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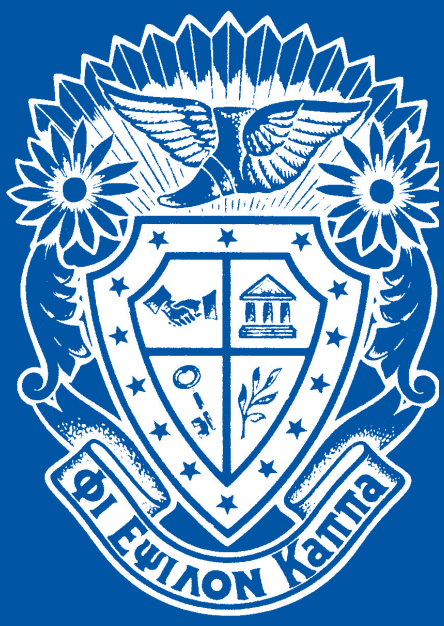

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PEDAGOGY

Physical Educators' Attitudes Toward the Teaching Profession and Perceptions of School Climate

Catherine E. Cardina and Clancy M. Seymour

Abstract

Teachers' attitudes and enthusiasm about teaching are characteristics of effective teachers, and these characteristics affect student achievement. This study compared self-reported perspectives of secondary public school physical education (PE) teachers to all other secondary public school teachers regarding (a) attitudes toward the profession of teaching, (b) perceptions of their school climate and working environment, (c) job satisfaction, and (d) general characteristics and job responsibilities. Data were collected from a nationally representative sample of public school teachers in the United States. This study used descriptive statistics to describe secondary teachers' perceptions of school climate, general characteristics, and attitudes toward teaching. Compared to teachers of other subjects, physical educators reported more job responsibilities outside of teaching and leadership roles in the school community. PE teachers also reported more positive levels of teacher satisfaction, professional support, and attitudes toward teaching. Based on these findings, recommendations related to physical educators' attitudes-and perceptions are provided.

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Research on teacher effectiveness encompasses teachers' qualities that influence student learning and academic achievement. Some major qualities of effective teachers focus on teachers' knowledge, skills, behaviors, responsibilities, and dispositions. Stronge (2018) described a Framework for Teacher Effectiveness derived from the research of Williams (2010), which included the following qualities of effective teaching: professional knowledge, assessment, instructional delivery, instructional planning, learning environment, and professionalism. The framework's professionalism construct is further categorized into exhibiting goals, values, dispositions, and beliefs. These attributes are important contributors to the teaching–learning process of effective teachers and have been associated with improved student learning. For example, a teacher's enthusiasm about teaching as a professional characteristic is a key aspect of instructional quality that has been found to affect student achievement by positively influencing students' motivation to learn (Breault, 2013; Kunter et al., 2013; Mitchell, 2013; Walberg & Paik, 2000; Stronge, 2018). Long and Hoy (2006) reported that students who experienced enthusiastic and interested teachers were not only more attentive and involved during class but also more engaged in subject-related activities outside of class. Similarly, Kunter et al. (2013) noted several studies (Frenszel et al., 2009; Kunter et al., 2008; Roth et al., 2007) that suggested student motivation to learn was influenced by teachers who view their occupation as enjoyable and intrinsically rewarding. In both instances, teachers created supportive learning environments for students, fostered student engagement, and promoted student learning by demonstrating a positive attitude toward their students and an enjoyment of teaching. Moreover, Buettner et al. (2016) found that teachers with a positive attitude expressed a sense of accountability or responsibility for student learning and were more likely to offer support and encouragement when students expressed negative emotions. Eren (2014) also concluded that teachers' attitudes such as academic optimism for students strengthen commitment to teaching.

Similarly, a positive attitude about teaching can help an educator cope with professional challenges. Bullough and Hall-Kenyon (2011) agreed and described teachers as hopeful people who feel a calling to teach and have an investment in and commitment to teaching.

These qualities enhanced a teacher's resilience and ability to successfully adjust to problems in the profession. For example, when a teacher is faced with an adverse teaching situation, their outlook and willingness to see difficult situations as professional challenges and learning opportunities may positively influence their overall job satisfaction. Furthermore, teachers with a positive attitude are more likely to pursue professional development and seek leadership responsibilities such as assisting other teachers or serving as mentors to new teachers (Stronge, 2018).

Consequently, a number of factors may affect teachers' attitudes and enthusiasm toward teaching. Price (2012) concluded that principals, who serve as school leaders, strongly and directly affect teachers' attitudes, which in turn influences the school climate. A positive school climate in which teachers feel supported can contribute to teacher satisfaction, commitment to teaching, collaboration among colleagues, and overall job satisfaction. Furthermore, Pearce and Morrison (2011) noted that supportive environments contribute to teacher resilience and aid teachers in managing professional stressors. Conversely, teachers who feel unsupported and devalued by their peers and school administration can burn out or leave the profession altogether (Wenner et al., 2019). Furthermore, a school environment that includes cooperative and collegial relationships with emotional and psychological balance for teachers enhances professional practice and teacher effectiveness (Beauchamp et al., 2014; Coggshall et al., 2012; Collie et al., 2012; Johnson et al., 2017). Goe et al. (2008) concluded, "Effective teachers collaborate with other teachers, administrators, parents, and educational professionals to ensure student success, particularly the success of students with special needs and those at high risk for failure" (p. 8).

Given the above context, it is crucial for physical educators to be a catalyst for a positive school climate that enhances teachers' overall job satisfaction, commitment to teaching, and attitudes and enthusiasm for teaching, which in turn can influence student learning and motivation. McCaughtry and Ferry (2017) detailed this relationship, describing teaching physical education (PE) as an emotional practice (Denzin, 1984) that affects physical educators' career satisfaction and professional growth and provides a foundation for educators

to influence students' motivation, passion, and desire to engage in physical activities.

Overall, this literature review reveals that teachers with a positive attitude who enjoy teaching are enthusiastic about and interested in teaching, promote student learning, and positively influence students' motivation to learn. Additionally, teachers with positive attitudes toward teaching are more likely to see difficult teaching situations as professional challenges, pursue professional development, and take on leadership roles. While the research investigating physical educators' attitudes toward the teaching profession continues to develop, this study seeks to add to this body of literature in PE by comparing secondary PE teachers to all other secondary public school teachers regarding (a) attitudes toward the profession of teaching, (b) perceptions of their school climate and working environment, and, (c) job satisfaction. General characteristics and job responsibilities of PE teachers are also described. For this study, public school was operationally defined as traditional public school and charter schools were excluded.

Method

Participants

We conducted a secondary analysis using data from the National Center for Education Statistics (NCES) 2015–2016 National Teacher and Principal Survey (NTPS), which included a comprehensive national survey of public and charter school teachers (NCES, n.d.). For this study, we operationally defined "teachers" as full-time secondary school employees (N = 9,560) who teach regularly scheduled classes to students from public schools in the 50 United States and District of Columbia, not including territories. Secondary schools were operationally defined by NCES as schools that had no grade lower than fifth (Geverdt, 2015). We operationally defined PE teachers (n = 1,320) as respondents from the sample population who reported PE as their main teaching assignment during the 2015–2016 school year.

Instrumentation

The NTPS was designed to represent the population of U.S. public school teachers in the year of administration (NCES, n.d.). The teacher questionnaire of the NTPS can be found on the NCES website (https://nces.ed.gov/surveys/ntps/pdf/1516/Teacher_Questionnaire_2015-16.pdf) and included items related to class organization, education and training, certification, early career experiences, working conditions, school climate and teacher attitudes, and general employment information (NCES, 2015). For this study, questions pertaining to working conditions, school climate, and teacher attitudes were analyzed (see Tables 2–5). Details regarding NTPS data collection and reporting were provided by Goldring et al. (2017) and are also described in the Sampling Procedure section.

Sampling Procedure

The NCES was the lead federal agency in charge of the survey. The sample frame of the 2015–2016 NTPS included 87,600 traditional public schools in operation during 2015. As Goldring et al. (2017) described, the NTPS used a stratified sampling design to oversample certain elements, for example, urbanicity (city, suburban, town, and rural) and poverty status (more or less than 75% of students receiving free and reduced lunch). The NCES employed a probability to size sampling method using school full-time equivalent teacher head counts as a proxy for size. As a result, 7,100 public schools were included in the sample and within each building, a roster of teachers was selected based on subject area taught. Schools in Alaska, District of Columbia, Hawaii, Rhode Island, Vermont, and Wyoming were oversampled because of the smaller size of the states (C. Cox et al., n.d.).

Data Analysis

Due to the stratified sample design, the data set required the use of statistical weights. The tables throughout this document include percentages with the weights applied, allowing the reader to see the population estimates for the entire United States. The final

weighted sample of the full-time public school secondary teachers in the United States (N = 9,560) was 1,158,410. The subsample of secondary public school PE teachers (n = 1,190) produced a final weighted sample size of 51,480.

As the NCES recommended, survey data were analyzed using the Jackknife methodology. This procedure developed a series of 200 individual replicate weights developed by NCES statisticians, which allow the observed weighted frequencies to represent the population (Goldring et al., 2017). The statistical package Stata was used because it supports complex survey weighting techniques and accurately applies the Jackknife weights to produce frequencies and percentages needed for this study.

Results

General Characteristics

Among secondary public school PE teachers, 62.8% were males—antithesis of findings for all other secondary public school teachers, who were mostly females (61.1%). Nearly 90% of PE teachers and all other teachers identified as White. Other race/ethnicities reported for secondary PE teachers were Black or African American (8.2%) and Hispanic (6.5%); remaining ethnicities were all less than 2%. Note, participants selected all race/ethnicity categories that applied.

Additional Job Responsibilities

Not surprising, most secondary PE teachers reported the additional job responsibility of coaching. Over three quarters of secondary PE teachers (76.6%) reported coaching a sport during the school year, compared to approximately 21.4% of all other secondary teachers. In addition, far more PE teachers reported coaching, compared to teachers of all other subjects (54.1%), who reported the extra responsibility of serving as a sponsor for student groups, clubs, or organizations. PE teachers were also more likely to report leadership roles as department lead or chair and lead curriculum specialist. Similar rates of mentoring, about 20%, were reported by both PE teachers and all other secondary teachers. Overall, when compared to all other secondary public school teachers, PE teachers carried

more notable additional job responsibilities related to coaching and leadership roles.

Job Satisfaction

Regarding levels of teaching satisfaction (see Table 1), nearly 90% of all secondary public school teachers reported (strongly agree + somewhat agree) they were generally satisfied with being a teacher in their school. In contrast, less than half of teachers indicated they were satisfied with their teaching salary. On items related to student behavior and job satisfaction, over 40% of all teachers agreed (strongly agree + somewhat agree) that tardiness, class cutting, and student misbehavior in school interfered with their teaching.

Responses to items related to academic standards and student performance showed differing perceptions of PE teachers compared to teachers of other subjects. Among secondary teachers of subjects other than PE, approximately 35% agreed (strongly agree + somewhat agree) that state or district standards had a positive influence on their teaching satisfaction and nearly 40% agreed that they were worried about the security of their job because of the performance of their students or school on state and/or local tests. PE teachers, however, were more affirming of standards having a positive influence on their teaching satisfaction (40.0% strongly agree + somewhat agree) and less worried about their job security due to the performance of their students or school on state and/or local tests (28.5% strongly agree + somewhat agree) when compared to all other secondary teachers. Results of this study indicated an additional meaningful difference related to job satisfaction: Nearly 72% of non-PE teachers agreed (strongly agree + somewhat agree) that routine duties and paperwork interfered with their job of teaching, in contrast to half (51.8%) of PE teachers.

School Climate and Working Environment

Physical educators also responded more positively (strongly agree + somewhat agree) to questions about their administrators and support received from their school district (see Table 2) when compared to all other teachers. For example, over half of the PE teachers strongly agreed that the school administration's behavior toward staff was supportive and encouraging. Similarly, PE teachers

Table 1
Secondary Physical Education Teachers Compared to Other Secondary Teachers Who Reported Positive Levels of Teaching Satisfaction by Selected District, School, and Classroom Characteristics as a Percentage of Sample (N = 1,158,410)

	Physical education teachers (*n* = 51,480)		Other teachers (*n* = 1,106,930)	
Characteristics	**Strongly agree**	**Somewhat agree**	**Strongly agree**	**Somewhat agree**
Generally satisfied with being a teacher in this school.	51.9	37.6	49.1	39.8
I am satisfied with my teaching salary.	11.3	38.5	12.2	36.5
State or district standards have had a positive influence on my satisfaction with teaching.	5.9	36.1	4.8	29.8
I am worried about the security of my job because of the performance of my students or my school on state and/or local tests.	7.4	21.1	10.6	28.7
Routine duties and paperwork interfere with my job of teaching.	15.6	36.2	28.6	43.1
The level of student misbehavior in this school (such as noise, horseplay, etc.) interferes with my teaching.	16.3	26.6	12.6	29.9
The amount of student tardiness and class cutting in this school interferers with my teaching.	16.3	26.5	16.8	31.2

responded favorably (53.4% strongly agree) that their principal knew what kind of school they wanted and communicated it to the staff—more so than all other secondary teachers (46.4% strongly agree). PE teachers also strongly agreed (46.1%) that the principal enforced school rules for student conduct and backed them when needed. Fewer of their colleagues teaching other subjects (40.8%) strongly agreed with this survey item. Notably, over 80% of all teachers responded positively (strongly agree + somewhat agree) to the administrative support items.

For other questionnaire items related to support among teachers, a majority of all teachers agreed (strongly agree + somewhat agree) they were given the support needed to teach students with special needs (64.7%), staff were recognized for a job well done (71.9%), they received a great deal of support from parents (52.9%), and necessary materials (i.e., textbooks, supplies, copies) were available as needed by staff (76.8%). Compared to teachers of other subjects, PE teachers were more likely to strongly agree that they were given the support needed to teach students with special needs (23.6%) and staff were recognized for a job well done (32.9%).

Table 2 also shows how secondary public school teachers responded to questions regarding professional support in their school environment related to cooperative and collegial relationships. Once again, over 80% of all teachers surveyed agreed (strongly agree + somewhat agree) that most of their colleagues shared their beliefs and values about what should be the central mission of the school. Similarly, approximately 80% of teachers reported that there was a great deal of cooperative effort among staff and that a conscious effort was made to coordinate the content of their courses with other teachers.

In contrast, just over half of all educators agreed that rules for student behavior were consistently enforced by teachers in their school, including for students who were not in their classes. Teachers of subjects other than PE reported stronger agreement (25.9%) that colleagues share beliefs and values about their school's mission and make a conscious effort to coordinate course content with other teachers (41.2%). In general, physical educators and teachers of all other subjects expressed similar perceptions about profession

Table 2
Secondary Physical Education (PE) Teachers Compared to Other Secondary Teachers Who Reported Positive Levels of Support by Selected School and Classroom Characteristics as a Percentage of Sample (N = 1,158,410)

	Physical education teachers (*n* = 51,480)		Other teachers (*n* = 1,106,930)	
Characteristics	**Strongly agree**	**Somewhat agree**	**Strongly agree**	**Somewhat agree**
Most of my colleagues share my beliefs and values about what the central mission of the school should be.	22.0	59.8	25.9	57.1
The school administration's behavior toward staff is supportive and encouraging.	51.0	35.6	44.6	38.5
The principle knows what kind of school he or she wants and has communicated it to the staff.	53.4	34.7	46.4	36.1
My principal enforces school rules for student conduct and backs me when I need it.	46.1	40.0	40.8	40.2
Necessary materials (i.e. textbooks, supplies, copies) are available as needed by staff.	34.2	48.8	34.0	42.8
There is a great deal of cooperative effort among staff.	30.1	47.8	30.9	48.1
I make a conscious effort to coordinate the content of my courses with that of other teachers.	32.2	52.6	41.2	43.6
In this school, staff members are recognized for a job well done.	32.9	45.6	26.9	45.0

Table 2 (cont.)

Characteristics	Physical education teachers (n = 51,480)		Other teachers (n = 1,106,930)	
	Strongly agree	Somewhat agree	Strongly agree	Somewhat agree
I am given the support I need to teach students with special needs.	23.6	51.8	18.2	46.5
I receive a great deal of support from parents for the work I do.	8.6	44.8	9.9	43.0
Rules for student behavior are consistently enforced by teachers in this school, even for student who are not in their classes.	15.0	37.4	12.6	39.4

support in their school environment related to cooperative and collegial relationships.

Overall, PE teachers were more likely to strongly agree with questionnaire items regarding principal and administrative supportive actions, such as behaviors are encouraging, communicates with staff, enforces school rules, and provides necessary teaching support and materials. Conversely, when compared to teachers of other subjects, PE teachers were less likely to strongly agree with questionnaire items regarding support or collaboration with staff and parents, for example, shared beliefs and values with colleagues about the central mission of the school, coordinating course content with other teachers, and receiving a great deal of support from parents. In general, when strongly agree and agree responses to questionnaire items were combined, physical educators and teachers of all other subjects surveyed expressed similar perceptions about professional support in their school environment related to cooperative and collegial relationships.

Attitudes Toward the Teaching Profession

Table 3 provides insights into teachers' attitudes toward teaching. For example, PE teachers were more likely to agree (strongly agree + somewhat agree) that they liked the way things were run at their school when compared to other teachers. PE teachers were also more likely to report they had the same enthusiasm for teaching as when they began their teaching career and were less likely to report negative attitudes about routine duties and paperwork when compared to non-PE teachers. Furthermore, they were less likely to report a desire to transfer schools, stay home from school because they were too tired to go, or leave the profession for a higher paying job. Conversely, teachers of other subjects were more likely to agree than PE teachers that the stress and disappointments involved in teaching at their school were not really worth it. Overall, PE teachers' responses for all questions showed more positive attitudes toward teaching than the responses of their colleagues teaching other subjects.

Discussion

Research has suggested that effective teachers who motivate others to learn have positive attitudes and enthusiasm for teaching

Table 3

Secondary Physical Education Teachers' Attitudes Toward Teaching Compared to Other Secondary Teachers' Attitudes by Selected School and Classroom Characteristics as a Percentage of Sample (N = 1,158,410)

	Physical education teachers (*n* = 51,480)		Other teachers (*n* = 1,106,930)	
Characteristics	**Strongly agree**	**Somewhat agree**	**Strongly agree**	**Somewhat agree**
The stress and disappointments involved in teaching at this school aren't really worth it.	4.6	16.5	4.7	19.9
The teachers at this school like being here; I would describe us as a satisfied group.	21.8	55.7	25.2	48.7
I like the way things are run at this school.	27.2	47.4	22.3	48.0
If I could get a higher paying job, I'd leave teaching as soon as possible.	14.7	0.6	12.5	23.3
I think about transferring to another school.	5.2	24.5	10.1	21.4
I don't seem to have as much enthusiasm now as I did when I began teaching.	9.6	26.8	16.0	28.3
I think about staying home from school because I'm just too tired to go.	2.6	15.7	6.5	18.2

(Breault, 2013; Kunter et al., 2013; Long & Hoy, 2006; Mitchell, 2013; Walberg & Paik, 2000; Stronge, 2018). Also, students' motivation to learn is influenced by teachers who experience their job as enjoyable and intrinsically rewarding (Frenszel et al., 2009; Kunter et al., 2008; Roth et al., 2007). Moreover, McCaughtry and Ferry (2017) noted physical educators' career satisfaction is one factor that influences students' motivation, passion, and desire to engage in physical activities. Findings from this study revealed, in general, secondary PE teachers had more positive attitudes for teaching and greater job satisfaction than their colleagues teaching other subjects.

These results conflict with earlier research in the profession and may need further investigation. "Previous research in PE has reported high rates of burnout among PE teachers" (Lee et al., 2019, p. 263). Kirk (2020) also discussed heightened physical educator burnout and turnover rates, particularly during induction years in U.S. urban schools where there may be more disadvantaged and underserved communities. While the research regarding perceptions and attitudes toward PE is robust, conflicting research findings suggest the study of PE teachers' attitudes and enthusiasm about the profession is still developing.

While these discoveries call for further investigation of PE teachers' perceptions and attitudes about the teaching profession, it can also be argued that teachers with positive attitudes see difficult teaching situations as professional challenges and learning opportunities (Bullough & Hall-Kenyon, 2011). Additionally, Stronge (2018) noted teachers with a positive attitude are more likely to pursue leadership responsibilities. The results of this study may confirm this premise that secondary PE teachers have more positive attitudes about teaching and take on more leadership roles as department head or chair, lead curriculum specialist, and coach of an interscholastic sport when compared to all other teachers. In addition, Lumpkin et al. (2014) highlighted mentoring as a form of teacher leadership and an example of effective teachers' commitment to student learning. Approximately 20% of PE teachers reported serving as an assigned mentor or mentor coordinator.

The perceptions of secondary teachers regarding their school climate is also a relevant consideration. A positive school climate has been found to affect teachers' attitudes and job satisfaction as well as

teacher effectiveness (Beauchamp et al., 2014; Coggshall et al., 2012; Collie et al., 2012; Goe et al., 2008; Johnson et al., 2017). Notably, over 80% of all secondary teachers surveyed responded positively (strongly agree + somewhat agree) to items regarding administrative support. This is meaningful because teacher effectiveness is evaluated by school administrators (e.g., principals). Teachers who feel supported by their administrators become more effective teachers, which in turn influences student achievement (Lumpkin et al., 2014; Price, 2012).

While both non-PE teachers and physical educators reported similar perceptions regarding professional support from staff, principals, and administrators in their schools, there were some observable differences. PE teachers were more likely to strongly agree with questionnaire items regarding principal and administrative supportive actions; specifically, the behavior of school administrators toward staff is supportive and encouraging. Conversely, PE teachers were less likely to strongly agree with questionnaire items regarding support or collaboration with staff and parents when compared to teachers of all other subjects.

PE teachers may perceive less support from colleagues and parents as PE has historically been a marginalized subject that has experienced diminished academic status (Beddoes et al., 2014; Collier, 2011; Dauenhauer et al., 2019; Henninger & Carlson, 2011; James, 2011; Richards et al., 2018; Richards et al., 2014; Sheehy, 2011). Sheehy (2011) provided insight into why PE teachers perceive lack of support from parents and suggested ways that increase support for PE and counteract marginalization; for example, create an inviting and interactive PE web page, invite parents to participate in PE so they can experience the substantive learning that occurs, and develop interactive homework that benefits both parents and children. These simple suggestions can help improve the status of PE within the school community and improve the long-term attitude and perspectives of physical educators toward the profession.

Richards et al. (2014) suggested that PE teachers who are physically isolated from their educator peers may also experience marginalization. This can lead to stress, burnout, and early career attrition among PE teachers due to low levels of perceived support in their work from colleagues (Pearce & Morrison, 2011; Richards

et al., 2018). Therefore, PE teachers need advocacy skills, more so than teachers of other subjects (i.e., mathematics, science, and English Language Arts). PE teachers are often required to justify the value of PE in a district's K–12 curriculum to prevent various program reductions, substitutions, and/or waivers.

This may explain why PE teachers reported more positive levels of satisfaction with the influence state or district standards had on their teaching when compared to teacher of other subjects. Content standards in PE with grade-level outcomes, such as those developed at the national level by the SHAPE America (2013), help PE teachers articulate to the school community what K–12 students should know and be able to do as a result of their PE program. Teachers of other subjects, such as mathematics, science, and English Language Arts, are rarely called upon to defend their academic disciplines and therefore may not see subject-specific standards as having a positive influence on their teaching.

Conversely, teachers of these subjects (e.g., mathematics and English Language Arts) may also be evaluated on their effectiveness as teachers based on their students' performance on standardized tests. Students' test results may be used in part for teachers' job performance evaluations, which can influence hiring, firing, and tenure decisions (Great Schools Partnership, 2014). High-stakes testing and performance on local school and/or state tests may explain why, in this study, secondary teachers of other subjects were more likely to worry about the security of their job when compared to secondary PE teachers. However, PE teachers who agreed with this item may be aware that current high-stakes testing promotes subjects (e.g., mathematics and English Language Arts) that are tested and could reduce instruction in subjects not tested (e.g., PE; Great Schools Partnership, 2014; Seymour & Garrison, 2015, 2016, 2017).

Findings from this study revealed that nearly 90% of secondary teachers identified as White, which is dissimilar to the demographics of U.S. secondary students. There is ample empirical evidence that when teachers and students share similar race/ethnicity, student outcomes are better, particularly in high-poverty environments among significantly at-risk student populations (Goldhaber et al., 2015). Stevens and Greenberg Motamedi (2019) summarized research demonstrating that having teachers who reflect the diversity of the

local school community helps to create a positive and welcoming climate for all members. They also noted that an emphasis on diversity and cultural exchange improves both teaching and learning.

Limitations

NCES used a cluster sampling design to produce a sample that would support generalization to the population of K–12 public school teachers in the United States. The complex design of the sampling strategy and subsequent assignments of replicate weights allowed for generalization of subsamples of the population. Hence, there was a possibility of design-related bias in results. Other limitations are inherent with subjects self-reporting the data. External analysts imputed missing data. Imputed data underwent computer edits for the verification that inputs were consistent with existing questionnaire data (C. Cox et al., n.d.; S. Cox et al., 2016).

Implications for Future Research

These results also raise new questions regarding secondary physical educators' attitudes toward the teaching profession and perceptions of school climate. The profession would benefit from understanding how factors such as perceived marginalization of PE and the continued need to justify PE within a district's K–12 curriculum affect teacher attitudes, attrition, and work responsibilities. For example, questions remain why PE teachers take on additional job responsibilities and leadership roles, more so than their colleagues. Based on findings from this study, recommendations for further studies include

- What are the effects of PE teachers' advocacy and how do they influence their relationship with their colleagues?
- What is the effect of advocacy for PE programs in an effort to reduce marginalization of physical educators and PE, in general?
- How do these results connect with the occupational socialization literature in PE?
- How does educational policy (e.g., standards and high-stakes testing) influence teachers' attitudes toward teachers of other subjects?

- How do additional job responsibilities affect teachers' attitudes toward teaching and teacher attrition?

Conclusion

When secondary teachers genuinely feel a sense of satisfaction and belonging in their profession, evidence suggests that they are able to influence the lives of their students through a contagious passion for teaching. Although research of PE professionals' attitudes regarding teaching may be mixed, the results of this investigation are positive. Yes, PE teachers, like most educators, reported the need for higher compensation and better amenities, but they remain committed to their students and the profession. The data from this study suggest that secondary physical educators are generally happy in their work, feel supported by administration, and functioned in leadership roles within their schools. On the whole, PE teachers were positive, engaged, and passionate individuals who enjoyed the profession.

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PHYSICAL ACTIVITY

Examining the Influence of Physical and Health Education on Ontario Grade 9 Students' Physical Activity Intentions and Behaviors

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Abstract

Insufficient physical activity and a sedentary lifestyle are major contributors to health risks for Canadian youth. Adolescents, particularly females, tend to experience major drop-offs in physical activity levels during high school. However, there is minimal research examining the extent to which physical and health education (PHE) courses promote physical activity and mitigate against this decline. Grounded in the theory of planned behavior (TPB), this quantitative short-term longitudinal study examined the effectiveness of Grade 9 PHE for 197 students' reports of TPB constructs, physical activity intentions, and physical activity behavior. Results were analyzed using 2 (time: Time Point 1 [T1], Time Point 2 [T2]) × 2 (condition: in PHE/not in PHE) × 2 (TPB status: higher or lower than the mean) MANCOVAs with males and females examined separately. Findings revealed there was no interaction among time, condition, and TPB status, meaning that students' physical activity intentions and TPB constructs did not

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change over the study. There was a significant effect of condition for females in PHE. Attitude and Physical Activity Behavior were higher at both time points, indicating that females taking PHE classes had more positive attitudes and higher physical activity behavior than females not enrolled in PHE classes. PHE teachers should focus attention on changing attitudes toward physical activity for this age group, given the importance of this construct.

Physical inactivity is the highest of all modifiable risk factors for several illnesses including type 2 diabetes, obesity, and cardiovascular disease (Warburton et al., 2006). Physical inactivity and a sedentary lifestyle have been linked to a major obesity epidemic across many developed countries including Canada and the United States (Cecchini et al., 2010; Centers for Disease Control and Prevention, 2013). Further, insufficient physical activity and its associated health risks are issues for Canadian youth (Janssen, 2012). With the increasing number of individuals at risk of chronic diseases, such as cardiovascular disease, as a result of physical inactivity, the focus on health promotion efforts at this age level needs to increase (Janssen, 2012; Liebert, 2012; Tremblay & Willms, 2003). Physical activity is beneficial to children and youth across multiple domains, including affective, physical, and cognitive (Bailey et al., 2009). With a greater physical activity level, youth can achieve more health benefits (Colley et al., 2011). Using accelerometer data to measure physical activity levels of Canadian youth, Colley et al. (2011) noted that less than 10% of males and less than 5% of females aged 6 to 19 years were active enough to achieve health benefits, and regardless of age group, males were more active than females.

Furthermore, with the link between health and physical activity, longitudinal tracking studies that follow adolescents' physical activity levels to adulthood indicate a strong relationship between people who participated in physical activity during adolescence and continuing that physical activity into adulthood (Trost, 2006). This trend is the same for adolescents who have low physical activity levels—they are less likely to continue physical activity into adulthood. The fact that adolescents' physical activity levels can be predictive of adulthood physical activity levels highlights a need for focused physical activity promotion efforts with the adolescent population.

One place where physical activity can be promoted is physical and health education (PHE) classes. PHE classes in Ontario aim to improve students' physical health as well as their understanding of healthy activities (Ontario Ministry of Education [OME], 1999). PHE classes provide access to the Canadian youth population, which constitutes a large part of the inactive population, according to Statistics Canada (Colley et al., 2011). Understanding how educators can promote physical activity to this age group in a context that already exists is essential for the promotion of physical activity and health benefits. In the examination of physical activity promotion in PHE classes, it is beneficial to use a theoretical framework for behavior change that has been established in the literature and been shown efficacious in a PHE physical activity context.

The theory of planned behavior (TPB) has been employed extensively in research on health behavior change in adult and adolescent populations (e.g., Chatzisarantis & Hagger, 2005; Mummery et al., 2000). TPB suggests that some behaviors do not occur automatically and therefore require conscious attention to complete. For behaviors requiring attentional forethought, of which physical activity is often one, TPB posits that the necessary intentions to act are influenced by Attitude, Perceived Behavioral Control, and Subjective Norms. TPB hypothesizes that Attitude, Subjective Norms, and Perceived Behavioral Control directly influence behavioral intentions, which then lead to actual behavior. TPB is one of the most cited models for human social behavior prediction (Ajzen, 2011). TPB has been found useful in understanding students' intentions to continue physical activity, with variations in the contribution of the three variables across grade, gender, and socioeconomic status (Ajzen, 2011; Duncan et al., 2012; Mummery et al., 2000).

Given the specific PHE context as well as the adolescent age group with which TPB has already been used, including the Canadian youth population, it seemed a comprehensive choice for examining behavior change within the PHE context in Ontario. Although PHE classes are an accessible location for public health promotion efforts, and although other researchers have suggested a need for a focus on changing PHE classes to become more effective (e.g., Sallis & McKenzie, 1991; Sallis et al., 2012), to our knowledge no studies have examined the Ontario PHE context to further understanding

of the efficacy of PHE classes in changing students' perceptions of physical activity.

This study examined the effectiveness of Grade 9 PHE students' reports of TPB constructs, physical activity intentions, and physical activity behavior, providing a real-world test of TPB for adolescents in a Grade 9 context with physical activity as the primary focus. Although studies have utilized TPB to examine adolescents in physical activity settings (e.g., Mummery et al., 2000) and to examine interventions in PHE classes based on TPB principles (e.g., Chatzisarantis & Hagger, 2005), TPB has not been used in the examination of the effectiveness of PHE courses in achieving their aims of increasing lifelong physical activity. Thus, this study has a unique contribution of testing TPB in a context with a curriculum that targets physical activity promotion. This study also provides an opportunity for the exploration of the TPB constructs to see if there is something modifiable (e.g., Attitude) that is not working in PHE contexts, which could then be further explored. Furthermore, given the discrepancies in terms of the most useful construct for TPB in adolescent contexts (e.g., Gibbons et al., 2009; Hofmann et al., 2008), this study adds to the literature findings of which TPB constructs are the most valuable in determining physical activity behavior in the examination of this population.

Method

Participants

Participants in this study were selected from preassigned Grade 9 classes from six of 11 public high schools from a single school board in a mid-sized city and surrounding area in Southeastern Ontario. The sample consisted of 252 Grade 9 students (52% female); however, only 197 completed both time points. Of the 197 students, 113 (57.4%) were enrolled in Grade 9 PHE during the semester of data collection (47.8% female) and 84 students (42.6%) were not enrolled in Grade 9 PHE (65.5% female). For all schools participating, Grade 9 PHE classes were single-gendered.

Procedure

A recruitment email was sent to each principal in the selected Ontario school district. The six principals who agreed to participate

in the study were provided with a recruitment script to email to Grade 9 teachers. Teachers interested in participating were provided with consent forms and letters of information to hand out to students in their classes. Questionnaires were administered to students with returned consent forms during class instruction time in September or October (Time Point 1) and mid-December (Time Point 2).

Instrumentation

Demographics

Background information was obtained including students' sex, participation (or not) in school PHE during the semester of data collection, participation in school sports, and participation in physical activities outside of school and during school hours.

TPB Constructs

A quantitative questionnaire was developed consistent with recommendations made by Ajzen (1985), which is common practice for the study of physical activity behavior using TPB (Hagger et al., 2002). Questions were designed to measure the TPB constructs (Attitude, Subjective Norms, and Perceived Behavioral Control plus Physical Activity Intentions). A principal component analysis was run on all related items for the creation of each scale, and variables with a factor loading greater than 0.5 were selected. A reliability analysis was run, and items were removed until the internal reliability was maximized. The questions were answered on a 7-point Likert-type scale anchored with bipolar adjectives. Individuals' responses were averaged for each scale.

Attitude. The Attitude scale was constructed from six items (α = .88). A sample item was "For me to be physically active on a regular basis is … [interesting] [boring]."

Perceived Behavioral Control. The Perceived Behavioral Control scale included three items (α = .78). A sample item was "For me to be physically active on a regular basis is … [impossible] [possible]."

Subjective Norms. The Subjective Norms scale consisted of four items (α= .65). A sample item was "Most people who are important to me hope that I am physically active … [absolutely true] [definitely false]."

Physical Activity Intentions. The Physical Activity Intentions scale included four items (α = .90). A sample item was "I plan to be physically active on a regular basis … [extremely likely] [extremely unlikely]."

Physical Activity Behavior

The Health Behavior in School-Aged Children (HBSC; Freeman et al., 2011) physical activity questions were used in the assessment of actual levels of physical activity. The HBSC collects information on students in Grades 6 to 10 in Canada and worldwide. The use of the HBSC survey for sampling has been established in the literature and validated as a measurement (Currie et al., 2012). Two separate scales were created for physical activity. All questions were standardized using *z* scores because items for physical activity were on different scales.

Summer Physical Activity Behavior. The Summer Physical Activity Behavior scale measured students' perceived summertime physical activity level. The scale included two items (α = .77) answered on an 8-point and a 9-point scale. A sample item was "During this past summer over a typical or usual week, on how many days were you physically active for a total of at least 60 minutes per day?" with answers ranging from 0 days to 7 days.

Physical Activity Behavior. The Physical Activity Behavior scale measured students' physical activity level during the school semester. There scale included five items (α = .84) answered on scales ranging from 1 to 6 and 1 to 9. An example item was "Over the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?" with answers ranging from 0 days to 7 days.

Data Analysis

Preliminary Data Analysis

Cases were scanned for missing data and outliers. Two participants were removed because there were insufficient usable data from either case. Due to the inherent differences between males and females of this age group as examined in previous TPB (e.g., Craig et al., 1996; McEachan et al., 2011) and physical activity (e.g., Lim & Wang, 2009; Prusak et al., 2004) studies, these two groups were compared at Time Point 1 with independent-samples *t* tests

that determined if further analyses would need to be conducted with males and females separately. Chi-square tests were conducted in the examination of other potential differences between males and females.

In the examination of preexisting differences, independent-sample *t* tests using Time Point 1 TPB and physical activity scales with males and females separated due to initial differences were run for students who were taking PHE during the semester of data collection versus students who were not taking PHE during the semester of data collection. Chi-square tests were completed for all noncontinuous categorical variables (i.e., whether or not students participate in organized physical activity outside of school and whether or not students have gym memberships outside of school). The Summer Physical Activity Behavior scale was treated as a covariate, and this ensured that the preexisting differences on the given variables were adjusted for in the analyses. Quantitative data were analyzed through descriptive statistics (e.g., means and standard deviations).

Multiple Analysis of Covariance (MANCOVA)

A MANCOVA was run due to initial differences between students in PHE and students not in PHE on the Summer Physical Activity Scale. A 2 (condition: in PHE/not in PHE) × 2 (time: Time Point 1/ Time Point 2) × 2 (TPB status: above the mean/below the mean) mixed between-within-subjects MANCOVA was used, wherein condition and TPB status were the between-subjects factors and time was a within-subject factor. Follow-up univariate ANCOVAs were then examined. All data analyses were performed with IBM SPSS software.

Results

Preliminary Analysis

Table 1 shows means and standard deviations for all variables for males and females taking or not taking PHE first semester. Table 2 shows correlations for all Time Point 1 and Time Point 2 variables. Independent-samples *t* tests showed that females significantly differed from males in (1) Attitude, (2) Perceived Behavioral Control,

and (3) Physical Activity Behavior (see Table 3). A chi-square test found a significant relationship between gender and having a gym membership outside of school, $\chi^2(1, N = 223) = 10.02$, $p = .001$, with a greater number of males reporting having a gym membership relative to females. Due to the differences in initial characteristics of males and females and their unequal division across PHE first semester versus no PHE first semester, further analyses were run with males and females separately.

Table 1

Means and Standard Deviations of Variables for Males and Females Taking PHE and Not Taking PHE First Semester

	Males taking PHE (*N* = 55)	Males not taking PHE (*N* = 29)	Females taking PHE (*N* = 53)	Females not taking PHE (*N* = 53)
Variable	***M* ± *SD***	***M* ± *SD***	***M* ± *SD***	***M* ± *SD***
Attitude Scale T1	5.90 ± 1.09	5.82 ± 1.03	5.61 ± 1.13	5.53 ± 1.06
Attitude Scale T2	6.01 ± .89	5.91 ± 1.01	5.81 ± .96	5.50 ± .89
PBC Scale T1	6.23 ± 1.08	6.07 ± .77	5.81 ± 1.19	5.90 ± .91
PBC Scale T2	6.24 ± .91	6.22 ± .86	5.81 ± .99	5.81 ± 1.10
SN Scale T1	5.69 ± 1.07	5.74 ± 1.08	5.51 ± 1.02	5.65 ± .91
SN Scale T2	5.54 ± 1.16	6.01 ± .96	5.71 ± .96	5.72 ± .95
PA Intentions Scale T1	6.07 ± 1.16	5.89 ± 1.22	5.66 ± 1.24	5.82 ± 1.12
PA Intentions Scale T2	5.98 ± 1.03	5.84 ± 1.25	5.81 ± 1.11	5.78 ± 1.08
PA Behavior Scale T1	.21 ± .71	.16 ± .74	-.09 ± .68	-.28 ± .87
PA Behavior Scale T2	.36 ± .63	.19 ± .93	-.19 ± .69	-.27 ± .87
Summer PA Scale T1	-.04 ± .90	.23 ± .89	-.24 ± .94	.11 ± .84
Summer PA Scale T2	.15 ± .88	.22 ± .77	-.28 ± 1.02	.11 ± .78

Note. Questions were answered on a 7-point Likert-type scale except for Physical Activity Behavior Scale and Summer Physical Activity Scale which were changed to standardized scores. PHE = physical and health education; T1 = Time Point 1; T2 = Time Point 2; PBC = perceived behavioral control; SN = subjective norms; PA = physical activity.

Table 2
Correlations Between Variables for Time Point 1 and Time Point 2

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender	—	.14*	-.09	-.22**	-.17*	-.17*	-.10	-.13	-.25**	-.10
2. Taking PHE	.15*	—	.04	.07	-.05	-.01	.07	-.00	-.12	.17*
3. PA Outside School	-.08	.10	—	.03	.30**	.32**	.19**	.34**	.38**	.13
4. Gym Membership	-.15*	.01	-.08	—	.15*	.16*	.04	.17*	.26**	.13
5. Attitude Scale	-.12	-.15*	.36**	.18**	—	.75**	.49**	.84**	.66**	.47**
6. PBC Scale	-.20**	-.01	.30**	.16*	.61**	—	.42**	.70**	.56**	.33**
7. SN Scale	-.01	.05	.31**	.12	.50**	.46**	—	.44**	.39**	.33**
8. PA Intentions Scale	-.08	-.07	.34**	.23**	.78**	.63**	.57**	—	.64**	.45**
9. PA Behavior Scale	-.31**	-.07	.46**	.20**	.57**	.48**	.37**	.64**	—	.52**
10. Summer PA Scale	-.17**	.11	.25**	.12	.43**	.31**	.29**	.45**	.50**	—

Note. Items above the diagonal represent Time Point 1 data; items below the diagonal represent Time Point 2 data. PA = physical activity; PBC = perceived behavioral control; SN = subjective norms.

*$p < 0.05$. ** $p < 0.001$.

Table 3
Independent-Samples t Tests for Males and Females

	Males	Females	
Variable	***M* ± *SD***	***M* ± *SD***	***t***
Attitude	5.90 ± 1.01	5.55 ± 1.08	2.51*
PBC	6.19 ± .96	5.83 ± 1.05	2.60*
PA Behavior	.20 ± .73	-.18 ± .77	3.73**

Note. Questions were answered on a 7-point Likert-type scale except for PA Behavior, which was changed to standardized scores. PBC = perceived behavioral control. PA = physical activity.

*p = .01. **p < 0.001.

Independent-samples t tests showed that males who were in PHE and males who were not in PHE were not significantly different at Time Point 1. There was a significant difference between the females taking PHE (M = -.26, SD = .95) and the females not taking PHE (M = .10, SD = .84) for the Summer Physical Activity Scale, $t(114)$ = -2.09, p = .04, with the females who were taking PHE first semester reporting less summertime physical activity than the females not taking PHE first semester. Thus, the Summer Physical Activity Scale was controlled for in all subsequent analyses. There were no significant differences from the chi-square tests between students in PHE and students not in PHE when students were separated by gender.

MANCOVA Analysis

Students were divided by TPB status using a score created for each individual who completed both time points. The score was based on the average of the three TPB constructs and Physical Activity Intentions, resulting in the TPB status variable. There was a mean total of 1.56 (SD = .16) for the males who completed both time points (n = 84) and a mean total of 1.50 (SD = .17) for the females who completed both time points (n = 106). Participants were separated into two groups based on their score in relation to the mean total. Those with scores above the mean were placed in the higher group and those with scores below the mean were placed in

the lower group. Two MANCOVAs were run (for males and females separately).

MANCOVA for Males

Of the 55 males taking PHE and completing both time points, 30 scored higher than the mean on TPB status and 25 scored lower than or equal to the mean on TPB status. Of the 29 males not taking PHE, 14 scored higher than the mean on TPB status and 15 scored lower than or equal to the mean on TPB status.

There was a significant effect of time on TPB constructs, Physical Activity Intentions, and Physical Activity Behavior, Wilks' Λ $F(5, 70) = 13.21$, $p < .001$, partial $\eta^2 = .49$. There was no significant effect for (1) condition; (2) the interaction between condition and TPB status; (3) the interaction between condition and time; (4) the interaction between TPB status and time; and (5) the interaction among time, TPB status, and condition. To examine which dependent variables were driving these multivariate responses, this study examined follow-up univariate analyses of covariance (ANCOVAs).

There was a significant difference from Time Point 1 to Time Point 2 (across condition and TPB status) on (1) Perceived Behavioral Control, $F(1, 74) = 8.76$, $p = .004$, partial $\eta^2 = .11$, with males reporting greater Perceived Behavioral Control at Time Point 1 ($M = 1.60$, $SD = .19$) compared with Time Point 2 ($M = 1.54$, $SD = .19$); (2) Subjective Norms, $F(1, 74) = 13.24$, $p = .001$, partial $\eta^2 = .15$, with males reporting greater Subjective Norms at Time Point 2 ($M = 1.50$, $SD = .21$) compared with Time Point 1 ($M = 1.42$, $SD = .20$); and (3) Physical Activity Intentions, $F(1, 74) = 12.33$, $p = .001$, partial $\eta^2 = .14$, with males reporting greater intentions to be physically active at Time Point 1 ($M = 1.61$, $SD = .22$) compared with Time Point 2 ($M = 1.54$, $SD = .22$).

MANCOVA for Females

Of the 53 females who were taking PHE, 26 scored higher than the mean on TPB status at Time Point 1 and 27 had scores lower than or equal to the mean on TPB status. Of the 53 females who were not taking PHE, 28 scored higher than the mean on TPB status and 25 scored lower than or equal to the mean on TPB status.

There was a significant effect for the multivariate portion of the MANCOVA for (1) condition, Wilks' Λ $F(5, 94) = 3.29$, $p = .009$, partial $\eta^2 = .15$, and (2) time, Wilks' Λ $F(5, 94) = 15.60$, $p < .001$, partial $\eta^2 = .45$. There were no significant effects for (1) the interaction between TPB status and condition; (2) the interaction between time and condition; and (3) the interaction among time, condition, and TPB status. To examine which dependent variables were driving the multivariate responses, this study examined follow-up univariate ANCOVAs.

There was a significant effect of time from the beginning to the end of the semester (across condition and TPB status) on (1) Perceived Behavioral Control, $F(1, 98) = 32.66$, $p < .001$, partial $\eta^2 = .25$, with females reporting decreased Perceived Behavioral Control from Time Point 1 ($M = 1.54$, $SD = .20$) to Time Point 2 ($M = 1.45$, $SD = .20$); (2) Subjective Norms, $F(1, 98) = 27.31$, $p < .001$, partial $\eta^2 = .22$, with reported Subjective Norms increasing from Time Point 1 ($M = 1.40$, $SD = .19$) to Time Point 2 ($M = 1.50$, $SD = .19$); and (3) Physical Activity Intentions, $F(1, 98) = 10.84$, $p = .001$, partial $\eta^2 = .10$, with females overall decreasing their intentions to be physically active from Time Point 1 ($M = 1.55$, $SD = .22$) to Time Point 2 ($M = 1.50$, $SD = .21$).

There was a significant effect of condition (across time and TPB status) on (1) Attitude, $F(1, 98) = 10.0$, $p < .002$, partial $\eta^2 = .09$, with females who were in PHE ($M = 1.53$, $SD = .20$) reporting overall higher Attitude toward physical activity than females who were not in PHE ($M = 1.48$, $SD = .17$), and (2) Physical Activity Behavior, $F(1, 98) = 6.78$, $p = .01$, partial $\eta^2 = .07$, with females in PHE ($M = -.15$, $SD = .70$) reporting higher Physical Activity Behavior than females not in PHE ($M = -.33$, $SD = .85$).

Overall for both males and females, there was a significant effect of time (independent of condition and TPB status) where Perceived Behavioral Control and Physical Activity Intentions decreased over the semester and Subjective Norms increased over the semester. For females alone, there was a significant effect of condition (independent of time and TPB status), where at both time points females in PHE reported higher Physical Activity Behavior and more positive attitudes than females not in PHE.

Discussion

The purpose of this study was to evaluate the effectiveness of high school PHE classes at meeting their objective of promoting physical activity, specifically changes in students' perceptions of physical activity over the semester. The first research question compared changes in TPB constructs and Physical Activity Intentions from the beginning to the end of a semester between students taking Grade 9 PHE and those not taking Grade 9 PHE. There were no significant interactions between condition, indicating that enrollment in PHE had no effect on change in physical activity intentions or TPB constructs over the study period.

One reason for this lack of change could be that PHE class does not have any effect on changing students' intentions to be physically active or on their feelings toward physical activity. Much research has suggested that PHE classes are a prime location for targeting physical activity promotion among adolescents (e.g., Stone et al., 1998; Trost, 2006). However, most research contexts have included an external intervention that contributes to a change. For example, Chatzisarantis and Hagger (2005) aimed to change students' physical activity behavior by focusing messaging around beliefs about physical activity. Further, a meta-analysis by Ringuet and Trost (as cited in Trost, 2006) that examined school-based physical activity interventions found interventions within school PHE classes to be the most effective way of promoting physical activity. Perhaps for a positive change to occur in PHE class, PHE teachers should implement the content of these specific research-supported interventions on a regular basis to promote positive physical activity behavior change. In this study, there was no external intervention implemented in the PHE classes. Thus, perhaps PHE courses are not currently as effective as they have the potential to be in promoting physical activity.

Another plausible logistical explanation for no change was the first time-point data being taken after students had already been enrolled or not enrolled in PHE class for a relatively extended period (i.e., minimum of 2 weeks, maximum of 6 weeks). It is possible that the first time-point data needed to be taken during the summer before students had access to PHE class (or not) in high school for change to occur. In addition, the males in this study initially

reported high TPB construct scores and physical activity intentions, which left little room for potential increases (i.e., ceiling effect). The average reported TPB constructs and physical activity intentions for both males and females were relatively positive at both time points whether they were in PHE or not in PHE, which could suggest that something about the school environment promoted (or at least did not hinder) a positive physical activity environment external to PHE class (e.g., Wechsler et al., 2000).

Although no main interaction effects were found from the MANCOVAs with respect to condition, significant main effects were found for other independent variables. First, for both males and females, there was a significant effect of time. Overall, students, regardless of gender, significantly decreased their reported Physical Activity Intentions over time. In addition, students reported that Perceived Behavioral Control became more negative (i.e., difficult) over the semester.

The findings that students have decreased feelings of Perceived Behavioral Control and decreased intentions to be physically active could be a precursor to a potential upcoming drop-off in physical activity behavior that is often noted for this age group (Dumith et al., 2011). The strongest predictor of Physical Activity Behavior tends to be Physical Activity Intentions (Ajzen, 2011), and in this study there was a decrease in Physical Activity Intentions, but not in Physical Activity Behavior. This decline could indicate that although students feel less likely to engage in physical activity (i.e., intentions), there is a delay while they still maintain their Physical Activity Behavior for at least the first semester of high school before the regularly predicted decline in Physical Activity Behavior.

Something inherent about students' experiences of entering Grade 9, independent of PHE class, may have also influenced them toward lower reports of intentions to be physically active and lower perceptions of behavioral control over their first semester of high school. These findings of changing physical activity perceptions during a time of transition and for this age group are common (e.g., Dumith et al., 2011; Garcia et al., 1998). The students who were involved in this study were all transitioning from elementary school or middle school to high school.

Although Perceived Behavioral Control and Physical Activity Intentions decreased across the participants, reported Subjective Norms regarding physical activity increased over the semester. It is possible that the students reported increased Subjective Norms because they perceived their classmates or their school environment as having more positive views toward physical activity (Reid et al., 2015). As the semester continued, students would have spent increasingly more time in the environment and may have become more integrated into an overall school culture that values physical activity.

Second, there was a significant effect of condition for females on Attitude. Females taking PHE reported more positive attitudes toward physical activity at both time points relative to females who were not in PHE. The effect size was small (partial $\eta^2 = .09$), indicating that while there was a significant difference between the two groups, it was minimal. Females may have had a higher Attitude in PHE class at both time points than those not in PHE class because they already had a few weeks of PHE class prior to the initial time point. Based on a review of correlates of physical activity in adolescents, Sallis et al. (2000) determined that attitude toward physical activity was one of the modifiable factors that could help change physical activity behaviors. For females who already have a tendency to start lower than males in terms of attitude toward physical activity (Garcia et al., 1998), PHE class may have some positive impact, despite the small effect, and PHE class may be a context in which to modify females' attitudes toward physical activity. Thus, while information from this study is inconclusive, further research is necessary to understand if and how PHE classes can most effectively be utilized for positive impact on adolescent females' attitudes toward physical activity.

The second research question compared changes in physical activity behavior from Time Point 1 to Time Point 2 between those enrolled in PHE courses and those not enrolled in PHE courses. There were no significant interactions, indicating that enrollment in PHE had no effect on change in Physical Activity Behavior. This result could be attributed to similar reasons as presented for the lack of change in TPB constructs and Physical Activity Intentions (i.e., PHE ineffective at promoting physical activity behavior change except under intervention conditions [Stone et al., 1998], timing of

questionnaire administration, ceiling effect for males, and positive physical well-being environment [Wechsler et al., 2000]).

However, there were significant effects for other independent variables. For condition, there was a significant effect with females who were taking PHE classes reporting greater Physical Activity Behavior across both time points relative to females not taking PHE. These results were not replicated for the males. There was no decline in males' physical activity behavior reported despite this age group often being cited as having declining physical activity levels (Dumith et al., 2011).

Females experience a greater drop-off in physical activity levels relative to males in this age group (Dumith et al., 2011). Considering that females in PHE reported higher Physical Activity Behavior relative to females not in PHE and that Physical Activity Behavior did not change between time points (despite no initial differences between groups), there is some factor influencing the higher reported Physical Activity Behavior. It is plausible that PHE class caused females to report higher physical activity behavior because of the increased time doing physical activity in the PHE class.

In addition, given that one of the barriers to physical activity for this age group is access to facilities (Sallis et al., 2000), PHE class may help adolescent females by providing a space to be involved in physical activity that they might not otherwise have access to—or choose to participate in—outside of PHE classes. In line with this hypothesis and the lack of change over time, students who were involved in PHE would have already had access to this physical/environmental resource at the first time point.

PHE curriculum in Ontario includes an expectation that PHE classes will provide students with opportunities to understand "the importance of physical fitness, health, and well-being and the factors that contribute to them" (OME, 1999, p. 2). This expectation targets an understanding of the importance of physical activity, which is representative of Attitude toward physical activity. In addition, the PHE courses aim to provide students with an opportunity for "a personal commitment to daily vigorous physical activity and positive health behaviors" (OME, 1999, p. 2), which aims directly to improve Physical Activity Behavior (or maintain it). Thus, PHE classes in Ontario should be actively working toward changing students'

perceptions of PHE by providing lessons that target understanding of why physical activity is good, in addition to making students feel competent and encouraging them to participate in regular physical activity behavior. On the basis of this study, it seems there is not an overall large effect in doing so, but it would be interesting to understand what teachers are doing that is helping or hindering these efforts.

Limitations

One limitation of this study was the timing of two data collection points. Given the length of the high school semester and time constraints (i.e., inability to access schools until principals returned from summer holidays), it was necessary to collect the first time-point data during late September and early October when students had already been in school and had either been taking or not taking PHE for a full month prior to the initial data being collected. This may have had implications for the significant difference between females who were in PHE compared to females not in PHE in attitudes and physical activity behavior and the lack of change between the two time points. More longitudinal research needs to follow students who continued to take PHE in future years of high school to determine if they continued to derive more benefit from PHE or if the initial PHE benefit was all they received.

Another limitation was the use of self-report questionnaires in the measurement of both feelings toward physical activity and actual physical activity behavior. Thus, the measures taken might be inflated or inaccurate. However, the measures used for both the TPB questionnaire and physical activity questionnaire were validated instruments that used questions designed to elicit from the participants responses that were as accurate as possible (Hagger et al., 2002). Similar findings that correspond to previous research lend support to the convergent validity of the use of this theory and thus allow meaningful interpretation of these findings. Future research should attempt to measure physical activity behavior through both observation and accelerometer data to lend insight into the overall PHE class behavior and attitudes that were found for females.

Conclusion

Although some findings from this study indicate potential implications of the use of PHE classes as a public health promotion tool in Ontario, there is a need for future research to clarify and/or replicate the findings. PHE teachers should focus on changing attitudes toward physical activity by targeting salient beliefs through presenting the positive effects of regular physical activity participation. Ensuring that information such as the positive implications for regular exercise in PHE classes is available could help instill appropriate beliefs for students regarding physical activity and thereby increase the likelihood of regular physical activity participation. The provider of the messaging (e.g., PHE teacher, health care provider, university/college student/intern) should also be considered.

Additionally, because adolescents of this age group, females in particular, have such a large drop-off in physical activity level, it would seem important to investigate physical activity policies at the secondary school level and consider including more regular mandatory participation in physical activity. Warburton et al. (2006) noted that physical inactivity prevalence is the highest of all modifiable risk factors for various illnesses, and yet PHE is still not mandated in high schools in Ontario beyond one credit (OME, 2016). Many of the issues associated with declining enrollment and effectiveness of PHE courses could be remedied with changing school policies to further enhance student opportunities for PHE and promotion of student health. If PHE were mandated throughout high school, then perhaps physical activity in the adolescent age group would not drop off so drastically. School policies could be revised to provide more opportunity for mandatory physical activities beyond one semester course.

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PHYSICAL ACTIVITY

ADHD and Physical Activity

Roman Waldera and Joe Deutsch

Abstract

A small portion of American children, adolescents, and adults are affected by attention deficit/hyperactivity disorder (ADHD), a chronic mental condition that includes a variety of symptoms. The brain activity of individuals with ADHD is abnormal in its characteristics of neurotransmitter activity during tasks that require attention. Symptoms are often treated with medication that stimulates attention levels. For individuals diagnosed with ADHD, these pharmaceutical interventions are often paired with structured social and behavioral support as well as dietary modifications for further remediation of symptoms. In addition, physical activity (PA) interventions present additional nonpharmaceutical opportunities that reduce ADHD symptoms. This article presents an extensive literature review assessing the notion that neuroactivation and attentional performance of children and adolescents with ADHD can be optimized with interventions of PA. Overall, research has suggested that PA interventions that are free of cost and do not rely on health care professionals can be easily adapted into a daily schedule for individuals with ADHD and effectively prepare individuals for bouts of attentional effort.

Attention deficit/hyperactivity disorder (ADHD) is a chronic condition that affects children, adolescents, and adults and includes a variety of symptoms. ADHD symptoms often include some combination of inactivity, hyperactivity, and impulsivity, as well as problems with self-esteem, relationships, and performance in school (Mayo Clinic, n.d.). The symptoms are often detected in childhood

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and sometimes carry into adulthood; however, the strategies for treating childhood-diagnosed ADHD may help alleviate the symptoms into adulthood (Healthline, 2019).

According to a parent report conducted by the Centers for Disease Control and Prevention (2019), in 2016 approximately 9.4% (6.1 million) of American children and adolescents 2 to 17 years of age had been diagnosed with ADHD at some point. Over half of those diagnosed from the report (3.3 million) were in the age range of 12 to 17 years. According to the National Institute of Mental Health (2016), symptoms are often treated with medications that increase thinking and attention-stimulating catecholamines (e.g., dopamine and epinephrine). Other treatments that replace or accompany pharmacological prescriptions include behavioral and social skills training, cognitive training, and dietary modification, but with varying amounts of success and agreement among researchers (Caye et al., 2019).

Using information from the 2014 National Survey of the Diagnosis and Treatment of ADHD, Danielson et al. (2018) reported the treatments of 2,495 U.S. children and adolescents (4 to 17 years) with ADHD. Danielson et al. reported that most children and adolescents in the sample had received medication (90.8%) and school support (school and classroom accommodations; 85.8%) as treatment for their ADHD. These treatments for the children and adolescents were often paired with psychosocial training such as social skills training (38.7%), parent training (30.9%), or peer intervention (30.2%), with less than 20% of children and adolescents receiving dietary supplements, cognitive training, or neurofeedback (Danielson et al., 2018). Danielson et al. concluded that they had particular concern for the lack of parent training given the strength of evidence suggesting it is an effective treatment. Given the results of this study, it is clear that an attempt is being made to treat ADHD symptoms of children and adolescents in the United States through a combination of pharmaceutical and nonpharmaceutical strategies.

Given the prevalence of childhood ADHD, the effectiveness of various treatments must be explored. Pharmacological interventions are common, but often they are not stand-alone treatments for children and adolescents with ADHD (Danielson et al., 2018). Apart from the mentioned treatment pairings, physical activity (PA)

interventions may present additional nonpharmaceutical opportunities that can reduce ADHD symptoms (Healthline, 2019).

Physical Activity Interventions and ADHD

Authors of meta-analyses have suggested that aerobic exercise interventions point to reduced short- and long-term symptoms of ADHD such as impulsivity, inattention, and hyperactivity exhibited by children (Cerrillo et al., 2015; Den Heijer et al., 2017). The studies reviewed in these analyses were not without limitations. Several research studies neglected to include analysis of covariates that may mediate the variability of symptoms observed in children and adolescents with ADHD (e.g., parent's education level, BMI, time of breastfeeding, and time commuting to school; Suarez-Manzano et al., 2018). Also, the authors of these meta-analyses could not make an association between nonaerobic or yoga activities and improved ADHD symptoms in children and adolescents (Cerrillo et al., 2015; Den Heijer et al., 2017), but these activities have been linked to cognitive gains for population-based controls (Nanthakumar, 2018). In terms of nonaerobic activities that are more intense and shorter in duration, researchers of PA intervention studies have suggested that different durations, intensities, and types of exercises may not alter the strength of the positive cognitive effect (Tan et al., 2016) but that longer bouts of exercise seem to show a more significant effect (Vysniauske et al., 2016).

Research is somewhat limited regarding the potential benefits for children and adolescents with ADHD performing anaerobic activity interventions. Of nonaerobic high-intensity activities, high-intensity interval training is anaerobic in nature, and children and adolescents with ADHD who participate may improve their cognition during manual tasks (Mebler et al., 2018). Therefore, the agreement among research teams about the positive effects of aerobic exercise on ADHD symptoms is promising. In another systematic literature review, Christiansen et al. (2019) stated that exercise has repeatedly been shown to improve ADHD-related behaviors throughout research studies. They emphasized the agreement of study results suggesting that individuals with ADHD who regularly partake in PA during adolescence may have less severe symptoms in early adulthood. Therefore, children and adolescents diagnosed with ADHD may have an opportunity to alleviate their own symptoms by

establishing a consistent and long-term outlet for PA as they age. This concept holds true for population-based controls, with authors of meta-analyses reporting improvements in individuals with ADHD in executive function and attention as a result of participation in long-term exercise intervention studies (de Greeff et al., 2017; Xue et al., 2019). Together, the context of these meta-analyses yields validation that PA may be a low-cost replacement or additive for standard treatments that improve cognitive performance and behavior in children and adolescents with ADHD, especially when the PA exposure is prolonged.

A variety of activities are likely available for most children and adolescents with ADHD to participate in and have been the subject of various research investigations regarding their potential benefit to cognition. Many modalities of activities have been selected to compare individuals with ADHD's results from cognitive tests to assess the effect of aerobic PA interventions. In Piepmeier et al.'s (2015) study, children and adolescents (K–12) with ADHD either performed 30 min of aerobic exercise or watched a nature documentary prior to taking various cognitive tests. Individuals with ADHD performed better on the tests relating to cognitive processing speed following the short bout of aerobic exercise as opposed to following nonexercise conditions. In another study, adults with ADHD (M_{age} = 24.8 years) walking on a treadmill demonstrated better scores on tests, showing faster reaction times with less errors on a continuous performance task than when sedentary (Rassovsky & Alfassi, 2018). Also, the population-based controls in Rassovsky and Alfassi's (2018) study showed the opposite effect; adults' performance was lower during treadmill walking compared to resting. Another study suggested that PA may improve mental health and cognition in children and adolescents with ADHD as a result of their swim training intervention (Silva et al., 2019). In Silva et al.'s (2019) study, 20 children and adolescents diagnosed with ADHD (trained: n = 10, M_{age} = 12.2 ± 2 years; untrained: n = 10, M_{age} = 12 ± 1 years) were included in the analysis. The improvements were expressed as increased scores on psychological and neurological tests taken by the trained group (Silva et al., 2019). However, these swim training interventions were somewhat simple in nature, and executive function might further improve when children and adolescents with

ADHD participate in activities that require more cognition and coordination, such as sports (Diamond & Ling, 2016). Thus, several different interventions that utilize a variety of equipment can serve to benefit children and adolescents with ADHD in their cognitive performance and mental health.

Given the varying protocols and durations of studied PA interventions, it is highly important that future research teams attempt to better justify the outcomes of interventions in reference to their methods (Vysniauske et al., 2016). In addition to the PA method, outcome measures of cognitive performance have varied in research studies. The improvements in cognition can be quantified in many ways. While many of the aforementioned research investigations involved a cognitive test, brain activity is also of interest to researchers when studying ADHD and PA.

Physical Activity and ADHD Brain Activity

To validate the effect of PA, one must understand the cognitive mechanisms that may help individuals with ADHD to better manage their symptoms. At a molecular level, individuals with ADHD have irregular cortical pathways that make it difficult to regulate executive function, impulses, and behavior, especially during complex tasks (Sharma & Couture, 2014). Huang et al. (2018) introduced the notion that the brain activity of individuals with and without ADHD differs in terms of theta/beta and theta/alpha ratios given resting electroencephalographic (EEG) measurements. Elevated theta activity and reduced beta activity are common in children with ADHD, and this is likely due to cortical underarousal (Lubar, 1991). Huang et al. claimed theta/beta and theta/alpha ratios are higher for children with ADHD and their results supported this claim; they found a significantly higher ratio of theta/beta activity in their sample of children with ADHD (n = 24 boys, age 7 to 12 years) compared with age-matched controls (n = 28 boys; Huang et al., 2018). Also, Huang et al. repeated the EEG measurements after interventions of video-watching (30 min) and treadmill exercise (5-min warm-up, 20 min at target heart rate, 5-min cooldown). Analysis of EEG readings for both groups indicated significant decreases in theta/beta ratios after exercise for the ADHD group, but not for the control (Huang et al., 2018). The results of this study suggest that EEG is normalized after a single bout of aerobic exercise. The normalizations observed in

Huang et al.'s study add to the body of evidence that suggests that physically active children and adolescents have increased cortical brain activity and that exercise participation serves to influence cortical function (Hillman et al., 2008; Lardon & Polich, 1996).

Ludyga et al. (2017) supported and tested the common belief within research that increased P300 amplitude (component of a neural event-related potential) is associated with inhibition of unnecessary neuronal activity that may slow executive control and attention. Specifically, they tested whether higher rates of P300 amplitude in the readings correlated to better cognition via improved inhibitory control for children and adolescents with ADHD (Ludyga et al., 2017). In fact, it is well known that overall physical fitness and aerobic exercise is related to optimization of this neural activity in healthy adolescent and adult populations (Hillman et al., 2005; Hillman et al., 2006). Ludyga et al. tested this hypothesis by recording EEG of children and adolescents (n_{ADHD} = 18, $n_{Control}$ = 18; age 11 to 16 years) performing an inhibitory control task (modified Flanker task). They found that 20 min of aerobic (cycle ergometer) or coordinative (balancing tasks) PA increased amplitudes of P300 during the Flanker task. No P300 increases occurred after a 20-min inactive condition (TV-watching). These results occurred in both groups, indicating that PA interventions can also benefit neural inhibition of children and adolescents without ADHD. Aerobic conditions produced more P300 improvements than coordinative PA for both groups. However, no significant improvements in the Flanker task occurred as a result of the PA conditions. The results of Ludyga et al.'s study are interesting given the results of a similar experiment by Chuang et al. (2015), who found that EEG measurements (contingent-negative variation) of children with ADHD (n = 19, no controls, age 8 to 12 years) were more optimal after 30 min on a treadmill compared to video-watching. However, Chuang et al.'s team observed significantly better performance of the participants in cognitive tests (Go/No Go Task) of reaction time. The results of these studies indicate that acute exercise may promote normalization of neural arousal and alertness for both children and adolescents with ADHD. Although results differed between the two experiments in regard to cognitive test performance, PA may serve to improve reaction time in cognitive tests.

The findings in these ADHD studies concerning children and adolescents, EEG activity, and PA support exercise prescription for cognitive performance. However, actual performance of cognitive tasks was assessed in only two of the experiments and the results were not consistent in observations of significant improvements following PA conditions. The authors of these EEG studies (Chuang et al., 2015; Huang et al., 2018; Ludyga et al., 2017) discussed the possible implications of optimal neuroactivation levels exhibited by children and adolescents with ADHD. An overarousal of superfluous neurotransmitter systems in the brain is thought to be a critical component leading to inattention of individuals with ADHD (Huang et al., 2018). The conditions of PA within all mentioned EEG studies resulted in children and adolescents with ADHD displaying more optimal values of neural activity for cognitive performance. The research outcomes of these studies provide a promising notion that PA can better normalize neural conditions for children and adolescents with ADHD. Given these findings, the temporary improvements of arousal and attention should be promoted to ADHD students through singular sessions of acute exercise in the moments before academic performance.

While researchers have used the performance of cognitive tasks and brain activity readings of children and adolescents with ADHD to determine the effect of PA participation, other outcome measures still exist. For example, a student may perform better and have more optimal brain conditions, but their behavior may not improve as a result of PA participation. Therefore, an observational measure provided by a parent, teacher, or researcher can provide a useful appraisal of ADHD symptom improvement.

Parental and Teacher Reports of Physical Activity and ADHD Symptoms

Multiple PA-related studies have analyzed behavior improvements through the perspective of the parents and teachers of children and adolescents with ADHD. Researchers who administered ADHD symptoms questionnaires along with PA interventions recorded positive associations of PA through parent and self-reports of ADHD symptoms in children and adolescents (age 8 to 13 years) after high-intensity interval training interventions (Mebler et al., 2018). Teacher reports of ADHD symptoms in children (age 10 to 11

years) after a 12-week intervention that included physically and cognitively challenging exercises also noted improvements (Taylor et al., 2019). The aforementioned study results suggest that parents and teachers have found ADHD symptoms to improve when both children and adolescents participate in exercise. In concert with these findings, parent and teacher ratings of behavior for children (7 to 11 years) without ADHD show that overweight and obese children have significantly more behavior problems (Slykerman et al., 2020).

In one of the few studies that include a large sample randomized trial to address ADHD symptoms at home and in the classroom, teachers and parents rated young children (M_{age} = 6.83 years) with ADHD (n = 94) and typical development (n = 108) on their behaviors before and after PA interventions (Hoza et al., 2015). Hoza et al. (2015) reported a significant reduction in inattention as reported by parents in the home setting of both groups of students, but no significant reduction was shown in the teacher reports of classroom behavior for either ADHD or typical development. Hoza et al. introduced an interesting concept given the results of previous and current PA interventions. They suggested that although PA interventions are limited in their explanation and causality of improved symptoms, they have not yet produced a negative effect in relation to the ADHD symptoms of young children. However, they could not further validate this statement, because their study lacked a no-treatment control group. Once again, a relationship exists between reduced ADHD symptoms and PA, but not without limitations.

Parents play an important role in identifying PA interventions that may help alleviate their child's ADHD symptoms. Parents who enroll their ADHD-diagnosed children in sport programs might find that certain activities have a different effect on symptoms. Recall that many of the studies described in this article found that aerobic activities have a significant effect. However, a portion of children and adolescents likely are participating in sport disciplines that not only require moments of anaerobic movement but also require more cooperative skills within a team than interventions such as walking, swimming, high-intensity interval training, and cycling. This is well described by Gapin and Etnier (2014), who state that organized team sport activities may not produce desired changes in behavior because of inherent challenges of the game that may inhibit benefit.

For example, children and adolescents with ADHD may struggle more to follow rules and control reactive aggression in fast-paced team sports (e.g., soccer) than their traditional developmental peers. This notion makes it imperative that parents engage in their children's sport and physical education class to ensure that their child's behavior is not negatively affecting ADHD symptom normalization (Prichard & Deutsch, 2013, 2015). Also, researchers should attempt to further delineate sport disciplines and nonsport exercise to more accurately determine the benefits of each. Overall, there appears to be a positive association between PA and ADHD symptoms according to parental reports (Gapin & Etnier, 2014).

Conclusion

In conclusion, millions of children and adolescents between 2 and 17 years of age are currently diagnosed with ADHD, with the majority being in their adolescence (12 to 17 years). While pharmaceutical and behavioral training remedies are prevalent for the treatment of ADHD symptoms in children and adolescents, the inclusion of daily exercise may further potentiate symptom relief. The brain activity of individuals with ADHD is abnormal in its characteristics of neurotransmitter activity during tasks that require attention. Works of several research teams support the notion that this neuroactivation can be optimized with PA interventions. Also, performance on cognitive tasks has been shown to improve in individuals with ADHD following PA interventions such as aerobic exercise and swimming. However, these improvements are not as prominent when the task is performed while they are exercising. Also, dose dependence may be a factor. Individuals with ADHD who are typically quite active may show less symptom improvement following PA interventions than sedentary individuals. Parents who have children with ADHD who undergo PA intervention programs may report an improvement in symptoms, but teacher reports may be less promising, showing the variability of PA intervention effect. Limitations that require certain consideration have been identified within research studies. Research studies have not been without limitation and should attempt to further eliminate covariates that may mediate the relationship between PA and ADHD symptom improvement. However, PA intervention has yet to show any negative effect on ADHD symptoms within an EEG, cognitive test, or parent- and teacher-report study. The type and

timing of PA required for a positive effect on ADHD symptoms may be unique to the individual. Nevertheless, individuals with ADHD can benefit from the addition of daily PA to their already established treatment regimen. This presents a tremendous opportunity for adults, children, and adolescents with ADHD: PA interventions can be easily adapted into a daily schedule in preparation for bouts of attentional effort. Also, PA interventions can be utilized completely free of cost and without reliance on health care professionals.

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PHYSICAL FITNESS

Sixth-Grade Hispanic Boys' and Girls' Performances and Preferences in Cardiovascular Fitness Testing: A Comparison Between the 1-Mile Run and the PACER

Grant M. Hill and Nicholas Meko

Abstract

The purposes of this study were to determine the performance of primarily Hispanic sixth-grade students for the PACER and the 1-mile run, which cardiovascular test they perceived to require more effort, and what they liked and disliked about both cardiovascular tests. Participants included 103 males and 97 females ages 10 to 12. Each participant completed a multiple-choice survey and was encouraged to provide specific reasons for cardiovascular test preference. Results indicated that higher percentages of both girls and boys achieved passing scores in the PACER and preferred the PACER (72%) to the 1-mile run (28%). Respondents provided strong support for allowing students in this age group to choose between the 1-mile run and the PACER when performing cardiovascular fitness testing.

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Cardiovascular (CV) fitness is extremely important for school-aged children. Because heart disease is a major factor in early mortality, Ratey (2009), a fitness expert, strongly advocates incorporating multiple aerobic activity sessions per week. To help students track their CV fitness progress, and to hopefully motivate them to set goals and also make connections between lifestyle decisions and test scores, The Cooper Institute created both the FitnessGram and the ActivityGram. Periodic FitnessGram CV testing provides for feedback to both students and parents and reinforces the importance of lifelong health and fitness (Meredith & Welk, 2017).

The FitnessGram aerobic capacity test, which is required in many states, measures CV fitness by using either the 1-mile run or the Progressive Aerobic Cardiovascular Endurance Run (PACER) test. These two tests are the most valid and reliable methods for the assessment of CV fitness of school-aged youth in a field setting (Beets & Pitetti, 2004).

While the 1-mile run is a good CV test for students who are motivated and enjoy running, the PACER may be a better alternative CV test for those who do not enjoy running laps around a track (Scott et al., 2013). Wilkinson et al. (2012) found that a majority of junior high girls preferred the PACER over the 1-mile run. For an increase in student motivation, a number of researchers have recommended students be given a choice of either the 1-mile run and or the PACER for the best possible testing environment (Prusak et al., 2004; Lonsdale et al., 2009; Jaakkola et al., 2013). Providing students with choices in their physical activities has been found to increase student motivation and engagement (Bennie et al., 2016).

Given the importance of aerobic fitness on overall physiological health, including cognitive functioning, physical educators need to provide the best testing procedures possible for students. Specifically, students may be more motivated to try to achieve a higher level of CV fitness if they have a choice of different CV tests because they may prefer certain CV activities over others (Saint Onge & Krueger, 2011). Helping students to enjoy and be more engaged in CV testing appears to be important; multiple studies have found a significant positive correlation between CV performance and academic performance (Chang et al., 2015; Donnelly & Lambourne, 2011; Kalantari & Esmaeilzadeh, 2016) and between CV performance and self-

efficacy and expectancy-value (Kane et al., 2013; Liu & Dai, 2017; Zhu & Chen, 2014). This study is also important because sixth grade is a time when many children are decreasing their daily physical activity levels (Reilly, 2016). Consequently, for the provision of a more enjoyable and engaging CV testing process, it appears important to determine whether students prefer the PACER or the 1-mile run, reasons why they try harder on either test, and their likes and dislikes associated with both CV tests.

Method

Participants were enrolled in five sixth-grade general physical education classes at one public urban middle school located in a Southwestern state. Permission was granted by the school district IRB representative. Of the 200 participants in the study, 103 (51.5%) were male and 97 (48.5%) were female. Participant ages ranged from 10 to 12 years. The published ethnicity of the students in this school was Hispanic (93.3%), African American (5.2%), and no ethnicity declared (1.5%). In this school, 97.2% of the students were classified as socioeconomically disadvantaged and 30.4% were English language learners.

This study used a validated questionnaire to determine students' perceptions of the 1-mile run and the PACER (Wilkinson et al., 2012). The survey included 13 multiple-choice questions and space was provided for students to enter comments for each item. Students completed the on-line survey using Qualtrics the day after completing both the 1-mile run and the PACER. Students were asked which test they preferred. They also selected the test in which they exerted the most effort and indicated specific reasons for doing so (see Tables 1 to 4 for specific survey questions). After PACER scores and 1-mile run times were recorded for each student, the researcher determined the percentages of males and females who achieved scores in the FitnessGram Healthy Zone for each test.

Data Collection Procedure

Students in all five classes completed the 1-mile run during the first week of the semester, followed by the PACER during the second week. This gave the students an opportunity to practice pacing themselves in each test. During the fifth week of the semester, three randomly selected classes completed the 1-mile run and the

other two classes completed the PACER. The next week students performed neither test. In the following week (Week 7), those who started with the 1-mile run performed the PACER and those who started with the PACER performed the 1-mile run. For the PACER, one half of the class completed the test at a time with a partner filling out the FitnessGram score sheet. The researcher also utilized an assistant to record when each student stopped running, to provide a cross-check of scores to ensure accurate reporting. The day following the second test, all students filled out the electronic questionnaire, stating their perceptions of both CV fitness tests. All students were informed their responses to the questionnaire items were confidential and had no effect on their physical education grade.

Results

Table 1 shows the CV test preferences among boys and girls. Of the 200 participants, 144 (72%) indicated they prefer to perform the PACER, whereas 56 (28%) chose the 1-mile run. For the females, 76.2% preferred running the PACER, whereas 23.7% chose the 1-mile run. For the males, 67.9% preferred the PACER, whereas 33.0% preferred the 1-mile run.

Table 1
Cardiovascular Endurance Test Preferences of Boys and Girls in Required Physical Education Classes

	Males		Females		Total	
Test	***N***	**%**	***N***	**%**	***N***	**%**
PACER	70	67.9	74	76.3	144	72.0
1-mile run	33	32.0	23	23.7	56	28.0

The most frequent reasons boys and girls gave for trying harder on the PACER were trying to beat their previous score (35.0%), not having the opportunity to rest or walk while performing the test (26.5%), and having no stopping point (20.0%; see Table 2). The most frequent reasons boys and girls gave for trying harder on the 1-mile run were to beat their previous time (26.5%), because they got to set their own pace (10.5%), and because they knew they had to finish a required distance (7.0%; see Table 3).

Table 2
Boys' and Girls' Reasons for Trying Harder in the PACER Test

	Males		Females		Total	
Reasons	**%**	***N***	**%**	***N***	**%**	***N***
Tried to beat previous score	33.0	(34)	37.1	(36)	35.0	(70)
Prefer the 1-mile run	33.0	(34)	37.1	(36)	35.0	(70)
Can't walk or rest	25.2	(26)	27.8	(27)	26.5	(53)
More difficult to score in the Healthy Fitness Zone	20.4	(21)	20.6	(20)	20.5	(41)
No set stopping point	17.5	(18)	22.7	(22)	20.0	(40)

Note. Participants were permitted to select more than one reason for why they try harder on the PACER test.

Table 3
Boys' and Girls' Reasons for Trying Harder in the 1-Mile Run

	Males		Females		Total	
Reasons	**%**	**N**	**%**	**N**	**%**	**N**
I tried to beat my previous time	27.2	(28)	25.8	(25)	26.5	(53)
I got to set my own pace	14.6	(15)	6.2	(6)	10.5	(21)
I had to finish a required distance	9.7	(10)	4.1	(4)	7.0	(14)
More difficult to score in Healthy Fitness Zone	3.9	(4)	7.2	(7)	5.5	(11)

Note. Participants were permitted to select more than one reason for why they try harder on the 1-mile run.

For the PACER test, 85.0% of the students scored in the Healthy Fitness Zone (HFZ). In contrast, only 67.5% scored in the HFZ for the 1-mile run. A higher percentage of females had scores in the HFZ for the PACER (95.9%) when compared to males (74.6%). A higher percentage of females (73.2%) also had scores in the HFZ for the 1-mile run when compared to males (62.1%; see Table 4).

Table 4
Percentage of Students Who Scored in the FitnessGram Healthy Fitness Zone When Completing the 1-Mile Run and PACER Tests

	Males		Females		Total	
Test	**%**	***N***	**%**	***N***	**%**	***N***
PACER	74.8	(77)	95.9	(93)	85.0	(170)
1-mile run	62.1	(64)	73.2	(71)	67.5	(135)

Discussion

Similar to the participants in Wilkinson et al. (2012), a strong majority of the participants favored the PACER over the 1-mile run. These results are also consistent with the results of Constantinou et al. (2009), who suggested the conditions of a testing environment may impact test preference. Just over half (54.5%) of the participants reported they tried harder on the PACER test, whereas just under half (45.5%) indicated they tried harder on the 1-mile run. These results support the contention of Lonsdale et al. (2009) that physical educators should consider either giving students a choice of the two CV tests or having them perform both tests and use the better score.

The most frequently cited reason students disliked the PACER was that spacing between runners was too crowded. The PACER was performed in the gymnasium with half of the class running at a time (approximately 20 to 30 students). Because class time was limited, it was necessary to test one half of the class at a time (i.e., rather than smaller groups of students). Apparently some of the students did not have a clear lane when they ran the PACER test, in contrast to the outdoor 1-mile run. As a result, students had to focus not only on running fast enough to complete each lap ahead of the beep but also on avoiding bumping into those who were running next to them. Being able to both walk and run was the students' most frequently mentioned reason regarding what they liked about the 1-mile run. Evidently, some students did not believe they were capable of running the entire mile without walking. Consequently, the task of completing the mile may seem more manageable for some participants because they can insert some walking breaks during their test.

Some students felt the 1-mile run provides a better measurement of their level of CV fitness. Others found their mile time to be more meaningful than a number of PACER laps and enjoyed trying to steadily lower their total time. Others felt the self-pacing requirement of the 1-mile run to be valuable, whereas others felt it was a better exercise to improve their long-term health.

Some students disliked the physically challenging nature of the 1-mile run. This is not surprising, because most of the students did not have BMIs in the FitnessGram HFZ and were likely not engaging in moderate to vigorous exercise on a regular basis. Some students in these classes appeared to have little experience in running a mile, and physical fatigue undoubtedly took them out of their comfort zones. In addition, the 1-mile distance may have psychologically overwhelmed them so that they felt they were incapable of finishing the test in a timely manner.

Less than 15% of the students provided one or more comments on the survey. Some of those students felt it was easier to score in the HFZ for the PACER than for the 1-mile run. This may be because the PACER has pacing and rest built into the test, compared to the mile, which requires a consistent pace. The PACER, on the other hand, dictates how fast students complete each lap and does not tend to fatigue participants as quickly. Additionally, the total distance required to score in the HFZ for the PACER is significantly less than the 1-mile run. The claim that the participants believed it is easier to score in the HFZ for the PACER was supported with 85% of the students scoring in the HFZ for the PACER test versus 67.5% for the 1-mile run. Participants also liked the unique test procedures of the PACER. The PACER was performed inside and had accompanying music and beep sounds that signified each lap. Others indicated they found the 1-mile run to be boring. Because the participants were collected through a convenience sample (five classes from one teacher), the results may not be generalizable to other populations. The online survey was taken on one day at school; however, some students were absent during the PACER or 1-mile run, so they were not represented in the final results of the study. Low effort by some of the students during the 1-mile run may also have affected the findings.

Given that approximately 93% of the participants were Hispanic, the findings may be compared with similar or dissimilar ethnic

groups of middle school students, because ethnicity has been shown to influence physical activity choices (Saint Onge & Krueger, 2011). In addition, the results should be of interest to those who are assessing physical activity disparities among underserved Hispanic children (Zhang et al., 2020).

The results provide additional support to the notion that physical educators should consider either giving students a choice of CV test or giving them both tests (Jaakkola et al., 2013; Lonsdale et al., 2009; Prusak et al., 2004). Because higher percentages of both males and females achieved scores in the HFZ of the FitnessGram for the PACER, the best strategy might be to have students work to pass the PACER first and later transition to the 1-mile run. Because partners were utilized to score the PACER (i.e., using the FitnessGram PACER scoresheet), the use of partners to score the 1-mile run (i.e., provide lap times and encouragement) might also be beneficial. Students could add their scores and then set goals and work together to improve their combined scores during the school year.

Researchers should consider replicating this study using a range of age groups as well as urban and rural communities with different ethnic backgrounds and socioeconomic status. In addition, it would be interesting for studies to incorporate upbeat music during the 1-mile run to see how it affects both performance and preferences (Priest & Karageorghis, 2008). Finally, researchers should try testing the 1-mile run and the PACER both inside and outside to determine the effects of those settings on student choice.

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SPORT SPECIALIZATION

Investigating the Common Myths Leading Parents to Enroll Their Children in Early Sport Specialization

Obidiah Atkinson and Jacqueline D. Goodway

Abstract

An estimated 60 million children and adolescents between the ages of 6 and 18 participate in some form of organized athletics in the United States. Unfortunately, the youth sport landscape has changed such that organizations and coaches inform parents and athletes that early sport specialization (ESS) is an essential requirement for elite performance. Despite evidence that opposes this limited track, parents continue to overlook the potential negative consequences. Although the media commonly portrays ESS as the only pathway to success, research of Olympians and elite athletes in team sports indicates otherwise. To date, there has been ongoing research that examines the outcomes of ESS on athletes, but a large portion focuses solely on athlete burnout and injuries from specializing too early. On the contrary, there has been less attention toward the influences and interactions of programs and coaches on and with parents*, who greatly influence their child's sporting experience. Parents place trust in programs and coaches but are often misled by common myths. This article summarizes the common myths that lead parents to enroll their children in ESS. By having awareness of these three common myths, parents can become better informed on the perceived requirement of ESS for elite performance in youth sport.*

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Sport continues to be a popular activity among children and adolescents. An estimated 60 million children and adolescents between the ages of 6 and 18 participate in some form of organized athletics in the United States (Jones et al., 2018). Youth sport should provide children and adolescents a positive environment in which they can develop in physical, cognitive, and social aspects (Gould & Carson, 2004). In addition, youth sport involvement has been shown to influence health-related outcomes (e.g., cardiovascular fitness, muscle strength, and endurance; Pate et al., 2000) while promoting opportunities for leadership, teamwork, and positive social relationships (Côté & Hay, 2002; Cotterill & Fransen, 2016; McEwan & Beauchamp, 2014). Unfortunately, youth sport has shifted toward a privatized and ultracompetitive environment in which more parents and athletes believe that specializing early in a single sport is an essential requirement for elite performance.

Early sport specialization (ESS) has been defined as participation in an intensive organized sport for greater than 8 months/year at the exclusion of other sports, for children aged 12 years or younger (LaPrade et al., 2016). Despite evidence that opposes this limited track, parents continue to overlook the potential detriments in hope that their children achieve their athletic potential and destiny (Smith, 2015). The media commonly portrays ESS as the only pathway to success, highlighting famous athletes who were early sport specializers such as Tiger Woods and Venus and Serena Williams. Yet in a survey of 1,720 U.S. Olympians who competed in the 1984–2012 Summer and Winter Olympic Games, the U.S. Olympic and Paralympic Committee reported that these Olympians averaged three sports until 14 years of age with an average of 2.2 sports/year at ages 15 to 18 (Riewald & Snyder, 2014). These findings are similarly shared in studies of team sports such as soccer (Ford et al., 2009; Haugaasen et al., 2014), basketball (Baker et al., 2003; Leite & Sampaio, 2012), volleyball (Coutinho et al., 2014), ice hockey (Soberlak & Côté, 2003), and baseball (Hill, 1993). Influencing factors such as the 10,000-hour or 10-year rule, success stories of certain sport programs or coaches, and the pursuit of a collegiate scholarship or professional contract have seemingly become a requirement within youth sport for parents.

For the past two decades, ongoing ESS research has examined the outcomes on athletes. The results of these studies have demonstrated that athletes are at an increased risk of burnout and overuse injuries (Bell et al., 2018; Bell et al., 2016; Myer et al., 2015). Of interest, there has been considerably less attention toward the influences and interactions of programs and coaches on and with parents. From a parental perspective, research has confirmed that parents can have a positive or negative influence on a child's sporting experience (Dorsch et al., 2015; Holt & Knight, 2014). As Knight et al. (2016) indicated, parents' involvement in their child's sport experience can be influenced by multiple aspects including the current context, other adults (e.g., parents and coaches), their own behavior, past experiences and knowledge of the sport, and their goals and expectations for their child. Most parents believe that programs and coaches are considering their child's best interests rather than exploiting their child for a competitive advantage when ESS is touted as the recommended method in the development of an athlete's potential (Popkin et al., 2019). Parents continue to be conflicted and misled by myths that suggest ESS is required for elite performance. This article summarizes the common myths that lead parents to enroll their children in ESS. By having awareness of these three common myths, parents can become better informed on the perceived requirement of ESS for elite performance in youth sport.

Myth 1: The Athlete Will Acquire More Sport Skills

Many parents believe that their child will become more skilled when specializing early in one sport. The notion of deliberate practice wherein practice is highly structured with no immediate rewards and focuses on improving performance over inherent enjoyment is often a perceived requirement (Ericsson et al., 1993). The sport community knows this as the 10,000-hour or 10-year rule, which says the child must deliberately practice for 10,000 hours or 10 years to achieve elite performance. In contrast, Côté et al. (2007) suggested deliberate play as a preferred method; in this method, play is intrinsically motivating and designed to maximize fun and enjoyment for children aged 6 to 13 years. Additional methods of youth sport participation include (a) play practice (i.e., adult-designed

instruction that emphasizes fun and games), (b) spontaneous practice (i.e., child-led sport skill development), or (c) organized competition (i.e., adult-managed competition that requires effort and focus; Côté et al., 2013). Although ESS and these methods can coexist (i.e., one sport that is intrinsically motivating at the exclusion of others), deliberate play should occur over a wide range of sports and activities, otherwise known as sport sampling (Côté, 1999). By sport sampling, children have more opportunities to learn a variety of fundamental motor skills and movement patterns that translate across many sports such as throwing or kicking a ball (Goodway & Robinson, 2015). Due to the encouragement of intrinsic motivation with an increase in time on task and creativity, children who sport sample and diversify are more likely to develop sport skills.

However, numerous programs and coaches limit athletes' sport participation to one sport. Required year-round training has become the norm—where once optional off-season activities were common—and has transitioned to become a mandatory component within an athlete's registration fee. Programs and coaches advocate for the exclusion of other sports, year-round training, and commitment to parents by luring them toward the idea that this method will aid their children's skill development, providing early specializers with the opportunity get ahead of their peers (Jayanthi et al., 2013). Moreover, there is the threat that if young athletes do not commit to this method, they will fall behind and be unable to catch up. Yet athlete development models such as the Developmental Model of Sport Participation (DMSP; Côté & Fraser-Thomas, 2007) have been introduced. The DMSP identifies and focuses on the stages and various pathways that an athlete can take toward elite performance. It describes three pathways that children can take through youth sport: (1) early sampling of recreational sport through deliberate play; (2) early sampling of sport through deliberate play, then transitioning to deliberate practice, known as later specialization; and (3) ESS through deliberate practice (Côté & Fraser-Thomas, 2007). These pathways can lead children toward elite performance. For sport skill development, the third trajectory is only required for young athletes who participate in sports in which peak performance is prepubertal such as gymnastics or figure skating (Anderson & Mayo, 2015).

The first myth that the athlete will acquire more sport skills by being an early sport specializer has been effectively challenged. The 10,000-hour or 10-year rule was formulated based upon the results of musicians and chess players' use of deliberate practice but has since become a perceived necessity for athletes in youth sport. Thus, programs and coaches mandate year-round commitment and training, misguiding parents into believing that their child is at risk of falling behind. However, athlete development models have demonstrated that there are multiple pathways toward elite performance unless the athlete is participating in a sport in which peak performance must occur before puberty. Sport diversification through deliberate play is the recommended method for athletes to best acquire a vast range of transferable sport skills.

Myth 2: The Athlete Will Become More Prepared for Adulthood

Often, parents are sold the idea that youth sport experiences are crucial to the development of life-related skills (e.g., teamwork, adversity, dealing with authority) that will better prepare their children to become more successful in adulthood (Etnier, 2020). Coakley (2015) defined this misconception as the Great Sport Myth, which says "the purity and goodness of sport is transmitted to those who play or consume it; and that sport inevitably leads to individual development" (p. 404). Parents frequently believe this notion and are informed that ESS will place their children within a competitive environment that toughens them up and prepares them best for the "real world." However, children are not miniature adults and should not be treated as such, even in sport. Although some athletes benefit from an uber-competitive setting, many are at risk of suffering short-term burnout and long-term psychological problems. A common issue of ESS is a disruption of the development of positive social and peer relationships due to the child's perceived competence being negatively impacted. Athletes who specialize early tend to only use limited sources (e.g., peer comparison, performance outcomes, and coach feedback) to evaluate themselves (Keegan et al., 2010). Further, these athletes tend to struggle with identity foreclosure, a process of finding their sense of self and feeling limited due to their involvement in one sport from a young age (Coakley, 2010).

An area of significance that parents may overlook is structure of developmental variables (e.g., physical, motor, cognitive, psychosocial) that sport organizations and coaches use within the sport environment. Children, regardless of gender, age, or level of competitive play, have shared similar reasons for participation in youth sport (Visek et al., 2019; Weiss & Williams, 2004). Therefore, if the environment is designed so the athlete is intrinsically motivated, the negative developmental outcomes may be not as severe (Horn, 2015). A key aspect in the design of a developmentally appropriate environment is the use of theory that is aligned throughout the curriculum and instruction (Allan et al., 2018). An example of a theory that can be implemented to increase athletes' intrinsic motivation is the self-determination theory (SDT; Deci & Ryan, 2000). The SDT outlines three fundamental needs for the athlete's motivation to occur: autonomy, competence, and relatedness (Standage et al., 2005). Autonomy represents the need for control and choice in actions, competence is the need for effectiveness and mastery in the environment, and relatedness refers to the need for a sense of belonging and connectedness with others (Ryan & Deci, 2017). If these needs of the athlete are met in the environment designed by the coach, the athletes will become intrinsically motivated to participate (Vasconcellos et al., 2019). Unfortunately, many sport programs and curriculums are not grounded in theory. This leads coaches to design an environment that solely focuses on winning and it thus results in negative psychological consequences.

The second myth that the athlete will become more prepared for adulthood by being an early sport specializer has been discredited (Etnier, 2020). Parents are persuaded into the belief that ESS is the best method to prepare their children for the adversity that lies ahead. Instead, an athlete's inability to establish social and peer relationships, a decrease in their perceived competence, and a lack of identity foreclosure are possible long-term risks. The environment must be structured in a developmentally appropriate way that intrinsically motivates athletes. In doing so, a program that is theoretically grounded (e.g., SDT) in its curriculum and instruction can design an environment that limits the negative psychological consequences.

Myth 3: The Athlete Will Receive Better Coaches

Frequently, parents are advised that their child will become privy to better coaches at programs that advertise being elite and require year-round commitment from athletes. These programs regularly state that their coaches are superior to those of other teams, often offering their services at extreme costs due to high winning percentages or track records of coaching athletes now in college and/or professional sport. As Hastie (2015) noted, to better comprehend the quality of pedagogy being offered, one needs to consider the knowledge of these coaches and look beyond only a coach's win–loss record and success stories. According to Côté and Gilbert's (2009) definition of coaching effectiveness, there are three types of knowledge of an effective coach: professional knowledge (a coach's sport-specific physical, technical, and tactical skills), interpersonal knowledge (a coach's ability to develop and manage relationships with their athletes), and intrapersonal knowledge (a coach's ability to reflect and examine their own methods and practice). Although these coaches can demonstrate and provide frequent feedback toward the development of sport-specific physical, technical, or tactical skills, this is not enough for them to be effective coaches. An effective coach designs a developmentally appropriate environment in which athletes receive relevant knowledge, identifies teachable moments, and fosters intrinsic motivation while making the experience enjoyable for all athletes (Etnier, 2020).

In addition to gaining a clearer understanding of all the knowledge that constructs coaching effectiveness, one needs to examine the concept of a coach's pedagogical content knowledge. Even though a coach's playing experience and professional knowledge of their sport is often revered, the coach's integration of content knowledge, their understanding of pedagogy, and their awareness of their athlete's abilities are equally important (Ward, 2009). In particular, for a coach to structure a training plan that reflects content progression, the sequencing of instructional learning tasks toward a set outcome is a critical skill (Rink, 1979, 2014). By extending (increasing the complexity of the task), refining (focusing on a particular aspect of performance), and applying (performance via a game or an assessment), a coach adjusts the difficulty of the task based upon

the specific needs of the athlete (Rink, 1979). Further, in a study that described athletes' experiences of poor teaching by coaches, Gearity (2012) found that athletes perceived coaches at various competitive levels (e.g., youth to professional) were substandard at providing useful and individualized instruction, were inadequate at managing game tactics, and lacked knowledge to teach effectively. Evidently, there is still low-quality instruction even at the highest levels (Gearity, 2012); coaches lack the pedagogical content knowledge necessary to teach in the most developmentally appropriate way best suited for their athletes.

The third myth that the athlete will receive better coaches by being an early sport specializer has been disputed. ESS is portrayed as an opportunity for athletes to have access to celebrity coaches who will help guide them to elite performance. These coaches are often expensive due to their touted high winning percentages or previous athletes now playing college and/or professional sport. This leads parents to believe that their child will benefit from guaranteed enhanced pedagogy, but low-quality coaching still happens at elite levels. While these coaches may have more professional knowledge, they may not structure learning tasks sequentially, communicate effectively, or adjust to the developmental needs of their athletes, making the experience less enjoyable for all athletes.

Discussion

With numerous programs and coaches suggesting that ESS is the only trajectory required for athletes to achieve collegiate or professional success, parents need to become better informed that there are many pathways that do not involve ESS that their child can take to elite performance. The percentage of athletes who successfully transition from high school sport to college sport and college sport to professional sport is extremely low in most sports (National Collegiate Athletic Association, 2019). In reality, young athletes are more likely to receive academic funding for college or university because there is significantly more funding to support academic scholarships than athletic scholarships (Bacon, 2016). Parents want the best for their children, but the child should be in control of their sporting decisions. Because parents have a duty to protect and limit the negative consequences of sport on their children, there are issues

that arise with the practice of ESS (Torres, 2015). The only acceptable reason for a child to partake in ESS is when the sport requires peak performance before puberty; otherwise, sport diversification through sport sampling is recommended. Many athletes who specialize in sport at a young age do not make it to an elite level and suffer from burnout, eventually dropping out of sport altogether (Malina, 2010). Parents and athletes need to become aware of the risks associated with ESS and learn about the multiple pathways toward elite performance.

Youth sport has become an arms race in which organizations and coaches aim to convince parents how much more their program can offer their child than their fellow competitors' program. The pursuit of a collegiate scholarship or professional contract as well as not wanting their child to fall behind other children who partake in ESS is usually enough for parents to sign up their child for ESS, as they presume this is the quickest trajectory toward elite level performance. To date, research has primarily examined ESS with regard to the athletes, focusing on burnout, overuse injuries, and skill development (Baker et al., 2009). There has been less attention toward the influences and interactions of programs and coaches on and with parents who believe their child's best interests are being considered rather than being exploited for a competitive advantage when ESS is the recommended method in the development of an athlete's potential (Popkin et al., 2019). Therefore, the continuation of longitudinal studies that follow parents and their child's sporting experiences from childhood to adulthood across all contexts is recommended and may provide an increased understanding of ESS (Jayanthi et al., 2020; Weiss, 2015). Further, through the usage of athlete development models, studies can track parental decision making and outcomes of their children across various populations along the spectrum of specialization, with an increased focus on the athlete's movement between each stage (Hecimovich, 2004; Jayanthi et al., 2013). Last, a consensus judgment regarding ESS and accountability of organizations from all major stakeholders within youth sport such as the National Basketball Association (DiFiori et al., 2018) would provide parents a resource related to their child's specific sport.

The trend of ESS is likely to continue with parents being misled by common myths due to the perceived benefits of their child

becoming an elite athlete (Smith, 2015). Although research has demonstrated there are multiple pathways to elite performance, parents continue to place trust in the organizations and coaches because these organizations and coaches publicize having the required expertise and knowledge to guide athletes into elite performance. Since the perceived benefits of ESS are repeatedly highlighted, the potential negative consequences of specializing too early are also noteworthy. Parents should remember that young athletes, even the most talented, are still children (Malina, 2010). Children who participate in organized sport at a young age want to have fun and should be immersed in an environment that prioritizes trying hard, being a good sport, and getting playing time (Visek et al., 2015). With events such as the Olympic Games and new success stories in athletics, ESS will continue to surface and be a hot topic of discussion.

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YOU AND THE LAW

A Retaliation Claim in High School Athletics

Ryan Benner and Mike Stocz

Sensabaugh v. Halliburton, 937 F.3d 621 (6th Cir. 2019).

A former high school football coach pressed charges against his former supervisor and the Washington County Board of Education in which he claimed they retaliated against him for expressing concerns about conditions on Facebook (*Sensabaugh v. Halliburton*, 2019).

Complaint

In the current case, the Sixth Circuit United States Court of Appeals in Cincinnati, Ohio, considered an appeal from the plaintiff, Gerald Sensabaugh, on if the defendants, a school director and the Washington County Board of Education (Tennessee), were properly granted a motion for summary judgment in a case involving a First Amendment retaliation claim.

Facts of the Case

Sensabaugh was the head football coach at David Crockett High School in Washington County in 2017. In September 2017, Sensabaugh visited an elementary school that was a member of the same school district. After his visit, Sensabaugh posted photos of the school to Facebook, which included the faces of students and

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commentary as to the condition of the school. The elementary school principal voiced to Sensabaugh's school director and principal her concerns that a violation of the Family Educational Rights and Privacy Act as well the school board's policy may have occurred. The director of schools and Sensabaugh's principal eventually contacted Sensabaugh and asked him to remove the photos that portrayed students, but he did not comply. Days later, Sensabaugh posted to Facebook concerns about prisoners working at the school. The three parties spoke on the phone to address the school's concerns, but the plaintiff became heated and yelled at his superiors before hanging up. Sensabaugh sent a text to the director of schools, stating, "Just let me know the next step. Fire me or deal with it."

Sensabaugh was then issued a letter of guidance that asked that Sensabaugh remove the photos featuring school kids, addressed concerns about Sensabaugh's conduct on the phone call, and addressed on-the-field issues, including profane language use in front of students and allowing an injured student to participate. The letter also stated that Sensabaugh was never asked to remove his comments or opinions and concluded by saying, "Failure to follow my directives may lead to discipline up to and including termination as our football coach." Sensabaugh deleted the photos, but during the meeting in which this letter was issued, Sensabaugh became agitated and confrontational toward the principal. Sensabaugh then accused his supervisor, the athletic director, of being high on oxycodone on the job. Sensabaugh also claimed he heard that a student brought a firearm to school, but he had never reported it. After the meeting, Sensabaugh accosted an athletic trainer and the injured student. Later that night during a game, Sensabaugh allegedly continued to swear at his players and to proclaim that the athletic director was on drugs and offered to sell to him. Sensabaugh was then deemed a threat to the students and staff by the school, although the school district's attorney suggested a letter of reprimand be issued. This letter would put Sensabaugh on administrative leave with pay while an independent investigation was conducted. The independent investigators suggested that Sensabaugh's employment be terminated, but the director of schools asked Sensabaugh if he would like to submit anything for his defense. Sensabaugh never submitted any documents or evidence and was subsequently fired. Sensabaugh claimed

that the school district retaliated against him for exercising his First Amendment right to free speech over two Facebook posts.

Court's Analysis

For Sensabaugh's retaliation based on his First Amendment right to free speech claim to prevail, he must show that he engaged in protected conduct; that an adverse action was taken against him that would deter a person from continuing to engage in that conduct; and that the adverse action was motivated, at least in part, by his protected conduct. Both the district court and the court of appeals agreed that although there was an adverse action in Sensabaugh's termination, particularly in regard to the letters of guidance and reprimand, there was no causal link between Sensabaugh's Facebook posts and his termination. Instead, the court determined that these letters were ways in which Sensabaugh could avoid punishment. The court also determined that Sensabaugh's causation argument—here meaning that Sensabaugh must demonstrate that the Facebook posts represented a substantial or motivating factor in his termination—was justified only by temporal proximity, which would not be enough to prove causation. Due to both letters acknowledging that Sensabaugh could keep his commentary on Facebook so long as he deleted the photos with school kids present, the court found that retaliatory conduct had not taken place.

Next, the school director claimed qualified immunity as a defense, in which Sensabaugh would need to show a violation of a clearly established constitutional right. The independent investigation showed that Sensabaugh's Facebook posts did not play a direct role in the decision to terminate him; thus, Sensabaugh failed to prove that a violation of his freedom of speech led to his termination. As Sensabaugh could not establish that the school director violated his First Amendment rights, any claim against the school district would not be successful.

Court's Decision

The Sixth Circuit United States Court of Appeals affirmed the district court's decision to grant summary judgment in favor of the defendants on all counts.

Discussion

This case illustrates the need for public officials, or anybody who earns a salary on the public payroll (Cotton & Wolohan, 2017), to stay cognizant of potential retaliatory actions. In this case, public officials were found not to have retaliated against the plaintiff in regard to a First Amendment complaint, as other actions led to the termination (*Sensabaugh v. Halliburton*, 2019). It is important for education administrators to take corrective action if possible before terminating an employee. It is also important to protect students under the Family Educational Rights and Privacy Act, which prohibits the disclosure of student records, which may also apply to pictures of students at a school environment. Protecting student rights is always in the school's best interests.

Although a minor point in this case, coaches have a duty to evaluate for injury (Cotton & Wolohan, 2017). If a coach puts an injured student athlete in harm's way, further litigation may come by way of a negligence claim. Athletic trainers are becoming vitally important, and their judgment on player safety must not be questioned.

A defense for any liability claim is when the plaintiff's claim cannot be substantiated. In this case, as the plaintiff could not prove a First Amendment allegation, not only were the public officials protected, but also the school, school district, and state. Although a loss occurred of the state's resources through the loss of time, proving that a claim's elements are not met ensures that a case cannot happen (*Sensabaugh v. Halliburton*, 2019).

This case shows how a school district and its employees can defend against constitutional claims. This case also shows the ways in which athletic trainers are still facing hardships within their jobs, a problem that will continue to stir debate. Last, this case shows how retaliation claims can originate and gives defenses for retaliation claims.

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