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# JOURNAL

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Label all graphs and tables and place them on separate pages. Number the pages beginning with the title page followed by text, references, figure captions, tables and figures. Tables should be single-spaced. Carefully check references to assure they are correct and included only when they are cited in the text. Only include references that have been published or accepted for publication. Manuscripts are read by the editor and at least one reviewer using a blind review process which can take up to 90 days.

# Evaluation of a Tobacco Prevention Program among Elementary and Middle School Students in Charleston and Berkeley County

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## Introduction

Smoking is the most preventable cause of death in our society. During 1995, approximately 2 million people in developed countries died prematurely because of smoking (American Cancer Society, 2001); and tobacco use is responsible for nearly one in five deaths in the United States (McGinnis and Foege, 1993). According to the American Cancer Society and the Centers for Disease Control and Prevention, it is estimated that 430,600 US deaths per year were attributable to smoking during 1990-1994 (CDC, 1997).

Experimentation with tobacco usually begins at an early age. Among US high school students surveyed in 1999, national data showed that 25% of high school students smoked a whole cigarette before age 13 (American Cancer Society, 2001). More than one third (35%) of high school students currently smoke cigarettes (smoked at least one cigarette in the past month), and White (39%) and Hispanic (33%) students were more likely to smoke than black (20%) students (US Dept of Health and Human Services, 1994). Since experimentation or occasional use of tobacco substantially increases the likelihood of becoming a regular smoker (Price, Beach, Everett, Tellhojann, and Lewis, 1998), efforts must be made to reduce or eliminate tobacco experimentation. The literature confirms that tobacco use prevention programs should begin in elementary school (Price et al., 1998).

Evidence suggests that school health programs can be an effective means of preventing tobacco use among youth (Bruvold, 1993). Several studies that have evaluated tobacco prevention programs on early adolescent children have found favorable results. Ganley, Young, Denny, and Wood (1998) examined the effect of an early education program on children and their attitudes, be-

haviors, and knowledge related to tobacco. Their study revealed a positive relationship between smoking attitudes and behaviors among fourth grade students. Children who had a negative attitude toward tobacco were far less likely to use tobacco than those with a positive attitude toward tobacco. Girls responded more favorably on knowledge as compared to boys, and students from nonsmoking families gave more desirable responses on the knowledge, attitude, and behavior scales. Price et al. (1998) assessed the effectiveness of a fourth, fifth, and sixth grade tobacco use prevention curriculum. Their study found that knowledge and attitude scores improved significantly from its tobacco prevention program. Chen and Lindsey (2001) examined the effectiveness of a tobacco prevention program in Florida. Their results indicated that fourth grade students improved their knowledge and attitude scores from a tobacco prevention program.

Despite the public's increased knowledge of health hazards associated with the use of tobacco products, cigarette smoking remains the single most preventable cause of death. Findings from the National Center for Health Statistics indicate that current smoking among US high school students increased significantly from 28% in 1991 to 35% in 1999 (CDC, 2000). With the alarming numbers cigarette use among high school students, educational programs must be structured to protect our nation's youth. Efforts to prevent the initiation of tobacco use among children and adolescents must be intensified. It is also important that more studies are conducted to evaluate smoking prevention programs that focus on early adolescent children. The purpose of this study was to evaluate the effectiveness of a tobacco prevention program among elementary and middle school students in Charleston and Berkeley County, South Carolina.

**Method**

*Participants*

A total of 6 elementary schools and 1 middle school in the Charleston and Berkeley County School District agreed to participate in the study. Students from fourth grade to sixth grade classes were invited to participate in the program. The program was divided into 2 groups, the education group which received the lesson, and a comparison group which did not receive the lesson. The principal investigator selected these schools based on availability of the schools and contact with the Charleston and Berkeley County School District Health and Physical Education Coordinators. The demographics of both groups are listed in Table 1. In the education group (N=123), there were 33% 9 year old students, 36% 10 year old students, 21% 11 year old students, and 9% 12 year old students and 2% 13 and 14 year old students. In the comparison group (N=112), 30% were 9 year old students, 49% were 10 year old students, 19% were 11 year old students, and 1% were 12 year old students. The education group consisted of 52% females and 48% males, while the comparison group consisted of 50% females and 50% males. As for the ethnic makeup, the educational group was made up of 49.59% blacks, 36.59% whites, 7.32% American Indian, 4.07% Native Hawaiian, and 2.44% Hispanics. The comparison group was made up of 47.32% blacks, 38.39% whites, 9.82% American Indian, 2.68% Hispanic, and 1.79% Asian.

**Instrumentation**

A 15 item survey was used to test tobacco knowledge. A 27 item survey was used to collect demographic information, and assess behavior, attitudes and intent towards tobacco use. A 13 item sur-

vey consisting of information from the prevention program was utilized for student evaluation. In addition, a 28 item teacher's evaluation survey was used to assess the effectiveness of the prevention program from the teacher's perspective.

To test the validity and reliability of the surveys, a pilot study was conducted using a class of fourth grade students that did not participate in the program (N=25). The internal consistency of reliability was estimated using Cronbach's alpha test. Cronbach's alpha ranged from .64 for the knowledge test, .66 for the attitude towards smoking, and .94 for the intent to smoke. The Safe and Drug Free Coordinator's in four school districts were invited to assess the face validity. After careful review and analysis, the coordinators gave their approval for each of the surveys.

**The Tobacco Prevention Program**

A story book entitled, *The Eglin Long-Horn of Nightshade County*, was used for the tobacco prevention program. This program focused on a children's story about tobacco use and its consequences. The story, supported by activities in the *Teacher's Guide*, explores the chemical make up of tobacco, some of its poisons, the physiologic, cosmetic, and social consequences of using tobacco including smokeless tobacco, the immediate and long-term consequences of use, tobacco advertising, and secondhand smoke. On the average, the lessons of the program take 10 days to complete. During this time, students are allowed ample time for discussion after each chapter and to review and complete the worksheets and activities outlined in the program. For training, all of the teachers were trained by the principal investigator at their respective schools.

**Table 1**  
*Students Age, Gender, and Ethnicity between Groups*

	Education (N=123) Group	Comparison (N=112) Group	X <sup>2</sup>	p
Age	%	%	11.60	.04*
9	33	30		
10	36	49		
11	21	19		
12	9	1		
13	1	0		
14	1	0		
Gender	%	%	.09	.75
F	52	50		
M	48	50		
Ethnicity	%	%	9.97	.07
Amer. Ind.	7.32	9.82		
Asian	0	1.79		
Black	49.59	47.32		
Hispanic	2.44	2.68		
Nat. Hawaiian	4.07	0.00		
White	36.59	38.39		

\*\*p < .01      \* p < .05

**Table 2**

*Differences of Knowledge, Attitude, and Intent between Groups on Pre-Tests and Post-Tests*

	Education (N=123) Group				Comparison (N=94) Group				F	p
	Pre		Post		Pre		Post			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Knowledge of Tobacco	6.60	0.21	9.78**	0.29	7.28	0.24	7.25**	0.30	36.17	0.00
Attitude	17.14	0.22	18.19	0.31	18.24	0.26	17.53	0.32	2.04	0.15
Intent	18.82	0.25	19.13	0.28	19.39	0.28	18.79	0.29	0.68	0.40

\*\*p < .01      \* p < .05

**Data Collection and Analysis**

The knowledge, attitude, intent, and behavior surveys were given to the students for a pre-lesson assessment. Then, the Eglin lesson was administered to the students. After a period of about 2 to 4 weeks, in which the class would have time for chapter discussion and completion of worksheets, the post-test assessments were administered. The student evaluation was also given at the conclusion of the lesson. The teacher evaluation was given to the teachers following the conclusion of the lesson. Classroom teachers in each school were responsible for administering and collecting the surveys. Graduate assistants from the Department of Physical Education and Health at the College of Charleston assisted in the scoring the tests and surveys. Graduate students were provided with keys, and met four to six times to score and record the tests, surveys, and evaluation results.

To examine if differences existed between the comparison and education groups before the program, t-tests were conducted. Since the pre-test analysis between the groups did not show any significant differences (p < .05), a repeated measures 2 x 2 factorial analysis of variance was utilized to analyze the scores on knowledge, attitudes, and intent. In order to compare the differences of tobacco use before and after the program, percentages of smoking

cigarettes, chewing tobacco, and smoking cigars were calculated and analyzed using Chi-square tests. To assess students' feedback, evaluations were given to the students in the education group. Evaluations were analyzed based on the percentages of positive responses to each of the items. In order to assess the effectiveness of the tobacco prevention program from the teacher's perspective, a teacher's evaluation was also distributed. The teacher's evaluation form assessed information about the program's extent of meeting the needs and ease of use, its general components, the tobacco prevention components, and general evaluation questions. The assessment used a five point Likert scale with 5 being the most favorable response. Percentages of teachers' positive responses were tabulated.

**Results**

*Knowledge, Attitude, and Intention*

The differences of knowledge, attitude, and intention between the education and comparison groups for pre and post-test are listed in Table 2. These results suggest that the program was effective in improving students' knowledge, attitudes and intention towards not using tobacco products. Students in the education group showed an improvement on tobacco knowledge from 6.60 to

**Table 3**

*Student Evaluation Results (n=99)*

Item	% of "Yes" responses
Gain better understanding of sicknesses related to tobacco	93.93
Help understand smoking affects way nonsmokers think about you	79.79
Taught you how to resist peer pressure	75.75
Taught you so you can discuss what you have learned about tobacco	92.92
Have reasons to ask someone you love to stop smoking	90.90
Help understand that secondhand smoke can make children sick	86.86
Think that smoking and chewing tobacco are unhealthy habits	92.92
Help shape or change opinion about smoking and chewing tobacco	84.84
Be proud and healthy for choosing to be tobacco free	93.93
Give you good reason never to smoke, chew or dip	94.89
Did you like reading Eglin Long-Horn?	91.91
Would you read Eglin Long-Horn again?	87.87
Would you make personal commitment never to smoke cigarettes, chew tobacco or dip snuff?	97.84

9.78. Students in the comparison group decreased in their scores from 7.28 to 7.25. The finding for the post test result was significantly different ( $F=36.17, p=.00$ ). The education group showed a 48% improvement compared to a <1% change in the comparison group.

For attitude towards using tobacco products, students in the education group showed an improvement on attitude from 17.14 to 18.19. Students in the comparison group decreased in their scores from 18.24 to 17.53. The findings for the pre and post test were not significantly different ( $p>.05$ ). The education group showed a 6.12% improvement compared to a 3.29% decrease in the comparison group.

For intent towards using tobacco products, students in the education group showed an improvement on intention from 18.82 to 19.13. Students in the comparison group decreased in their scores from 19.39 to 18.79. The findings for the pre and post test were not significantly different ( $p>.05$ ). The education group showed a 1.64% increase compared to a 3.09% decrease in the comparison group.

**Student Evaluation**

In order to receive feedback from the students who participated in the Eglin Long-Horn of Nightshade County program, student evaluations were completed. Results of the student evaluations are presented in Table 3. The positive responses ranged from 75.75% to 97.84%. The items that received the most positive responses were item 13 (Would you make a personal commitment never to smoke cigarettes, chew tobacco, or dip snuff?, [97.84%]), item 10 (Did you think Eglin Long-Horn gave you good reasons to never smoke, chew, or dip tobacco?, [94.89%]), item 9 (Did Eglin Long-Horn help you to be proud and happy for choosing to be tobacco free?, [93.93%]), item 1 (Did Eglin Long-Horn help you gain a better understanding of sicknesses related to tobacco?, [93.93%]), item 7 (Did Eglin help you think that smoking and chewing tobacco are unhealthy habits?, [92.92%]), and item 4 (Did Eglin teach you so that you can discuss what you have learned about tobacco?, [92.92%]).

**Teacher Evaluation**

To assess the effectiveness of the Eglin Long-Horn of Nightshade County program from the teacher’s perspectives, teacher evaluation forms were distributed to the teachers. The teacher evaluations assessed information about the Eglin Long-Horn of Nightshade County program in terms of meeting educational needs, ease of use, its general components and tobacco-prevention components. The results of the teachers’ evaluation are found in Table 4. The assessment used a five point Likert scale with 5 being the most favorable response. The average rating for the curriculum component was 4.06. For the tobacco prevention component, the average rating was 4.45. Overall, the teachers gave a very positive response to the program. In addition, 83% of the teachers gave the prevention program an excellent overall rating, 83% would recommend that the district use the program in all elementary schools, 83% found the book to be a versatile teaching tool, and 83% believed that the prevention program strengthened the attitudes of their students concerning the harmful effects of using tobacco.

**Summary and Discussion**

**Table 4**  
*Teacher Evaluation Results (n=6)*

Sections	Mean
A) General Components	
a) Book meet needs not in health curriculum	3.33
b) Free of racial and gender bias	4.16
c) Material easy to use	4.33
d) Like using the material	4.16
e) Material appropriate for grade level	3.83
f) Students respond spontaneously	4.16
g) Material clear and concise	4.33
h) Cover subject adequately	4.33
i) Format to your liking	4.00
j) Vocabulary appropriate	3.50
k) Information accurate	4.00
l) Program objectives met	4.33
m) Material to your liking	4.16
n) Material capture interest	4.16
o) Material stimulate discussion	4.16
B) Tobacco Prevention Components	
a) Material have factual info	4.66
b) Info presented in manner which children understand	4.33
c) Material stress unhealthy effects of tobacco	4.83
d) Material teach refusal skills	4.16
e) Material discuss ways to resist peer pressure	4.16
f) Material stress tobacco is against law for minors	4.50
g) Material teach positive decision making	4.50
h) Material promote healthy, safe attitudes and behavior	4.66
4) Final Evaluation Questions	
a) Overall rating	83% “Excellent and Good Rating” responses
b) Recommend book in all elementary schools	83% “Yes” responses
c) Presented you with many teaching options	83% “Yes” responses
d) What grade do you recommend <i>Eglin Long-Horn</i> as a supplement	33%—fourth grade 33%—third, fourth, fifth grade 16%—fifth grade 16%—fourth and fifth grade
e) Has Eglin Long-Horn strengthened students’ attitudes towards tobacco	83% “Yes” responses
f) Did this lesson reach any high risk youth?	50% “Yes”

The results from this study suggests that the Eglin Long-Horn of Nightshade County program was effective in improving the student's knowledge and attitudes toward cigarette smoking and tobacco chewing. Students in the education group showed improvements in knowledge, attitude, and intent while students in the comparison group showed a decrease in all three areas.

This study also assessed behavioral practices regarding cigarette smoking, chewing tobacco, and smoking cigars. As expected, no significant differences were found between the groups due to small percentages of tobacco users among the students and the relatively short time between the assessments. However, this result further supports the importance of implementing preventive programs at an earlier grade level before students begin to try tobacco products and perhaps become habitual users.

Results of this study need to be interpreted cautiously because no random selection or assignment of the students was conducted. Students were assigned to either an education group or a comparison group based on convenience and classroom teachers' willingness to participate in the program. In addition, the time between the pre and post assessment may not be sufficient enough to complete a fair evaluation.

Preventing tobacco use is a concern for all educators. The information that students receive in school through educational programs can affect their knowledge and attitudes of tobacco use. Tobacco prevention programs are appropriate for elementary school children from kindergarten to sixth grade. From a prevention perspective, the teachers believe that the fourth grade was an appropriate level for the prevention program. However, teachers also believed that this program could be applied to students from the third grade up to the fifth grade as well. In 1994, the CDC recommended that school-based tobacco use prevention programs begin in elementary school and continue through 12th grade, with intensive instruction for students in grades six through eight (Bruvold, 1993; Chen et al., 2001). The Eglin Long-Horn of Nightshade County program indicates that programs presented prior to these grades can have a positive effect on improving the knowledge, attitude, and intent towards using tobacco products.

More than 3,000 children and adolescents begin smoking each day. Over two million children of ages 12-17 currently smoke, and 70% of students in grades 9-12 have tried smoking (Price et al., 1998). With these numbers, there is a need to reduce the prevalence of tobacco use among America's youth. It is possible to reduce these numbers by providing a good tobacco education program in early elementary school. The results from this study indicate that the Eglin Long-Horn of Nightshade County

program is an effective way to improve fourth through sixth grade student's knowledge on tobacco, and attitudes, toward not using tobacco products. In addition, the favorable responses from both students and teachers strengthen the use of this program among elementary children. Future research within the state of South Carolina and nationwide is needed to identify the degree in which the findings from this study are generalizable to other areas.

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# Implementation of a Walking Program for Urban Youth during School Hours

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## Abstract

A two-phase (P1 and P2) physical activity program for ninth and tenth grade students, particularly adolescent females of color, was designed and implemented at a mid-western urban high school during lunch time. Written surveys, field noted interviews and an 8- item questionnaire developed by the researchers were the methods used to collect data to answer the following three research questions: Would a walking program encourage physical activity participation among high school females? What motivated the students to participate in the program? Did the students find the activity program enjoyable? Combined, P1 and P2 drew 68 students to attend the walking program with "friends" being a major source of influence. The physical activity program provided an unstructured form of physical activity targeted to African American adolescents, and resulted in engagement of walking. Efforts should be continued in understanding and developing culturally appropriate alternative physical activities in which African American adolescents might enjoy participating.

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## Introduction

Engaging in physical activity on a regular basis is beneficial to an individual's health and well-being regardless of age. In fact, physical inactivity is recognized as a risk factor for chronic diseases such as coronary heart disease, type II diabetes and certain cancers. Although many of these diseases manifest during adulthood, it is recognized that one or more risk factors for chronic diseases start in early childhood. More specifically, there has been growing recognition that the adolescent years serve as a pivotal period for physical activity promotion (Corbin and Pangrazi, 1999), resulting in specific activity guidelines to promote physical activity among this age group (Salis and Patrick, 1994).

Despite the known health benefits of regular physical activity and exercise, data from the 1999 Youth Risk Behavior Survey (YRBS) demonstrate that engagement in vigorous physical activity on at least three days of the previous seven days declines from ninth grade to 12th grade among both males and females. The decline is more apparent in females. Furthermore, the least active group of adolescents is African American females. Only 41% of African American females report engagement in vigorous physical activity three days a week compared with 50% of Hispanic and 58% of Caucasian adolescent females (Youth Risk Behavior Sur-

vey, 1999). Additional data demonstrate that many African American female adolescents living in the Midwest are not meeting the recommended amount of physical activity (Pate, 1994; YRBS, 1999). Several suggestions have been made as to why physical activity declines during adolescence: opportunities for participation in organized sports decrease, access to automobiles becomes more available, and motivation for physical activity is shaped by factors that involve peer acceptance, physical capabilities, sexual attractiveness, and self-concept (Corbin and Pangrazi, 1999).

However, nationwide efforts are being made to promote physical activity to adolescents in general. In fact, the Centers for Disease Control and Prevention (CDC) established guidelines for school and community programs to promote life-long physical activity among young people (Centers for Disease Control, 1997). One of the recommendations calls for school personnel to encourage students to be physically active during the school day, such as before and after school and during recess. In many schools, however, the opportunity to engage in unstructured physical activity is determined by school policies, and in general, these policies are not meeting the needs of female adolescents.

In many schools, the gymnasium is open during lunch periods for recreational activities. However, the limited space available

is often occupied almost entirely by males who dominate with basketball games and basketball shooting activities. Furthermore, students engaged in these recreational basketball games are often highly skilled. For many female students this environment is not appealing as a recreational activity (Pope, 1998). Thus, strategies to promote physical activity for adolescent females within the school setting need to be better formulated around their needs and interests. A number of factors have been identified that are associated with adolescent involvement in physical activity. These include opportunities for play, competence in physical activity, and support from friends. Thus, when offering a program to promote physical activity, it is important that a) opportunities within school time are offered; b) opportunities include non-threatening activities such as walking, so that each individual can participate, regardless of fitness or skill level—engagement in such activity establishes a sense of competence, increases physical activity-related self-efficacy and promotes long term appreciation for the activity; and c) builds an extensive friend support.

The present study was undertaken to provide an opportunity for females to engage in a physical activity (i.e., walking) that is appealing to them. The purpose of this study was to determine if females of different ethnic groups would participate in a walking program offered to them during a study hall period. The specific research questions of this study were:

- 1) Would a walking program encourage physical activity participation among high school females?
- 2) What motivated the students to participate in the program?  
In addition, what motivated the students who joined the program to continue to walk?
- 3) Did the students find the walking program enjoyable?

## Methodology

### Overview

A physical activity program for ninth and tenth grade students, particularly adolescent females of color, was implemented at a mid-western city high school during lunchtime. The program was implemented in two phases: Phase I (P1) during Spring of 1999 and Phase II (P2) during Autumn of 1999. For the purposes of this study, there was no control group. Rather, the researchers offered a program to a population within a school setting to address the three research questions. The procedures used to implement the Hockey Activity Program (HAP), a voluntary non-instructional walking program and (pseudonym) Hockey High School, and the program's effects on the students' walking behavior are discussed.

### Selection of Setting and Subjects

The school, Hockey High School, selected for implementation of the HAP, is an urban public high school. This instruction is different than most high schools in the school district as it is a college preparatory high school with an emphasis on the Arts. In addition, there are no after school sports teams at the school. Students who wish to participate in school sports are allowed to participate on a team at their "home" school and to compete at the varsity of junior varsity level in one or more of several sports offered in the school district. Hockey High School, with a population of approximately 570 students, was chosen for several reasons. First, the rapport and long-term involvement between the local university physical education faculty and the physical educator, (pseudonym)

Mickey, at Hockey High School ensured access to this site. In addition, the site was used because it was a city school and had a diverse student population thus satisfying the interest of the researchers on targeting African American female students for the HAP. Hockey High School was a good location to implement a lunchtime walking program as it had a small park adjacent to the school. Finally, Hockey High School was chosen because the primary author was completing a graduate teaching internship at the school during P1 of the program, and it seemed logical to continue P2 at the same site. Doing a teaching internship at the school allowed the researcher an opportunity to develop a rapport with the students prior to implementing the HAP. Hockey High School was receptive to administering the HAP with the goal to make changes in students physical activity behavior.

The HAP was promoted only to students in grades 9 and 10 during the second lunch period of the day (L-2). All ninth and tenth grade students (n=297) had the opportunity to join, but particular attention was placed on recruiting the ninth and tenth grade females of color (n=106). To promote the program, students designed posters portraying African American girls involved in physical activities and displayed them within the school. While in the early phase of the primary author's teaching internship (two weeks), the investigator spent time interacting with and observing the students prior to starting the HAP. From these interactions two female students were identified as leaders among their African American classmates and were encouraged to recruit other students. During each of the walking sessions one or two adults joined the students. These combinations of factors established a sense of student ownership that would presumably increase their enjoyment while walking. The HAP was offered four days per week for 40 minutes each session. Students had the opportunity and were encouraged to come to as many sessions of the walking program as possible, to walk at their own pace during the session, and to be physically active outside the program. The HAP was implemented the last four weeks of the school year (May to June) during P1. P2 was implemented for six weeks during the following fall (October to December).

During P1, students were familiarized with the program the week prior to the collection of baseline data. The investigator then introduced the program and solicited support during conversations with the students. The HAP was advertised during P2 through school announcements, and through the use of posters that were designed by the students themselves.

### Data Collection

Several methods were used to collect data to answer the three research questions, including written surveys, field notes, attendance sheets, activity logs, interviews, and an 8-item questionnaire developed by the primary researcher.

### Self-Efficacy Scale

The researchers distributed the Self-Efficacy Scale (SES) adapted from Marculs, Selby, Niaura, and Rossi (1992) and Nigg and Courneya (1998) in P1 on the sixth session of the program and again on the last day of the program. The same survey was distributed on the fifth day and second to last day of P2. The purpose of the self-efficacy instrument was to measure students' self-efficacy about exercise. It was used to determine if the students felt more

self-efficacious about exercise at the end compared to the beginning of the HAP.

### *Social Influences Scale*

The Social Influences Scale (SIS) adapted from Saunders and colleagues (Pate, Felto, Dowda, Weinrich, Ward, Parsons, and Baranowski, 1997) was distributed during P1 on the sixth day of the program and again on the last day of the program. This questionnaire was also distributed during P2 (fifth day and second to last day). This instrument was used to collect information relating to the impact of social influences on the participants. The Social Influences Scale was modified from an 8-item "yes/no" survey to a 7-item "yes/no" survey, omitting one item related to a family member offering to be physically active with the participant. The instrument was used to obtain a better understanding of psychosocial influences on physical activity during adolescence. This could assist efforts in schools and communities to promote lifelong physical activity. The original survey had 0.72 internal consistency reliability in the validation sample (n=82). The test-retest coefficient was 0.78 (Saunders et al., 1997).

### *The Physical Activity Enjoyment Scale*

The Physical Activity Enjoyment Scale was adapted and administered to measure the enjoyment of the HAP (Kendzierski and DeCarlo, 1991). This instrument was distributed on the same days as the SIS and SES surveys in P1 only. The instrument assesses the extent to which and individual enjoys doing an activity. The instrument was modified from an 18-item questionnaire to 15 items. In addition, the wording was changed from the original survey by adding the words, "physical activity program," so that the questions were directly related to the HAP. The three items that were omitted related to frustration, gratification, and exhilaration with regard to the program. The original survey had a 0.96 test-retest reliability using Cronback's coefficient alpha (Kendzierski and DeCarlo, 1991). The researchers believed that the 15-items used for the survey targeted whether or not the activity was enjoyable.

### *8-Item Questionnaire*

In addition to the above measures, the researchers designed an 8-item questionnaire that was used in P1 to gather data about why the students joined the program, whether or not they did or did not attend the program on a regular basis, and if they had and suggestions for future programs. The 8-item questionnaire was not used by the researchers in P2 of the program because the results of the questionnaire in P1 were used only for the purpose of guiding the design of P2.

### *Walking Behavior*

A Yamax-Digiwalker (pedometer) (Tokyo, Japan) was used to record the number of steps each student took. The pedometer is a small device that when attached to the body accurately counts the number of steps taken. The accuracy of this instrument in registering steps and distance has been demonstrated (Bassett, Ainsworth, Leggett, Mathien, Main, Hunter, and Duncan, 1996). To obtain a measure of distance walked, stride length was obtained by asking 25 students to walk 50 feet. This was repeated 10 times. The investigators recorded the number of steps walked. Based upon the information obtained, the average stride length was calculated

(2.2 +/- .2 feet) and the pedometers were individually numbered so that each student used the same pedometer during every session. Pedometers were distributed to the students at the start of each session, and subjects wore the pedometers on the waist of their pants or shorts. They returned the pedometer at the conclusion of each session when they recorded the data from the pedometers in their individual activity logs. Although maintaining the daily logs took additional time, it provided the participants with an opportunity to record the number of steps taken and monitor their progress.

### *Formal Interviews*

An exit interview was conducted with six of the students who participated during P1 of the HAP. The purpose of the interviews was to gain students' perspectives about the program. The students were asked: Were you physically active during L-2 prior to HAP? Why did you join HAP? What did you enjoy about HAP? And why did you miss any sessions? The interviews were tape recorded and lasted approximately 20 minutes.

### *Field Notes*

Finally, students' involvement in the HAP was monitored by gathering field notes. One of the researchers in P1 and all three in P2 were participant observers and walked one or more times each week with the students. In P1, one researcher walked with the students every day. In P2, at least two researchers walked with the students on two or more days a week. Field notes were completed following each session in P1. The notes recorded were related to how the walking session went in general, what happened during the session, how many participants were present, what the weather was like, how long the group walked, what went particularly well that day, and what could have been done differently. The notes provided the researchers with information about what was working and what needed to be changed to maximize students' safety, interest, and involvement during the program. These changes were considered in the design of P2.

### **Data Analysis**

#### *Attendance Data, Steps Walked, Distance Walked*

Descriptive data for P1 and P2 were calculated for all students participating in the walking program. This included data on ethnicity, daily student attendance by gender (see Figure 2), and the mean number of steps taken per day. In addition, the mean number of minutes walked and steps taken per five minutes were calculated.

#### *Surveys*

Scores from the Enjoyment Scale, Self-Efficacy Scale and Social Influences Scale were analyzed using basic descriptive statistics comparing students' scores at the beginning and end of the program. T-tests were completed to determine if there was any significant difference between the scores at the beginning and end of the program. In addition, the researchers determined whether a relationship existed between students' attendance and a) end of program self-efficacy score and b) end of program social influences score. The 8-item questionnaire was reviewed for common themes and trends.

**Table 1**

*Race and Gender of the Students During Phase I and Phase II of the Hockey Activity Program*

	P1		P2	
	Girls	Boys	Girls	Boys
Caucasian	16	3	2	0
African American	12	2	20	11
Biracial	2	0	0	0
Total	30	5	22	11

*Interviews and Field Notes*

The researchers first transcribed the interview tapes and read the interview transcripts looking for prevalent themes. Next, the researcher read the interview transcripts looking for key phrases to support these themes. These phrases were accumulated in a list format and the researchers eventually chose phrases from this list to support the major themes from the interviews. The field notes by the researchers were used to provide an overview of what happened on each particular day.

**Results**

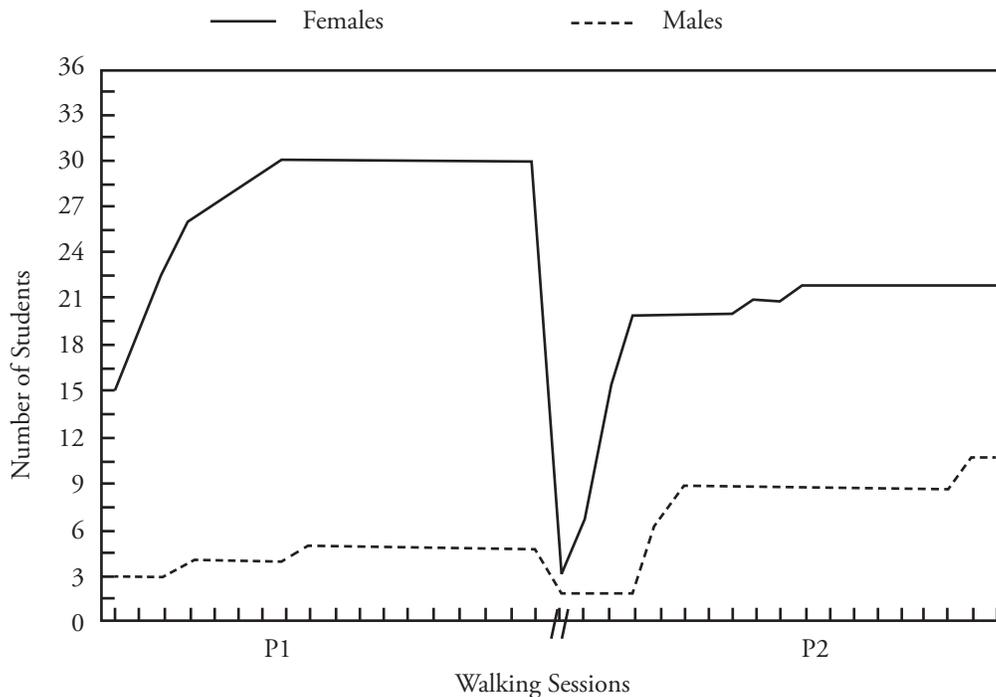
*Did the walking program encourage physical activity participation among high school females?*

The walking program at Hockey High School encouraged the participation of ninth and tenth grade students, particularly adolescent females of color (see Table 1). Prior to the introduction of the HAP, none of the participants were active during the second lunch period of the day (L-2) as the “had to eat and then go to study hall” (Mary, Interview 1, p. 2).

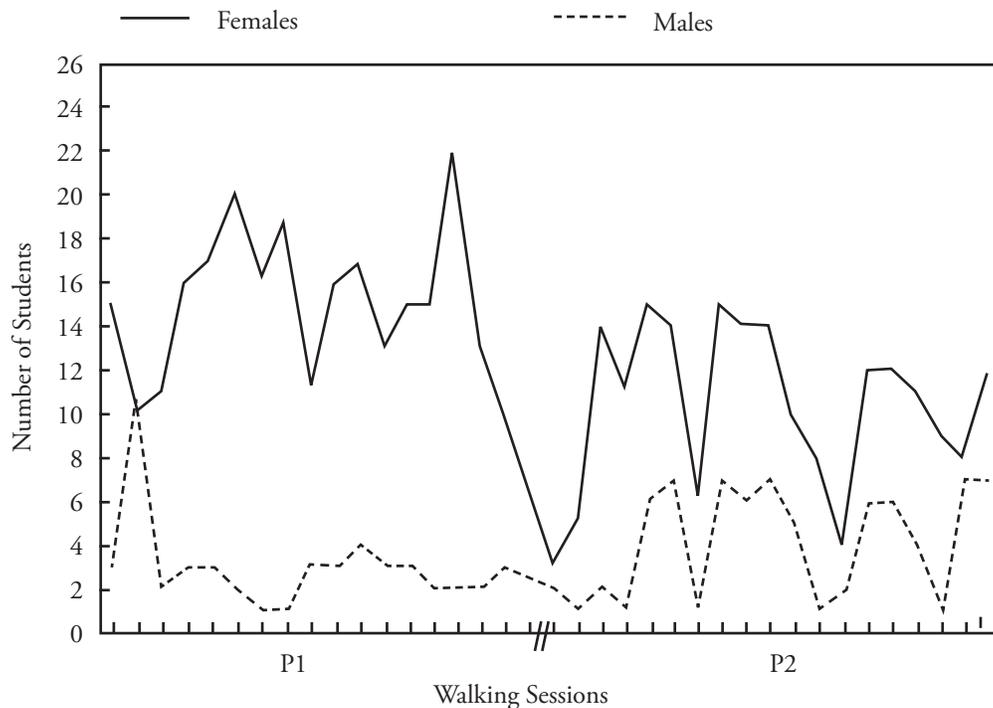
During P1 and P2, 35 and 33 students, respectively, participated on one or more occasions. Friends were initially a key factor in getting students to attend the program. The majority of the students joined the program during the first and second weeks (see Figure 1). Daily attendance averaged 17 students for P1 and 15 students for P2 (see Figure 2). Consistency was defined as at least 50% attendance from the time the students joined the HAP until the final day of the HAP. In P1 and P2, 17 and 19 students attended at least 50% of the walking sessions. In P2, 13 of the consistent attendees were girls and six were boys.

Mean daily number of steps walked and minutes recorded by the students are presented in Figures 3 and 4. During P1 and P2, mean daily number of steps recorded by the students was 2188 +/-697 and 2762 +/-437 steps/day, respectively.

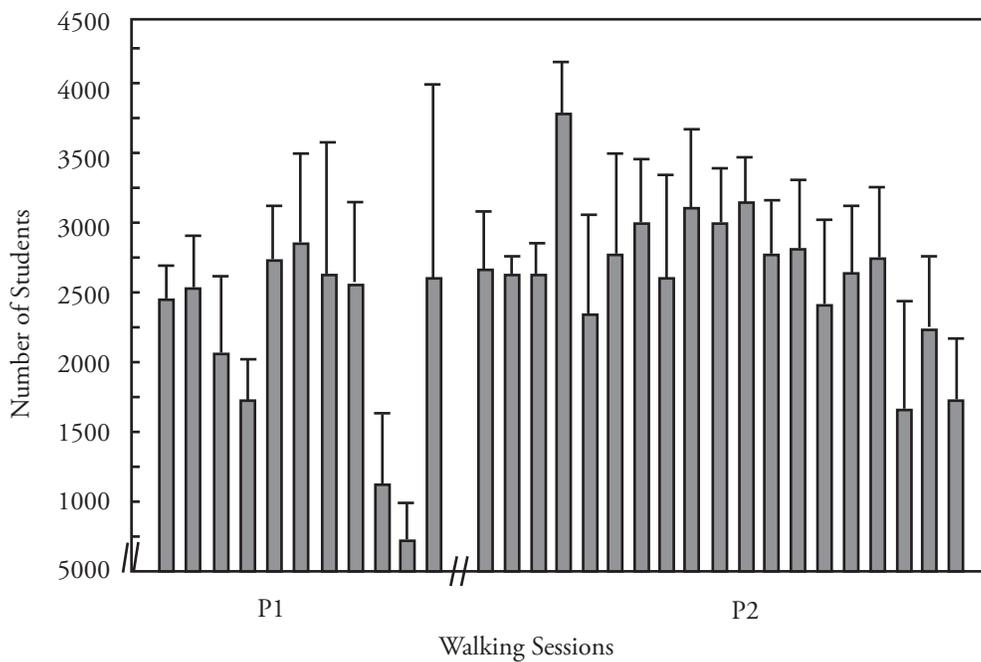
**Figure 1**  
*Cumulative Attendance*



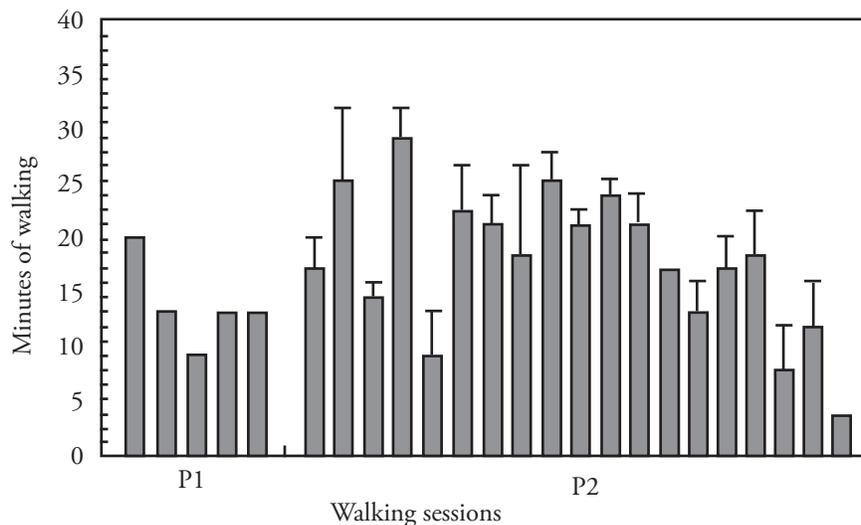
**Figure 2**  
*Attendance*



**Figure 3**  
*Average number of steps recorded*



**Figure 4**  
*Number of minutes recorded*



Thus, students walked approximately 0.9 to 1.0 mile per session. During P2, students walked on average 24 +/- 4 min/day. The average number of steps taken per five minutes during P2 was 579 +/- 55 steps/5 min (see Figure 5).

*What motivated the students to participate in the program?*

The students were motivated to participate in the program for a variety of reasons. At the end of the fall and spring walking programs, students were asked, “Why did you join the walking program?” The most frequent answers were because they wanted to exercise (54%), for social reasons as it was fun to exercise and talk (28%), and to relieve stress (5%). In both sessions, P1 and P2, students indicated they joined the program for social reasons (to walk with friends or because a friend asked them to join), health reasons, and to “stay fit,” “get fit,” “lose weight” or “build my metabolism.” Only one student noted walking as a way to “avoid study hall.”

Students had not been physically active during L-2 prior to the HAP. Few female students participated in “open gym” basketball game opportunities because as one of the participants noted during P1 “it was the majority males” (Sandy, Interview, p.1). This student, Sandy, was referring to the open gymnasium during lunchtime when most highly skilled males participated in pickup basketball or an intramural league organized by a school staff member.

*Did the students find the walking program enjoyable?*

In P1, students’ scores on the self-efficacy and enjoyment scales did not change significantly. However, social support from friends and family was significantly higher in post-test compared to pre-test in P1 (0.7 +/- 0.2 and 0.8 +/- 0.2). Neither of the psychosocial variables measured in P2 changed after the HAP. There were no significant relationships between attendance and any of the

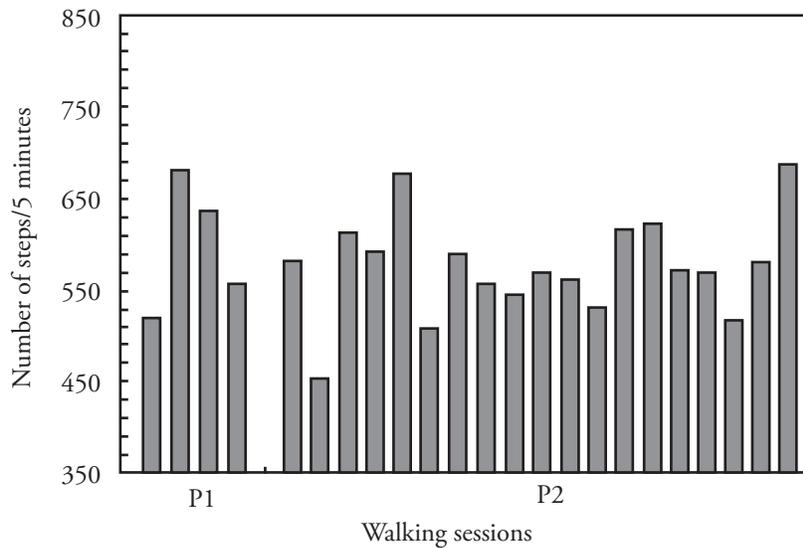
psychosocial scales for P1 and P2. It was apparent that the students seemed motivated to attend the HAP initially because a) it was a fun way to exercise, b) the program was available, and c) they had been asked to participate. Participants explained that friends told them about the program, that it was fun, and enticed them to participate. Once the students attended the first session, 91% of them found the program enjoyable and remained in the program even though their attendance varied. The best part of the walking program for many students, including Sandy, was “being able to be physically active and do something” (Interview, p.2). Other reasons students enjoyed the walking program were the social and health benefits from walking in a relaxed outdoor setting. Students found walking “fun,” could do it with friends, and could talk as they exercised. They also felt a sense of accomplishment as they recorded the number of steps daily from their pedometers. The Physical Activity Enjoyment Scale did not indicate whether students were enjoying the activity program. The probability of the t-test of the Physical Activity Enjoyment Scale from P1 was .49m indicating no statistical difference. Yet, the 8-item survey, daily observations, informal conversations and formal interviews all indicated that the students found the program enjoyable.

The only concerns students noted about the program (never more than two students listed and one concern) were walking inside when it rained, walking the same route each day, or walking when it was hot. When they missed a day of walking, the key reason was to use the time to complete homework for an afternoon class.

**Discussion**

The present study was designed to promote physical activity by means of walking for adolescent females during school time (study hall) in two different seasons. Although a small percentage of the total school population participated in the program, attendance

**Figure 5**  
Average number of steps recorded/5 minutes



levels demonstrate that the walking program was successful. Once students joined the program they continued to participate.

The program was successful in recruiting predominantly African American adolescents of different skill and interest levels with regard to physical activities. Although the present study was successful in targeting African American females, many of the ninth and tenth grade students did not participate. The goal of this study was only to determine if students would participate in a physical activity walking program. Information was not gathered on students who did not participate in the program. It is not possible to speculate as to why students did not join or to determine if these students differ on any variables compared to the students who did join.

In order for intervention strategies to be successful, physical activity programs need to be culturally appropriate (Bungum and Vincent, 1997; Shephard, 1995). Although the information from this study cannot be generalized to other populations, it does provide valuable information regarding steps that were taken to engage a group of primarily African American female adolescents in the simple activity of walking during school time. More physical activity intervention efforts need to be undertaken to further understand how to engage African American females in physical activity.

It is well documented that seasonal effects influence levels of physical activity and choices of activities (Sallis, Simons-Morton, Stone, Corbin, Epstein, Faucette, Iannotti, Killen, Klesges and Petray, 1992). The present study was no different. As expected, fair or poor weather affected the program in several ways: attendance was lower on days of rain and/or cold weather. Although students were given the opportunity to provide ideas about activities in which they could participate during inclement weather days, students provided few ideas, other than basketball. Acquiring space in the gymnasium for 15–20 females to play basketball

on an ad hoc basis was not a viable option given that upwards of 60–80 primarily male students used that space for basketball. The girls participating in the walking program did not want to “compete” with the boys and most did not want to play “in front of others” in that space. Closing off the space to other students was not possible as it was the only gathering place for students in the school during recess, other than the cafeteria and a very narrow hallway, both of which were always crowded. Thus, further efforts must be made to understand culturally appropriate alternative physical activities that more African American adolescents (girls and boys) might enjoy.

Intensity of the physical activity was not enforced. On several occasions this resulted in what appeared to be a slower walking pace and consequently shorter walking distances than desirable (Sallis and Patrick, 1994). Although the students were prompted by the investigators to increase their walking speed, this was not made a primary objective because the researchers wanted to reach out to students regardless of their fitness level or athletic skills. Additionally, the researchers were concerned that if competition had been introduced, students may have dropped out of the program, specifically the students who are most in need of such a program.

Nevertheless, given that engagement in physical activity, specifically for African American females, is low nationwide, the HAP did demonstrate that African American females at Hockey High became actively engaged in physical activity. When a program was made available to them, they engaged in such activity for 10 to 32 minutes approximately four times per week. Moreover, students were exposed to a type of physical activity that can be performed in most environments, during all stages of life, and without having to purchase equipment.

Self-efficacy and social support are important predictors of current physical activity behavior (Bungum and Vincent, 1997; Trost, Pate, Ward, Saunders and Riner, 1999). None of the phy-

chosocial variables, i.e., social support, self-efficacy, and enjoyment, changed after the program. This finding was surprising considering that the walking program provided an opportunity for all individuals to engage in activity regardless of skill level where students reported they had fun and adult modeling was present. From the interview data, it was apparent that engagement in the program was highly shaped by friend support. The reasons for the lack of change in self-efficacy and social support may be a result of the short duration of the walking program, the lack of sensitivity of the selected scales to detect and differences, or both. It should be determined whether a physical activity program of longer duration would have an effect on any of these variables.

In the present study, variables that relate to health outcomes were not measured. Therefore, it cannot be determined whether the walking program had any effect on health variables such as body weight. Future studies should be designed that enforce different intensities of physical activity to determine whether participation in a walking program on a regular basis during school time might result in changes in health related variables.

In summary, findings from this study indicate that providing a physical activity program during a school study hall period attracted African American female adolescents to participate in unstructured physical activity of walking. Efforts should be continued to understand determinants of physical activity and alternative physical activities in which African American adolescents might enjoy participating that are also culturally appropriate.

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# Physical Activity and Recreation Patterns in Urban, Suburban, and Rural Areas of South Carolina

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## Introduction

Participation in regular physical activity (PA) has been shown to have many benefits, including decreased risk of chronic disease, increased longevity, and improved physical and psychological health (US Department of Health and Human Services, 1996). However, many US adults do not engage in enough PA, or are completely sedentary (Schoenborn and Barnes, 2002).

Behavioral and demographic influences of PA have been extensively studied, though research is still unable to explain a large portion of PA participation. Recent investigations have examined the impact of the environment in an attempt to understand the physical and social factors that can influence PA (Brownson, Baker, Housemann, Brennan, and Bacak, 2001; Humpel, Owen, and Leslie, 2002; Sallis, Bauman, and Pratt, 1998; Sallis and Owen, 2002). This research has shown that aesthetic and convenient environments, safe trails with local access, safe neighborhoods, lack of hills, chained dogs, physically active neighbors, coastal environments, and availability of recreation facilities are positively associated with PA participation.

Recent research has focused on urban environments and suggests high density and social activity, mixed land use, connective street patterns, and distribution of activities and transportation are related to increased PA. (Berrigan and Troiano, 2002; Handy, Boarnet, Ewing, and Killingsworth, 2002; Saelens, Sallis, and Frank, 2003). Though these findings have great implications for PA public policy changes in urban and suburban areas, little is known about the impact of these factors in rural areas. People in rural areas experience greater barriers to health behaviors in gen-

eral compared to urban counterparts, including a higher incidence of poverty, lower education, higher rates of chronic diseases, and greater distance to travel for health care and other services (Mulder et al., 2000). Rural residents are less likely to meet health recommendations for PA as a result of lack of places to be active (Parks, Housemann, and Brownson, 2003). Recent interventions have attempted to increase PA in rural areas through increasing access to PA facilities (Brownson et al., 2000), however few studies are available to corroborate these findings.

The purpose of this study was to examine the patterns of recreational PA participation in a statewide sample of South Carolinians. Differences in participation in sports, swimming, bicycling, and walking/running/jogging (WRJ) were examined relative to respondents' urban/rural status. Also investigated were differences in utilization of public facilities for recreation and leisure activities, and differences in participation in locations outside of the county of the survey participant's residence.

## Methods

### *Participants*

Participants were selected from respondents to the 1999 South Carolina Recreation Participation and Preference Study conducted by the South Carolina Department of Parks, Recreation and Tourism. South Carolina residents aged 12 years and older were contacted via random-digit telephone dial, and 2,086 residents completed the survey. In addition to information regarding recreational PA participation, respondents reported personal demographic information, including their zip code and county of

residence. Population of city of residence was determined by linking each respondent's zip code with U.S. Census population data. For the purposes of this study, analyses were restricted to adults aged 18 years and older. After exclusion for missing data related to county of residence and population of city of residence, 1,686 adults were included for analysis.

### *Measures*

A population/urbanization scale was developed for this study to allow for comparative analysis of rural, suburban, and urban populations. This scale was calculated using a combination of county of residence and population of city of residence. Counties were classified using the U.S. Department of Agriculture (USDA) rural-urban continuum codes, which describe counties by degree of urbanization and proximity to metropolitan areas (Butler and Beale, 1994). Those individuals in counties classified as within metropolitan areas of 250,000 or more people by USDA continuum codes were classified as residing in an urban area (includes people in small cities). Participants in cities with population less than 2,500 and not in metropolitan counties were classified as residing in a rural area. Those in between urban and rural status were classified as suburban or less urban.

Respondents were asked to indicate whether or not they participated in several recreational activities within the past year. Activities queried were swimming, bicycling, WRJ, and participation in sports activities such as tennis, football, softball, baseball, and soccer. Participants were also asked how many times in the past 12 months they participated in each activity. Participants then reported where they usually participated in the activity, and this information was dichotomized as either a public facility or a private facility. For all activities other than WRJ, participants were asked to report the county where they participated in each activity.

One "sports" participation variable was created to summarize participation in any or all of four sports activities (i.e. football, soccer, baseball, and softball). If the respondent reported engaging in any of these four activities then they were recorded as participating in sports. For those that reported participation in sports, it was noted if the respondent reported participating in any organized league, and if they reported participating outside of home county of residence for any sport. A "swim" variable was created based on whether or not participants reported engaging in swimming, and it was noted if they reported swimming in a public pool and if they participated outside their county of residence. Bicycling activity was assessed based on whether or not participants reported engaging in any bicycling; bicycling in a public place and participation outside of home county was also noted. A "tennis" variable was created based on whether or not participants reported engaging in tennis; participating in tennis in a public place and participation in their home county was noted as for previous activities. WRJ activity was noted with a single variable. If the respondent reported any walking or any running/jogging they were classified as participating in WRJ activities. It was also noted if the respondent reported participating in WRJ in public places other than roads.

### *Data Analysis*

To adjust for the individual sampling weights and the design effects of the survey, the SUDAAN statistical software package

version 8.0 (Research Triangle Institute, Research Triangle Park, Cary, NC) was used to perform all analyses. Simple frequencies were calculated to provide basic information regarding age, race, gender, and urbanization distribution. Odds ratios and 95% confidence intervals were calculated to determine odds of participation in activities by degree of urbanization. For participants reporting participation, further analysis was conducted to estimate odds of participation in public places by urbanization and participation in county outside of home residence by urbanization.

Data was restricted to differentiate those that are regularly active from those that are irregularly active in order to arrive at more accurate estimates of participation in PA and usage of public recreation facilities. Responses to days engaged in seasonal activities (sports, bicycling, swimming, and tennis) were restricted to 12 days or more per year (or about one day per week for three months). Similarly, responses to days engaged in WRJ were restricted to 52 days or more per year (about one day per week). Persons reporting less than 12 days per year of seasonal activities or 52 days per year of WRJ had days of participation recorded as zero for that respective activity.

### **Results**

The study sample consisted of 703 men and 983 women. The mean age of the total sample was 44.73 years and 84.6% of the study sample was less than 65 years of age. Respondents were predominantly white (73.2%), 24.3% were black, and the remaining 2.5% were of other races. The majority of respondents (55%) resided in an urban area, as defined by the population/urbanization scale. Persons living in less urban/suburban areas made up 32.7% of the sample, and persons living in rural areas comprised the smallest proportion of the total sample (12.3%).

The analysis revealed several trends in participation through calculation of odds ratios. Persons in suburban areas were 18% more likely to report participating in sports than persons in urban areas, and persons in rural areas were 11% less likely to participate in sports than those in urban areas. Similar patterns were observed regarding participation in swimming, with those in suburban areas more likely to participate in swimming and those in rural areas less likely to participate in swimming than those in urban areas. Persons in suburban and rural areas were about 10% less likely to participate in bicycling during leisure time. Likewise persons in both suburban and rural areas were less likely to participate in tennis than persons in urban areas (35% and 47%, respectively). Finally, compared to those in urban areas, persons in suburban areas were 10% less likely to engage in WRJ activities, and persons in rural areas were 20% less likely to engage in WRJ activities.

Responses from persons who reported engaging in sports, swimming, bicycling, tennis, or WRJ were analyzed further to investigate differences in patterns of participation relative to participating in leisure activities at a public facility. Persons in suburban areas were more likely to participate in an organized league than their urban counterparts, and persons in rural areas were less likely to participate in organized sports leagues. Compared to urban persons, suburban persons were less likely to swim in a public facility, and rural persons were more likely to swim in a public facility. Suburban persons were about 30% and rural persons about 75% less likely to bicycle in public places other than roads. Suburban and rural persons were both less likely to report playing tennis at

a public facility, and persons in rural settings were about 50% less likely to participate in WRJ in public places other than roads and sidewalks compared to persons residing in urban areas.

When data were analyzed to determine differences in odds of traveling outside of home county for activity participation by degree of urbanization it was found that suburban and rural persons were both about 40–45% less likely to participate in sports outside their home county. Suburban persons were about 80% less likely to travel outside of their county of residence to swim. Both suburban and rural persons were about equally less likely to participate in bicycling outside county of residence than their urban counterparts. Rural persons were more likely to report participating in tennis outside their county of residence. Odds of participation in tennis outside of county of residence were not computed for suburban persons due to zero persons in suburban areas reporting participation outside county.

## Discussion and Conclusions

The findings of this study of South Carolina residents are consistent with the majority of the published literature regarding participation patterns by metropolitan area. Adults living in suburban areas have been found to be more likely to engage in some form of leisure time physical activity (PA) than adults living in urban or rural areas (Schoenborn and Barnes, 2002; “Self-reported physical inactivity by degree of urbanization--United States, 1996,” 1998). According to results presented here, persons residing in suburban areas are generally more likely to participate in activities such as sports or swimming during leisure time, and less likely to participate in bicycling, tennis, or WRJ when compared to persons residing in metropolitan areas. Persons living in rural areas of South Carolina were about 10-20% less likely to report participating in any type of recreational activity during leisure time compared to persons living in metropolitan areas. The most pronounced differences in frequency of participation were observed for tennis with only about half as many persons in suburban or rural areas likely to participate in tennis compared to metropolitan counterparts. This difference may reflect a lack of tennis facilities available to persons in suburban and rural areas of South Carolina. Since persons in rural areas who play tennis are nearly four times more likely to travel outside of their home county to do so, they are less likely to travel outside of their home county to participate in all other activities compared to persons living in urban areas.

The availability of PA facilities has been shown to be a correlate of PA participation in many studies (Humpel et al., 2002; King et al., 1992; Parks et al., 2003), and presents policy makers with consistent research supporting increasing public facility availability. This concept is particularly important in rural areas, since a low population density, higher rates of poverty, and transportation complications make travel to a PA facility difficult. This presents much less of a challenge in urban and suburban areas, since larger populations, greater mix of land use and more transportation choices allow residents to access facilities much more readily. Rural respondents in this study were generally less likely to report participation in recreational activities, less likely to report participation at public facilities, and less likely to report traveling outside of home county to participate in PA.

A previous study has shown that increasing the number of places available for exercise or PA will increase chances of meeting

PA recommendations for a health benefit in urban, suburban, and rural areas, and that rural residents have fewer places to engage in PA than suburban or urban residents (Parks et al., 2003). While no data is available in this study on actual availability of facilities, it could be possible that persons in rural areas are less likely to participate in activities due to lack of environmental supports. It may be that those in rural areas who do participate in activities are able to do so because of access to private facilities not available for use by the general population. While this may be the expected scenario, minimal research has been done to assess actual differences in availability of facilities in rural versus urban areas. Much research has been conducted to determine disparities in access to facilities in special populations such as the elderly or racial and ethnic minorities. Several studies have indicated that women of different ethnic groups or older adults living in rural areas commonly cite a lack of PA or recreation facilities as a barrier to PA participation, and lack of nearby PA and recreation facilities have been shown to be a negative correlate of meeting PA recommendations (Eyler and Vest, 2002; Kumar, Acanfora, Hennessy, and Kalache, 2001; B. Sanderson, Littleton, and Pulley, 2002; B. K. Sanderson et al., 2003; Wilcox, Castro, King, Housemann, and Brownson, 2000). Studies of ethnic minority women in urban areas have revealed that they do not see a lack of access to PA facilities as a barrier to participation (Wilbur, Chandler, Dancy, Choi, and Plonczynski, 2002; Wilbur, Chandler, Dancy, and Lee, 2003; Young, He, Harris, and Mabry, 2002; Young and Vorhees, 2003); however, there is a lack of information for persons differing by residential area. Further research is needed to examine if differences between urban and rural areas is due to lack of use or the actual absence of public facilities.

## Limitations

Small sample size is a limitation to this study. Though many of the associations between participation in recreational activities and degree of urbanization followed expected patterns and are supported elsewhere by previous research, the results of this study were found to lack statistical significance (i.e., 95% confidence intervals for odds ratios include 1.00). Sample size plays a major role in determining statistical significance by impacting statistical power. Power is defined as the ability to statistically determine a difference between groups with the difference truly exists. By increasing the size of a sample the power of a test is increased, and therefore an investigator is better able to detect true differences. In the case of this study, only about 209 (12.3%) of participants lived in rural areas; whereas about 29% of South Carolina's total population reside in rural or very rural areas. The small number of participants residing in rural areas resulted in a loss of power to statistically detect differences in participation in activities. The rural residents of the state were underrepresented according to the actual percentage of South Carolinians residing in rural areas. Further studies are needed with better strategies for acquiring an adequate number of rural participants to investigate these relationships.

## Implications

Despite the statistical limitations, the results of this study have revealed a number of important trends that should be examined further in order to understand the effect of physical attributes of the

environment and metropolitan area on PA participation in South Carolina. Results here have demonstrated possible differences between suburban and rural areas in types of activities, perhaps because of difference in types of facilities available to suburban areas and rural areas. There are a number of ways to provide an environment more conducive to physically active lifestyles. New residential development should be located in densities capable of supporting recreation facilities. In addition, target increased assistance to small communities for safe trails/recreation facilities. More public PA facilities within rural counties may be needed to ensure persons residing in those areas have access comparable to persons in more urban locations. A built environment conducive to PA is necessary for improving lifestyle behaviors and providing opportunities for better health.

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# Physical Education Teachers' Perceptions of the Adequacy of University Coursework in Preparation for Teaching

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## Abstract

Teaching physical education in K-12 schools is a very challenging profession. Consequently, colleges and universities must provide instruction and experiences that will adequately prepare teachers to make a successful transition into full time teaching. In this study, a sample of K-12 physical educators within the state of Washington were surveyed to determine their undergraduate coursework in physical education, the value of each course in preparing them to teach, and specific areas in which they experienced difficulty during their first year of teaching. Results indicated that most physical education teacher education (PETE) programs consist of similar course requirements. In addition, the respondents' perceptions of the value of the components that were included in these classes generally validate current college and university PETE curriculums. The findings also indicate that dealing with inadequate facilities and equipment, classroom management and discipline, meeting the needs of students in special populations, schedule interruptions, personal fatigue, parental contact, and student assessment are the most significant challenges experienced by first year teachers.

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The goal of all physical education teacher education (PETE) programs should be to graduate highly competent students who will become effective teachers. In order to accomplish this task, departments of Physical Education, in accordance with the requirements of State Offices of Public Instruction, have traditionally identified components that should be included in every student's coursework. Specifically, most PETE programs include the following: 1) required liberal arts courses; 2) completion of a major in Physical Education which consists of skills and knowledge in sports in fitness activities, scientific foundations, sociocultural and philosophical constructs, and health-related fitness concepts; 3) pedagogical knowledge including methods of teaching, curriculum, management, discipline, and assessment; 4) early field experience and observation and opportunity for practice teaching with peers; and 5) a teaching internship under the supervision of a master teacher who serves in a mentoring role. The goal of all these requirements is that graduates will be well qualified to teach physical education at the K-12 level (O'Sullivan, 1990).

Unfortunately, it appears as though not all graduates of PETE programs are well prepared to teach when they graduate. Specifically, some are not adept at classroom management, assessment of student performance, and adapting curriculum to limited facilities and equipment or differing student needs. Others simply are unprepared for the physical demands of teaching all day (i.e. fatigue) or able to deal diplomatically with parents. As a result, many who have completed a PETE program have not had a smooth transition from the university to student teaching profession or have experienced significant difficulties during their knowledge (Amade-Escot, 2000; Walkwitz and Lee, 1992).

### *The Importance of Field Experiences*

PETE programs have sought to increase the amount of time that students spend in K-12 schools through early field and student teaching experiences (O'Sullivan, 1990). Despite some of the weaknesses relative to the assignments and processes, teachers most often view their student teaching experiences as the most

beneficial component in their preparation to teach (Gutyon and McIntyre, 1990). The development of a positive and productive working relationship between cooperating teachers and student teachers is the most significant factor in determining successful field experiences (Knowles and Cole, 1996). Other important factors in a successful student teaching experience include relating to, understanding, and developing positive relationships with students. Knowles and Cole (1996) indicate that there is a general consensus among university supervisors that most student teachers who fail are unable to determine and respond to students' needs and relate to students well enough to engage their interest and participation. Often this is a result of such a high level of preoccupation with their own abilities and planning that the students' needs are neglected.

Based on their strengths, Rikard and Knight (1997) make the following suggestions for pre-student teaching field experiences: 1) planned interactions with skilled clinical teachers; 2) multiple opportunities for school-based field experiences; 3) multiple opportunities to teach students from various grade levels and in groups of increasing size. Some have argued that physical education in schools and as a teaching discipline is in the midst of a deep crisis and that the lack of appropriate preparation of teachers is a significant contributor to this crisis (Fernandez-Balboa, 1997; Livingston, 1996). Although physical educators believe that physical education holds value for our society in general and is vital to our educational system, there remains a lack of public appreciation for the value of physical education (Steinhardt, 1992). If physical education teachers are to establish better professional credibility, colleges and universities must be more effective in providing the educational experiences that will adequately prepare individuals to be successful teachers.

### *Need for Study*

After consideration of the above discussion of the components of PETE, and in the light of the rapid growth in knowledge and the "crisis" that is facing K-12 physical education, a survey of current physical education teachers was deemed necessary. Furthermore, since university teacher education programs in physical education are required by state boards of education to offer comprehensive and relevant curriculum, it was determined that the results from this study would provide a potentially valuable set of reference points for directors of PETE programs. Consequently, a questionnaire was designed to determine the frequency that specific components were included in the undergraduate PETE programs of current physical education teachers, to determine respondents' perceptions of the perceived value of these components in preparing them to teach, and to determine the level of difficulty specific teaching responsibilities presented during the first year of teaching.

### **Methods**

The questionnaire used in this study included four sections: demographic information, components included in PETE program, perceived value of those components in preparing one to teach, and perceived areas of difficulty during the first year of teaching. A panel of six experts, including a university professor in physical pedagogy, a graduate student in physical education, and four physical education teachers generated the items on the question-

naire. The questionnaire was field tested with a group of 30 elementary and secondary physical education teachers and then modified for clarity, organization, and content based on feedback from those individuals.

Under the section titled "Undergraduate course work," respondents were asked to identify which components were addressed in their PETE program coursework. In addition, the respondents used the following scale to rate the perceived value of each component in regards to how important it was in preparing them to teach physical education:

- 1=no value
- 2=little value
- 3=undecided
- 4=somewhat valuable
- 5=very valuable

Respondents were also asked to rate the level of difficulty of various teaching responsibilities during their first year of teaching according to the following scale:

- 1=no difficulty
- 2=little difficulty
- 3=undecided
- 4=moderately difficult
- 5=extremely difficult

A sample of 350 public and private schools within the state of Washington with enrollments greater than 200 were identified from the Washington Education Directory. Every sixth school in the directory that met the criteria for enrollment was included in the survey. Teachers from the state of Washington were selected for two reasons: 1) The authors were both directors of PETE programs in that state and anticipated that the results would help them to better assess and modify their own programs; 2) Recently the state of Washington adopted curriculum reform which resulted in the creation of a new set of health and fitness knowledges and competencies for K-12 students. The results of this study should be helpful in determining whether current physical education teachers in the State of Washington are adequately prepared to address those competencies in their programs.

Copies of the surveys along with stamped and addressed return envelopes were sent to physical education department heads at each of the identified schools. After two weeks, follow-up letters and another copy of the questionnaire was sent out to each respondent. A total of 132 questionnaires were received for a return rate of 37.7%.

### **Results**

#### *Demographic information*

The average respondent was 41.1 years of age, had 15.1 years of teaching experience, and taught at a school with 510 students. Of the 124 respondents who indicated their gender, 68 (54.8%) were female and 56 (45.2%) were male. Sixty-two (50.8%) of the respondents held a B.A. or B.S. as their highest academic degree while 62 (49.2%) reported that their highest degree was a Masters. The grade levels taught were as follows: 35.2% taught in elementary schools, 22.8% in middle schools, 42.3% in high schools, and 54.9% indicated that they were currently teaching at more than one level. 86.3% were currently teaching at public schools and 13.1% at private schools. 97.7% of the respondents indicated that they were currently teaching physical education, 24.2% were

also teaching health classes, and 21.1% were also teaching other subjects. Sixty-six and seven tenths percent of the respondents received their initial teaching certificate in the state of Washington while 33.3% received their initial teaching certificate in another state.

*Undergraduate Coursework*

The percentages of respondents who reported that specific components were included in their undergraduate courses (from highest to lowest): 1) student teaching (95.4%); 2) lesson planning (94.6%); 3) knowledge of physiology (94.6%); 4) teaching methods (93.8%); 5) knowledge of anatomy (93.1%); 6) sports skills/knowledge (93.1%); 7) fitness concepts (93.1%); 8) motor development (91.5%); 9) PE curriculum (90.0%); 10) health concepts (90.0%); 11) First Aid/CPR (87.8%); 12) adaptive physical education (88.3%); 13) classroom/gym management (85.4%); 14) classroom (gym) organization (83.8%); 15) historical perspective on PE (80.0%); 16) fitness testing (78.5%); 17) assessment of learning (78.1%); 18) grading practices (74.6%); 19) communication skills (70.5%); 20) discipline techniques (66.9%); 21) sports law (66.2%); 22) integration of movement with other subjects (59.2%) (See Table 1).

A T-test indicated that a significantly greater number of respondents who taught at the high school level received instruction in how to conduct fitness testing in their PETE programs ( $x=4.31$ ) than those who taught at either the middle or elementary levels ( $x=3.81$ ) ( $p<.01$ ).

*Perceived Value of Specific Concepts*

The scores on perceived value of components that were addressed in undergraduate physical education coursework in regards to preparing one to teach were ranked (from highest to lowest) using a five-point Likert scale from which responses were compressed into three categories; somewhat or very valuable, little or no value, and undecided. The percentages of respondents who perceived that particular experiences and knowledge were either “somewhat valuable” or “very valuable” were as follows: sports/skills knowledge (93.4%); student teaching (92.7%); First Aid/CPR (92.1%); classroom (gym) organization (89.4%); classroom (gym) management ((87.9%); lesson planning (87.6%); physical education curriculum (86.1%); fitness concepts (86.0%); teaching methods (85.2%); motor development (84.2%); knowledge of physiology (83.7%); knowledge of anatomy (83.5%); communication skills (82.3%); discipline techniques (80.9%); health concepts (79.8%); fitness testing (73.3%); assessment of learning (71.6%); adaptive physical education (70.4%); grading practices (66.0%); sports law (51.1%); and historical perspective of physical education (30.5%) (See Table 2).

A T-test revealed that female respondents rated the value of their student teaching experience (mean=4.83) higher than male respondents (mean=4.55) ( $p<.01$ ).

*Difficulties During First Year Teaching*

The scores on the areas of perceived difficulty during first year teaching physical education were ranked (from highest to lowest) using a five-point Likert scale from which responses were compressed into three categories: extremely or moderately difficult, little or no difficulty, and undecided. The percentages of respondents identifying the area as either “extremely difficult” or “moderately difficult” were as follows: facilities/equipment (53.5%), discipline (49.6%), special needs populations (46.0%), schedule interruptions (45.7%), personal fatigue (44.1%), assessment/grading (41.7%), classroom management (40.5%), parental contact (40.2%), differences in skill level (39.8%), liability concerns (32.3%), motivating students (31.5%), lack of administrative support (26.0%), curriculum selection (21.3%), colleague relationships (16.8%), locker room supervision (16.5%), lesson planning (15.6%), teacher/student relationships (10.9%), and teaching sport skills (7.8%).

A T-test that compared the means of the responses revealed that the teachers from public schools reported greater difficulty with special populations (mean=3.10) than teachers from private schools (mean=1.94) ( $p<.01$ ). In comparing the responses of respondents who received their initial certification in the state of Washington and other states, the following significant differences were found ( $p<.01$ ). Out-of-state teachers were more likely to have taken courses that included historical concepts and physical education curriculum, and less likely to have completed courses which addressed how to integrate movement with other subjects. In addition, out-of-state teachers were more likely to experience fatigue (4.38 vs. 3.88) and classroom management difficulties (3.45 vs. 2.69) during their first year of teaching.

**Table 1**  
*Frequency of Components included in Respondents' Undergraduate Coursework in Physical Education*

Concept	n	%
Student Teaching	124	95.4
Lesson planning	123	94.6
Knowledge of physiology	123	94.6
Teaching methods	122	93.8
Knowledge of anatomy	121	93.1
Sports skills/knowledge	121	93.1
Fitness concepts	121	93.1
Motor development	119	91.5
PE curriculum	117	90.0
Health concepts	117	90.0
Adaptive physical education	113	88.3
First Aid/CPR	114	87.7
Classroom (gym) management	109	85.4
Classroom (gym) organization	109	83.8
Historical perspective on PE	104	80.0
Fitness testing	102	78.5
Assessment of learning	106	78.1
Grading practices	97	74.6
Communication skills	91	70.5
Discipline techniques	87	66.9
Sports law	86	66.9
Integration of movement (other subjects)	77	59.2

**Table 2**

*Perceived value of components included in respondents' undergraduate coursework in physical education.*

	Somewhat or very valuable		Undecided		Little or no value	
	n	%	n	%	n	%
Concept	113	93.4	6	5.0	2	1.7
Sports skills/knowledge	115	92.7	8	6.5	1	0.8
Student teaching	105	92.1	3	2.6	6	5.3
First Aid/CPR	101	89.4	6	5.3	6	5.3
Classroom (gym) organization	102	87.9	7	6.0	7	6.0
Classroom (gym) management	106	87.6	7	5.7	8	6.6
Lesson planning	99	86.1	7	6.1	9	7.8
PE curriculum	104	86.0	10	8.3	7	5.8
Fitness concepts	104	85.2	9	7.4	9	7.4
Teaching methods	101	84.2	9	7.5	10	8.3
Motor development	103	83.7	9	7.3	11	8.9
Knowledge of physiology	101	83.5	8	6.6	12	9.9
Knowledge of anatomy	96	82.3	7	7.3	10	10.4
Communication skills	72	80.9	9	10.1	8	9.0
Discipline techniques	95	79.8	11	9.2	13	10.9
Health concepts	77	73.3	17	16.2	11	10.5
Fitness testing	78	71.6	11	10.1	20	18.3
Assessment of learning	81	70.4	12	10.4	22	19.1
Adaptive physical education	68	66.0	16	15.5	19	18.4
Grading practices	55	64.0	16	18.6	15	17.4
Integration of movement/sub.	46	51.1	20	22.2	24	26.7
Sports law	33	30.5	21	20.0	52	49.5
Historical perspective on PE						

**Discussion**

*Frequency of Specific Components in Undergraduate Courses in Physical Education*

In general, the results of this study support the position that PETE programs generally consist of similar components. For example, even integration of movement with other subjects, the least frequently included concept, was addressed in a majority of the respondents' programs. The similarity of content in PETE programs seems to reflect state requirements which college and university teacher education programs must follow for endorsements and teacher certification.

Almost all respondents reported that lesson planning was addressed in their undergraduate coursework. This is not surprising since planning is an integral part of implementing an effective lesson and, consequently, should be addressed to varying degrees in several courses within undergraduate PETE programs. Given the fact that only 15% of the respondents reported moderate or extreme difficulty in lesson planning during the first year of teaching, it appears that PETE programs are generally doing an adequate job of preparing students in this vital area.

Given the current interest in health-related fitness, it is encouraging that fitness concepts were included in the undergraduate courses in physical education for almost all respondents. This result seems to reinforce the importance of fitness as the most important objective in physical education (Hill, Leslie, and Snider,

1991) and is consistent with the health and fitness standards of the Washington State Essential Academic Learning Requirements (Washington State Commission on Student Learning, 1998).

It is very interesting that some of the respondents did not student teach in physical education. A possible explanation may be that some of the respondents received an undergraduate degree in elementary education with an additional endorsement in physical education or later completed an endorsement and were not required to complete a student teaching experience in physical education.

Results of this study indicate that PETE programs may need to assess the level of attention given to management and discipline given the difficulty in these areas that were reported by respondents. Specifically, skill in establishing patterns of desirable behavior and decreasing undesirable behavior are prerequisite to effective instruction. As the results of research by both Bahneman (1996) and Graber (1995) suggest, the instruction in management techniques may be communicated during PETE coursework, but adequate opportunities to practice and develop skills in management and discipline are typically not provided. If these skills are not developed in the PETE educational process, the teacher is placed at a disadvantage when facing a class full of students. PETE programs must give adequate attention to the development of these skills in order to properly equip students to become effective and successful teachers.

Assessment of learning was addressed in 78.1% of the respon-

**Table 3**

*Respondents' perceived area of difficulty during first year of teaching physical education.*

Area of Difficulty (n)	Yes		Undecided		No	
	n	%	n	%	n	%
Facilities/equipment (127)	68	53.5	10	7.9	49	38.6
Discipline (127)	63	49.6	8	6.3	56	44.1
Special needs populations	52	46.0	14	11.0	61	48.0
Schedule interruptions (127)	58	45.7	16	11.8	54	42.5
Personal fatigue	56	44.1	12	9.5	59	46.5
Assessment/grading (127)	53	41.7	12	9.5	62	48.9
Classroom management (126)	56	40.5	8	6.3	67	53.2
Parental contact (127)	51	40.2	20	15.7	56	44.1
Differences in skill level (128)	61	39.8	14	10.9	63	49.2
Liability concerns (127)	41	32.3	27	21.3	59	46.5
Motivating students (127)	40	31.5	4	3.1	83	65.4
Lack admin. support (127)	33	26.0	11	8.7	95	65.4
Curriculum selection (127)	27	21.3	15	11.8	85	66.9
Colleague relationships (125)	21	16.8	12	9.6	92	73.6
Locker room supervision (97)	16	16.5	16	16.5	65	67.0
Lesson planning	20	15.6	13	10.2	95	74.2
Teacher/student relationships (128)	14	10.8	6	4.7	108	84.4
Teaching sport skills (128)	10	7.8	4	3.1	114	89.1

dents' coursework; however, this means that over one fifth of the teachers surveyed did not receive assessment of learning concepts in their undergraduate program. Content standards and the assessment of learning are currently a major influence in educational reform and of concern especially relative to governing bodies and accrediting agencies (Bennett and Peel, 1994). Teachers and administrators have received a mandate to provide evidence that assessment of learning is occurring. In addition, the results reported in Table 3 indicate that 41.7% of the respondents experienced either moderate or extreme difficulty in the area of assessment responsibilities during their first year of teaching. Consequently it appears that university programs will need to provide more assessment tools and experiences to better prepare PETE students.

Since effective communication is essential for successful teaching, it is of concern that almost 30% of the respondents reported that communication skills were not addressed in their undergraduate PETE programs. These results seem to reinforce the findings of other researchers (Bahneman, 1996, and Fernandez-Balboa, 1997) who identified a need for more emphasis on the development of communication skills within teacher preparation. This deserves consideration by those establishing curricular requirements within teacher education programs.

It is interesting that over a third of the respondents received no instruction in sports law. Given the litigious nature of our society, the nature of the teaching and learning activities in physical education, and the percentage of school injuries that take place during physical education classes, sports law should be addressed in all undergraduate physical education programs. It is extremely important to adequately inform PETE students about sports law issues in order to better ensure the safety of their students and re-

duce the possibility that they will be the targets of lawsuits in the school system in which they are employed. Unfortunately, however, the newly implemented health and fitness teaching endorsements in the state of Washington do not include specific requirements for sport law.

It is unfortunate that over 40% of the respondents received no instruction regarding how to integrate movement into other academic subject areas. Subject integration provides alternate ways to introduce and reinforce concepts. In addition, movement activities that are linked to other subject areas, challenging students to think, are motivating, and promote wholistic learning, particularly for kinesthetic learners (Pangrazi, 2001).

*Perceived Value of Components in Preparing One to Teach*

The high percentage of respondents who rated student teaching as valuable in their preparation to teach is consistent with Knowles and Cole (1996) and Guyton and McIntyre (1990) who have argued that teachers generally acknowledge their student teaching experience as the most beneficial component in their preparation to teach.

Management, sports skills/knowledge, teaching methods, organization, and lesson planning were rated highly in regards to preparation for teaching by over 85% of the respondents. These results concur with Graber (1995), Rink (1993), and Shulman (1987) who have contended that the development of pedagogical skills during the teaching certification program, is central to fostering effective teaching.

Given the litigious nature of our current society, the low rating for the perceived value of sports law concepts is both surprising and a cause for concern. The low rating may be partially

related to the quality of instruction that was received rather than the importance of the concepts. If that were to be the case, then PETE programs should consider alternative approaches to presenting sports law concepts, including field based assignments and direct instruction from members of the legal profession.

Historical perspective on physical education ranked the lowest in perceived value by a large margin. This finding is congruent with research by Norback and Wattay (1994) whose results indicated that historical foundations were ranked low among the knowledge domain concepts considered to be important for physical education teachers to perform their jobs competently. PETE professionals should consider the fact that so few respondents perceive historical perspective on physical education as valuable. It appears that either the material needs to be presented in a way that is more relevant to the students and application made to their future teaching, or it should be dropped from the required coursework.

### *Areas of difficulty*

It is not surprising that teaching sports skills was the least perceived area of difficulty since most PETE programs require teaching majors to complete a comprehensive set of activity courses, as well as methods courses, which provide them instruction regarding how to effectively teach a variety of movement skills. It is also not surprising that most of the respondents reported little or no difficulty in writing lesson plans since most PETE programs provide much practice in lesson plan design and require daily written plans during student teaching.

The results suggest that most respondents were successful in establishing positive relationships with both their students and colleagues during their first year of teaching. This appears to be essential because teaching is primarily a human relations enterprise. These results seem to indicate that the teacher selection process has been successful in identifying those individuals who have the interpersonal skills that enable schools to build a positive building climate. However, it is notable that over 40% of the respondents indicated that they experienced difficulty in dealing with parents during their first year of teaching. This finding may be at least partially related to difficulties with discipline and assessment.

Personal fatigue ranked as a high area of difficulty during the first year of teaching by almost half the respondents. This is not surprising since the combination of first time preparation for classes, learning the school procedures, developing relationships with colleagues and students, learning all of the new names, being on one's feet all day, and having vigor and enthusiasm for each class session is demanding physically, mentally and emotionally (McGaha and Lynn, 2000). In addition, once a contract is signed a new teacher is often expected to coach one or more sports. This can involve travel and late hours that impinge upon sleep and/or personal time.

Two other categories that were perceived as areas of difficulty by at least 40% of the respondents were discipline and management. Both of these categories could present challenges that are specific to a particular teaching location such as the demographics of the student population, administrative support, budget, and class scheduling. Despite the fact that these two areas are given significant emphasis within most PETE programs, both in the classroom and in field experiences, it is impossible to anticipate every

possible situation that may arise on the job as a physical education teacher. Indeed, management and discipline have been identified as common difficulties for first year teachers (Wendt and Bain, 1989; Truog, 1998).

Facilities and equipment was rated as an area of difficulty by over half of the respondents. This is not surprising since curricular offerings can be significantly affected by the lack of both space and unit specific materials, thus limiting both the creativity of the teacher and the skill development of the students. In addition, the new teaching situation may be vastly different from the experience in the college/university methods classes or in the fieldwork or student teaching settings that were part of the undergraduate preparation. Facing these new challenges and making the necessary adjustments can pose a significant difficulty, especially during the first year. A related problem is that, periodically, schedules are interrupted by assemblies and other school programs, so that physical education programs have to modify plans and conduct classes in different locations.

It is interesting that almost half of the respondents (46%) reported that they had initial difficulty working with special needs populations. This finding is not surprising even though almost all of the respondents reported that they have completed related coursework. Specifically, new teachers who are trying to instruct and control an entire class may struggle to also find time and energy to assist those who need individual attention. A related problem is meeting the needs of students of different skill levels. Specifically, for teachers to provide a successful environment for all students, skill level based groupings should be provided for both advanced and lower skilled students. Splitting students into different level games and activities, however, requires additional work for teachers in regards to assessment, task modification, and supervision.

It is notable that most respondents indicated that they did not experience difficulty in motivating students. In contrast, the literature often presents this as a significant area of challenge (Rikard and Knight, 1997; Graber, 1995). This discrepancy may be partially explained by nothing that those teachers who do have significant difficulties motivating students tend to leave the teacher profession within a few years (i.e. the average teaching experience of the respondents in this study was over 15 years).

### *Response rate*

A higher response rate than 37.7% was hoped for. There are several possible reasons why the response rate was not higher: 1) The questionnaires, which included a university logo, may have been perceived as advertising materials and been thrown out without being read, 2) The surveys, which were addressed to Physical Education Coordinators, may have been misdirected to someone else in the building (e.g. athletic director), 3) Some of the directors of physical education may not have been certified in physical education and, consequently, felt unqualified to respond, and 4) non-respondents may simply have been less committed or less interested in professional issues.

### *Limitations*

Since the respondents in this survey averaged over 15 years of teaching experience the information may not be reflective of current practices related to PETE. Surveying a representative sample

of the physical education teachers within the state of Washington who had graduated within the last five years would probably provide more accurate information about current practices.

It might have also been helpful to have respondents indicate the perceived value of the concepts based on the way in which it was taught or the teaching ability of the professor rather than strictly the value of the concept (i.e. include two separate questions with one being the importance of the material or experience and the other being the effectiveness of presentation or delivery).

### Conclusions and Recommendations

There is no one prototype that can or should be identified as the ideal model for PETE. The diversity from one institution to another in mission, size, institutional constraints, faculty competence, and the emphasis placed on teacher education requires differences in curriculum structure. However, there are common aspects necessary to develop high quality physical education teachers and these need to be given sufficient attention.

The results of this study suggest the need for continued reform of methods courses within PETE to reflect instruction in best practices in teaching and application to real-world settings (e.g. management, discipline, and assessment). Possible avenues for providing additional learning experiences for PETE students are the use of current K-12 teachers as guest speakers, class field trips, and extensive early field experiences with observation opportunities.

With the increasing societal concern and involvement in fitness, the communication of fitness concepts as well as fitness testing require sufficient emphasis within PETE. In addition, as some states shift from a physical education to a health/fitness emphasis, a more thorough and comprehensive preparation in health issues will be necessary (Washington State Learning Commission, 1998).

Given the importance of the student teaching experience, as supported by this study, and in agreement with Guyton and McIntyre (1990), the matching of student teachers with experienced teachers, who have developed exemplary programs, is critical. Ideally, student teaching should provide an extended opportunity for interaction with a teacher who has strong instructional skills, who can provide accurate feedback to student teachers, and who can model how to establish positive relationships with K-12 students.

In regards to the first year of teaching, school districts should strongly consider implementing a formal mentoring system. Such a system should identify, train, and compensate experienced teachers who have been successful in the classroom and match them with first year teachers in an effort to make the entrance into the teaching profession smoother and less stressful (Wright and Smith, 2000).

Program assessment by students of PETE programs on a regular basis is essential to quality education. Specifically, both graduating seniors and former graduates, who are completing their first year of teaching, should be regularly surveyed in order to provide essential information that may result in PETE program improvements. These assessments should focus on such issues as quality of placement, performance of cooperating teacher and supervisor, relevance of particular courses in preparing one to teach, and the value of specific assignments within the PETE program.

In summary, it is the duty of all PETE professionals to pro-

vide appropriate education and support to prospective teachers so that they will have the necessary tools to make a successful transition into full time teaching. Given the unique and essential contributions that high quality physical education programs can make in the lives of K-12 students, the PETE enterprise must be carried out with passion, dedication, and understanding.

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# Undergraduate Physical Education Teacher Preparation: What Practitioners Tell Us

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## Introduction

Many believe academic performance in American elementary, middle and high schools is declining sharply. This perceived decline has frequently been attributed to poor teaching and this, by extension, poor teacher preparation. This perception has been supported by educational scholars as well as citizens committed to improving the educational process. As far back as 1983, *A Nation at Risk* (National Commission on Excellence in Education, 1993) outlined disturbing inadequacies in the way the educational process is conducted. Although this frankly written document moved universities and colleges to examine the manner in which they prepared pre-service teachers, teacher education programs in the United States continued to be in disarray (Goodlad, 1990).

Over the past decade, there is evidence of significant scrutiny by researchers, practitioners, parents, politicians and the press regarding the goals, approaches and content of teacher education programs. Concurrently, there has been a strong movement towards standard-based programming, as well as increased attention from national professional societies and accrediting agencies. Despite these efforts, pre-service teacher education programs remain largely unchanged. Generally, these programs deliver a combination of subject matter knowledge, pedagogical knowledge, knowledge of learners and the learning of professional values and conduct (Metzler and Tjeerdsma, 2000). If anything has changed, it may be the relative amount of time given to each aforementioned area. Changes appear to be related to the priorities, resources and length of individual programs. Consistency across institutions is not apparent. Thus, the fundamental question remains: how can we better equip teachers with the skills necessary to conduct quality educational programs in schools (Bain, 1990)?

Despite the acknowledged need for improved, high-level preparation, pre-service teacher education program assessment has

not received systematic attention. Metzler and Tjeerdsma (2000) have referred to program assessment as the “orphan” of teacher education, as it lies somewhere between pedagogy and research. Although teacher preparation can be regarded as a lifelong process, the preponderance of research has focused on formal teacher preparation delivered in colleges and universities (Bain, 1990). Furthermore, this research has narrowly examined selected aspects of pre-service education (e.g., student teaching, or the values held by pre-service teachers upon their arrival in college) (Ducharme and Ducharme, 1996).

As noted, despite general dissatisfaction with the preparation of teachers, there have been few significant curricular changes in teacher preparation (Metzler and Tjeerdsma, 2000). Changes made have come largely from “site specific” discussions at individual institutions, as well as follow-up surveys with recent graduates and/or their supervising teachers.

Although the appropriate preparation of teachers in all curricular areas is of paramount importance, we would argue that the preparation of physical education teachers requires particular attention. Because of physical education’s marginalized value within schools (Bain, 1990), its very existence is threatened. If the quality of teaching and learning in physical education is significantly sub-par, critics will have ample reason to argue for this program’s reduction or, perhaps, complete removal.

A positive recent development in the preparation of physical education teachers is increased collaboration among teachers in higher education and their professional counterparts in the public schools (Metzler and Tjeerdsma, 1000; Van der Mars, personal communication, September 30, 2001). Despite this collaboration, practitioners’ perspectives concerning pre-service teacher education is missing from the discussion—particularly in the area of curriculum development.

**Table 1**  
*Teacher Demographics*

Setting	Grade level taught	Educational Level	Years of Experience
Rural (167)	K–8 (199)	Undergraduate (200)	1–5 years (71)
Suburban (96)	9–12 (60)	Master's degree (71)	6–10 years (45)
Urban (81)	K–12 (86)	Beyond one Master's (84)	10–20 years (96) More than 20 years (144)

Galluzzo and Craig (1990) have outlined four purposes for teacher education program research: accountability, improvement, understanding and knowledge. Although we hope this work increases the professional knowledge base, our initial reason for conducting this research was to prepare our students to teach physical education in appropriate and meaningful ways consistent with the challenges of today's physical education instruction. Thus, the purpose of this research was to provide practitioner data to assist faculty in determining curricular decisions and future directions in undergraduate physical education programs.

**Method**

*Participants*

Kindergarten through twelfth grade physical education teachers from Wisconsin, Oregon, Washington, Idaho and California participated in this investigation during the winter and spring of 2000. Wisconsin teachers provided 256 responses, while 103 responses were received from teachers in the Pacific Northwest. Teacher demographics are outlined in Table 1. Table 1 demonstrates that the sample is both highly educated (with 44% of par-

ticipants holding at least a Master's degree) and experienced (with 40% teaching for more than 20 years, and 67% teaching for ten years or more). The majority of these teachers (49%) taught in a rural setting, with the remainder relatively equally distributed between suburban and urban settings.

*Survey Development*

Survey development began with the designing of survey items and scales by the researchers. Next, four professionals, noted for expertise in pedagogy and curriculum design, reviewed the survey items and format and provided feedback on content validity, appropriateness of demographic information and readability. The seven-page survey was then pilot tested on six elementary and secondary physical education teachers who provided written and verbal feedback. Once again, the survey was modified based on feedback regarding the clarity of questions and directions, readability and time to complete the survey. The revised survey consisted of 24 questions covering the following areas: a) teaching demographics, b) value of selected teaching approaches, c) value of selected teaching certifications, d) importance of selected functional teaching

**Table 2**  
*Sample Questions*

Q-1 Listed below are some approaches to teaching physical education. Based on your experience as a physical educator, do you place no value, low value, medium value, or high value on the following teaching approaches?

How much value do you give to each approach

	None (0)	Low (1)	Medium/Low (2)	Medium (3)	High/Medium (4)	High (5)
1. Adventure education (e.g. team building)						
2. Low organized games (e.g. lead up games)						
3. Physical fitness activities (e.g. weight lifting)						

Q-2 Of the approaches listed in Q-1, which do you feel are most important for our profession? (Please write the approach number from Q-1 on the appropriate line.)

Most important \_\_\_\_\_  
 Second most important \_\_\_\_\_  
 Third most important \_\_\_\_\_

skills, e) importance of selected activity based competencies, f) importance of selected course work, g) importance of selected programming areas, and h) importance of selected in-service training topics. At the end of the survey, respondents were encouraged to add qualitative comments/suggestions regarding pre-service teacher education preparation. The wording was somewhat open-ended, allowing a wide variety of responses.

Respondents were asked to respond to each option within a question on a six-point Likert scale ranging from 0 (no value) to 5 (high value). Questions had anywhere from 5 to 14 possible options, with no limits placed on respondents' answers. That is, they could give as many (or as few) fives, fours, threes, twos, ones or zeros as they chose. A follow-up question then directed them to choose their first, second and third most valued option. An example of each type of question is provided in Table 2.

*Procedures*

Using a list of public and private schools in Wisconsin, each K-12 physical education department in Wisconsin received the survey and a cover letter with a return-stamped envelope. To survey physical education teachers in Oregon, Washington, California and Idaho, a sample of convenience was used. Survey responses were gathered at an annual physical education practitioners' conference in Portland, Oregon, attended by 311 physical education teachers. At the start of the conference, attendees received the survey and cover letter in their registration packets. Twice daily during the two-day conference, attendees were publicly encouraged to complete the survey by conference organizers. Completed surveys were placed in clearly marked boxes placed throughout the conference grounds.

*Data Analysis*

Data were examined by way of descriptive statistics. Frequency counts, percentages, means and standard deviations were tabulated. Data were entered and reduced, using the Statistical Package for the Social Sciences (SPSS) version 10.

**Results**

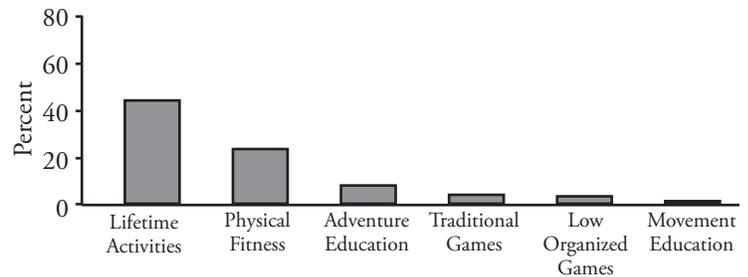
Survey return rate was 31% for the Wisconsin survey respondents and 33% for attendees at the professional conference in Oregon. Data across all respondents will be initially presented, followed by, where appropriate, a breakdown by grade level taught (K-8 and high school). The data were broken down by grade level as a result of the greater number of K-8 practitioners in the study and because high school and K-8 teachers answered certain questions in a significantly different manner. Finally, qualitative responses were provided by 133 respondents and will be discussed throughout this section whenever appropriate.

*Most Important Teaching Approach*

Respondents were asked to indicate which teaching approach was most important for the physical education profession, given the following choices: a) adventure education, b) low organized games, c) traditional games (e.g. team/individual sports), d) movement education, e) lifetime activities, and f) physical fitness activities. A lifetime activities approach was viewed as significantly more important than other teaching approaches listed. Forty-five percent of the respondents selected lifetime activities as most

important, while physical fitness was selected by 24% of respondents. Although anecdotal comments by respondents suggested an interest in adventure education, only 9% of respondents felt this approach was the most important to our profession. These results are presented in Figure 1.

**Figure 1**  
*Most important teaching approaches*



When grade level was taken into account, it became evident that high school physical education teachers viewed lifetime skills as extremely valuable, with 63% identifying this as the most important curricular approach. Interestingly, lifetime skills was also viewed as the most important teaching approach (35%) by teachers working in elementary and middle school. Both elementary educators and those working at the secondary level felt that a physical fitness approach was important, with 24% and 21% respectively making this curricular area their top priority.

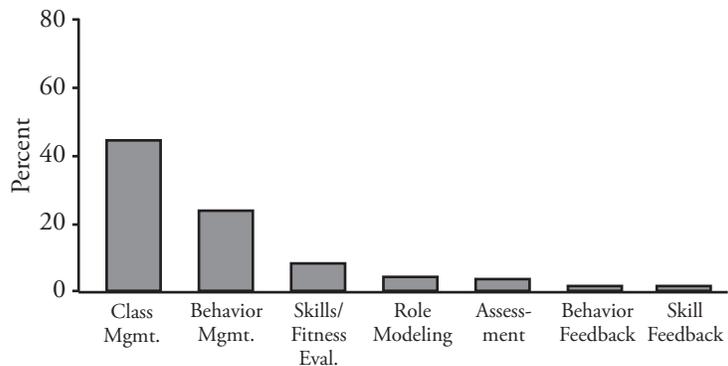
Qualitative data supports the above findings, perhaps best reflected in the following comment from an elementary school physical educator: "Physical educators must understand that the ultimate goal of your field must be to encourage ALL people to lead an active lifestyle." A middle school teacher stated: "I believe the most important thing we need to teach students is how to be fit for life. Activities must all be packaged so they will have fun, experience success and learn that it's not just for today's class or grades but also for life!"

The importance of creating an atmosphere of fun and play was echoed by a number of professionals. A K-12 educator concluded, "Play is one of the most important factors in a healthy joyous life experience. I want them aware they have moved (sweated, heart rate elevated and muscles used) and are smiling and giggling and looking forward to more."

*Most Important Teaching Skills*

Respondents indicated which skill was most important in teaching effectively, given the following choices: a) behavior management, b) personal skill proficiency, c) classroom organization and management, d) skill/fitness/knowledge evaluation, e) providing feedback regarding behavior, f) assessment (measurement and evaluation), g) provision of feedback regarding physical skill performance, and h) personal fitness level (role modeling). Skills concerning "classroom management" (38% of respondents) or "behavior management" (29% of respondents) dwarfed all others in terms of importance (Figure 1). The next most popular choice—"fitness skill evaluation"—garnered 10% of respondents' vote. When broken down by grade level taught, these data remained consistent.

**Figure 2**  
*Most important teaching skills*



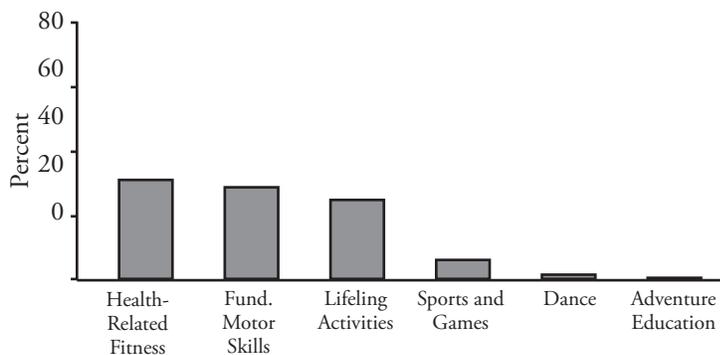
Qualitative data supported the importance of behavior management and classroom management techniques. “I believe classroom organization, management, and behavior management are very important,” stated one middle school teacher. An elementary teacher agreed: “There needs to be more realistic discipline techniques taught and they need to practice them in college.” A high school teacher echoed this concern: “It is very unfortunate that new teachers need to know so much about behavior control, but without it they will not survive.” A middle school educator indicated that practicing teachers also need support and ideas in behavior management, stating, “Even as an existing teacher I am constantly looking for new ideas.”

*Most Important Activity Based Competencies*

Reflecting on their preparation and teaching experience, respondents were asked to indicate the amount of emphasis that should be given to the following activity based competencies in undergraduate physical education programs. In other words, they were to determine which were the most important in terms of teaching effectiveness. They were given the following choices: a) fundamental motor skills, b) sports and games, c) lifelong leisure activities, d) dance and rhythms, e) exercise and health-related fitness, and f) adventure education. Exercise and health-related fitness (31%), fundamental motor skills (29%), and lifelong leisure activities (25%) were valued at high levels (Figure 3). Conversely, activity-based competencies in the areas of sports and games (6%), dance and rhythms (1.5%), and adventure education (1%) were viewed as much less valuable.

The grade level taught had a significant bearing on what activity-based competency was viewed as the most important. While 44% of elementary and middle school teachers valued fundamental motor skills highly, only 16% of high school teachers felt this way. Conversely, 45% of high school teachers viewed lifetime skills as important, while 35% of elementary and middle school teachers felt this way. With regard to exercise and health related fitness, both elementary/middle school teachers and high school teachers were in agreement regarding its worth (30% and 26% respectively).

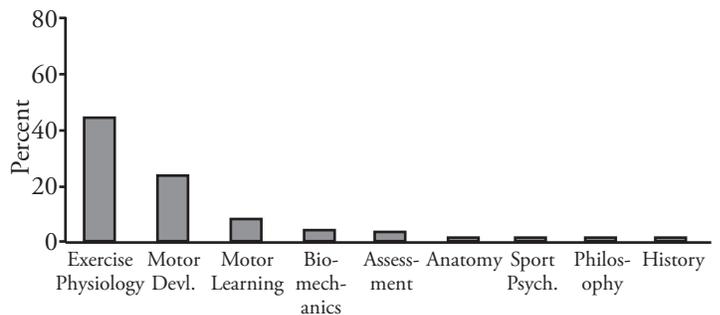
**Figure 3**  
*Most important activity based competencies*



*Most Important Subject Area*

Participants indicated which academic subject was most valuable in terms of their preparation, given the following choices: a) exercise physiology, b) assessments (measurement and evaluation), c) human anatomy, d) biomechanics/kinesiology, e) motor learning, f) motor development, g) history of physical education and sport, h) sociology of sport, i) sport and exercise psychology, and j) philosophy of sport. The overall results are presented in Figure 4.

**Figure 4**  
*Most important subject area*



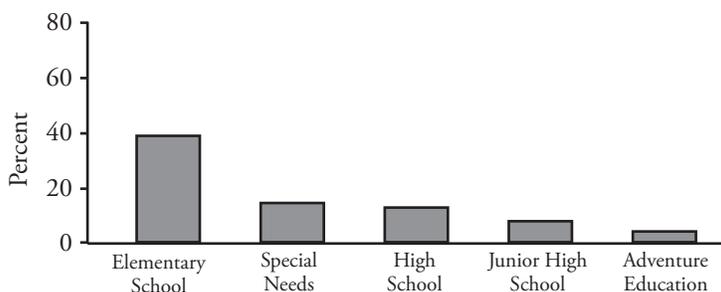
At the high school level, 38% viewed exercise physiology as the most important subject while 27% of elementary and middle school teachers shared this perspective. The value of exercise physiology was best demonstrated by the following comment from a high school educator: “I do integrate a good deal of physiology and human kinetics into my classes. I want physical education seen as a science class, with their bodies as the lab subject.” While elementary and middle school teachers felt that motor development was critical to their pre-service development (26%), only 10% of high school teachers felt this way.

History, sociology of sport, exercise and sport psychology and philosophy were seen as significantly less important. Less than 1% of participants identified these subjects areas as the most important.

*Most Important Instructional Area*

Teachers participating in this investigation indicated which instructional area was of most importance given the following choices: a) physical education programming for students with special needs, b) physical education programming for elementary school students, c) physical education programming for junior high school students, d) physical education programming for high school students, and e) adventure education programming. As shown in Figure 5, competency in physical education programming for elementary school was seen as more important than then other programming areas (38% of respondents). As would be expected, a majority of K-8 physical educators (55%) believed programming for elementary schools was most important. Interestingly, 25% of high school physical education teachers felt the same way. Programming for students with special needs was viewed as the most important for the same number of K-8 and high school teachers (15%). Anecdotal comments suggested that pre-service teachers have less experience with elementary-aged students, and thus begin their teaching tenure with less well developed tools.

**Figure 5**  
*Most important instructional area*



### *Experiential Learning*

In closing, it is important to mention the strong suggestions in the qualitative data for providing undergraduate students with hands-on teaching opportunities as early as possible in their pre-professional training. Many respondents spoke of being unprepared for teaching children after their own undergraduate curriculum. An elementary teacher, reflecting on her training summarized her dissatisfaction with the curriculum: “It has been 13 years since I graduated from college, and the most glaring omission from my preparation was hands-on learning. I honestly feel that I should have been with school-aged children and learning from real, in-the-trenches teachers who could let me absorb some of their experience and ideas.” These thoughts are echoed by another elementary educator: “Students need more real world experiences. Professors need to be aware of what present teachers are actually doing in their area and prepare students for 500+ students a week, two times a week classes etc., and a realistic prep.” One high school teacher said, “To get a better understanding of teaching health or physical education, college students need to go right to schools and observe or participate in the activities. Hands-on teaching activities, I feel, are always the best.”

### **Discussion**

Bain (1990) and Lawson (1985a) have noted that practitioners employed in the elementary, middle and high schools prefer working knowledge that blends the scientific, empirically derived with the practical and experientially gained. After examining and evaluating the data in light of the demographics of survey respondents, it appears we have both types of information. By attending to the quantitative data gathered from practicing teachers, we may be able to focus the pre-service education of physical education teachers more sharply and accurately.

A significant amount of support emerged from the data with regard to the following general categories: teaching skills, teaching approaches, and activity-based competencies. With regard to teaching skills, classroom organization and behavior management were mentioned frequently. These findings are in concert with recent data (Hellison, 1995) that suggest physical educators are leaving teaching because of the perceived increase in behavior problems and a lack of preparation in dealing with these incidents. In all likelihood, participants have observed or worked with colleagues who were not adequately prepared in classroom organization and/or behavior management techniques. From this data, it appears teacher preparation programs are not spending adequate time or resources preparing pre-service teachers to deal with a more diverse and, potentially, difficult to teach student body—a student body that, due to a reduction in contact hours, teachers don’t get to know as well. Our results point to the need to teach positive and proactive behavior management strategies originating from a sound theoretical base. Learning and practicing these skills within the context of “real world” practicum experiences appears to be essential (G. Reid, personal communication, June 24, 2001).

Regarding teaching/curricular approaches, an emphasis on lifetime activities and physical fitness activities was evident at both the K-8 and high school levels. Clearly, our sample’s attitude matches the focus at both the local and national levels (NASPE, 1995) on teaching physical skills and activities that can be enjoyed and built upon throughout one’s life, and on teaching health-related activities and concepts. One message for teacher preparation faculty includes the need for examination of curricular offerings in the basic “sports skills” classes. Should we, instead, move beyond our more traditional team and individual sport skills, and incorporate more activities that would appeal to a broader range of students (e.g., rock climbing, skateboarding or archery)? It seems important to provide students with activities that could be pursued for a lifetime.

A second message concerns the teaching of health-related fitness. Are we preparing physical education students to teach these concepts in a meaningful, understandable and integrated manner? Are school-aged students exposed to approaches to teaching health-related fitness that are educationally sound and enjoyable? A potential approach would be to prepare physical education students to seamlessly combine the two curricular approaches (lifetime activities and health related fitness), thereby providing school-age students the skills and knowledge to pursue lifetime activities, which encourage and incorporate physical fitness. A potential issue involves educating students beyond the gymnasium and fields and promoting healthy lifestyle behaviors and skills. One could argue that the teaching of lifetime skills and physical and health-related fitness are important goals in any sound physi-

cal education program; the clear support from practitioners gives added credence to this position.

With regard to coursework offered within the physical education major, a somewhat surprising finding was the high ranking “exercise physiology” received from all teachers. Although one might expect college faculty to rank this scientifically based course highly, for practitioners to do so, perhaps, further supports the previously noted emphasis on health-related fitness and the teaching of lifetime activities. Less surprising was the importance placed on motor development, especially by teachers at the elementary and middle school levels. These findings support instruction in the development, structure and function of physical systems and how these systems interact in the development of motor skills.

An unexpected finding was the low level of importance attached to adventure education, both in terms of a curricular approach, and in terms of additional in-service training. This was unanticipated, given the recent attention to affective goals in physical education (Gallahue, 1996; Graham, 2001; Hellison, 1995), and recent attention given this approach at national and regional teacher education conferences. In the state of Wisconsin, a number of school districts have invested in climbing walls and challenge courses, thereby combining physical education with experiential concepts. Perhaps surveyed practitioners have had little exposure to adventure programming or do not perceive adventure education to be closely linked to physical education. Indeed, adventure education is taught predominantly in therapeutic recreation and experiential education departments rather than physical education departments (Roth, 2001). As well, there may be concerns regarding risk, liability and the costs associated with starting up and maintaining a program (e.g., building climbing walls). Given their recent experiences in Wisconsin, the authors expected adventure education to garner more support.

In summary, pre-professional preparation faculty must closely examine the curricular opportunities afforded pre-professionals with respect to exposure to lifetime activities, physical and health-related fitness and behavior management and classroom organization. They must specifically analyze the depth and breadth of opportunities afforded students to work directly with children in well-supervised practicum settings. The opportunity to apply theory to practice and receive appropriate feedback from faculty, cooperating teachers, peers and children allows for individual growth and ultimately, growth within the profession. Assessment of undergraduate curriculum and utilization of input from practitioners provides another voice in the attempt to improve the preparation of future professionals. As professionals involved in curricular revision, we would recommend this data be used to help guide the process, but not to drive it. We have gained insights from practitioners; such insights will assist us in shaping the direction of teacher preparation.

## Limitations

While examining the survey data, a number of questions need to be asked with regard to curricular revisions. Do the practitioners who completed this survey have significant professional information and does their extensive experience in the field make them more or less open to change? How much stock should be given to gathered data when shaping future curriculum, and how closely does the survey data align with “best practices” within our physical education profession? How do we determine what is valued and what is not? Results of this study are limited by the fact that there is no guarantee that the surveyed practitioners represent a highly qualified group of experts. On the other hand, herein lies the appeal and strength of this study. We are hearing voices of practitioners.

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