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Physical Education's Role in Public Health: Steps Forward and Backward Over 20 Years and HOPE for the Future

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The 1991 paper, "Physical Education's Role in Public Health" described the importance of physical education in addressing public health problems. On its 20th anniversary, this article reviews accomplishments in improving the health impact of physical education and identifies areas lacking progress. Major accomplishments include development of evidence-based programs, documentation of health and academic benefits of physical education, and acceptance of physical education as a public health resource. Additional work is needed to evaluate the uptake of evidence-based programs, improve national surveillance of physical education quantity and quality, establish stronger policies supporting active physical education, and achieve wide acceptance of public health goals within the physical education field. These opportunities constitute an agenda for actualizing the promise of Health-Optimizing Physical Education before the next 20-year anniversary.

Key words: childhood obesity, health promotion, physical activity, policy

In 1991, Sallis and McKenzie (1991) published, "Physical Education's Role in Public Health" in *Research Quarterly for Exercise and Sport*, with the goal of forging a productive relationship between the physical education and public health fields. At that time, public health interest in physical activity was increasing rapidly due to the steady stream of research on the numerous and substantial health effects, but there had been limited recognition of physical education's potential contribution as a mechanism to increase physical activity and improve overall health. Physical education, a school curricular subject over the past 100 years, has a number of goals, including providing students with the knowledge, skills, abilities, and confidence to be physically active throughout their lifetime. Although the multiple goals of physical education were being discussed 20 years ago, calls to maximize the public health impact of physical education were not prominent.

Subsequently, the Sallis and McKenzie (1991) paper has become one of the most cited in the history of *Research Quarterly for Exercise and Sport*, with 115 citations by 2005 (Cardinal & Thomas 2005) and 427 citations according to Google Scholar (2012) by May 2012. This paper has played an important role in defining the public health importance of physical education. On the 20th anniversary of the paper's publication, it is fitting to consider the progress both physical education and public health have made toward the goals proposed in it. The purpose of the present paper is to reflect on the rationale and goals

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of the 1991 paper and to highlight related developments in evidence, practice, and policy that are consistent or inconsistent with optimizing the public health impact of physical education.

Goals Outlined in 1991

The 1991 paper provided a health-related rationale for physical education by summarizing evidence on the prevalence and health effects of physical activity in youth, although the data were limited at the time. Nevertheless, a rationale was proposed for altering the goals of physical education from multiple cognitive, social, and physical skill objectives (Pate & Hohn, 1994) to become more focused and aligned with public health needs. The paper challenged physical educators to "adopt a new role and pursue a public health goal for school physical education" (p. 133). Although everyone is in favor of "quality physical education," the definition depends on one's perspective. Consistent with the health orientation described in 1991, providing physical activity during physical education is the major indicator of physical education quality, because doing physical activity has so many well documented health benefits. To be explicit, health-related physical education is not *just* about providing students with physically active classes. A comprehensive but physically active approach involves teaching social, cognitive, and physical skills, and achieving other goals through movement. This approach is true to the historical origins of physical education as "educating through the physical." As long as additional goals are achieved while students are active, students gain health benefits. Defining physical education "quality" is a continuing debate, but our recommendation—from 1991 to the present—is that any definition should prioritize highly active classes.

Two main goals of "health-related physical education" (as coined in 1991) were to (a) prepare youth for a lifetime of physical activity, and (b) provide them with physical activity during physical education classes. The former goal represented the optimistic scenario for long-term benefit in which children exposed to high quality, health-enhancing physical education would be prepared to continue an active lifestyle as they enter adulthood. This goal, although important and health-related, is difficult to evaluate and has limited evidence to support its validity (Trudeau, Laurencelle, Tremblay, Rajic, & Shephard, 1999). However, it has been adopted widely within the profession and is included in the National Association for Sport and Physical Education (NASPE, 2004) physical education standards. The second goal represented an immediate, tangible outcome from participating in physical education. The health rationale for emphasizing high levels of moderate-to-vigorous physical activity (MVPA) during classes is that (a) physical education is the only required program that theoretically provides MVPA to virtually all students, and (b) immediate health benefits accrue when MVPA is provided. The second goal has been operationalized as students spending 50% of physical education time being physically active (U.S. Public Health Service, 1991). Progress toward wide achievement of this benchmark has been slow. We believe the goals proposed in 1991 remain valid; however, we now believe emphasis should be placed on ensuring students are active in physical education class, because we have good evidence it is possible to achieve and beneficial to students. It remains a research challenge to demonstrate which physical education approaches are effective in increasing regular physical activity into adulthood.

Now, after 20 years of progress in some areas but not others, the context for physical education and key questions about how to advance physical education and public health are much different from those in 1991. The present paper identifies these questions and discusses important progress made as well as areas of stagnation in health-related physical education. Because physical education remains the primary societal institution for promoting physical activity among youth (Payne & Morrow, 2009), and improvements can help respond to some of the new century's most pressing health problems, it is worthwhile to take stock of successes and make recommendations for accelerating progress. To this end, we present two perspectives by taking liberty with an often-posed philosophical question and asking, "Is the gym half empty or half full?"

The Gym Is Half Full: Progress During the Past 20 Years

The context and perceived need for physical education have changed dramatically. In 1991, the childhood obesity epidemic was underway, but it was not nationally or globally recognized. Recently, obesity was identified as the biggest health threat to U.S. children (Koplan, Liverman, & Kraak, 2005). Additional physical health, mental health, social health, and academic benefits of physical activity during youth have been further documented, resulting in the first official U.S. government guidelines (U.S. Department of Health and Human Services [USDHHS], 2008). One of the most positive developments of the past 20 years has been a transformation in the nature and quality of evidence about physical activity in physical education and multiple outcomes of health-related physical education. Based largely on major studies funded by the National Institutes of Health, systematic reviews by the Task Force on Community Preventive Services concluded that "enhanced" physical education is an evidence-based physical activity promotion approach

(Kahn et al., 2002), defined as having more active classes or more time in physical education than comparison or control conditions.

Support for Physical Education Outside the Profession

Prior to Sallis and McKenzie's 1991 article, recommendations for MVPA in physical education were rare, appearing perhaps first in Healthy People health promotion and disease prevention objectives (U.S. Public Health Service, 1991). Since then, numerous public health groups have called for schools to be more proactive in promoting physically active lifestyles to contribute to prevention and control of obesity, diabetes, and heart disease risk. Common goals are to increase the number of school districts that require daily physical education for all students and ensure high activity levels during physical education classes. Recommendations and guidelines have been issued by the American Heart Association (Pate et al., 2006), Centers for Disease Control and Prevention (CDC, 1997, 2010b), Partnership for Prevention (2008), Institute of Medicine (Koplan et al., 2005), American Academy of Pediatrics (2006), and USDHHS (2000, 2008). The potential for physical education to contribute to chronic disease prevention is illustrated by findings that it can provide up to 18% of a child's recommended daily physical activity (Morgan, Beighle, & Pangrazi, 2007). Although Healthy People (USDHHS, 1991) recommended that students be active at least 50% of each physical education lesson in 1991, this did not immediately translate into practice (NASPE did not adopt a similar recommendation until about 2005; NASPE, 2009).

Evidence-Based Physical Education Programs

In the past two decades, evidence-based physical education curricula and programs designed to achieve multiple goals (e.g., student-acquired fitness, knowledge, motor skills) while ensuring student activity has been developed and rigorously evaluated in elementary, middle, and high school settings. Sports, Play and Active Recreation for Kids (SPARK), a health-optimizing physical education curriculum and staff-development program, showed significant increases in MVPA and energy expenditure during elementary school physical education (Sallis et al., 1997). Improvements in fitness, sports skills, academic achievement, and teaching quality were also documented (McKenzie, Sallis, & Rosengard, 2009). The Child and Adolescent Trial for Cardiovascular Health (CATCH) is a comprehensive elementary school physical activity and nutrition program evaluated in a major multisite study. The physical education component focused on children's enjoyment of and participation in MVPA during physical education classes. Results indicated that MVPA during CATCH increased by 39% and surpassed the 50% MVPA guideline, compared to a 23% increase for the controls (McKenzie et al., 1996). Middle School Physical Activity and Nutrition (M-SPAN) intervention focused on increasing teacher awareness of the need for active, health-related physical education; designing and implementing active physical education curricula; and developing class management and instructional skills. M-SPAN resulted in students spending approximately 3 min more (an increase of 18%) engaged in MVPA per lesson without increasing lesson length (McKenzie et al., 2004). Both SPARK and CATCH are implemented in many states, school districts, and individual schools (Owen, Glanz, Sallis, & Kelder, 2006). This demonstrates the demand for "active" physical education programs and the feasibility of widespread implementation.

Other evidence-based physical education programs have been developed and evaluated at the secondary level, such as the Trial of Activity for Adolescent Girls (TAAG) middle school program (Webber et al., 2008) and the Lifetime Education for Activity Program (LEAP) high school program (Pate et al., 2007), both targeting girls. Results were promising (e.g., in LEAP, intervention girls participated in more bouts of vigorous activity than control girls), but these programs have not been widely disseminated. Researchers have also examined the impact of conceptual physical education (i.e., focused on student competence and enjoyment of physically active lifestyles) on future physical activity participation of high school graduates. Dale and Corbin (2000) found that a significantly greater proportion of boys who were exposed to conceptual physical education in ninth grade reported engaging in vigorous physical activity 1 year after graduation than those in traditional physical education. In 2004, due to growing evidence from physical education interventions and programs, NASPE (2004) published the national standards for physical education, which provide a framework for physical education coordinators and teachers in developing curriculum, lessons, and student assessment plans.

Physical Education-Based Physical Activity and Academic Achievement

The past 20 years have brought an increased effort to emphasize the value of physical education for health *and* as a mechanism to improve academic performance. In 2010, CDC released a comprehensive report on the association between physical activity and academic performance (CDC, 2010a). Of the 14 studies described in the report, 11 found at least one positive association between physical education and academic outcomes, such as standardized test scores, grades, or teacher ratings of student behavior. Increasing students' time in physical

education either had a positive association or no association with academic performance. Importantly, increased physical education time did not have a negative effect on academic outcomes, despite students spending less time in classes focused on core academic topics. There is consistent evidence from other research reviews that physical activity and fitness are positively associated with various academic outcomes (Basch, 2010; Fedewa & Ahn, 2011; Trost & Van der Mars, 2010), supporting a conclusion that physical education and other physical activity programs can contribute to schools' primary academic mission.

Federal Support for School-Based Physical Education

Throughout the last two decades, federal support for and commitment to physical education there has increased, especially in the public health sector. Beginning in 1992, the CDC has funded state education agencies to partner with state health departments to increase physical activity and healthy eating and prevent tobacco use among young people. Currently, the CDC funds 22 states and 1 tribal government through this program. In 2001, Congress authorized the U.S. Department of Education to administer the Physical Education for Progress program as part of Title X of the Elementary and Secondary Education Act. Now titled the Carol M. White Physical Education Program (PEP), it provides grants to local education agencies and community-based organizations to initiate, expand, and improve physical education for students K–12. In 2011, PEP included many requirements that can strengthen grantees' physical education programs.

In February 2010, the First Lady of the United States launched the Let's Move initiative to solve the epidemic of childhood obesity within a generation (Let's Move, 2012). Within 1 year of the initiative's launch, several efforts were underway to engage schools, communities, cities, towns, faith-based institutions, and individuals in the fight against childhood obesity. Also in 2010, the White House Task Force on Childhood Obesity (2010) published an action plan titled, Solving the Problem of Childhood Obesity Within a Generation. The chapter on physical activity focuses heavily on actions schools can and should take to increase youth physical activity and improve physical education.

As part of the American Recovery and Reinvestment Act of 2009, the USDHHS developed the Communities Putting Prevention to Work (CPPW) initiative focusing on conducting evidence-based clinical and community prevention and wellness strategies that deliver specific, measurable outcomes to reduce chronic disease. One strategy identified in the CPPW was daily physical education (CDC, 2012a). In 2011, the CDC announced the Community Transformation Grant (CTG) program (CDC, 2012b) that will support communities to implement, disseminate, and evaluate evidence-based community-preventive health activities to reduce chronic disease risks and rates, address health disparities, and develop a stronger base for effective programs. The CTG includes an emphasis on school-based physical education. The President's Council on Fitness, Sports, and Nutrition (PCFSN) is a catalyst for developing, disseminating, and promoting information and resources on physical activity and sports programs for Americans of all ages and abilities. Following the 1996 *Surgeon General's Report on Physical Activity and Health* (USDHHS, 1996), the PCFSN added the Presidential Active Lifestyle Award to the President's Challenge program, a presidential recognition program for physical activity and fitness for use in physical education settings.

In 2006, the CDC released the Physical Education Curriculum Analysis Tool (PECAT; CDC, 2006), a tool designed to analyze and revise written physical education curricula or develop new written curricula. The PECAT uses the national physical education standards as a framework (NASPE, 2004) and assists school districts and schools in determining whether their physical education curricula align with national standards and best practices.

Various federal agencies have adopted policies related to physical education. As part of the Child Nutrition and Special Supplemental Food Program for Women, Infants, and Children Reauthorization Act of 2004 (108th Congress, 2004), school districts participating in the federal school meals program are required to have local wellness policies. These policies need to address nutrition education and guidelines while promoting physical activity. In 2010, the U.S. Congress passed the Healthy Hunger-Free Kids Act (S. 3307), which included requirements for implementing local school wellness policy and reporting (111th Congress, 2010). Physical activity requirements remained the same.

A U.S. national health objective for 50% of MVPA in physical education classes has been a part of the Healthy People documents since at least 1991 (U.S. Public Health Service, 1991) and was reaffirmed for Healthy People 2010 (U.S. Department of Health and Human Services, 2000). The objective was evidence that the U.S. Public Health Service determined physical education classes should be active most of the time, and the objective justified public health actions. However, the recently released Healthy People 2020 (USDHHS, 2010) did not have an objective for 50% of MVPA in physical education classes. This appears to be a step backward for efforts to promote more physically active physical education. Although it was not announced why the objective was dropped, a likely reason was the lack of data to measure progress. In a clear indication that the U.S. Public Health Service is still pursuing more physically active physical education

classes, the CDC recently affirmed a 50% MVPA recommendation for physical education classes (CDC, 2010b).

State Support for School-Based Physical Education

State-level physical education policies (or lack thereof) can have an impact on how much physical education is provided. According to the 2010 *Shape of the Nation Survey* (NASPE, 2010), 42 states mandated elementary school physical education; 39 mandated middle school physical education; and 45 mandated high school physical education. However, only four states specified time requirements for the amount of physical education to be taught at all grade levels, 28 states permitted school districts or schools to allow students to substitute other activities for their required physical education, and 26 states granted exemptions/waivers regarding physical education. However, nearly all states (49) had physical education standards. State-level policies play a role in establishing strong standards for physical education teacher qualifications and professional development. In 2010, 39 states required elementary school physical education teachers to be certified/licensed; 42 states had this requirement for middle school physical education; and 46 states required it for high school physical education. Finally, 41 states required professional development to maintain/renew physical education teacher certification/licensure, but most did not provide the funding for teachers to participate.

A study of state physical education legislation documented a dramatic increase from 2001 to 2007, with a total of 781 bills introduced and 162 enacted (Eyler et al., 2010). A promising trend is that some bills specify evidence-based elements, defined as minutes of physical education, physical activity in physical education, teacher certification, and environmental support, such as facilities and equipment. Time in physical education was by far the most common evidence-based element in the bills (n = 178), and physical activity during physical education was the least common element (n = 43). As of 2007, 11 states had laws designed to increase physical activity during physical education classes. From a public health viewpoint, this is an important advance toward ensuring physical education classes provide physical activity for students, but it is disturbing that this appears to have the lowest priority.

Surveillance of Physical Education Quantity and Quality

In 1991, virtually nothing was known about the quantity and quality of physical education on a national basis. To date, surveillance data provided by CDC's Youth Risk Behavior Surveillance System (YRBSS; CDC, 2010c) are the best available data pertaining to the quantity of physical education. These biannual, nationally representative, student-reported surveys show that the percentage of high school students who attended physical education classes one or more days in an average week did not change significantly from 1991 to 2009 (48.9% to 56.4%). Meanwhile, the percentage of high school students who attended physical education classes daily decreased across YRBSS survey years 1991–1995 (41.6–25.4%) and then did not change significantly across YRBSS survey years 1995–2009 (25.4–33.3%). CDC's 2006 School Health Policies and Programs Study (SHPPS; Lee, Burgeson, Fulton, & Spain, 2007) of school administrators, physical education coordinators, and physical education teachers revealed that only 4% of elementary schools provided all students (first–fifth grades) physical education daily or at least for 150 min per week for the entire year (Lee, Burgeson, Fulton, & Spain, 2007). These two data sets provide valuable data on trends in physical education exposure and policies, but YRBSS only covers high school and neither study quantifies physical activity provided in physical education classes. In addition to the YRBSS and SHPPS surveillance systems, several research studies (e.g., McKenzie et al., 1995; McKenzie et al., 2006; Nader, 2003) provided baseline data pertaining to components of physical education quality (i.e., physical activity levels, lesson content, and teacher behavior) prior to interventions in schools. Though these studies used rigorous direct observation methods, they cannot substitute for a national study of the state of physical education in the United States that documents activity levels in physical education.

The Gym is Half Empty: Areas for Improvement for the Next 20 Years

Reduced Physical Education Time

Increased emphasis of schools on improving standardized test scores has been a barrier to advancing physical education practices and policies. Federal funding is now dependent on schools making adequate progress in reading and mathematics, and the federal No Child Left Behind (NCLB) law created an environment in which physical education, music, and art are viewed as "non-essential." Since the passing of NCLB in 2002, 62% of elementary schools and 20% of middle schools increased instructional time allocated to reading/language arts and math. Among those schools, 44% of administrators reported cutting time from one or more of social studies, science, art and music, physical education, and recess (Center on Educational Policy, 2008). The average reduction in instructional time to these subjects was 145

min/week. More recent severe budget cuts in many states may have further eroded funding and support for physical education, because it remains a "non-core" subject.

Defining and Measuring Physical Education Quality

Since the 1991 article, numerous guidelines for quality physical education and measurement tools have been created. However, due to the diversity of views on what constitutes quality physical education (i.e., goals, curriculum, instruction, MVPA) a comprehensive tool has yet to be widely adopted. NASPE (2004) has developed standards for quality physical education, but they are not entirely consistent with guidelines from health agencies (CDC, 2010b; Koplan et al., 2005; Pate et al., 2006). The NASPE standards were written mainly for an education audience and though they encourage physical activity, they do not specify the amount of physical activity that should be in physical education classes or stress that the other goals should be achieved through active instruction. The guidelines from health agencies, such as American Heart Association, CDC, and the Institute of Medicine are focused on maximizing physical activity in physical education to combat obesity and chronic diseases, and the guidelines do not adequately consider what is required to achieve policy and practice change within the education field. Thus, education and health officials need to work together more closely to achieve the goals of both fields.

To assess physical activity during physical education lessons, objective measures, such as accelerometers, pedometers, heart rate monitors, and direct observation, are widely used in research. Guidelines for pedometer steps correspond to 50% MVPA time during physical education classes (Scruggs, 2007), and the System for Observing fitness Instruction Time observational system (McKenzie, Sallis, & Nader, 1991) assesses activity time directly and has been used in many large studies of physical education. All these measures have demonstrated validity, but they require expertise and expense and are not used widely in physical education practice or for national surveillance.

In their review of physical activity accrued during elementary physical education, Fairclough and Stratton (2006) found that students were active an average of 37% of a 34-min lesson, based on objective MVPA measures. This equates to approximately 13 min of physical activity per lesson. There was no mention of frequency of lessons per week. A similar review for secondary physical education showed 27–47% of lesson time engaged in physical activity, depending on the measurement method (Fairclough & Stratton, 2005). The latter review did not provide lesson length. The available data on objective measures of physical activity in physical education raise alarms about the quality of physical education instruction and missed opportunities to improve children's health. These data also provide a strong rationale for a national study of physical education practice using objective measures. It would be useful for such a study to include physical activity and other components of quality physical education, such as class size, teacher certification and training, school environment, and school policies.

Dissemination of Evidence-Based Physical Education Programs

Although dissemination of evidence-based physical education programs is clearly in the "gym half full" category, there are important limitations that should be remedied. One is that there is no consensus on criteria for deciding which programs should be disseminated. One criterion is replication, which is the reproducibility of an intervention's effects across multiple studies, commonly with different sample characteristics and settings (Cook & Campbell, 1979). In the physical activity field, single large-scale studies are conducted, and some programs with positive findings are subsequently disseminated. Examples of this paradigm can be seen in CATCH, SPARK, LEAP, and TAAG, which were large and expensive studies; It is difficult to imagine that funders would be enthusiastic about supporting replications (Easley, Madden, & Dunn, 2000), except perhaps for studies that targeted schools in high-need communities (e.g., Coleman et al., 2005) or evaluated more cost-effective implementation models. However, in other prevention fields (e.g., substance abuse, violence, mental health), replication is a necessary step of the research process (Flay et al., 2005), with a minimum of two studies from independent investigative teams needed to confirm an intervention approach is ready for dissemination (Flay et al., 2005). Putting a higher priority on studies that replicate, extend to different populations, or refine effective programs could create a cycle of continuous innovation that builds on prior investments. It is justified to continue studying programs with an important public health impact, such as physical education.

Another major gap in evidence is evaluation of the dissemination process. These evaluations have been rare for evidence-based physical education programs, but there are opportunities to evaluate the many schools that have adopted the programs as "natural experiments." Such studies could examine cost-benefit ratios, compare different models of implementation, and examine factors that lead to better sustainability. A program on dissemination of physical education programs could advance science while improving practice. The National Institutes of Health (2011) recently established an office of Dissemination and Implementation Research, and multiple institutes are calling for studies in these areas.

Thus, funding is available to support dissemination and implementation research on evidence-based physical education.

Adoption of Evidence-Based Practices

The extent to which evidence-based physical education programs have been adopted and implemented with fidelity is unknown. There are no known sources of information regarding how many programs (defined as programs with documented positive outcomes, at least with MVPA, published in peer-reviewed journals) are currently in use across the United States. For programs that have been adopted, it is not known how well they are implemented. The absence of such data makes it difficult to determine whether effective interventions are having an impact on students as intended. A recent study found that adopting evidence-based physical education programming was hindered by the number of physical education specialists, budget limitations, unwillingness to allocate time for physical education, and a low priority for physical education (Lounsbery, McKenzie, Trost, & Smith, 2011). Thus, there are serious barriers to the adoption of evidence-based physical education practices.

Although SPARK, M-SPAN, and CATCH programs are being disseminated, there is no ongoing evaluation of dissemination quality or outcomes. However, limited data suggest there are improvements over "usual practice." For example, an independently conducted survey of SPARK-trained teachers up to 4 years after training indicated that almost 80% were still using SPARK, and SPARK users conducted about one more physical education class per week than nonusers (Dowda, Sallis, McKenzie, Rosengard, & Kohl, 2005). In an evaluation of CATCH dissemination in Texas, physical education specialists reported up to 65% of classes were CATCH activities and/or based on CATCH philosophy (Hoelscher et al., 2001). Also, when different investigators implemented CATCH in a low-income city, the results were favorable (Coleman et al., 2005). These studies provide encouragement that evidence-based physical education is being disseminated somewhat effectively, but a national study could determine the prevalence of use, further document barriers, identify schools that are evaluating innovative approaches, and help identify methods to improve adoption, implementation, and sustainability.

Education Has Not Adopted Public Health Goals

It appears the physical education field has not fully embraced the public health goals set forth in 1991. Many in the field emphasize that physical education is more than physical activity, is an academic discipline, and should include motor learning, sport skills, social development, and other worthy outcomes. However, there is still no consensus that physical education should meet its other goals while ensuring students are physically active during class. To illustrate this point, Kulinna (2008) described multiple curricular models being used in physical education, all focusing on different outcomes. Years ago, Pate and Hohn (1994) complained that multiple goals created a "muddled mission" for physical education, and this lack of focus appeared to be preventing a consensus around meeting students' health needs. Despite an emphasis on developing and adopting physical education standards at the local, state, and national levels, few of these are enforced (i.e., lack of accountability), and meeting the standards often requires additional resources for equipment, professional development, and staffing that have not been provided. Though standards can contribute to a higher priority for physical education within education departments, they are often not consistent with health goals. For example, standards are not systematically evidence-based and have not been evaluated prior to adoption (e.g., what is the impact of implementing standards on physical education outcomes, including MVPA?). Most standards do not specify how much MVPA must be provided during class, and some contain many knowledge goals that could lead to physical education classes being less active. Because of the varying definitions of "quality physical education," some policies to improve physical education could have negative impacts on physical activity engagement while meeting other goals.

Over the past 20 years, stronger working relationships between public health and education professionals have developed, with many examples at the federal, state, and local levels. These alliances probably contributed to recent statewide policies that support or require specific amounts of physical activity in physical education (Fedewa & Ahn, 2011). Federal, state, and local policy makers develop, implement, and evaluate physical education policies that conceivably could achieve both health and education goals. However, state and federal policies, such as the requirement for local wellness policies, do not appear to have been sufficient to substantially improve physical education implementation (Belansky et al., 2009), although the lack of surveillance makes it difficult to reach a definitive conclusion.

Conclusions and Recommendations

We want to replace the "health-related physical education" term we introduced in 1991 with "health-optimizing physical education" or HOPE. We propose defining HOPE as physical education that encompasses curriculum and lessons focused on health-related physical activity and fitness; keeps students active for at least 50%

of class time; engages all students, regardless of physical ability; and significantly contributes to students' overall physical activity participation, thereby improving their health. The need for HOPE has grown dramatically over the past 20 years, with the obesity epidemic, evidence that most youth are not meeting physical activity guidelines, and erosion of physical education practices. The new term signifies that the epidemics of childhood obesity and diabetes have created a new urgency for providing more physical activity to all children, which many get only through physical education. Because physical education can have important public health effects, we encourage the field to take responsibility for ensuring that it has optimal health effects. HOPE does not mean abandoning all other physical education goals, but ensuring that health goals are primary. HOPE is part of the century-old evolution of a proud physical education tradition that seeks to provide students with the knowledge, skills, abilities, and confidence to be physically active for life. HOPE means that other important physical education goals are achieved through physical activity. There are many paths to HOPE.

The health crisis emboldens us to recommend that education and public health professionals work together with policy makers to *optimize* the contribution of physical education to health. An excellent start toward achieving these goals would be to implement the U.S. National Physical Activity Plan's (2010) "education sector" strategies (Seidentop, 2009). These strategies were developed by an interdisciplinary group that included physical education, education, and health professionals. We encourage all physical education curriculum writers to embrace HOPE concepts, generate creative approaches to meeting HOPE goals, and pursue program evaluation so they can become evidence-based HOPE. We have evidence from multiple large studies that HOPE can improve physical activity and academic outcomes (CDC, 2010a, 2010b; Fedewa & Ahn, 2011; McKenzie et al., 1996; McKenzie et al, 2004; McKenzie, Sallis, & Rosengard, 2009; Pate et al, 2007; Sallis et al., 1997). Although thousands of schools across the United States are using evidence-based physical education, most are not. Although many public health groups have embraced HOPE, few education groups have. The failure of public health and education groups to work together sufficiently to implement increased physical activity within physical education is hurting children's health.

Our goals for achieving HOPE for all children well before 20 more years pass are:

— Federal, state, and local policy makers develop, implement, and evaluate physical education policies that ensure children have daily, active physical education that achieves both health and education goals.

— Conduct periodic national studies of physical education classes using objective measures to assess MVPA during physical education. Studies should assess teacher behavior in physical education classes, curricula, teacher preparation, facilities, and equipment. Such studies could identify disparities in physical education quality and quantity and document favorable and unfavorable trends.

— Develop low-cost and feasible methods for teachers to accurately assess MVPA in their classes so they have immediate feedback and data for reporting to district and state officials.

— Provide grants or incentives to encourage districts and schools to implement evidence-based physical education programs (or evaluate innovative approaches to promoting MVPA in physical education).

—Prioritize funding, training, and equipment for HOPE in low-resource districts and schools where there is likely greater room for improvement and students are often at the highest health risk.

— Identify funds to support adopting, implementing, monitoring, and evaluating evidence-based physical education programs in schools K–12. Because HOPE improves health, it is reasonable for some funding of physical education improvement to come from public health agencies.

— Revise physical education undergraduate and graduate courses to reflect contemporary health needs, and prepare teachers to implement evidence-based HOPE.

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