Physical Activity and U.S. Public Elementary Schools: Implications for our Profession

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Abstract

Childhood obesity in the U.S. has reached crisis proportion. In response, public elementary schools have embarked on various methods to increase children's physical activity. The purpose of this study was to examine strategies by United States public elementary schools to increase children's physical activity. Of particular concern was how physical activity strategies were influenced by minority status, geographic location and socioeconomics. Data from the National Center for Education Statistics was analyzed. The top overall strategy employed by schools was non-traditional activities within a physical education program, e.g., dance, martial arts, and outdoor adventure activities. However, strategies to increase physical activity were significantly impacted by minority and socioeconomic status. Most notably, schools with the highest rate of minority enrollment were less likely to use non-traditional activities to encourage physical activity. Schools with the lowest rates of children enrolled in free/reduced price lunch were more likely to use non-traditional activities. Implications for physical education and professional preparation are discussed.

An alarming childhood obesity epidemic has captured attention from all corners of society. School administrators, public health officials, political leaders, and physical educators have coalesced on the need for a systematic approach to solving one of the most pressing public health crises of our time (Krishnamoorthy, Hart, & Jelalian, 2006). Investigators interested in children's health have searched for the most sensible and effective solutions. Apparently, consensus has formed around a comprehensive approach to increasing physical activity in the public schools. This approach makes sense, as schools are often focal points for neighborhoods and communities. In fact, the American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) recently advanced its Comprehensive School Physical Activity Program (AAHPERD, 2011). This model seeks to capitalize on schools as centers of physical activity by including before, during, and after school physical activity programs in concert with regular physical education. Specifically, AAHPERD is promoting an approach based on quality physical education, school-based physical activity opportunities, school employee wellness participation, and family and community involvement.

Implementing such a broad based program is not without challenges. For instance, quality physical education calls for 150 minutes per week of class time. However, convincing school authorities to implement such a target has often met with resistance Morrow, Jackson, and Payne (1999) reported that many schools have reduced physical education to allow more time for academics. Morrow et al. argued that time spent in physical education does not adversely impact academics, even when classroom time is reduced to allow more physical education. Regrettably, time in physical education decreases after grade five (Lounsbery, Bungum, & Smith, 2007; AAHPERD, 2011). There are encouraging signs however: The School Health Policies and Programs Study (Kann, Telljohann, & Wooley, 2007) examined changes from 2002 to 2006 in state and district policies related to physical activity. Most notable among their findings were: a) an increase in districts that required elementary schools to teach physical education increased from 82.6 % to 93.3%; b) the percentage of districts that required newly hired PE teachers to have undergraduate or graduate training in physical education increased from 51.1% to 64.7%; and c) the number of districts that required elementary schools to provide frequently scheduled recess increased from 46.3% to 57.1%. Similar trends were observed for assessing student performance in physical education, encouraging family involvement in physical activity, and methods to increase the amount of class time that children are physically active.

Many of these findings are echoed in the more recent Comprehensive School Physical Activity Program survey (CSPAP) (AAHPERD, 2011). Additionally, the CSPAP survey reported trends toward integrating physical activity into regular elementary classrooms, providing physical activity clubs and intramurals, before and after school child care that allot time for physical activity, and sponsoring events in which families engage in physical activity. However, neither of the aforementioned reports accounted for socioeconomic or minority status. In fact, several reports indicate close associations among socioeconomic status (SES), minority status, and reduced access to environments that promote physical activity (Babey, Brown, & Hastert, 2005; Estabrooks, Lee, & Gyurcsik, 2003, Giles-Corti & Donovan, 2002). Furthermore, Winkleby, Kraemer, Ahn, and Varady (1998) found that ethnic minorities including Hispanics and African Americans are more likely to suffer from chronic disease associated with sedentary lifestyles.

Given this background, data is needed regarding strategies elementary schools use to encourage and increase physical activity. Such information could help refine comprehensive approaches to physical activity with particular attention to geographical location, social class, and minority status. Knowledge of these issues could not only help shape public policy, but also influence how universities and colleges train future physical educators. The purpose of this study was to examine strategies used by elementary schools to encourage physical activity. Of particular concern was the impact of minority status, socioeconomics and locale with respect to physical activity strategies. Possible implications for physical education and professional preparation are also presented.

Method

Procedure

The design was cross-sectional. Survey data were obtained from a United States public access database (Parsad & Lewis,

2006). Specifically, The Fast Response Survey System (FRSS) designed by the U.S. Department of Education, National Center for Education Statistics (NCES) was used to obtain national information on nutrition practices and opportunities for physical activity in U.S. public elementary schools. In terms of physical activity, survey questions addressed scheduled recess and physical education, physical assessment of students, and activities to encourage physical activity, the latter of which was the focus of the present study. The FRSS survey also included questions relative to region, locale, school enrollment, percent of students eligible for free and reduced price lunch, and enrollment by students identified as belonging to an ethnic minority group. Free and reduced price lunch was used to estimate poverty level at each school. According to Parsad and Lewis (2006), the survey was directed to the official in each school with the most knowledge about opportunity for physical activity. In most cases this individual was a school administrator.

National Center for Education Statistics personnel collected all survey data. The original sampling frame included 51, 000 regular public elementary schools. From this sampling frame, the FRSS survey was mailed in 2005 to 1198 public elementary schools in all 50 states and the District of Columbia; see Table 1. The number of surveys returned for analysis was 1055. Elementary schools were operationally defined as schools with a high grade of 1 to 8 and a low grade of prekindergarten, kindergarten, or grades 1 to 3. This study did not involve any interaction with human participants and was therefore considered 'an exempt study' by the University Institutional Review Board.

Table 1. ***States and District of Columbia Classified by Region***

Northeast—Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont

Southeast—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia

Central—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming

Note: Classification is based on Bureau of Economic Analysis of the U.S. Department of Commerce, the National Assessment of Educational Progress, and the National Education Association.

Outcome Variables

For the present study, the specific outcomes of interest were the degree to which schools a) used nontraditional physical education activities to make physical education more enjoyable; b) provided opportunities for organized physical activity during the school day, excluding physical education; c) offered school-sponsored before and after school physical activity; and d) participated in the President's Challenge Physical Activity and Fitness Award Program (PCPAFAP). Each of these were dichotomous variables indicating whether or not a school employed that specific strategy.

Predictor Variables

Differences in these school outcomes were examined based on the following school characteristics: 1) Region - Schools were classified into four groups based on their state's geographic region, as depicted in Table 1. 2) Locale - Schools were also grouped into four categories based on U.S. Census Bureau definitions: *City*---A large or midsize central city of a Consolidated Metropolitan Statistical Area (CMSA) or Metropolitan Statistical Area (MSA); *Urban fringe*---Any incorporated place, Census-designated place, or non-place territory within a CSMA or MSA of a large midsize city and defined as urban from the Census Bureau; *Town*---Any incorporated place or Census-designated place with a population greater than or equal to 2,500 and located outside a CMSA or MSA; *Rural*---Any incorporated place, Census-designated place, or non-place territory defined as rural by the Census Bureau (Parsad & Lewis, 2006). 3) Enrollment - School enrollment levels were classified into three groups: less than 300 students, 300 to 499 students, and 500 or more students. 4) Socioeconomic Status - Socioeconomic status was determined by the percentage of pupils enrolled in free or reduced price lunch. This information was used to create four categories: less than 35 percent eligible, 35 to 49 percent, 50 to 74 percent, and 75 or more percent of students eligible for free or reduced price lunch. 5) Minority Enrollment This parameter refers to children enrolled in a school whose race or ethnicity is one of the following: American Indian or Alaska native, Asian or Pacific Islander, non-Hispanic Black, or Hispanic, based on data in the 2002-03 Common Core of Data (CCD) School Universe file (Parsad & Lewis, 2006). Minority classification corresponded to four categories: less than 6 percent minority enrollment, 6 to 20 percent, 21 to 49 percent, and 50 percent or more minority enrollment in a particular school.

Data Analyses

The four school outcome variables were organized by: a) Region, b) Locale, c) Enrollment, d) Percent of students eligible for free or reduced-price lunch (socioeconomic status), and e) Percent minority enrollment. A Chi-square test of independence was applied to analyze data across categories (Region, Minority Enrollment, etc.). In addition, overall percentages for each of the strategies applied (Outcome Variables) are presented in Table 2.

Table 2. ***Strategies to Encourage Physical Activity (Percentage of Schools)***

Strategy	Percentage of Schools
Use non-traditional physical education activity	64.3%
Provides opportunities during the school day for organized physical activity	58.0%
Offer school-sponsored before/after school activities that emphasize physical activity	50.7%
Participate in President's Challenge Physical Activity and Fitness Award Program	55.0%
Use other physical activity program	29.5%

Results

Using Nontraditional Activities

Use of nontraditional activities was the most widely used strategy, with 64.3% of respondents reporting that they provided opportunities within their physical education program for such

physical activity. However, these findings varied based on geographical region, overall socioeconomic status of the school, and level of enrollment by students identified as belonging to an ethnic minority group.

Schools in the Northeast were most likely to employ nontraditional activities to make physical education more enjoyable [$\chi 2$ (3)=17.62, p=.001]. Specifically, 77.5% of schools in the Northeast reported using nontraditional activities for this purpose, versus 64.3% of schools in the Southeast, 61.7% of schools in the Central region, and 59.8% of Western schools.

Second, schools with the lowest rates of children receiving free or reduced-price lunch (<35%) were more likely to use nontraditional activities in physical education [$\chi 2$ (3)=23.26, p<.001]. Specifically, while 71.5% of those schools used such activities, the proportion was 67.7% among schools with 35% to 49% free/reduced lunch, 62.8% among schools with 50% to 74% free/reduced lunch, and only 53.4% among schools with more than 75% free/reduced lunch.

Third, schools with the highest rate of minority enrollment (>50%) were less likely to use nontraditional activities [$\chi 2$ (3)=27.04, p<.001]. Among those schools, only 55.2% reported using nontraditional activities, while the proportion was 71.3% among schools with 21% to 49% minority enrollment, 73.5% among schools with 6% to 20% minority enrollment, and 61.3% among schools with less than 6% minority enrollment.

Finally, use of nontraditional activities as a strategy to provide opportunities for physical activity did not vary by locale or overall enrollment.

Providing Opportunities during the School Day for Organized Physical Activity

As reported in Table 2, the second most common strategy to encourage physical activity was to provide opportunities during the school day for organized physical activity. This was reported by 58.0% of schools; however, the frequency at which this approach was employed did not vary by region, locale, enrollment, or by student SES or minority enrollment.

Participating in the President's Challenge

The third most common strategy to encourage physical activity was to participate in the President's Challenge Physical Activity and Fitness Award Program (PCPAFAP, 55.0% of schools). PCPAFAP participation decreased with enrollment in free/reduced-price lunch [$\chi 2$ (3)=11.73, p=.008]. Specifically, 58.9% of schools with less than 35% free/reduced lunch participated in PCPAFAP, and among schools with 35% to 49% free/reduced lunch, 60.4% participated in PCPAFAP. However, participation declined to 54.5% for schools with 50% to 74% free/reduced lunch, and declined further to 46.6% among schools with 75% or more free/reduced lunch.

Participation in the PCPAFAP also decreased as minority enrollment in schools increased [$\chi 2$ (3)=13.27, p=.004]. While 63.5% of schools with less than 6% minority enrollment participated in PCPAFAP, the proportion participating in PCPAFAP declined to 59.0% among schools with 6% to 20% minority enrollment, 54.3% among schools with 21% to 49% minority enrollment, and 48.9% among schools with 50% or more minority enrollment.

Offering School-Sponsored Before/After School Activities

Finally, the fourth most common strategy to encourage physical activity was to offer school-sponsored before/after school activities that emphasized physical activity (50.7% of schools). A series of comparisons based on school characteristics found that schools in cities were more likely to offer school-sponsored before/after school physical activity (59.1%) than were schools located in towns (47.8%), urban fringes (49.7%), or rural areas (44.8%) [$\chi 2$ (3)=12.64, p=.005].

Discussion

In the most general sense, these finding are consistent with the recent AAHPERD survey indicating a trend towards before, during and after school physical activity (AAHPERD, 2011). However, present findings were found to vary considerably by geographic location, SES, and minority status. These results are consistent with Beaulieu, Butterfield, and Pratt (2010) who found differences in physical activity opportunities in which Western U. S. schools provided more opportunities than all other regions (Geographical Location), schools with large numbers of children receiving free or reduced price lunch provided less opportunities (SES), and schools with low minority enrollment (<6%) provided more opportunities than schools with very high minority enrollments (>50%). In the present study, schools with high minority enrollment and those with higher rates of free/reduced lunch participation were less likely to employ non-traditional activities to encourage physical activity. Findings with respect to minority and socioeconomic status are consistent with the National Institute for Health Care Management Foundation (2004), which reported that schools with low-income and ethnic minority students were less likely to meet Centers for Disease Control (CDC) recommendations for daily physical education. It would appear that some children are disadvantaged from the onset. Not only are children from minorities and low SES areas less likely to meet CDC recommendations for daily physical education, they may have less access to community facilities and programs as well.

For instance, in a study conducted in the United Kingdom, Brunton et al. (2003) examined perceived barriers to children's physical activity. Major barriers included contextual variables such as low-income status, distance from school (particularly for children from rural areas), lack of facilities, traffic congestion, crime, bullying by older children, and deterioration of local playgrounds. On the other hand, factors that encouraged participation were sport and exercise as a means of having fun and spending time with friends, sense of belonging to a team, enjoyment of competition, and feelings of achievement. Also prominent among children's perceptions was a supportive and encouraging family environment. Welk, Wood, and Morss (2003) concluded that parental support, encouragement, and role modeling had positive influences on their children's physical activity. Furthermore, Drummond, Drummond, Dollman, and Abery (2010) reported that interventions to increase physical activity must be multifaceted and repetitive; and that parental participation in the intervention increases the probability of success. The aforementioned factors that promote or limit opportunities for physical activity point to a comprehensive community-based approach with schools as physical activity centers (AAHPERD, 2011). Physical educators are likely to have a key role in this process.

Possible Implications

With the nation moving toward a comprehensive approach to increasing children's physical activity, it is likely that physical education will evolve accordingly. However, it is important that physical educators retain their professional identity and avoid devolving into physical activity brokers and supervisors. To be sure, successful implementation of a national, comprehensive physical activity plan will require a new generation of professionals. Implications for pre-service and in-service training of physical educators are profound. It is clear that future physical education professionals will have to adapt to a new set of realities. In short, physical educators must possess adequate knowledge and skill to design instruction to match children's 24 -hour milieu.

Increasingly, physical educators will have to be collaborative problem-solvers who can teach children of varying backgrounds and abilities and work with professionals from other disciplines and perspectives, often within community wellness committees. Physical educators will need to know how to assess neighborhood contextual variables and coordinate available school-community resources. Physical educators will likely join forces with community leaders, in various locales, to make physical activity programs ecologically valid and meaningful (AAHPERD, 2011). These skill sets may define physical education professionals well into the future. In the meantime, a very practical starting point can be found in the National Association for Sports and Physical Education (NASPE, n.d.) guidelines for quality elementary physical education. This document provides a blueprint for exemplary physical education including, equity, inclusion, diversity, program content, and establishing a safe and productive learning environment. Another important resource is the 'Let's Move in School' program (AAHPERD, n.d.). This excellent resource provides tool kits for school administrators, parent organizations, and physical educators as well as a free webinar series.

In addition to professional development, greater pre-service emphasis on sociology, psychology, and perhaps even foreign language may characterize tomorrow's pre-service programs. Physical educators will likely seek out and establish linkages among students, curricula, communities and neighborhoods. They will discover how to make non-traditional activities available, culturally relevant, and intrinsically self-sustaining. Increasingly, physical educators have to organize, direct and conduct, before and after school programs that are attractive and meaningful to youngsters. They will need to work with community leaders to connect schools to programs and facilities in their community. Much of this planning and implementation will take place outside the traditional six-hour day, in other words before and after school. Universities must assume a partnership in this process. School-university collaborations will likely include applied research where faculty members and graduate students collaborate with physical educators directly in schools and communities. These collaborations might examine local contextual variables that enhance or restrict opportunities for physical activity. Another avenue of investigation is possible links between physical activity and academic performance. Faculty and students will probably conduct more training in classrooms, gymnasia, and communities. Universities should prepare students to embrace new roles. Course work and clinical experiences that emphasize critical-thinking and problem solving will be instrumental.

Competition for curriculum space in the six-hour school day will not likely soon abate. The case for physical education as an academic discipline must continue to be made, so too the essential role of physical education in developing strong, healthy children. The profession must remain vigilant in this regard. Schools and communities will no doubt continue to offer before and after school programs to encourage physical activity. As professionals, we must seamlessly link what is learned in physical education to what occurs in school-community environments. As physical educators we have always been community leaders and creative collaborative problem-solvers. These qualities are most certainly encoded in our professional DNA. Now we are called to a national crisis. We need to apply these qualities to address issues of class, culture and locale. This is our moment.

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