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Identifying High School Physical Education Physical Activity Patterns After High School

David Barney, Francis T. Pleban,
Carol Wilkinson, Keven A. Prusak

Abstract

National standards for physical education (PE) encompass five principles for the purpose of defining what high school students should recognize and be able to perform as a result of a quality PE program. The expectation is that youth will develop an active, healthy lifestyle into adulthood from activities and skills taught in PE. Researchers from the United Kingdom and the United States have identified team sports as the primary curricular design in high school PE. However, it has been suggested the use of team sports is not an effective way to encourage students to be physically active throughout their lives. Participants for this study were 1,034 college-aged students from a private university located in the western United States. Responses from the questionnaire (Questions 9, 12, and 14) indicated a significant difference at the $p < 0.05$ level when gender was compared. Cohen's d for statistically significant values indicated low to moderate practical significance. Seven open-ended questions were used to investigate in which activities students enjoyed participating during high school PE. A majority of college

David Barney is associate professor, Teacher Education Department, Brigham Young University. Francis T. Pleban is associate professor, Department of Applied Health Science, Murray State University. Carol Wilkinson is associate professor, Teacher Education Department Brigham Young University. Keven A. Prusak is associate professor, Teacher Education Department, Brigham Young University Please send author correspondence to David Barney, Brigham Young University, 249 G Smith Field House, Provo, Utah 84602. E-mail: david_barney@byu.edu

students reflected the desire of being taught or exposed to lifetime activities during their high school PE class. College students who were surveyed tended to want to attain skills in high school that they could use throughout their lives. Study results indicate that some college students' reflections on past PE exposure were not beneficial.

The National Association for Sport and Physical Education (NASPE, 2004) in the document *Appropriate Practices for High School Physical Education* states the primary purpose of physical education (PE) is to help adolescents gain skills and knowledge to be physically active for a lifetime (p. 5). National standards for PE encompass five principles for the purpose of defining what a high school student should recognize and be able to perform as a result of a quality PE program (American Alliance for Health, Physical Education, Recreation, and Dance [AAPHERD], 2013). Of the five standards, the third standard is, "Demonstrates the knowledge and skill to achieve and maintain a health-enhancing level of physical activity and fitness." This standard suggests students should have the knowledge and skills to participate regularly in meaningful physical activity. Regular participation in physical activity is any bodily movement produced by skeletal muscles that results in energy expenditure (Bouchard & Shephard, 1994, p. 77). Furthermore, the U.S. Department of Health and Human Services (2008) has issued *Physical Activity Guidelines for Americans*. Current guidelines are that youth engage in 60 or more minutes of moderate- or vigorous-intensity aerobic activity at least 3 days a week. To elaborate, the expectation is that youth will develop an active, healthy lifestyle into adulthood from activities and skills they were taught in PE as youth.

Recent trends in high school PE indicate a prior attempt to help adolescents gain skills and knowledge to be physically active over a lifetime (Pangrazi, 2003). Researchers from the United Kingdom (Kimball, Jenkins, & Wallhead, 2009) and the United States (Mears, 2008a) have identified team sports as the primary curricular design in high school PE; however, it has been suggested that team sports is not an effective way to encourage students to be physically active throughout their lives (Fairclough, Stratton, & Baldwin, 2002; Mears, 2008a). In general, one identified drawback of a team sports curriculum is many students, particularly females, do not take pleasure in group participation and competition. Kimball et al. (2009)

investigated university students' perceptions of the influence of high school PE curriculum on their current level of physical activity. Differences were noted, based on gender, in reference to a team sports curriculum. Investigators indicated females did not find their high school PE experiences useful later in life. In contrast, male participants felt team sport skills and techniques aided them in their current physical activity lifestyles. If high school students are voicing displeasure with certain team sports curriculum practices, providing a more diverse curriculum may contribute to greater acceptance and increased physical activity patterns later in life (Trudeau, Laurencelle, & Shephard, 2004). Mears (2008a) also stated expanding curriculum diversity of high school PE may lead to students discovering physical activity that will facilitate motivation for continued participation beyond the school setting.

Dale and Corbin (2000) compared a traditional physical education (TPE) curriculum (i.e., team sport activities) to a conceptual physical education (CPE) curriculum (2 days in the classroom and 3 days in activity in the gymnasium) among ninth grade students. In the gymnasium, laboratory sessions were planned to include teaching fitness self-assessment, personal program-building skills, and methods of performing lifetime physical activities designed to meet national health goals. A 3-year follow-up was conducted of male and female students enrolled in the CPE curricula. Data indicated that male CPE students were significantly more active than males in the TPE curriculum; however, females, regardless of curricula, were no more active after 3 years.

Scantling, Strand, Lackey, and McAleese (1995) studied why high school students avoid taking PE classes. First, students identified courses other than PE as being more important in preparing them for college. Second, students responded that their lack of PE participation was due to the PE course structure. The researchers, through further inquiry, found several specific factors for students' dislike of PE, including repetition of similar physical activities from semester to semester, male-dominated physical activities, and the extreme competitive nature of the curriculum.

Social learning theory was used as the basis for this study, which Mears (2008b) stated that the consequences of a behavior influence the likelihood of continued performance. For example, exposing students to certain curricular activities (team sports, fitness, etc.) affects the activities they will participate in later and throughout their lives. Another element to social learning theory is that because hu-

mans learn by observing and participating in activity, they are likely to continue behaviors observed in others of similar age and ability. Thus, the more high school students are exposed to lifetime activities in their high school PE class, the greater the likelihood they will participate in those activities throughout their lives. Exposure and practice in performing skills and activities, as well as participation in classes themselves, could facilitate continuing activity into adulthood (Crosbie-Burnett & Lewis, 1993; Jones, 1989; Perry, Baranowski, & Parcel, 1990; Thomas, 1990; Woodward, 1982). It is implied in this study that the activities in which high school students participate will affect activities in which they will participate after graduating high school. The purpose of this study was to investigate college students' high school PE experience and gender effects on their physical activity after high school, through an initial quantitative instrument design, with open-ended follow-up questions, and dissemination.

Methods

Participants

Participants for this study were 1,034 college-aged students (539 males, 481 females) from a private university located in the western United States majoring in a variety of courses of study and enrolled in 36 university physical activity classes. None of the participants were PE majors. Activity classes identified and used were badminton, basketball, bowling, racquetball, swimming, tennis, volleyball, and weight training. Of those students that were asked to participate in the study, 99% agreed to participate.

Instrumentation

For the initial study, the investigator developed a 19-statement survey (Table 1) from previous research in which activity patterns of college-aged students after their high school PE classes was investigated. In this study, survey development included adding eight open-ended response questions addressing participants' high school PE experience to the seven scaling response questions. These new questions addressed physical activity in which students are involved as college students and were previously constructed by Mears (2007) and Everhart et al. (2005). Students were asked to rate certain aspects of their physical activity on a scale from 1 = *not meaningful* to 10 = *very meaningful*. The remaining four statements addressed par-

ticipant demographics. To establish content validity, the investigator asked a panel of experts to read each survey question for clarity and understanding.

Table 1
Effect of High School Physical Education on Physical Activity Survey

1. What is your academic year? Fr. Soph. Jr. Sr. Grad Student

2. Sex: M F

3. How many years since you have graduated from high school?

   1 2 3 4 5 6 7 8 More than 8 years

4. What types of activities were taught in your high school physical education classes? Check all that apply.

   _____Team Sports (basketball, softball, volleyball, soccer, etc.)

   _____ Lifetime Sports (golf, tennis, bowling, rollerblading, pickle ball, etc.)

   _____ Outdoor Activities (disc golf, wall climbing, biking, skiing, orienteering, etc.)

   _____ Fitness Activities (lifting weights, aerobics, treadmill, elliptical, stationary bikes, yoga, walking, etc.)

5. Of the activities you participated in during high school physical education, which ones did you enjoy participating in? Please explain your answer.

6. What activities do you feel were a waste of your high school physical education class time? Please explain your answer.

Table 1 (cont.)

7. Do you engage in physical activity more now than when you were in high school? Yes No
   Please explain your answer.

8. As you think back to your high school physical education experience, what activities and experiences do you wish you had been taught or exposed to? Please explain your answer.

9. On a scale of 1 to 10 (1= *not meaningful*, 10 = *very meaningful*) how meaningful was your high school physical education experience? Please explain your answer.

   1 2 3 4 5 6 7 8 9 10

10. Is being physically active important to you? Please explain your answer.

11. How many days in the week do you participate in physical activity?

    1 2 3 4 5 6 7

12. How often do you participate in strength training exercises during the week? (Hours per week)

    0 1 2 3 4 5 6 7 8 9 +10

13. How often do you participate in exercise designed for cardiovascular endurance? (Hours per week)

    0 1 2 3 4 5 6 7 8 9 +10

14. How often do you participate in team sports during the week? (Hours per week)

    0 1 2 3 4 5 6 7 8 9 +10

Table 1 (cont.)

15. How many days per week do you engage in abdominal exercises? (Hours per week)

    0 1 2 3 4 5 6 7 8 9 +10

16. How many days a week did you have physical education class in high school?

    0 1 2 3 4 5

17. Do you feel your high school physical education classes gave you the knowledge and skills to be successful and comfortable being physically active throughout your life? Please explain your answer.

18. After completing your high school physical education experiences, could you walk into a gym or participate in a certain activity and know how to participate successfully on your own? Please explain your answer.

19. What state did you live in while attending high school?

Procedures

Convenience sampling was employed to collect response data for this study. Additionally, investigators secured university institutional review board (IRB) approval to conduct the study. After IRB approval, investigators contacted 15 physical activity class instructors and explained the study and instrumentation. After instructors agreed to have their classes queried for student participation, investigators attended each physical activity class and systematically administered and collected the survey. Before survey administration, investigators explained the survey, asking for volunteers to participate before volunteers signed informed consent forms. Students were assured their voluntary decision to participate or not participate in the study would not affect their grade in class or class standing. Completion of survey explanation, administration, and document return took approximately 10 min.

Data Analysis

Analyses were performed on student responses to the survey instrument. Quantitative data analysis consisted of chi-squares (χ^2) as well as measures of central tendency and dispersion. Chi-square was conducted to compare question responses between genders. Significance was established at the $p < 0.05$ level. Means, standard deviations, chi-square, levels of significance, and Cohen's *d* were reported for significant effects. Responses to questions, defined by gender, were presented as percentages. Open-ended questions were analyzed based on the thematic content of respondent's short answers. To determine parallel thematic content (Mueller & Skamp, 2003), two of the researchers reviewed the responses and identified common themes.

Results

One thousand thirty-four college-aged students participated in this study ($M = 1.47$, $SD = .499$), 546 males and 488 females, respectively. Participants were enrolled as college freshmen ($n = 216$, 20.9%), sophomores ($n = 208$, 20.1%), juniors ($n = 260$, 25.1%), seniors ($n = 302$, 29.2%), or graduate students ($n = 48$, 4.6%) at the time of the study. Males and females were similar in regard to academic school standing and ethnicity. Tables 2, 3, and 4 depict participant characteristics by academic standing, activity type, and years since high school, respectively.

Table 2
Participant Characteristics by Academic Standing

		Freshman		Sophomore		Junior		Senior		Graduate	
Group	***M* (*SD*)**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Males	2.78 (1.22)	118	21.9%	99	18.4%	132	24.5%	170	31.5%	20	3.7%
Females	2.75 (1.20)	98	20.4%	107	22.2%	125	26%	131	27.2%	20	4.2%

Table 3
Frequencies: Question 4 Gender and Activity Type

	Team sports		Lifetime sports		Outdoor activities		Fitness activities	
Group	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Males	517	94.0%	303	55.5%	112	22.3%	449	82.2%
Females	29	5.3%	243	44.5%	423	77.5%	97	17.8%

Table 4
Participant Characteristics by Years Since High School

		Y1		Y2		Y3		Y4		Y5		Y6		Y7		Y8		Y+8	
Group	**M (SD)**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Males	4.42 (2.28)	108	19.8%	22	4%	39	7.1%	94	17.2%	89	16.3%	100	18.3%	49	9%	23	4.2%	22	4%
Females	3.04 (1.89)	107	21.9%	124	25.4%	104	21.3%	60	12.3%	42	8.6%	21	4.3%	12	2.5%	5	1.0%	13	2.7%

Quantitative Analysis

Significant differences were found for three of the eight scaling questions when gender was compared. Chi-square did not show an association between gender and activity type (i.e., team sports, lifetime sports, outdoor activities, and fitness activities).

Responses to Question 9, "On a scale of 1 to 10 (1 = *not meaningful* 10 = *very meaningful*), how meaningful was your high school physical education experience?" indicated an association by gender (males: $M = 6.67$, $SD = 2.29$; females: $M = 5.93$, $SD = 2.56$), χ^2 (10, $N = 1{,}034$) = 33.03, $p > .001$. Cohen's d for Question 9 was 0.30, representing a small to moderate effect.

Responses to Question 12, "How often do you participate in strength training exercises during the week?" indicated a moderate effect by gender. Chi-square was different by gender (males: $M = 2.57$, $SD = 2.33$; females: $M = 2.11$, $SD = 1.99$) and hours per week strength training. For Question 14, "How often do you participate in team sports during the week?" a moderate effect was found by gender (males: $M = 2.73$, $SD = 2.25$; females: $M = 1.78$, $SD = 2.07$), χ^2 (10, $N = 1{,}034$) = 20.41, $p > .05$, and hours per week participating in team sports, χ^2 (10, $N = 1{,}034$) = 77.73, $p > .001$. Cohen's d for Questions 12 and 14 was 0.21 and 0.43, respectively. The range of effect size for these analyses was found to be associated with Cohen's (1988) convention for a small effect ($d = .20$) to moderate effect ($d = .50$), suggesting low to high practical significance.

Follow-Up Questions

Additional data results were from short-answer responses from respondents. Seven questions (Questions 5, 6, 7, 8, 9, 17, and 18) were used in the thematic analysis and findings reported below.

When students were asked in an open-ended question in which activities they enjoyed participating (Question 5), a number of students responded favorably to team sports, enjoying the social aspect. Referencing the social aspect, students stated they "like being around people," "helps build friendships and are more fun," "fun to interact with my friends," and "I bonded with people."

Responses to Question 6 (a lifetime activity) indicated the primary activity students found to be least beneficial of their PE experience was running, in particular, running the mile. Both male and female students commented, "I dreaded having to run the mile," "I hated it," and "Running the mile didn't do a thing for me." Also referencing Question 6, many female students indicated dodgeball

was an unwarranted use of their PE time. Conversely, male students stated that they enjoyed playing dodgeball, a sport generally noted for its male-dominated group participation and competition, paralleling Kimball et al.'s (2009) findings specific to gender differences.

In a third question (Question 7), students were asked if they engaged in physical activity more now than when they were in high school. A spectrum of responses were obtained. Some students stated that because they are "not on [an athletic] team, they are not as active." However, other students made statements such as "I ride my bike everywhere," "I'm married and want to stay healthy," and "I am more motivated to live a healthy lifestyle."

In Question 8, respondents were asked to reflect back to their high school PE experience—to activities they wished they had been taught or exposed to. The overwhelming statements addressed lifetime activities. Students specifically mentioned yoga, golf, tennis, swimming, and bowling. One student stated that he wished he had been exposed to "more lifetime sports to make the transition easier."

In Question 9, students were asked about the meaningfulness of their high school PE experience. Once again, similar to Question 7 responses, polarizing statements were obtained. For example, "Good break from school," "Loved it, best thing about high school," and "It released stress and created a lot of fun in high school." Though, other statements included "Degrading to self and self-worth, did not give me the desire to be active," "Teacher didn't care what we did," and "A lot of it was goof off time."

Current physical activity patterns, from past physical activity instruction, were addressed in Questions 17 and 18. Students revealed in response to Question 17 that generally they did not feel they received the knowledge and skills to be successful in physical activity throughout their lives in their high school PE classes. Finally, students were asked (Question 18), based on what they were taught in high school PE, if they walked into a commercial gym or participated in a certain activity, would they be successful on their own, with no instruction. Many of the students felt they could be successful because they were involved in team sports while in high school. This, in part, contradicts the open-ended responses teased out in Question 17, "Do you feel your high school PE classes gave you the knowledge and skills to be successful and comfortable being physically active throughout your life? Please explain your answer." Yet, one of the major themes students communicated as a reason they could not be successful in a gym or activity was their frequency of participating in team sports.

Discussion

A number of participants from this study expressed the same thoughts Pangrazi (2003) concluded, stating many high school students found their PE experience irrelevant. College students who were surveyed tended to want to attain skills in high school that they could use throughout their lives, such as golf, tennis, walking, and outdoor activities. This identified a needed focus on the curriculum taught to students, which is within the PE teacher's control.

In regard to students' attitudes about their high school PE experience, the activities in which college students participated and to which they wish they had been exposed while in high school PE were addressed in additional data. College students responded overwhelmingly to team sports when asked in which activities they enjoyed participating during high school PE, more specifically, basketball, flag football, volleyball, and soccer. College students were also asked which activities and experiences they wish they had been taught or exposed to in their high school PE class. A large majority of the college students wish they had been taught or exposed to lifetime activities. College students specifically mentioned golf, tennis, weight training, bowling, and ultimate Frisbee. The interesting point regarding these two survey questions is that when students were in high school, many enjoyed and wanted team sport participation, which many of their PE teachers instituted in their courses. Yet, in hindsight, these college students indicated a desire of having been taught and exposed to activities that would have been beneficial to them later in life. Results paralleled Kimball et al. (2009), in that team sports were a common curricular offering to students in high school PE, but not sufficient for students to develop the skills and knowledge to participate in lifetime activities.

When respondents were asked if they were given the knowledge and skills to be successful and satisfied being physically active throughout their lives, many of them said they did not feel satisfied. For example, students stated, "They didn't teach us much that is useful now," "We just played sports we already knew," and "My class never taught me how to stay active, it was more of come and play a sport." Many of student responses were similar to findings from Scantling et al. (1995), who investigated why high school students did not take PE in high school. They found that many high school students performed the same activities (i.e., sports) repeatedly and the PE curriculum was focused primarily on team sport competition.

Barney and Strand (2008) suggested a deeper level of instruction needs to be provided to high school students in PE class in lifestyle skill development. They continued by stating there is a danger in high school PE of communicating the message that such education is only relevant for students who are competent or skilled movers interested in pursuing physical activity through sport competition. Findings from this study and the present study indicate that students in high school PE need to be put in a position to master skills, be given opportunities to perform, and have a curriculum with opportunities to be exposed to lifetime activities, thus better preparing them to adapt physical activity into their future lifestyles.

Conclusions

The purpose of this study was to investigate college students' high school PE experience and gender effects on their physical activity after high school. The investigators anticipate the findings from this study will help expand and strengthen the literature for the betterment of high school PE instruction.

Significant difference were revealed in this study among males and females referencing the meaningfulness of their high school PE experience, participating in strength training exercises, and participating in team sport activities; additionally, females found less meaning in and participated less in high school PE than males did.

NASPE (2004) Standard 3 states the goal for students is to "[participate] regularly in physical activity." High school physical educators are in a position to influence students to participate in regular and practical physical activity throughout their lives by exposing them to activities in which they can participate throughout their lives. College students' reflection on their past PE exposure present patterns are shown in the study results.

A final conclusion from this investigation is the importance of physical education teacher education (PETE) faculty preparing PETE majors to teach relevant high school PE properly and effectively. Many PETE majors enter PETE programs with preconceived beliefs of how high school PE should be taught (Placek et al., 1995), and in many cases, their beliefs of teaching high school PE are grossly misaligned. For this purpose, PETE faculty are charged to educate, train, and demonstrate which lifetime activities are appropriate to be taught in high school PE for the purpose of supporting high school students for a lifetime of regular physical activity.

Implications of this Study

The results from this study are beneficial for high school physical educators and PETE faculty in their teaching and preparations. Results showed college students preferred, and were satisfied with, activities (i.e., team sports) in which they participated during their high school years. Yet, as these students aged, they expressed a desire to have been exposed to a variety of lifetime activities. Consequently, high school physical educators should expose their high school students to a variety of lifetime activities. In addition, as these high school students are participating in lifetime activities, physical educators need to communicate to students the importance of these activities throughout their lives. Notably, some high school students may not find initial enjoyment in these activities (lifetime activities), yet later in life, it is expected they will be more appreciative of their previous exposure to lifetime activities.

The second group that can benefit from the results of this study is PETE faculty. PETE faculty will expose their pre-service students to lifetime activities that can be taught to high school students. By exposing pre-service teachers to a multitude of lifetime activities, PETE faculty are communicating to these students that there is more to high school PE than flag football, basketball, softball, volleyball, and other team sports. With the results from this study, PETE faculty who expose and provide appropriate time in lifetime activities will thus more effectively prepare pre-service teachers.

Study Limitations

The investigators of this study noted a number of limitations of this study. Foremost was the use of a sample of convenience. Only college students in physical activity classes were surveyed, possibly influencing physical activity pattern responses. Because a cross-sectional design was used, participants were relied on to recall past and present perceptions related to physical activity practices in school accurately and truthfully. In addition, students' responses may have been different from classmates' responses who did not volunteer for the study. Respondents also were from one university, and students who participated in this study may not have been representative of other students at their university, as well as other universities or in other geographic regions, thus limiting the generalizability of the findings.

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