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Stretched too thin? The relationship between insufficient resource allocation and physical education instructional time and assessment practices

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HIGHLIGHTS

- Many elementary schools do not provide students adequate physical education time.
- Equipment budgets for physical education programs are minimal, or nonexistent.
- Physical education-specific continuing education was required by half of schools.
- Most schools that required continuing education provided financial support.
- When teaching loads are too high, physical education practices are not optimal.

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ABSTRACT

With provisions in the Every Student Succeeds Act, attention to physical education (PE) programs in school will be crucial for developing well-rounded students. We assessed the availability of resources that have the potential to impact PE (staffing, continuing education, annual PE equipment budgets) in a nationally-representative sample of 640 U.S. public elementary schools. Higher student-to-PE teacher ratios were associated with students not receiving adequate instruction. Equipment budgets were minimal (median = $500) and 30% of schools had no budget at all. Additional financial support from federal and state education agencies would help schools to better meet recommendations for PE.

Physical education (PE) in schools is a key aspect of providing children with the knowledge and skill to be physically active for a lifetime, and there is strong evidence that healthy children are better learners (Basch, 2011; Institute of Medicine, 2013). PE and school-based physical activity (PA) improves academic outcomes, including students' scores on standardized tests of achievement (Centers for Disease Control and Prevention [CDC], 2010). PE has received renewed support recently, due to increasing recognition of the importance of supporting the whole child in education settings, which has been articulated by the Association for Supervision and Curriculum Development (ASCD) and CDC in the "Whole School, Whole Community, Whole Child" model (2015). In addition, supporting the whole child has received national support through an emphasis on well-rounded education in the Every Student Succeeds Act (2015). In other words, it is clear that—much like other content areas such as mathematics, science, or civics—PE should also be part of the educational experience for all students, rather than being considered an optional subject or one that is eliminated due to budgetary challenges. Like all other teachers, PE teachers provide instruction on a formal content area with standards, curricula, and assessments to measure student outcomes (SHAPE America, 2015). Resources are necessary for all teachers to accomplish these goals, regardless of content area. However, thus far, few studies have examined the nationwide allocation of resources to PE programs in schools, nor the impact on characteristics

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Abbreviations

CE	continuing education
CSPAP	comprehensive school physical activity program
PA	physical activity
PE	physical education

of those PE programs according to resource allocation.

PE is the cornerstone of the comprehensive school physical activity program (CSPAP) approach that has been recommended by the Society of Health and Physical Educators (SHAPE America, 2013). A CSPAP is a multi-faceted, collaborative effort designed to increase the number of opportunities for students to engage in PA at school, including five components: (a) quality physical education; (b) PA during school; (c) PA before and after school; (d) staff involvement; and (e) family and community involvement.

PE serves a crucial role in the CSPAP model because it is the only component that includes a structured, developmentally appropriate curriculum taught by a state-certified or licensed teacher. During PE class, the teacher is expected to maximize students' opportunities to be active, and to teach them the necessary skills, knowledge, and dispositions to be physically active now and into the future (CDC, 2013; SHAPE America, 2015). Professional organizations have identified four essential components of PE programming: policy and environment; curriculum; appropriate instruction; and student assessment (SHAPE America, 2015). Each of the four components contains additional recommendations for improving PE, with the following strategies being crucial for providing PE in K-12 schools: employing state-licensed or -certified teachers who are endorsed to teach PE; maintaining reasonable teaching loads; providing adequate funding for PE equipment and supplies; offering students the recommended number of minutes/week of PE instruction; and assessing key PE outcomes such as students' knowledge of PA concepts and principles, and students' health-related physical fitness.

Previous research has demonstrated that the presence of full-time, well-trained PE teachers on staff at elementary schools is associated with important elements of instruction such as adequate duration and frequency of PE classes (i.e., PE instructional time per week), using evidence-based curricula, and incorporating health-related physical fitness testing, as well as providing other PA opportunities before, during, and after the school day (Turner, Johnson, Slater, & Chaloupka, 2014). Furthermore, research has shown that human resources such as student-to-PE teacher ratio, and physical resources such as access to adequate PE equipment and facilities, are associated with students having more PE class time and being more physically active during PE class (Bevans, Fitzpatrick, Sanchez, Riley, & Forrest, 2010).

It is clear that PE teachers are essential personnel at the school level for educating children about why and how to be active (e.g., Castelli & Rink, 2003; Dyson, 2014; SHAPE America, 2015). As others have noted (McCaughtry, Martin, Kulinna, & Cothran, 2006), although the overall education literature is clear that well-trained educators and resources are necessary for effective instruction in all content areas, more detailed study is needed to understand how the availability of resources might specifically impact PE specialists. Prior work has shown that instructional resources—specifically, a new PE curriculum and $3500 worth of PE equipment—enabled physical educators to better meet student needs and keep students more physically active in class (McCaughtry et al., 2006), and importantly, it also yielded emotional benefits such as more enthusiasm for PE among students and teachers.

PE teachers are uniquely positioned to be leaders in the implementation and support of broader elements of PA promotion throughout the school (Beighle, Castelli, Ernst, & Ernst, 2009; Castelli, Centeio, & Nicksic, 2013; Erwin, Beighle, Carson, & Castelli, 2013). Yet, it has also been acknowledged that in doing so, PE teachers face challenges such as a lack of resources, time and decision-making authority, and that many PE teachers may not have received sufficient professional preparation for leadership roles (Goc Karp, Scruggs, Brown, & Kelder, 2014). In many schools, providing even the basic elements of PE (e.g., instruction and student assessment) may be challenging due to resource and capacity limitations.

Unfortunately, given national economic issues over the past decade, many local education agencies have faced budgetary challenges necessitating difficult decisions regarding the prioritization of academic content and priorities. Some recommendations (e.g., Picus & Odden, 2011) regarding strategies to cope with budgetary shortfalls specifically target specialized programming such as PE, and recommend approaches such as reducing teacher coverage and cutting the school-day time and budgetary resources allocated to such programs. While budgetary constraints are very real challenges to the education system in this country, such approaches to cost containment severely compromise PE programs on a large scale. In addition, most states now mandate that students receive PE, although only 19 specify a minimum amount of time required for PE in elementary schools (SHAPE America, 2016). When districts and schools provide inadequate PE programming it not only violates such laws, but non-compliance can also negatively impact student fitness outcomes (Sanchez-Vaznaugh, Sánchez, Rosas, Baek, & Eggerter, 2012).

The purpose of this study was to examine elementary school PE resources across the country, and to explore how resources are associated with PE programming, using data from a 2013–2014 survey of a nationally-representative sample of US public elementary schools. In this work, PE resources relates to issues of PE staffing, teaching loads, opportunities for continuing education (CE), financial support for CE, and PE-related budgets. This category includes the allocation of district or school-level resources to ensure that PE programs have the necessary infrastructure in place to offer a quality education to students. With regard to PE programming, we examined instructional time/frequency and in-class student assessment practices. It was hypothesized that schools with more PE resources would be more likely to meet national recommendations (e.g., SHAPE America, 2015) for PE programming.

1. Methods

Data were gathered as part of a multi-year project that tracked school health-related policies and practices in elementary schools. These analyses use data collected by survey in the spring of the 2013-14 school year. This study was approved by the Institutional Review Boards at the University of Illinois at Chicago (where data collection occurred) and at Boise State University (where data analysis occurred). A waiver of documentation of informed consent was granted, as consent was implied by return of the survey.

1.1. Sampling and weighting

The sample was developed by survey experts at the Institute for Social Research at the University of Michigan, based on a sampling frame drawn from the Common Core of Data from the National Center for Education Statistics. The sample was developed to be nationally representative of public elementary schools (containing 3rd grade) from the contiguous United States. All public elementary schools with at least 20 students in 3rd grade were eligible for