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Physical Educators' Perceptions of Their Use of NASPE Standards

Timothy Baghurst, Jennifer Langley, Jason C. Bishop

Abstract

The rate of childhood obesity in the United States is approximately 17%. Because physical education can be a key intervention strategy against this epidemic, this study was conducted to determine physical educators' perceptions on their use of recommended national standards specifically focused on physical fitness and activity in their classroom. An online survey was distributed to 101 physical education teachers from nine states in which participants were asked to provide their opinion of several Likert-based questions that ascertained use of National Association for Sport and Physical Education (NASPE) Standards 1, 3, and 4. Teachers were found to incorporate the components of these standards at varying rates. More experienced physical education teachers spent less instructional time on movement fundamentals and combining skills than did less experienced teachers. Furthermore, they assessed student enjoyment significantly less in higher grades than in lower grades. Physical educators teaching higher grade levels as well as those with more contact time with students spent less instructional time teaching movement fundamentals, balancing skills, carrying and lifting techniques, and motor skills. Over 40% of participants had 2 or less hours of contact time per week. Thus, how effective a physical educator can be with limited time is uncertain, and al-

Timothy Baghurst is an associate professor, Department of Health and Human Performance, Oklahoma State University. Jennifer Langley is an assistant athletic trainer, Department of Recreation and Intercollegiate Athletics, University of Pennsylvania. Jason C. Bishop is an assistant professor, Athletic Coaching Education, West Virginia University. Please send author correspondence to tbaghurst@live.com

though physical educators have a unique opportunity to address childhood obesity challenges, they must be provided the time and opportunity to do so.

Childhood obesity has been rising steadily since the mid-20th century (National Center for Health Statistics [NCHS], 2010). Concurrent with this rise is an increase in diseases associated with obesity in children including cardiovascular disease, type 2 diabetes, hypertension, and dyslipidemia (Gardner, Gardner, & Sowers, 2008; Shmulewitz et al., 2006).

The prevalence of childhood obesity across the United States is approximately 17% (Ogden, Carroll, Kit, & Flegal, 2014). Although lower in adults, trends in obesity among children indicate a steady increase (Levy, Vinter, Richardson, St. Laurent, & Segal, 2009). In the United States, from the early 1960s until 2006, the number of children who are overweight or obese has doubled (Sebelius, Frieden, & Sondik, 2010). Thus, there is an increasing need not only to treat diseases associated with obesity, but also to determine what strategies might combat its development during childhood.

The Importance of Physical Education

Health problems that develop in adolescence often persist into adulthood (Fennoy, 2010), which emphasizes the importance of providing education and interventions in early childhood (Baghurst & Eichmann, 2014). It is unfortunate, however, that increases in levels of childhood obesity have corresponded to a decrease in the physical activity of children in physical education (PE) classes (Kern & Calleja, 2008; Salmon, Dunstan, & Owen, 2008; Whitt-Glover et al., 2009), which highlights the importance of this discipline within a student's education.

Physical educators can potentially decrease the incidence of childhood obesity in the United States (NCHS, 2010), and physical activity can help alleviate childhood obesity and related diseases (Byberg et al., 2009; Leitzmann et al., 2007). In addition, physical educators are also responsible for developing physical skills beyond being physically active. For example, in a recent prospective study, the researchers investigated the fitness levels of high school students 11 years after having been tested for fundamental motor and sport-based skills (Vlahov, Baghurst, & Mwavita, 2014). They found that high levels of motor skill proficiency in preschool, particularly sport-based skills, were significant predictors of high levels

of fitness later in life. Therefore, physical educators have a unique opportunity to develop skills in children that lead to physical activity and fitness.

School-based programs that are focused on food choices and physical activity provide an ideal locale to try and alter the rise in childhood obesity (Pyle et al., 2006). This includes addressing nutrition, screening, and physical activity in the schools. In addressing nutrition, school administrators have investigated meal options provided to students and the offerings of vending machines in the schools (Horridge, 2008; Millimet, Tchernis, & Husain, 2010). Screening involves measuring students for height and weight and informing parents of the results (McMurtry & Jelalian, 2010), although whether this information translates into meaningful information and change is unclear. By addressing the area of physical activity, school officials give children the opportunity to be more active in a structured environment (Harris, Kuramoto, Schulzer, & Retallack, 2009; Stork & Sanders, 2008), yet questions remain regarding the type and intensity of physical activity and how to overcome the potential barriers to participation. Thus, research into the association between the prevalence of childhood obesity and school PE programs is important and needed (Levy et al., 2009).

NASPE Standards

Although all 50 states list PE as a school requirement to graduate, unclear language regarding requirements makes enforcement for educational leaders difficult (Levy et al., 2009). Only 13 states (Arizona, Arkansas, California, Delaware, Florida, Kentucky, Louisiana, New Mexico, North Carolina, Oklahoma, South Carolina, Virginia, and Washington) wrote the policies in a way that could be enforced (Levy et al., 2009). Although the National Association for Sport and Physical Education (NASPE, 2009) provides standards recommended for inclusion in each state's health and PE curriculum, not all states and programs require adherence.

NASPE (2009) created six national standards of PE. These standards were recently modified (Society of Health and Physical Educators America, 2014), and therefore, standard numbers used in the basis for this study do not match those currently available in some material (but match those in others). These standards were designed to provide a framework for quality PE. Although all six standards are important, three directly relate to physical activity and skills that combat childhood obesity. Standard 1 expects students in PE

to demonstrate competency in motor skills and movement patterns, Standard 3 requires students to participate regularly in physical activity, and Standard 4 requires students to achieve and maintain a health-enhancing level of physical fitness. All have been found to influence levels of childhood obesity (e.g., Barlow, 2007; Cliff et al., 2010; Kilding, Wagenaar, Cronin, McGulgan, & Schofield, 2009; Reilly, Kelly, & Wilson, 2010; Zecevic, Tremblay, Lovsin, & Michel, 2010).

By investigating the incorporation of these standards in PE curricula and classroom decisions, we looked at the possible affects physical educators could have on the prevalence of childhood obesity. The purpose of this study was to determine how much physical educators perceive they incorporate elements of the three NASPE (2009) standards for PE that directly address obesity in their curriculum and classroom decisions. It was guided by one overarching research question: How much time, if at all, are elements of NASPE Standards 1, 3, and 4 incorporated into PE curricula?

Method

Participants

To determine the appropriate sample size for the study, a power analysis was conducted with a medium effect size of .30, an alpha level of .05, and an accepted power of .80 (Creswell, 2008). Analysis using G*Power 3.1.2 resulted in a desired sample size of 82. Participants (N = 101; 58 male, 43 female) were a convenience sample of physical educators in the public school systems from eight states including Arizona (n = 38), Arkansas (n = 6), California (n = 22), Georgia (n = 15), Michigan (n = 2), Minnesota (n = 8), Oregon (n = 7), and Utah (n = 3). Participants' status as physical educators was established individually by state as each state has varying requirements for teacher certification. Because private and parochial schools are not required to abide by state standards, no physical educators from these schools were included in the study. Physical educators were chosen because these individuals are directly responsible for the incorporation and use of the NASPE standards in health and PE classrooms.

Instruments

The survey instrument was designed specifically for this study. Prior to the decision to self-develop the survey instrument, an exhaustive search for commercially available surveys was completed,

and none were found. In addition to demographic questions ascertaining gender, number of years teaching, grade level taught, and location (state), the survey contained 15 randomly ordered Likert-type statements in which participants were asked to rate their level of agreement from 1 = *never* to 5 = *always*. These statements were developed specifically based on the three NASPE standards being investigated, and there were five survey questions per standard. These questions were framed in terms of time spent in specific areas, and example questions included "How often, if at all, did you teach specific motor skills?" and "How often, if at all, did you assess the students' levels of fitness?"

Statements were developed from key words or phrases that were repeated in the descriptions of the standards. For the first NASPE standard, five key phrases or words were identified: (a) movement fundamentals, (b) combining skills, (c) balancing skills, (d) carrying and lifting techniques, and (e) motor skills. This process was repeated for the third NASPE standard, and five key phrases were identified: (a) time management, (b) time spent in physical activity, (c) fitness tests, (d) goal setting, and (e) enjoyment. Key phrases identified from the fourth NASPE standard included (a) identifying levels of physical activity (i.e., light, moderate, or vigorous), (b) levels of fitness, (c) health-related recommendations, (d) physical activity indicators, and (e) improving fitness levels.

Validity of this survey followed several steps. After a broad search to locate an equitable survey, items were developed and evaluated by three university professionals to provide content feedback to aid in construct validity. These recommendations were adopted in the final survey instrument. Following these changes, further validity of the survey was acquired through a pilot study, wherein the survey was sent out to 10 eligible physical educators from a state not included in the data collection for feedback regarding content, wording, and formatting to ensure the survey was formatted and presented correctly and the content could be understood by the target population. Minor grammatical edits were made, and one statement was modified to include examples associated with the statement, but the overall structure and wording of the survey remained unchanged.

Procedure

Following university ethics approval, a school district was randomly targeted from the identified states and the superintendent for each district was contacted to obtain written approval and permis-

sion to conduct the study within that district. District representatives provided the contact information for health and physical educators within the districts that consented to the study.

The request for participation occurred in two ways. The first method was through direct e-mail between the online survey website and potential participants. These participants were sent an e-mail containing an explanation of the study and a link to the Web-based survey. Reminder e-mails were sent at time intervals of 2 weeks, 3 weeks, and 4 weeks after the initial e-mail. Two of the school districts sent the survey via Web link to the potential participants, stating that the response rate would be increased and that they did not want to release the contact information of the health and physical educators. Thus, these potential participants could not be sent reminder e-mails. The survey remained available for 1 month.

Data Analysis

Data were categorized into independent and dependent variables. The independent variables included gender, years teaching, grades taught, class time, and whether PE was mandated by state law. The dependent variables included the items evaluated for teacher adherence to addressing the NASPE standards. The data were analyzed via Pearson product–moment correlation coefficient (r) to determine the presence of a relationship between each independent and dependent variable. Alpha level was set at .05.

Results

Almost one quarter (22.8%) of participants had between 1 and 5 years teaching experience, 32.7% between 5 and 10, 14.9% between 10 and 15, 6.9% between 16 and 20, and 22.8% more than 20. Participants were asked to indicate the primary grades taught, whereby 39.6%, 29.7%, and 30.7% taught K–5, 6–8, and 9–12, respectively. When asked if PE was state mandated, 73% indicated that it was. Time spent with each class per week measured in hours ranged between less than 1 hr (15.8%), 1–2 (27.7%), 2–3 (9.9%), 3–4 (6.9%), 4–5 (26.7%), and more than 5 (12.9%).

Correlations between teacher gender and the dependent variables were not significant. Table 1 shows the means and standard deviations of each independent and dependent variable as well as the r value of each correlation. The null hypothesis was that each relationship would be $r = .00$. Assumption of independence was met via random selection, and the assumption of linearity was met via a scatterplot review of the variables.

Table 1
Means, Standard Deviations, Correlation Coefficients, and p Values of Independent and Dependent Variables

Standard, *M* (*SD*)	Gender	Years teaching	Grades taught	Time with class	State mandated
		2.74 (1.47)[a]	2.75 (1.06)[b]	3.40 (1.76)[c]	1.27 (.44)[d]
NASPE Standard 1					
Movement Fundamentals, 3.78 (.99)[e]	*r* = .06 *p* = .57	*r* = –.23 *p* = .02*	*r* = –.28 *p* = .01**	*r* = –.34 *p* = .01**	*r* = .11 *p* = .27
Combining Skills, 3.28 (1.03)	*r* = .07 *p* = .50	*r* = –.24 *p* = .02*	*r* = –.18 *p* = .07	*r* = –.27 *p* = .01**	*r* = .06 *p* = .59
Balancing Skills, 2.88 (.96)	*r* = –.01 *p* = .89	*r* = –.19 *p* = .06	*r* = –.26 *p* = .01**	*r* = –.26 *p* = .01**	*r* = –.04 *p* = .68
Carrying/Lifting Techniques, 2.59 (1.20)	*r* = .04 *p* = .71	*r* = .14 *p* = .17	*r* = .34 *p* = .01**	*r* = .29 *p* = .01**	*r* = –.06 *p* = .57
Motor Skills, 3.87 (1.02)	*r* = .03 *p* = .88	*r* = –.14 *p* = .16	*r* = –.28 *p* = .01**	*r* = –.38 *p* = .01**	*r* = .14 *p* = .15

Table 1 (cont.)

Standard, *M* (*SD*)	Gender	Years teaching	Grades taught	Time with class	State mandated
NASPE Standard 3					
Time Management,	$r = -.20$	$r = .07$	$r = .15$	$r = .17$	$r = -.15$
2.71 (1.07)	$p = .84$	$p = .47$	$p = .14$	$p = .09$	$p = .13$
Time Spent in Physical Activity, 2.57 (1.00)	$r = -.16$	$r = .11$	$r = .01$	$r = -.10$	$r = -.24$
	$p = .12$	$p = .28$	$p = .90$	$p = .31$	$p = .02$*
Fitness Tests,	$r = .8$	$r = -.05$	$r = .01$	$r = .02$	$r = -.06$
3.19 (1.14)	$p = .43$	$p = .59$	$p = 90$	$p = .85$	$p = .55$
Goal Setting,	$r = .02$	$r = -.01$	$r = .09$	$r = .07$	$r = -.21$
3.43 (.93)	$p = .86$	$p = .95$	$p = .33$	$p = .46$	$p = .04$*
Enjoyment,	$r = .12$	$r = -.06$	$r = -.28$	$r = -.25$	$r = .01$
3.50 (1.08)	$p = .22$	$p = .53$	$p = .01$**	$p = .01$	$p = .90$

Table 1 (cont.)

Standard, *M* (*SD*)	Gender	Years teaching	Grades taught	Time with class	State mandated
NASPE Standard 4					
Levels of Physical Activity, 3.51 (.93)	$r = .16$ $p = .12$	$r = –.16$ $p = .10$	$r = –.12$ $p = .25$	$r = –.14$ $p = .18$	$r = .08$ $p = .43$
Levels of Fitness, 3.63 (.90)	$r = .14$ $p = .15$	$r = .01$ $p = .91$	$r = –.23$ $p = .82$	$r = .08$ $p = .43$	$r = –.78$ $p = .44$
Health-Related Suggestions, 3.69 (85)	$r = .94$ $p = .67$	$r = –.02$ $p = .88$	$r = .06$ $p = .56$	$r = .10$ $p = .34$	$r = .01$ $p = .94$
PA Indicators, 3.47 (.99)	$r = .02$ $p = .83$	$r = –.05$ $p = .64$	$r = –.17$ $p = .10$	$r = –.10$ $p = .31$	$r = .12$ $p = .22$
Improving Fitness Levels, 3.87 (.96)	$r = –.00$ $p = .97$	$r = .15$ $p = .14$	$r = –.12$ $p = .91$	$r = .02$ $p = .85$	$r = –.06$ $p = .56$

[a]Mean years teaching was between 6 and 15 years. [b]Mean grades taught were between third and eighth grade. [c]Mean hours per week with PE classes was 6–12 hr per week. [d]Physical education was mandated in 73% of teachers who completed the survey. [e]Means and standard deviations of Likert scored items. Range: 1 = *Never addressed the standard* to 5 = *Always addressed the standard.*

*$p < .05$. **$p < .01$.

Standard 1

Significant inverse correlations were observed between years teaching and movement fundamentals ($r = -.23$, $n = 105$, $p = .02$) and combining skills ($r = -.24$, $n = 105$, $p = .02$). More experienced PE teachers spent less instructional time on movement fundamentals and combining skills than did less experienced teachers.

There were significant positive and inverse correlations between grades taught and movement fundamentals ($r = -.28$, $n = 105$, $p < .01$), balancing skills ($r = -.26$, $n = 105$, $p < .01$), carrying and lifting techniques ($r = .34$, $n = 105$, $p < .01$), and motor skills ($r = -.28$, $n = 105$, $p < .01$). Therefore, PE teachers in higher grade levels spent less instructional time teaching movement fundamentals, balancing skills, carrying and lifting techniques, and motor skills.

Significant positive and inverse correlations were observed between time with PE class and each NASPE Standard 1 item including movement fundamentals ($r = -.34$, $n = 105$, $p < .01$), combining skills ($r = -.27$, $n = 105$, $p < .01$), balancing skills ($r = -.26$, $n = 105$, $p < .01$), carrying and lifting techniques ($r = .29$, $n = 105$, $p < .01$), and motor skills ($r = -.38$, $p < .01$). Thus, a greater time spent in PE class resulted in a decrease in instructional time spent on increasing fundamental movement skills, combining skills, balancing skills, carrying, and motor skill development. A greater time spent in PE class resulted in greater instructional time spent on teaching lifting techniques. No significant relationships were observed between state-mandated PE and each of the NASPE Standard 1 items.

Standard 3

Three significant relationships were observed within NASPE Standard 3 and each of the independent variables. Physical educators assessed student enjoyment significantly less in higher grades than in lower grades ($r = -.28$, $n = 105$, $p < .01$). Furthermore, less time was spent in physical activity ($r = -.24$, $p = .02$) and on goal setting ($r = -.21$, $p = .04$) among PE classes mandated by public policy.

Standard 4

No significant relationships were found between NASPE Standard 4 items and each of the independent variables. Thus, no significant differences were found between levels of physical activity, levels of fitness, health-related suggestions, physical activity indica-

tors, and improving fitness levels when compared with participant gender, years teaching, grades taught, time with class, and whether PE was state mandated ($p > .05$).

Discussion

This study was conducted to determine the frequency that physical educators use recommended national standards that are specifically focused on physical fitness and activity in their classroom. This is important as understanding whether physical educators are adhering to standards could impact the obesity levels and general health and well-being of children.

Childhood obesity is complex with a myriad of possible causes including genetics (Dina et al., 2007), environment (Verhulst et al., 2009), food (Kral et al., 2008), economics (Cawley, 2010), and lifestyle (Epstein et al., 2008). Potential solutions to address this epidemic include medical professional support (Vaughn & Waldrop, 2007), familial units (Wen et al., 2007), public policies (Pinzon-Perez & Mountcastle, 2010), community programs (Coleman, Geller, Rosenkranz, & Dzewaltowski, 2008), and school-based programs (Pyle et al., 2006). With regular contact with children, teachers and physical educators in particular have a unique opportunity to educate and change unhealthy behaviors by instructing children how to live healthily throughout all phases of life (Sergiovanni, 2007). However, there is little research to determine if or how physical educators use standards within their curriculum to combat childhood obesity.

Standard 1 expects PE students to demonstrate competency in motor skills and movement patterns, and our findings yielded several areas of discussion. First, we found that the more time a student spent in PE, the less instructional time was dedicated to motor skill development. It is not surprising that PE teachers in higher grade levels spent less instructional time teaching fundamental movement skills. High school curricula are more likely to be focused on other areas such as strategies, for example. However, fundamental movement skills are the foundation to successful movement and coordination (Lloyd, Saunders, Bremer, & Tremblay, 2014), and the increased time "lifting" indicates that perhaps PE teachers are focusing more on fitness-based activities. This could have potentially deleterious consequences as higher levels of motor skills have been shown to predict higher levels of fitness (Barnett, van Beurden, Morgan, Brooks, & Beard, 2008).

Standard 3 intends for students to develop habitual patterns of regular participation in meaningful physical activity (NASPE, 2009). This standard is perhaps the most significant of all of the standards because it is within the setting of physical activity participation that children apply, practice, and refine fundamental motor skills. In addition, the positive health and academic benefits associated with children's regular physical activity participation are well known. There was an inverse relationship between time spent in physical activity and state-mandated PE, such that students in state-mandated programs received less physical activity time than students without a state mandate. Bias (2010) reported that the majority of superintendents polled thought that PE programs within their jurisdiction were meeting NASPE standards. However, Benham-Deal, Jenkins, Wallhead, and Byra (2007) reported that teachers found that state mandates can negatively affect their program; in the present study, state mandates appear to limit how much physical activity is occurring in schools.

It is concerning that PE teachers assessed student enjoyment less in higher grades than in lower grades; without additional data, it is unclear why. Because a lack of fun is a primary reason children quit sports ("Why Kids Quit Sports," 2001), PE teachers, irrespective of level, should be cognizant of whether their classes are not only beneficial, but also fun, which can positively influence exercise outcomes and attitudes toward physical activity (Zan & Ping, 2014). Teaching a student that physical activity and exercise is not fun is likely to result in less desire to engage in these activities as an adult (Ryan & Deci, 2000).

Standard 4 requires students to achieve and maintain a health-enhancing level of physical fitness. It is understandably difficult for physical educators to believe they are impacting physical fitness levels if PE is not provided on a regular basis. For example, Benham-Deal et al. (2007) reported that a lack of time was a significant barrier to meeting state standards. Weiyun (2006) also found that teacher personal commitment, active participation in professional development, and understanding the standards influenced teachers' knowledge and views of national standards.

Limitations and Future Research

This study should be considered in light of several limitations that provide opportunities for future research. First, although statistically ample, participant sample size was small considering the

number of physical educators in the United States. Researchers should consider expanding the pool to determine if differences vary by state. Second, not all NASPE standards were assessed, in part to keep the survey of a manageable length and focus specifically on obesity-related standards. Researchers may wish to examine adherence to these standards through a qualitative method to gain a richer, deeper understanding of how and why NASPE standards are or are not used. Finally, this survey was designed specifically for this study and needs further analysis with additional groups to determine its reliability and validity.

Conclusions

Educational leaders rely on research to support changes to current health and PE standards, public policy, and legislation. Story, Nanney, and Schwartz (2009) stated that physical activity can be added to the school curriculum without academic consequences, but a scientific basis through research must exist to create a sound rationale for these additions. As Richards and Wilson (2012) so eloquently stated, to advocate one must have something worth advocating. Our findings suggest that physical educators can do more to meet current NASPE standards. However, perhaps more concerning is the limited contact time between the physical educator and student; over 40% of participants had 2 or less hours of contact time per week. Thus, how effective a physical educator can be with such limited time is uncertain. Although physical educators have a unique opportunity to address childhood obesity challenges, they must be provided the time and opportunity to do so.

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