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Fit to Teach Physical Education?

En forme pour enseigner l'éducation physique?

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The purpose of this study was two-fold, to explore the relationships between teacher's confidence to teach Physical Education (PE) and: 1) teacher's own physical activity levels; and, 2) teacher's formal PE training. Elementary school teachers (n = 58) completed an online survey between January and April 2010. An independent sample t-test and an analysis of variance was undertaken to achieve the study purpose. Results indicated that teachers who engaged in sufficient daily activity to meet the Canadian Physical Activity guideline were more confident in their ability to teach PE ($p < .05$). When considering teachers' formal PE training, results (albeit non-significant) confirmed that an increased confidence in teaching PE is associated with educational training in PE. In an effort to increase teachers' confidence instructing PE class, these findings support the importance of encouraging physical activity participation among generalist elementary school teachers and the need to offer ongoing PE training.

Cette étude avait deux objectifs, soit examiner les relations entre la confiance des enseignants en leur aptitude à enseigner l'éducation physique, d'une part, et 1) le niveau d'activité physique individuel de l'enseignant; 2)la formation académique en éducation physique, d'autre part. Des enseignants de l'élémentaire (n = 58) ont répondu à un sondage en ligne entre janvier et avril 2010. Des tests T sur des échantillons indépendants et des analyses de variance ont servi dans le traitement des données du sondage. Les résultats montrent que les enseignants suffisamment actifs quotidiennement pour satisfaire aux lignes directrices canadiennes sur l'activité physique avaient plus confiance en leur aptitude à enseigner l'éducation physique ($p < ,05$). Les résultats révèlent aussi que la formation académique est corrélée positivement, mais de façon non significative, à la confiance à enseigner l'éducation physique. Dans le but d'accroître le niveau de confiance des enseignants d'éducation physique, cette étude souligne l'importance d'encourager les généralistes de l'élémentaire à

s'adonner davantage à l'activité physique et confirme la nécessité d'offrir une formation continue en éducation physique.

Introduction

According the 2010 Active Healthy Kids Canada Report Card, Canadian children are significantly less physically active and less fit than their same-aged counterparts 20 years ago. In fact, the report assigns a failing grade for the fourth consecutive year, reflecting the chronic lack of change in physical activity levels of Canadian children (Active Healthy Kids Canada, 2010). The known benefits of physical activity are numerous (Warburton et al., 2006) and while overall physical activity is important, physical education (PE) may be considered most important as it engages children in physical activity and provides an opportunity for students to learn, practice, and perform new motor skills. As such, physical education represents an ideal time to support, encourage, and facilitate both physical literacy (e.g., the development of fundamental movement skills) and physical activity participation among a largely sedentary Canadian child population. Several studies have substantiated the relationship between PE and positive health impacts for children and youth (Faucett, Nugent, Sallis, & McKenzie, 2002; McKenzie, Sallis, Kolody, & Faucette, 1997, McKenzie, Sallis, Faucette, Roby, & Kolody, 1993; Sallis et al., 1997); however, there still exists a need for longitudinal studies in order to understand the lifelong health impact of childhood participation in quality PE (Trudeau & Shephard, 2008).

Given the short-term benefits highlighted in the literature linking quality daily PE to children's overall health (Dartar & Strum, 2004), it is important to examine who is responsible for its delivery. Physical education specialists (i.e., individuals who have an undergraduate education in PE - or an equivalent undergraduate degree - and who have pursued post-graduate specialized PE teacher training) are not mandated in all provinces/territories at the elementary school level. Therefore, generalist teachers (i.e., teachers who have training in a variety of courses but not necessarily PE; non-specialists) lead PE classes in many schools. For instance, in Ontario, a recent study by Faulkner and colleagues (2008) identified that 63% of schools reported PE classes were taught by non-specialists. The large number of generalist teachers providing PE compels the need to consider the quality of these PE classes. Researchers from the University of Manitoba conducted a qualitative study whereby generalist teachers and principals were asked to describe the challenges experienced in delivering quality PE (DeCorby, Halas, Dixon, Wintrup, & Janzen, 2005). The researchers noted that most school principals felt generalist teachers were "limited in their ability to provide lessons that were developmentally appropriate and varied in terms of an effective scope and sequence of curricular content" (p.28). These findings suggest that on-going teacher training in PE (e.g., professional development) and pre-service teacher PE education (e.g., previous PE preparation before starting to teach) play a significant role in the quality of PE. It is promising to note that although studies have demonstrated generalist teachers lack confidence in teaching PE, these teachers do believe PE is a valuable component of the curriculum for their students (DeCorby et al., 2005; Xiang, Lowy, & McBride, 2002).

Researchers from Australia examined non-specialist teachers' confidence to teach PE and the nature and influence of their previous personal experiences

(e.g., childhood experiences) in PE (Morgan & Bourke, 2008). These researchers suggested that the quality of an individual's school PE experiences directly predicted his or her confidence to teach PE. Although changing a teacher's own experience as a PE student is not possible, providing pre-service elementary teachers with appropriate PE learning opportunities may beneficially impact the delivery of PE classes for current school children. Other studies have identified teacher preparation and education in PE as contributors to generalist teachers' confidence for teaching PE. Morgan and Bourke (2008) found a significant relationship between teachers' preparation in PE and their confidence to teach it. Additionally, Carney and Chedzoy (1998) reported that the lack of teacher confidence is due primarily to a lack of belief in their own physical ability to perform skills and activities competently. Based on this literature, it appears that teacher confidence to teach PE may come from a variety of experiences. Two areas that appear to be lacking in research are whether, and how, a teacher's personal physical activity participation may affect her/his self-confidence in delivering PE curriculum.

Based on these questions, the purpose of the current study was to explore the relationship, if any, between teachers' PE confidence and: 1) teachers' personal physical activity levels; and 2) their PE educational training. The results of this study may provide insight into the importance of teachers' personal physical activity levels and pre-service and ongoing training, and provide direction to support teacher confidence in PE.

Methods

Recruitment

Concurrent to seeking approval from the University of Western Ontario Research Ethics board, research protocols were submitted to the local public and separate school boards for review. Upon receiving approval from all three research ethics boards, participant recruitment was initiated. The research coordinator at each school board sent an email on behalf of the research team to all elementary school principals inviting them to circulate a recruitment email to the teachers on their staffs and to post a recruitment flyer in their staff rooms. The recruitment email and flyer included information for accessing two versions of a survey (i.e., online and paper), as well as contact information for the research team. In an effort to enhance the survey's response rate, a member of the research team attempted to contact each principal by phone 5 weeks after the initial email was sent by the boards' research coordinators. The follow-up calls aimed to confirm that the initial email had been received and whether the principal had forwarded the recruitment email to their staff and posted the flyer. In cases where the initial email had not been received or was misplaced, the researchers re-sent the information directly to the principal. Principals who indicated they had sent the information to their staff were thanked for their support, and those that indicated they had not provided their staff with the information were given the opportunity to have any questions about the study answered by the research team and encouraged to facilitate their staffs' participation.

Participants

A total of 84 teachers completed the survey, of which 58 (69%) met the inclusion criteria (i.e., currently teaching one or more PE classes at some point in

the school day) and, therefore, were included in the analysis. The sample was largely female (74%), which is not atypical in elementary school. The average age of respondents was 33.99 years (*SD* = 9.56) and the average number of years of teaching experience was 14.35 years (*SD* = 9.50). Participants taught PE to children from Junior Kindergarten (JK) to grade 8. Full demographic information of study participants is summarized in Table 1.

Table 1
Participant demographic information (n=58)

	#	%
Sex		
Male	11	26
Female	32	74
Age		
<25 years	7	17.5
25-34 years	12	30
35-44 years	16	40
>45 years	5	12.5
Highest Level of Education		
College	0	0
University	32	73
Graduate School	12	27
Recent PE Training		
No formal PE training	17	37
1 course in PE in teachers college	20	43.5
Kinesiology, BPE degree, or PE specialist	9	19.5
Believe Have Sufficient PE Training		
Not at all	2	4.4
Minimally	8	17.8
Somewhat	9	20
Moderately	13	28.9
A lot	13	28.9

*numbers may not add up due to missing data – only those teachers who reported teaching PE were asked demographic questions.

Data Collection and Analysis

Interested elementary school teachers were asked to complete a survey, titled the "Physical Activity, Teacher Training and Physical Education Confidence Questionnaire". The primary method of survey completion was online via Survey Monkey; however, participants had the option to complete a paper survey if they preferred (this involved contacting the researchers to request a paper copy; Dillman, 2002). No participants who requested this option completed the survey. All information collected through Survey Monkey met university research ethical approval and did not collect personal identifiers or IP addresses.

The survey was comprised of five sections: 1) school profile; 2) teaching profile (e.g., grades taught, years of experience); 3) teacher training and confidence; 4) teacher physical activity behaviours (via the Adapted Godin

Leisure Time Exercise Questionnaire); and 5) personal demographic information (e.g., age, sex, etc). Sections 1, 2, 3, and 5 were comprised of sets of researcher-devised questions, developed for this study. Teacher confidence was measured by questions such as: How confident are you in your ability to be an effective PE teacher?, while teacher training was captured by questions such as: To what extent do you feel you have sufficient training to be an effective PE teacher? Section 4 -The Adapted Godin Leisure Time Exercise Questionnaire was used to measure the frequency and duration of the respondent's physical activity levels. The Adapted Godin Leisure Time Exercise Questionnaire has a strong alpha reliability of .87 to .95 (Godin & Shepard, 1985; Irwin, 2007), and asked teachers to identify the number of days and the number of 10-15–minute blocks and 30-minute blocks during those days which they participated in various levels of physical activity (i.e., light, moderate, vigorous) for an average 1-week period.

Analysis

Two specific analyses were undertaken. First, an independent sample t-test was completed to identify whether physically active teachers were more confident teaching PE than their sedentary counterparts. Specifically, this analysis assessed whether there was a difference in the confidence level of teachers that were sufficiently active (e.g., met the Canadian physical activity guideline of 150 minutes a week or approximately 30 minutes over 5 days), as compared with teachers that were not sufficiently active. Second, a one-way Analysis of Variance (ANOVA) was performed to test for differences in confidence teaching PE among teachers that have different levels of physical education training (e.g., no formal PE training, 1 course in PE, Kinesiology, Bachelors in PE, or PE specialist).

Findings

The variances of the two groups in the first analysis (i.e., sufficiently physically active teachers, versus not-sufficiently-physically active teachers) were significantly heterogeneous [$F(1,44) = 4.64$, $p < 0.05$], and so equal variances were not assumed within the t-test of the mean difference between groups. Results of this analysis suggested that physically active teachers are more confident teaching PE ($M = 4.62$, $SD = 0.51$) than teachers that are not sufficiently physically active ($M = 4.03$, $SD = 1.02$), $t(41.28) = 2.59$, $p < .05$. Additionally, male teachers appeared to be more confident teaching PE (M = 4.73, $SD = 0.47$) than their female counterparts ($M = 4.09$, $SD = 1.23$), $t(40.40) = 2.50$, $p < .05$. Because of the large sample size discrepancy between males and females, it was important to test the difference between the variances of the two groups. Levene's test of homogeneity of variances was statistically significant suggesting that the variances are significantly different from each other. Given that the variance of the bigger group (i.e., women) is larger than the variance of the smaller group (i.e., men), this suggests that this finding is likely to be conservative (Cohen, 2001).

For our second analysis, although not statistically significant at an alpha of 0.05, these data reveal the hypothesized trend that increased training in PE impacts teacher confidence when teaching PE, $F(2, 43) = 2.44$, $p < .10$. Mean confidence levels are presented in Table 2, separated by educational level.

Table 2
Means (SD) of confidence teaching PE based on educational training

	Mean (SD)	N
No formal PE training	3.82 (.95)	17
1 Course in PE	4.35 (.93)	20
Kinesiology, Bachelor of Physical Education, or Physical Education Specialist	4.56 (.73)	9
Total	4.20 (.93)	46

Discussion

The purpose of this study was two-fold, to explore: 1) the relationship, if any, between elementary teachers' confidence in teaching PE and a teacher's personal physical activity levels; and 2) the relationship between the teacher's confidence in teaching PE and their PE educational preparation. Results indicated that teachers who met the recommended daily physical activity guideline were in fact more confident in their ability to teach physical education than those teachers who did not engage in the recommended amount of daily physical activity. In addition, this study also confirmed similar previous findings that increased confidence in teaching PE was associated with education and training in PE (e.g., Janzen, Halas, Dixon, DeCorby, Booke, & Wintrup, 2003; Tremblay, Pella & Taylor, 1996). While this result may not be surprising, the implications of these findings suggest that encouraging teachers to participate in physical activity may increase their confidence in teaching PE, and potentially the quality of physical activity in their physical education classes. Research suggests that the quality of PE instruction has been correlated with physical activity levels of children participating in such classes (McKenzie et al., 2004).

Based on the current PE literature, it has been identified that several variables may influence the quality of PE offered to Canadian students including the amount of time spent in PE, PE resources and equipment, and the "lack of physical education teachers qualified to teach physical education" (Mandigo, 2010, p.7). In fact, Faulkner and colleagues (2008) emphasized the importance of having well-prepared PE teachers as "part of the solution" to ensure students are sufficiently active during the school day" (p.418). While these researchers acknowledge that this is not the only solution for increasing the quality of PE offered in Canadian classrooms, it does appear that having teachers who are educated, and consequently confident in their ability to teach PE, is important to increase the quality of PE provided.

Further, it appears that the teacher's confidence in instructing PE may be developed as a result of a variety of experiences, inclusive of personal physical activity behaviours and childhood experiences. This finding lends support to previous research which has demonstrated that a teacher's own childhood experiences in PE (Morgan & Burke, 2008); and physical competence in PE skills (Carney & Chedzoy, 1998) can influence one's confidence in teaching PE. The current study makes an important contribution to the literature by identifying that confidence in teaching PE is also influenced by the teacher's own physical activity behaviours. This research also supports the body of literature which highlights that a teacher's PE training/education impacts their confidence

teaching physical education. Therefore, further examination of whether the teacher's physical activity levels, training, and confidence to teach elementary PE have a direct impact on the quality of physical education offered in their classes is warranted.

Limitations

While the present study provides insightful information regarding PE teachers' physical activity behaviours, educational training and subsequent confidence in the classroom, it is not without limitations. First a small sample size and the self-report nature of this study limit the generalizability of these findings. Specifically, participants were requested to self-report their physical activity levels; research suggests that subjectively reported activity levels tend to be over reported when compared with objective measurement (Beyler, Nusser, Fuller, & Welk, 2008). Additionally, the predominately female sample limits the generalizability of these results to the larger teacher population in elementary school. Moreover, because this study was cross-sectional in design, we are not able to infer causation. Lastly, it is possible that the teachers in this study were eager to participate and passionate about their job as a PE teacher, and therefore, may not represent the average elementary school teacher. Despite these limitations, the results of this work identified a significant relationship between teachers' personal physical activity behaviours and confidence teaching PE. This finding is important for consideration and future exploration in an effort to improve the confidence of PE teachers, the implementation of PE curriculum, and ultimately, the physical activity levels of Canadian children. Given the results of this research, efforts to improve the quality of PE implementation in elementary schools might entail ensuring that qualified teachers who are also *sufficiently physically active* (e.g., meet the Canadian physical activity guideline of 150 minutes a week or approximately 30 minutes over 5 days) are the ones responsible for teaching lifelong healthy physical activity in elementary school students.

Elementary teachers who meet physical activity guidelines and seek out educative training sessions in PE instruction are typically, more confident in the PE teaching environment. Future studies are needed to continue to explore the relationship between teacher physical activity and its impact in the physical education teaching environment. This area of research has the potential to address the growing need to keep students active and engaged in physical activity. Physical education is an opportunity to teach lifelong leisure skills and promote healthy physical activity, when taught by qualified, confident and physically active teachers.

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