunity for children to be physically active during school has decreased due to many factors including an increase in vehicle transportation to school, environmental factors, school policy, and reducing time children spend in physical education (PE) and at recess (NASPE, 2006). The more access children have to physical activity the more active they will be at school (Brusseau & Kulinna, 2015).

Recently, the CDC (2013) and SHAPE America (NASPE, 2008) have suggested that one solution to the lack of childhood physical activity in Comprehensive School Physical Activity Programming (CSPAP). A CSPAP is a multi-component approach by which schools use all available opportunities for students to be physically active, meet the nation recommendation of 60 minutes of PA per day, and develop the knowledge, skills, and confidence to be physically active for a lifetime (CDC, 2013). CSPAP has five components (See Figure 1) including quality physical education, physical activity during the school day (e.g. recess and classroom PA), PA before and after school, staff involvement, and family and community engagement. There are two main goals of CSPAP: (1) to provide a variety of school-based physical activities to enable all students to participate in 60 minutes of moderate-to-vigorous PA each day and (2) to provide coordination among the CSPAP components to maximize understandings, application, and practice of the knowledge and skills learned in physical education so that all student will be fully physically educated and well-equipped for lifetime of PA (CDC, 2013; NASPE, 2008). Below is a detailed description of each component and strategies for implementation.

Quality Physical Education

Physical education is an academic subject that is the foundation for the CSPAP (CDC, 2013). Quality PE should be guided by national PE/PA standards, be student-centered and developmentally appropriate, have a core focus on physical activity and motor skill development, teach management skills and promote self-discipline, include all students, emphasize proper learning over outcome, promote lifetime personal wellness, and teach responsibility and cooperation and promote diversity (Darst, Pangrazi, Brusseau, & Erwin, 2015). The two major outcomes of physical education should be physical activity and health. Furthermore, children should be active at least 50% of class time (CDC, 2013).

Quality physical education provides the necessary skills and may encourage young people to be active adults (Darst et al., 2015).

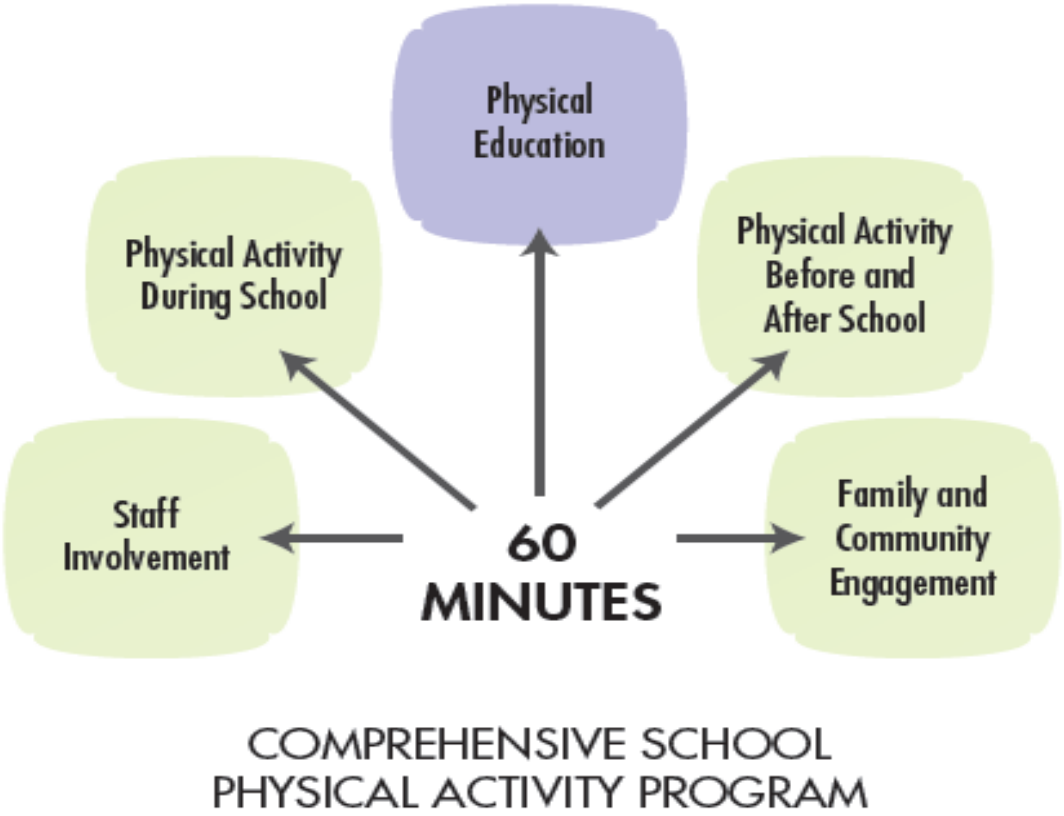

Figure 1. CSPAP (CDC, 2013)

At the elementary school level, all students should be required to take PE and have a minimum of 150 minutes per week. PE classes should be in line with the class sizes of other academic subjects, should be taught by a trained specialist and should have adequate equipment and facilities (CDC, 2013). Quality physical education should also include regular assessment and PA should not be used as punishment. Quality physical education has shown to contribute up to 25% of daily physical activity (Brusseau, Kulinna, Tudor-Locke, & Ferry, 2013) and youth are significantly more active on days that they have physical education class (Brusseau, Kulinna, Tudor-Locke, van der Mars, & Darst, 2011).

Physical Activity Before and After School

Before and after school programs provide opportunities to promote physical activity by providing structured and unstructured physical activity opportunities and teaching youth the skills needed for a lifetime of activity (Trost, Rosenkranz, & Dzewaltowski, 2008). The CDC (2011) and USDHHS (2012) suggest that before/after school programs have the ability to: 1) practice what they have learned in physical education, 2) work toward the nationally recommended 60 minutes of daily physical activity, 3) become more adequately prepared for learning, 4) engage in safe, social, and supervised activities, and 4) identify activities they enjoy and might engage in long term. Numerous scholars have identified the ability of before and after school programming to increase youth physical activity (i.e. Trost et al., 2008) and decrease overweight (Salcedo Aguilar et al., 2010).

The CDC (2013) in their CSPAP recommendations state that "before- and after-school physical activity programs offer students an opportunity to be physically active instead of waiting in a sedentary setting for the school day to begin or end. These programs may include a walking and biking to school program (i.e. walking school bus), clubs and intramural programs (i.e., programs that are developmentally appropriate and give an opportunity for all students to participate), informal free play on school grounds, and integrating physically active homework during out of school hours. Finally, before- and after-school physical activity programs can be coordinated with community-based organizations (e.g., YMCAs, community parks and recreation) and delivered in school settings (CDC, 2013).

Physical Activity during School

In addition to physical education, schools can offer physical activity in a variety of settings during the school day. The main ways students can participate in physical activity during the school day are recess, and physical activity integrated into lessons or classroom activity breaks. These opportunities can be offered to all grade levels. Schools can facilitate increased physical activity during the school day by encouraging students to be active; providing students with space, facilities, equipment and supplies that make participating in activity appealing; and providing organized times and structured physical activities for interested students (CDC, 2013).

Recess. Recess offers an excellent opportunity for children to engage in free play or semi-structured physical activity during the school day, and allows them to apply skills learned in PE. Recess should not, however, replace physical education or be used to meet time requirements set forth in PE policies (CDC, 2013). Recess has seen a reduction by more than 20% of school districts in order to allocate more time for English and Math (Lee, Burgeson, Fulton, & Spain, 2007) and this trend has continued over the past decade. Participation in recess is associated with academic benefits, such as improving attentiveness, concentration, behavior, and time on-task in the classroom (i.e. Pellegrini & Bjorklund, 2010) and also provides a unique contribution to a child's creative, social, and emotional development (Ramstetter, Murray, & Garner, 2010). Strategies for implementing recess in elementary schools include: providing age-appropriate equipment for students, having adult recess supervisors encourage students to be physically active, and providing semi-structured activity that involves activity stations (e.g., jump rope, four square, hopscotch stations) (CDC, 2013). Simple modifications including semi-structure and equipment has shown to significantly increase youth physical activity at recess (i.e. Larson, Brusseau, Chase, Heinneman, & Hannon, 2014) as has adding playground markings (Esaclante, Garcia-Hermoso, Backx, & Saaverda, 2014).

Physical Activity Integrated into Classroom Lessons. Integrating physical activity within classrooms as part of planned lessons that teach academic subjects through movement can increase students' overall physical activity and improve time-on-task and attentiveness (Mahar et al., 2006; Donnelly & Lambourne, 2011; Erwin, Beighle Morgan, & Noland, 2011; Goh et al., 2014). Physical activity can be integrated into academic subjects for all grade levels, not just elementary school grades. This type of physical activity helps establish an active school environment, and enhance students' learning experiences. Examples of evaluated programs or interventions that have shown improvements in students' physical activity levels include the North Carolina Energizers (www.eatsmartmovemorenc.com/Energizers/Elementary.html) and Take 10! (www.take10.net/). A specific example of a Take 10! lesson might include completing imaginary jump roping while counting using odd numbers on every jump or completing addition or subtraction problems based on the number of jumps a student might complete.

Physical Activity Breaks in the Classroom. Physical activity breaks in the academic classroom allow students to take a mental and physical break from current academic tasks. These breaks can occur at any time during the school day, last from 5–30 minutes, and occur all at one time or several times during the school day. Bershwinger and Brusseau (2013) found that 10 minute activity breaks can lead to an increase of 1000 steps/day. Chaddock, Hillman, Buck, and Cohen (2011) found that even a short break from focused concentration allows the brain to consolidate information for better retention and retrieval of memory.

Studies (CDC, 2010) have found that offering physical activity breaks during standard classroom instruction may have favorable associations with some indicators of cognitive functioning (e.g., attention/concentration); academic behaviors (e.g., classroom conduct); and/or academic achievement (e.g., test scores). Examples of physical activity breaks in the classroom include:

- Stretching or relaxation break.
- Walking around the classroom or hallway.
- Jumping with an invisible jump rope.
- Doing squats, push-up, or sit-ups.
- Passing a ball around the classroom

Staff Involvement

School employees play an integral role in a school's CSPAP (CDC, 2013). School employee wellness programs improve staff health, increase physical activity levels, and are cost effective (Osilla et al., 2012). When school staff commits to good health practices, they are positive role models for students, and may show increased support for student participation in physical activity (Cullen et al., 1999). Support for school employee wellness and leadership training contribute to the overall culture of physical activity at a school. Teachers and other school staff members can integrate physical activity into classroom academic instruction and breaks, and support recess, intramurals, and other physical activity offerings. A simple program to encourage faculty to actively engage in physical activity with their students or in their classrooms is the GIMME5 initiative where many schools will reward teachers for every week they implement five CSPAP components with their students they get entered into a lottery or have access to external rewards like free weekly membership at a local fitness center. Additionally, school employees can be positive role models for students by demonstrating active lifestyle choices in and out of school (CDC, 2013). It is also important to integrate staff wellness activates into a CSPAP program. These might include a staff wellness room, cooking classes, or community opportunities (i.e. gym passes) for faculty and staff.

Family and Community Engagement

Family and community engagement in school-based physical activity programs provides numerous benefits (CDC, 2012). Research shows that youth participation in physical activity is influenced by participation and support of parents and siblings (Lee et al., 2010). When families are active together, they spend additional time together and experience health benefits (Lee et al., 2010). Parents, guardians, or other family members can support a CSPAP by participating in evening or weekend special events, or by serving as physical education or physical activity volunteers. Physical activity homework from the classroom or physical education teacher might require the family to be active as part of the students at home assignments (Williams & Hannon, 2013). An example might include requiring the family to participate in a variety of activities at home and calculate their heart rates during each activity to determine which are light, moderate, or vigorous.

Community involvement allows maximum use of school and community resources and creates a connection between school and community-based physical activity opportunities. Community organizations might provide programs before or after school or establish joint-use or shared-use agreements with schools (CDC, 2013). Community events including walkathons or Zumba decathlons encourage everyone to be active and at the same time raising money for local charities.

The Importance of Coordination of the CSPAP

The CDC (2013) suggests that in order to maximize physical activity opportunities in schools they need to be coordinated, well planned, and thoughtfully executed and evaluated, thus creating a culture of physical activity that is integrated throughout the school environment and reaches beyond the school and into the community. A school that establishes student health as a priority will form a CSPAP team and develop a comprehensive physical activity plan that includes all of the components described in the preceding sections (CDC, 2013). A CSPAP reflects the social, emotional, and cultural needs of students, their families, and the broader community, thereby establishing a strong social and culturally supportive environment for students, families, and communities to engage in physical activity (CDC, 2013).

Strong support from school administration and staff involvement in the CSPAP are important to school program success. The physical educator is ideally positioned to address issues of physical inactivity during the school day, as they understands the school environment, parents, the community, correlates of physical activity, and unique characteristics and needs of the school culture (CDC, 2013). From this perspective, the physical education teacher is ideally situated to lead the development and implementation of the CSPAP, with strong support from other staff, volunteers, and teachers (Castelli & Beighle, 2007). In addition, classroom teachers and school staff play a vital role in promoting the health of their students by integrating physical activity opportunities throughout the school day (Pangrazi, Beighle, & Pangrazi, 2009) and serving as positive role models while supporting student participation in physical activity (NASPE, 2008). When coordinated approaches are implemented they have begun to illustrate positive impacts on children's physical activity (i.e. Burns, Brusseau, & Hannon, 2015; Kulinna, Brusseau, Cothran, & Tudor-Locke, 2012)

The following sections define and describe steps to develop, implement, and evaluate a CSPAP (CDC, 2013).

1. Establish a team or committee and designate a Physical Activity Leader.
2. Conduct an assessment of existing physical activity opportunities.
3. Create a vision statement, goals, and objectives for your CSPAP.
4. Identify the outcomes or specific changes that will be direct results of program implementation.
5. Identify and plan the activities for your CSPAP.
6. Implement your CSPAP.
7. Evaluate your CSPAP.

The CDC (2013) also recommends creative ways to schedule physical activity throughout the school day:

- Adding 5 more minutes to recess time.
- Integrating physical activity into academic lessons at least once per day.
- Adding physical activity clubs during times that students arrive early at school in the mornings, or depart late after school.

- Hosting a morning movement activity for each grade level in the school, prior to the start of the school day.
- Developing intramural sport programs and physical activity clubs.

Conclusion

CSPAP provide a school and community program geared to maximizing physical activity in children. Increases in physical activity are associated with improved academic performance and overall health. With a little planning and commitment from all school personnel, CSPAP has great potential to make improvements at very little cost.

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