

*Physical Education within a Comprehensive School
Physical Activity Program*

KENT A. LORENZ, PHD
San Francisco State University

Volume 6, Issue 2, pp. 38-49 (2018)

To cite this article: Lorenz, K. A. (2018). Physical education within a comprehensive school physical activity program. *Texas Education Review*, 6(2), 38-49. <http://hdl.handle.net/2152/68278>

Physical Education within a Comprehensive School Physical Activity Program

KENT A. LORENZ
San Francisco State University

Quality physical education is the central component to a Comprehensive School Physical Activity Program (CSPAP; CDC, 2013). This review begins with a summary of the benefits of physical activity (PA) participation for youth and outlines current PA recommendations and trends. Next, an introduction to the National Framework of Physical Education and PA for schools in the US, that leads into a discussion of what makes a quality physical education program in conjunction with a CSPAP. Some practical strategies for improving PA through modifications to management and instruction, activity design and selection, the infusion of fitness activities follow. Finally, an outline of how a Physical Educator can serve as a Physical Activity Leader and coordinate the implementation of a CSPAP and advocate for policies that support physical education and PA.

What was your favorite subject in school? For some, it was math or science, others, art or music. And for a select few, physical education ranked as their favorite subject in school (Ray, 2003). Physical education is designed to provide students the foundations for a lifetime of physical activity (PA) participation through effective instruction of the skills, fitness, behaviors, and knowledge needed to engage in a range of sport and recreational activities (Centers for Disease Control and Prevention [CDC], 2010). Physical activity, within or outside physical education classes, provides numerous physical and mental health benefits (CDC, 2013; Janssen & LeBlanc, 2010). Some of those benefits are related to improvements in physical fitness, defined as the ability to carry out tasks without limitation or fatigue, and includes measurable outcomes of aerobic capacity, muscular strength and endurance, flexibility, and body composition (Caspersen, Powell, & Christenson, 1985).

There is strong evidence that regular PA participation reduces the risk of coronary artery disease, hypertension (high blood pressure), diabetes, and unfavorable changes to body composition associated with excessive body fat. In addition to positive health outcomes, favorable changes to the strength and structure of the musculoskeletal system are associated with weight-bearing, or resistance-based PA. There are also profound effects on mental health, including significant reductions in feelings of anxiety and depression along with improvements in self-concept and self-efficacy (Janssen & LeBlanc, 2010). Finally, there is evidence that regular PA participation for youth, particularly during the school day, can lead to improvements in academic performance (CDC, 2013; Janssen & LeBlanc, 2010; Lorenz, Stylianou, Moore, & Kulinna, 2016) and on-task behavior during class (Stylianou et al., 2016).

A dose-response relationship exists between the amount and intensity of PA and the benefits accrued. Accordingly, the U.S. Department of Health and Human Services (USDHHS) recommends that all youth and adolescence accumulate a minimum of 60 minutes of moderate-to-vigorous physical activity (MVPA) per day (USDHHS, 2008) to achieve the benefits described above. Some health benefits may be derived from as little as 30 minutes of MVPA per day; however, more PA per day is generally associated with greater benefits (Janssen & LeBlanc, 2010). In the case of PA, more, really is better. Unfortunately, surveillance data indicates that as few as 9% of boys and 2% of girls will meet the minimum of 60 minutes of MVPA per day (Cooper et al., 2015).

Epidemiological data reports that on average, boys are more active than girls, PA participation declines as youth progress through their school years, and racial and ethnic disparities exist, with minorities reporting less PA than Caucasian reference groups (Cooper et al., 2015; Fakhouri et al., 2014; Katzmarzyk, Lee, Martin, & Blair, 2017). Walking is the most commonly

reported activity amongst high school students, along with running, resistance training and active video games. Boys also reported football as a popular choice, with girls adding dance and swimming to their list of favorites (Katzmarzyk et al., 2017). What is most concerning for school personnel is the estimated decline of 4.2% per year after starting Kindergarten in the proportion of youth meeting minimum PA recommendations. The decline may be influenced in part due to increases in sedentary behaviors associated with screen-time, or spending additional time sitting at school (Cooper et al., 2015). It is because of this trend, and that PA behaviors track into adulthood (Fakhouri et al., 2014), that schools need to actively promote PA and create opportunities for youth to be active during the school day (CDC, 2013; Cooper et al., 2015; Janssen & LeBlanc, 2010).

The purpose of this article is to outline how physical education fits within efforts to increase the opportunity for youth in schools to engage in PA that counter the decline in daily activity and increases in sedentary behaviors. An introduction to the National Framework of Physical Education and PA for schools in the United States leads into a discussion of what makes a quality physical education program in conjunction with a Comprehensive School Physical Activity Program (CSPAP; CDC, 2013). An outline of practical strategies for improving PA through modifications to management and instruction, activity design and selection, the infusion of fitness activities follow. Finally, suggestions are presented of how a Physical Educator can serve as a Physical Activity Leader and coordinate the implementation of a CSPAP and advocate for policies that support physical education and PA.

Comprehensive School Physical Activity Programs

To create a framework for the provision of PA in schools, the CDC endorses the application of Comprehensive School Physical Activity Programs (CSPAPs) to increase the access and opportunities for youth in schools to experience PA (CDC, 2013). This broad-spectrum approach outlines strategies to increase PA through quality physical education, before- and after-school opportunities, during school opportunities, staff involvement, and community engagement (CDC, 2013). The aims of CSPAPs are to create additional opportunities for students to reach, or surpass, the recommended 60 minutes of MVPA per day, along with allowing students more time to learn, practice and refine motor skills, physical fitness, and knowledge necessary to become a physically literate individual (Castelli, Centeio, Beighle, Carson, & Nicksic, 2014; CDC, 2013). The combination of structured (e.g., physical education or intramurals) or unstructured (e.g., recreational sports or fitness before school or at recess) activities allows students to develop a range of abilities that combine to create a physically literate person. These abilities contained within the definition of physical literacy include the understanding and skills needed to participate in a variety of sports or recreational activities, the development and maintenance of health-enhancing physical fitness, the capacity for self-regulation, being personally and socially responsible, and making informed health decisions (Castelli et al., 2014).

Different types of activities lend themselves to the development of different outcomes. For example, structured activities during physical education are more likely to teach and refine movement competence and tactical awareness that can be applied in other sport or PA contexts (CDC, 2013). Unstructured opportunities allow students to choose which activities they enjoy participating in during school, and can enhance problem solving skills, fair play, and creativity (Castelli et al., 2014; CDC, 2013). Both structured and unstructured activities are needed for the complete development of a physically literate individual; however, the remainder of this article will focus on structured activities within physical education and strategies to maximize PA within the CSPAP framework.

Quality Physical Education within a CSPAP

Quality physical education serves as the foundation of a CSPAP and provides key resources needed to create additional opportunities for PA (CDC, 2013; Russ, Webster, Beets, & Phillips, 2015). The knowledge and skill needed to participate in PA is often learned within physical education; adequate equipment and facilities to provide additional PA opportunities at school are generally part of the physical education budget, as well. Moreover, the physical education teacher is often the primary resource for PA programming and events (e.g., intramurals, recess, before-school programs) within the school (Hunt & Metzler, 2017) and quality physical education is a requirement for the successful implementation of a CSPAP (CDC, 2013).

Elements of a quality physical education program include adequate opportunities to learn, appropriate instruction of developmentally appropriate activities that strive to have a minimum of 50% of class time spent in MVPA, meaningful content that introduces and develops a range of skills, knowledge and behaviors, and regular student and program assessments (CDC, 2013). There are two major concepts contained within the term, physical education: physical and education. The physical domain refers to engaging students in MVPA that allows for adequate practice time and the possibility of improving physical fitness. The education domain includes effective management, instruction and curriculum that provides all students the opportunity to learn new skills and apply them across sports, dance, and leisure activities. Quality physical education must contain both domains and doing one without the other does a disservice to our students (Blakenship, 2013). In the context of increasing PA within the framework of CSPAPs, strategies to maximize PA during physical education classes must be considered.

Moderate-to-Vigorous Physical Activity During Physical Education

All physical activity is good; however, PA performed at a moderate-to-vigorous (MVPA) intensity conveys additional health benefits. Creating opportunities for students to engage in MVPA during physical education and throughout the school day is a major outcome of a CSPAP. A review of interventions to increase PA within physical education by Lonsdale and colleagues (2013) reported two major strategies that produced significant increases in time spent in MVPA during class time: Teaching strategies and including specific fitness development activities. Teaching strategies, including enhanced management and instruction, and the selection of more active tasks, produced a weighted mean increase of 14% in time spent in MVPA across intervention groups compared to control groups. In addition, fitness inclusion amongst intervention groups produced a weighted mean increase of 61% in MVPA compared to control groups. From these data, the inclusion of specific fitness development activities during physical education is more effective; however, both approaches are important and should be considered.

Teaching strategies that were mentioned within the review included enhanced management and instructional skills to reduce sedentary time during class, and the selection of more active games or tasks (Lonsdale et al., 2013). Refining management during a physical education class can increase time spent in MVPA and reduce time spent where the students are standing still (McKenzie, Sallis, & Nader, 1992). If students are not moving and engaging, there is a good chance they are not learning. Some areas where teachers can improve their management skills are establishing and reinforcing stop-start routines, introducing specific procedures for retrieving and returning equipment, creating efficient grouping routines, and continually promoting and reinforcing positive behaviors during class (Beighle & Erwin, 2013).

Establishing a routine to stop and restart students during a lesson can reduce wasted time waiting for students to pay attention and listen to what is happening next. It is recommended the

teacher create a routine early in the year and consistently use that routine throughout the lesson and across the year (Pangrazi & Beighle, 2014). This signal could be a whistle, “freeze” command, a clap or drum, stopping the music, or another phrase “1, 2, eyes on me,” and this serves to signal the class they are to stop their activity and position themselves where they can see and hear the teacher (Pangrazi & Beighle, 2014). In addition, it is important to stop and scan the area to ensure all students have stopped what they were doing, are looking at the teacher and are not talking to their peers within three seconds (Beighle & Erwin, 2013) as not to waste activity time (McKenzie et al., 1992), and to establish positive behaviors in response to teacher directions (Pangrazi & Beighle, 2014).

Related to stop-start signals is the management of equipment during class time. This can be an area of difficulty, especially with large classes, as inefficient equipment procedures can take inordinate amounts of time and may lead to behavioral problems between students (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). To make retrieving equipment more efficient, have all the necessary equipment out and available before the start of class, and spread individual pieces of equipment (e.g., bean bags, hoops, soccer balls, flags) around the perimeter of your teaching space, as not to create congestion and conflict as student’s wrestle for their favorite piece (Beighle & Erwin, 2013). In addition to establishing routines for retrieving, and subsequently putting equipment away, it is important to create a procedure for what students are to do during management or instructional times (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). One way to facilitate this is to have all students place the equipment on the ground and step away from it so they are not tempted to play with it while you are trying to outline the next activity. Teachers know the difficulty of trying to speak over the cacophony of bouncing basketballs, so having everyone place the equipment on the floor and leaving it there until asked to do something can reduce time wasted in repeatedly explaining instructions (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014).

Another area of classroom management that can lead to inefficient transitions is organizing students into groups. Having students form lines and counting them off is a tremendous waste of time, and having students pick their own groups can lead to disagreements and a disruptive classroom environment (Pangrazi & Beighle, 2014). Introducing a simple grouping procedure of finding the closest people and standing toe-to-to, back-to-back, or sitting down in whatever sized group the upcoming activity requires minimizes potential problems associated with grouping (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). The teacher would first stop their class using their stop signal and wait for all students to stop, look, and listen. Then, they would call for the number of people they wanted in each group, and they would move to the closest people next to them to create their groups. From there, the PE teacher could instruct them to begin the activity or provide them with another layer of instructions to retrieve equipment or to introduce the activity (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). For secondary schools, the use of squads or teams can be an effective routine that reduces the number of times the teacher has to stop the class and spend time forming groups. One example of this may include having each team create a designated procedure they are to follow upon arriving, and each student is familiar with this routine to shift the responsibility to organizing groups to the students (Siedentop, Hastie, & van der Mars, 2011).

Creating an environment where students feel comfortable managing themselves not only allows for more PA opportunities, but it also allows for positive social and emotional development. By encouraging more of what you would like to see, rather than punishing what you do not, shifts the focus of the teacher away from constant management to being able to engage and prompt increased PA and skill practice (Beighle & Erwin, 2013). Establishing classroom rules and outlining consequences for not following the rules enables the teacher to quickly deal with inappropriate behaviors without detracting from the overall flow of the current lesson (Beighle & Erwin, 2013).

Class rules, such as respect and effort at all times, no talking when the teacher is talking, or dress-out requirements, provides a structure that every student is familiar with and is expected to follow, and simplifies the process of enacting consequences (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). Knowing the first offense warrants a student to be in a short time out, or a deduction of one class point, minimizes confrontation and shifts the attention of the teacher back to the full class quickly and with minimal loss of activity time (Beighle & Erwin, 2013). First offense warrants also (hopefully) reset the student so they can return to the class more engaged to the task at hand.

The final piece of pedagogical advice from Beighle and Erwin (2013) to increase PA during physical education was to minimize the time spent giving instructions. While instructing less may seem antithetical for a teacher, excessive instructions to a group serve only to confuse and delay, not to inform and engage. Instructions should be kept short (less than 30 seconds), concise, and specific and provide enough information for the class to know what they are to do and when to begin (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). Once the PE teacher gets the group started, they can circulate the space and provide additional information to students that are unsure or off-task to engage them and increase PA (Fairclough, & Stratton, 2005a). Using this approach, the teacher can layer instructions between practice to work towards more complicated tasks while reducing the time students are sitting or standing, listening to lengthy descriptions (Beighle & Erwin, 2013; Pangrazi & Beighle, 2014). Improving pedagogical skills can lead to improvements in MVPA within a lesson (Beighle & Erwin, 2013; Fairclough, & Strattona, 2005a; Lonsdale et al., 2013), which can have significant impact on overall PA across the school day.

Activity Selection within Physical Education

In conjunction with improved pedagogy, making curriculum decisions to increase PA can also be effective. Two options that increase PA will be discussed here: selecting activities that provide more PA, such as small-sided games (SSG) (Young, Phillips, Yu, Haythornthwaite, 2006), and the inclusion of specific tasks designed to improve physical fitness (Lonsdale et al., 2013).

Before continuing this section, let us revisit the caveat introduced earlier. Physical education is a combination of both skill development and PA; each domain complements each other and shifting the emphasis completely to one at the peril of the other is not the marker of a quality physical education program (Blankenship, 2013; CDC, 2010; CDC, 2013).

When designing games or activities, teachers should consider ways to maximize opportunities to respond (OTR; chances for students to attempt a task) and MVPA (Silverman, 1985). Some ideas are to minimize wait times between repetitions, provide lots of equipment, use effective management and instruction, and include more active games when possible (Beighle & Erwin, 2013; Fairclough & Stratton, 2005b). Certain activities are inherently more active (e.g., soccer versus softball), and while it is important to introduce a range of activities, one must be mindful of the PA levels of the curriculum. Fitness activities and invasion games (e.g., basketball, hockey, football, soccer) are more active than net-court games (e.g., volleyball, tennis, racquetball) or target games (e.g., golf, softball; Fairclough & Stratton, 2005b). When teaching a less-active sport or game, consider adding specific fitness sessions before, or during the skill practice to increase the overall PA levels of the lesson (Fairclough & Stratton, 2005b).

In addition to including specific fitness sessions within a lesson, another strategy to increase overall PA within a lesson is to use small-sided games (SSG). Small-sided games (with fewer players per team than traditionally used) have been shown to increase opportunities to respond (OTR) and MVPA (Aquiari, Botelho, Goncalves, & Sampaio, 2013). Imagine the difference in PA required when there are only four or five players per team compared to 10 or 11. During studies that monitored PA levels and heart rate (HR) responses to SSGs, smaller games had higher PA and HR compared to

larger games (Aquiari et al., 2013). Soccer games with two or three players per team yielded greater HRs and time in MVPA compared to games with four or five players per team (Aquiari et al., 2013). Larger games provide different tactical and skill challenges and better represent the “true” form of the parent sport (i.e., the way the game or sport is played in formal competition compared to a modified or small-sided version; Launder, 2001) and can provide a reasonable amount of PA (Aquiari et al., 2013). If larger games are used, having adequate space is needed, with estimates of one player for every 75 m² (~800 ft²) of playing space (Dellal, Hill-Haas, Lago-Penas, & Chamari, 2011). These data suggest for a 3v3 (three players per team) soccer game, you would need a space of 450 m² (4,800 ft² or 1,600 yds²) to produce optimal HR and PA outcomes. This study was done with high-level amateur and professional players, so less-skilled players would likely need less space to adequately develop skills and tactical abilities. Lower-skilled players may also have lower levels of fitness, reducing the total distance they could cover during a SSG; rendering the need for a larger field. However, this study does provide evidence that activity space and player density influences PA levels. If the goal is to encourage PA and develop more skills and fitness, more space per player is required (Dellal et al., 2011).

Small-sided games allow for students to develop game skills and tactical awareness while participating in more PA than traditional, large games or more sedentary variations. It is important to provide students’ options for skill and/or competition levels, as not all students will respond the same way to each game or activity (Bernstein, Phillips, & Silverman, 2011; Fairclough & Stratton, 2005b). Lower skilled students tend to experience less PA during games, so having different games for different skill/competition levels can increase overall PA across all participants. Many students report overly competitive games as a detraction from participating within physical education and get tired of a few players dominating the games. Allowing higher skilled players to compete at their own level and having a separate game for those still learning the nuances of the game, can increase enjoyment, engagement, and PA for all students (Bernstein et al., 2011).

Fitness Development Within Physical Education

Fitness training is an opportunity for students to work at their individual capacity to improve measures of aerobic and/or musculoskeletal health. To develop fitness, PA must reach the moderate intensity – usually defined as greater than 3 METS (METS = metabolic equivalents and is defined as multiples of average energy expenditure at rest; 1 MET = 3.5 ml/kg/min of oxygen consumed), and some evidence suggests that vigorous intensity (greater than 6 METS) (Ainsworth et al., 2011) is required (Armstrong & Barker, 2011). In the context of physical education, fitness activities that develop aerobic fitness (Lonsdale et al., 2013; Sallis et al., 1997) and musculoskeletal fitness (Faigenbaum, Lloyd, & Myer, 2013) are always recommended and are a part of national standards for physical education (CDC, 2010; SHAPE America, 2013).

Effect sizes from a review and meta-analysis of interventions in physical education indicated that including fitness-specific activities produced large increases in MVPA during class (Lonsdale et al., 2013). Teachers can include specific fitness activities during their lessons that are intended to develop aerobic or muscular fitness, and then spend the remaining time developing skills (Pangrazi & Beighle, 2014; Sallis et al., 1997). Often, the fitness portion would begin the lesson – flowing smoothly from the warm up and introduction, into the actual lesson portion of the class. These activities could include aerobic games, fitness circuits, dance, or strength and conditioning activities (Faigenbaum et al., 2013; Pangrazi & Beighle, 2014; Sallis et al., 1997). An alternative approach is to incorporate fitness breaks or circuits during skill development activities. This could be done by making fitness activities the transition from skill development to game play or by limiting skill time to include fitness at the end of the lesson (Lonsdale et al., 2013).

However, as the teacher decides to incorporate fitness into the lesson, it is important they make efforts to include fitness in every lesson. Fitness, particularly levels of fitness that improve health outcomes, requires a specific dose of intensity and duration (Armstrong & Barker, 2011; Blair Cheng, & Holder, 2001). This is a common reason why many students do not see changes in fitness test scores over the course of a year; the dose of PA was too low to elicit adaptations in aerobic or muscular fitness. If performed in short, yet high-intensity bouts (>6 METS or $>85\%$ HR_{max}), students can improve aerobic fitness during physical education (Armstrong & Barker, 2011). This intensity level provides further credence to including specific fitness activities in every lesson; otherwise the usual intensities seen in physical education are unlikely to lead to fitness or health changes. While you can see improvements in fitness with SSGs, this may be more targeted to high skilled and motivated students, and those with lower levels may not experience the same benefits (Fairclough & Stratton, 2005b).

High-intensity activities, such as tag games, fitness circuits, or strength and conditioning activities (e.g., interval running, plyometrics, resistance training) can increase aerobic and muscular fitness, and teachers should examine how they could incorporate these tasks into every lesson. Examples for elementary students might be a series of non-elimination tag games (where if you are tagged, you are not permanently removed from the game; see Pangrazi & Beighle, 2014) and a fitness circuit that includes movements designed to enhance different domains of muscular fitness, such as strength, endurance, and flexibility (Faigenbaum et al., 2013; Pangrazi & Beighle, 2014) to start the lesson before moving to the skill theme of the day. For secondary students, a similar approach could be done with a slight modification to interval running instead of the tag games before the fitness circuit. In this way, both elements of fitness are developed, and students learn that fitness should be a part of their daily routine, as part of developing overall physical literacy.

Something to note is that fitness itself is a skill. Physical education often limits skills to sport or movements related to a particular activity; however, learning the proper technique for a pushup or squat is just as valuable as learning how to throw, kick, or catch. Adopting the mentality that fitness is a skill shifts the attention of the teacher and the student, so that correct technique and consistent application of the movement is more important than the outcome. Teachers can make adjustments and modifications to equipment and activities to help students learn at a developmentally appropriate level, and we assess their progress based upon particular standards and objectives (Pangrazi & Beighle, 2014); therefore, allowing a student to continue to demonstrate sloppy form during a pushup or curl-up because it is “just fitness,” is in direct opposition to the primary outcomes of physical education. Failure to develop fitness and the skill competence related to fitness activities can have long-term negative impacts on the health and PA participation of our students (Blair et al., 2001; Faigenbaum et al., 2013). While teachers are not trying to turn every student into an elite fitness performer, including fitness into every lesson is consistent with quality physical education and is an effective way to integrate more PA into the school day and should be a major emphasis for physical education teachers (CDC, 2013; Lonsdale et al., 2013).

Physical Education Teachers as Physical Activity Leaders

Quality physical education is the cornerstone of a CSPAP and the physical education teacher is in a prime position to serve as the Physical Activity Leader for their school (CDC, 2013). In this capacity, the physical educator can coordinate and advocate for additional PA opportunities, both during class to their students, and within the school to other teachers, administrators, and parents (Corbin, 2002). A CSPAP is a multi-level intervention strategy, and the program will not be successful without a team of people working together. However, there must be a catalyst. As the expert in PA at the school, the physical education teacher can serve as the spark that begins the

process and continues the momentum once things have begun and more people are on board (CDC, 2013; Hunt & Metzler, 2017).

The physical education teacher can train classroom teachers to lead PA breaks (short breaks from regular classroom activities, or transitions to new topics, where students can get up and move) during school (CDC, 2013), or to survey the school for common areas that could be used to display materials prompting PA participation (Lorenz, van der Mars, Kulinna, Ainsworth & Hovell, 2017). A review of interventions that have included efforts to improve the quality of physical education, and at least one other component from the CSPAP framework, have been shown to significantly increase the total amount of MVPA accumulated during the school day. One of the main takeaways from this review was that physical education was always included as a core part of the intervention, with other components added to supplement what was happening within physical education. In this way, a CSPAP can be thought of as a physical education-plus (PE+) approach to PA promotion in schools (CDC, 2013; Hunt & Metzler, 2017).

Although there is evidence to support the effectiveness of CSPAPs on increasing PA participation for youth in school, this is in no way an endorsement that we should eliminate physical education and just have more recreational PA opportunities. In reality, teachers should be advocating for more physical education, as recent estimates suggest mandatory daily physical education can lead to an average increase of 23 minutes of MVPA per day (Bassett et al., 2013). Other policy analyses reveal that physical education, and by extension CSPAP, is an untapped resource for increasing PA and serving as a public health program with many physical and mental health benefits (Kahan & McKenzie, 2017). By making improvements to the quality of physical education content and by promoting and advocating for additional PA opportunities for youth in schools, we are on the way to significantly improving the health and well-being of all students.

Take Home Message and Practical Implications

Comprehensive school physical activity programs aim to increase the access and opportunity for every student in every school to engage in more PA during the day (CDC, 2013). This process begins with quality physical education and expands to promote PA throughout the school day (PE+). Some recommendations (e.g., Beighle & Erwin, 2013; CDC; 2013; Fairclough & Stratton, 2005b; Lonsdale et al., 2013) for physical education teachers to increase the amount of PA available to their students are:

- Establish and reinforce start-stop signals to quickly get the attention of the class
- Create procedures to efficiently set up and retrieve equipment
- Create student-centered grouping routines using toe-to-toe with adjacent people as quickly as possible, or by using established teams or squads
- Provide positive behavioral support to nurture social and emotional health and encourage more participation
- Quick, concise, and specific instructions lasting less than 30 seconds that are layered to develop into more complicated tasks
- Select or design activities that foster PA by reducing wait times, having lots of equipment and space, provide options for skill and competition levels, and increase the number of total games by reducing the number of players per game
- Include daily moderate-to-vigorous intensity fitness tasks
- Serve as a Physical Activity Leader to coordinate and promote additional PA opportunities across the school

- Advocate for policies that improve and enforce quality physical education and PA

A teacher that is able to develop a quality physical education program and coordinate other aspects of a CSPAP will be able to create a culture of PA that can positively influence everyone in their school and the surrounding community (CDC, 2013). This will enable students, faculty/staff, families, and community members the opportunity to participate in activities that improve their physical and mental health, along with developing skills needed to participate in lifelong physical activity.

KENT A. LORENZ, PHD, is an assistant professor in physical education and physical activity in the Department of Kinesiology at San Francisco State University. Dr. Lorenz also specializes in Statistics. His lab conducts research on physical activity in the school setting. He also created an observational instrument that assesses the environment as it relates to physical activity in the school setting – System for Observing Behavioral Ecology of Youth in Schools (SOBEYS). Dr. Lorenz graduated from Arizona State University with his PhD in Physical Education. He also obtained a graduate certificate in Statistics. His other research interests include strength and conditioning and measurement of physical and muscular changes following resistance training.

References

- Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., Meckes, N., Bassett Jr, D. R., Tudor-Locke, C., ... & Leon, A. S. (2011). 2011 Compendium of physical activities: A second update of codes and MET values. *Medicine and Science in Sports and Exercise*, *43*(8), 1575-1581.
- Armstrong, N. & Barker, A. R. (2011). Endurance training and elite young athletes. *Medicine and Sport Science*, *56*, 59-83.
- Bassett, D. R., Fitzhugh, E. C., Heath, G. W., Erwin, P. C., Frederick, G. M., Wolff, D. L., ... & Stout, A. B. (2013). Estimated energy expenditures for school-based policies and active living. *American Journal of Preventive Medicine*, *44*(2), 108-113.
- Beighle, A., & Erwin, H. E. (2013). FRIG'N physical education: Management strategies to maximize physical activity. *Journal of Physical Education, Recreation & Dance*, *84*(1), 16-17.
- Bernstein, E., Phillips, S. R., & Silverman, S. (2011). Attitudes and perceptions of middle school students toward competitive activities in physical education. *Journal of Teaching in Physical Education*, *30*(1), 69-83.
- Blair, S. N., Cheng, Y., & Holder, J. S. (2001). Is physical activity or physical fitness more important in defining health benefits? *Medicine & Science in Sports & Exercise*, *33*(6), S379-S399.
- Blankenship, B. (2013). Knowledge/skills and physical activity: Two different coins, or two sides of the same coin? *Journal of Physical Education, Recreation and Dance*, *84*(6), 5-6.
- Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports*, *100*(2), 126-131.
- Castelli, D. M., Centeio, E. E., Beighle, A. E., Carson, R. L., & Nicksic, H. M. (2014). Physical literacy and comprehensive school physical activity programs. *Preventive Medicine*, *66*, 95-100.
- Centers of Disease Control and Prevention [CDC] (2010). *Strategies to improve the quality of physical education*. Atlanta, GA: U. S. Department of Health and Human Services
- Centers for Disease Control and Prevention [CDC] (2013). *Comprehensive school physical activity Programs: A guide for schools*. Atlanta, GA: U. S. Department of Health and Human Services.
- Cooper, A. R., Goodman, A., Page, A. S., Sherar, L. B., Esliger, D. W., van Sluijs, E. M., ... & Froberg, K. (2015). Objectively measured physical activity and sedentary time in youth: The International children's accelerometry database (ICAD). *International Journal of Behavioral Nutrition and Physical Activity*, *12*(1), 113.
- Corbin, C. B. (2002). Physical activity for everyone: What every physical educator should know about promoting lifelong physical activity. *Journal of Teaching in Physical Education*, *21*(2), 128-144.
- Dellal, A., Hill-Haas, S., Lago-Penas, C., & Chamari, K. (2011). Small-sided games in soccer: Amateur vs. professional players' physiological responses, physical, and technical activities. *The Journal of Strength & Conditioning Research*, *25*(9), 2371-2381.
- Fairclough, S. & Stratton, G. (2005a). Improving health-enhancing physical activity in girls' physical education. *Health Education Research*, *20*(4), 448-457,
- Fairclough, S., & Stratton, G. (2005b). Physical activity levels in middle and high school physical education: A review. *Pediatric Exercise Science*, *17*(3), 217-236.
- Faigenbaum, A. D., Lloyd, R. S., & Myer, G. D. (2013). Youth resistance training: Past practices, new perspectives, and future directions. *Pediatric Exercise Science*, *25*(4), 591-604.
- Fakhouri, T. H., Hughes, J. P., Burt, V. L., Song, M., Fulton, J. E., & Ogden, C. L. (2014). Physical activity in U. S. youth aged 12-15 years, 2012. *NCHS Data Brief*, *141*, 1-8.
- Hunt, K., & Metzler, M. (2017). Adoption of comprehensive school physical activity programs: A literature review. *The Physical Educator*, *74*, 315-340.

- Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity*, 7(1), 40-56.
- Kahan, D., & McKenzie, T. L. (2017). Energy expenditure estimates during school physical education: Potential vs. reality? *Preventive Medicine*, 95, 82-88.
- Katzmarzyk, P. T., Lee, I. M., Martin, C. K., & Blair, S. N. (2017). Epidemiology of physical activity and exercise training in the United States. *Progress in Cardiovascular Diseases*, 60, 3-10.
- Lonsdale, C., Rosenkranz, R. R., Peralta, L. R., Bennie, A., Fahey, P., & Lubans, D. R. (2013). A systematic review and meta-analysis of interventions designed to increase moderate-to-vigorous physical activity in school physical education lessons. *Preventive Medicine*, 56(2), 152-161.
- Lorenz, K. A., Stylianou, M., Moore, S., & Kulinna, P. H. (2016). Does fitness make the grade? The relationship between elementary students' physical fitness and grades. *Health Education Journal*, 76(3), 302-312.
- Lorenz, K. A., van der Mars, H., Kulinna, P. H., Ainsworth, B. E., & Hovell, M. F. (2017). Developing the System for Observing Behavioral Ecology for Youth in Schools (SOBEYS) instrument. *Journal of School Health*, 87(12), 894-901.
- McKenzie, T. L., Sallis, J. F., & Nader, P. R. (1992). SOFIT: System for observing fitness instruction time. *Journal of Teaching in Physical Education*, 11(2), 195-205.
- Pangrazi, R.P., & Beighle, A. (2014). *Dynamic physical education for elementary school children*, (18th ed.). Pearson, New York: New York.
- United States Department of Health and Human Services [USDHHS] (2008). *Physical activity guidelines for Americans*. Washington, DC: US Department of Health and Human Services.
- Ray, J. (April 22, 2003). *A Report Card on Teens' Favorite Subjects*. Gallup News. Retrieved from: <http://news.gallup.com/poll/8248/report-card-teens-favorite-subjects.aspx>.
- Russ, L. B., Webster, C. A., Beets, M. W., & Phillips, D. S. (2015). Systematic review and meta-analysis of multi-component interventions through schools to increase physical activity. *Journal of Physical Activity and Health*, 12(10), 1436-1446.
- Sallis, J. F., McKenzie, T. L., Alcaraz, J. E., Kolody, B., Faucette, N., & Hovell, M. F. (1997). The effects of a 2-year physical education program (SPARK) on physical activity and fitness in elementary school students. *Sports, Play and Active Recreation for Kids. American Journal of Public Health*, 87(8), 1328-1334.
- SHAPE America. (2013). *Grade-level outcomes for K-12 physical education*. Reston, VA: Author.
- Siedentop, D., Hastie, P. A., & Van der Mars, H. (2011). *Complete guide to sport education* (2nd ed.). Human Kinetics, Champaign: Illinois.
- Silverman, S. (1985). Relationship of engagement and practice trials to student achievement. *Journal of Teaching in Physical Education*, 5(1), 13-21.
- Stylianou, M., Kulinna, P. H., van der Mars, H., Mahar, M. T., Adams, M. A., & Amazeen, E. (2016). Before-school running/walking club: Effects on student on-task behavior. *Preventive Medicine Reports*, 3, 196-202.
- Young, D. R., Phillips, J. A., Yu, T., & Haythornthwaite, J. A. (2006). Effects of a life skills intervention for increasing physical activity in adolescent girls. *Archives of Pediatrics & Adolescent Medicine*, 160(12), 1255-1261.