Differences in Exercise Identity Between Secondary Physical Education Students and Athletes

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Abstract

Texas (USA) public schools require high school students to take one year of physical education to graduate. However, students can meet this requirement by participating on a state sanctioned athletic team for a year. The Texas Education Agency states the physical education curriculum should teach affective attitudes and values that will encourage students to be "physically active and healthy for a lifetime" (TEA, 2010). Only physical education students are exposed to this curriculum that specifically incorporates instruction and knowledge related to physical education and fitness concepts. The purpose of the study was to determine if significant differences existed between physical education students and students who chose to participate in sports regarding exercise identity. Data were collected from 207 students with 151 in the physical education group and 56 athletes with the Exercise Identity Scale (EIS) (Anderson & Cychosz, 1994). Scores on the EIS range from 9 to 63. Higher scores indicate greater exercise identity. The physical education group had an average EIS score of 32.9 and athletes had an average score of 45.4. T-test analysis determined athletes had significantly higher exercise identities than physical education students at the $p < .000$ level.

Introduction

Despite the well documented benefits that regular exercise and physical activity have on the immediate and long term health of adolescents, the United States Center of Disease Control (CDC) 2008 revealed that only 34.7% of high school students reported being vigorously active for at least 60 minutes a day for at least 5 days from the previous week. In 2007, 54% of high school students reported attending physical education; however, only 30% of them attend daily physical education classes (CDC, 2008). The United States Department of Health and Human Services recommend that adolescents should engage in 60 minutes or more of moderate to vigorous - intensity aerobic physical activity on a daily basis (USDHHS, 2008). The Youth Risk Behavior Survey 2007 results determined that 65.3% of adolescents did not meet this minimum recommendation for physical activity.

Reports by the National Association for Sport and Physical Education (2002), the Secretary of Health and Human Services and the Secretary of Education to the President of the United States (U. S. Department of Health and Human Services, 2000b), and Healthy People 2010 (U. S. Department of Health and Human Services, 2000a) all identified increasing rates of physical activity for adolescents as primary goals for improving health and reducing obesity rates in adolescents. The National Association for Sport and Physical Education stresses the importance of physical education and fitness knowledge and defines a physically educated person as being physically active on a regular basis and knowing the implications and benefits of involvement in physical activity and its contribution to a healthy lifestyle (National Association for Sport and Physical Education, 1992).

Numerous researchers and reports have stressed the importance that physical education knowledge and activities play in promoting physical activity in school aged children that will continue into adulthood (Corbin, 2000; McKenzie & Sallis, 1996; Morrow, Jackson, & Payne; 1999; National Association for Sport and Physical Education, 2004; Sallis & Patrick, 1994; U. S. Department of Health and Human Services, 1990; U. S. Department of Health and Human Services, 1996). Physically active adolescents develop and maintain higher rates of physical fitness into adulthood (Blair, 1993; Colditz & Mariani, 2000; Lee, Blair, & Jackson, 1999; Pate et al., 1995; Sallis, 1993), and active adolescents are more likely to be physically active adults (Telama, Yang, Laakso, & Viikari, 1997). However, many youth are not enrolled in any physical education classes. In fact, most states in the United States have de-emphasized and reduced the amount of time required that students spend in secondary physical education classes (Morrow et al., 1999; U.S. Department of Health and Human Services, 1996; U. S. Department of Health and Human Services, 2000).

Exercise Identity

Role identities give meaning and importance to past behavior as well as provide direction to future behavior (Anderson & Cychosz, 1995; Anderson, Cychosz, & Franke, 1998; Anderson, Cychosz, & Franke, 2001; Storer, Cychosz, & Anderson, 1997). Individuals with strong exercise identities validate and reinforce their identities by exercising, and the validation of the exercise role identity increases the likelihood that the individual will continue to adhere to exercise programs in the future. Exercise and the social interactions that individuals develop through exercise become important to an exerciser's role identity (Storer et al., 1997; Anderson et al., 2001; Anderson et al., 1998). Helping individuals develop stronger exercise identities will help them adopt and maintain more physically active lifestyles (Anderson et al., 1998; Anderson et al., 2001; Cardinal & Cardinal, 1997). Several studies have demonstrated the association between exercise behavior and exercise identity (Anderson & Cychosz, 1995; Anderson et al., 1998; Anderson et al., 2001; Cardinal & Cardinal, 1997; Gray, Soukup, & Sherals, 2007; Soukup & Clayton, 2008). The Exercise Identity Scale (EIS) was developed to identify individuals who would and would not be likely to exercise and be physically active on a regular basis (Storer et al., 1997; Anderson et al., 1998; Anderson et al., 2001). The purpose of the study was to determine if significant differences existed between physical education students and students who chose to participate in sports regarding exercise identity.

Method

Participants

A stratified sample of students was drawn from an inner-city high school in Texas. Data were collected from 207 students with 151 of the participants having completed their physical education requirements for graduation and 56 of the students having participated in athletics. The distribution of students by grade level was 31.1% 10th graders, 31.8% 11th graders and 37.1% 12th graders. The ethnic diversity of the participants was 8.6% African-American, 20.5% Asian, 13.9% Hispanic, and 55.6% White. The sample was 58.3% female and 41.7% male. Participants in the study ranged in age from 15 to 19 years old.

Instrumentation

The Exercise Identity Scale (EIS) was used to quantify levels of exercise identity of participants in the study. The EIS was developed by Anderson and Cychosz (1994) to measure and assess the extent to which exercise behavior is descriptive of one's concept of self (Anderson & Cychosz, 1995). The EIS is comprised of nine Likert-scaled items.

Each item can range from strongly disagree (1) to strongly agree (7) with a final score that will range from a low of 9 to a high score of 63. Higher scores indicate greater exercise identity. Alpha reliability coefficients for the scale have been reported at .94 to .95 (Anderson et al., 1998; Anderson et al., 2001). One week test-retest reliability of the scale was reported at .93 (Anderson & Cychosz, 1994), and was determined by the authors of this article to be .96. Factor analysis assessment of the EIS determined the scale to be unidimensional (Anderson & Cychosz, 1994; Anderson et al., 1998; Anderson et al., 2001) with factor loadings ranging from .74 to .89 that accounted for 68.4% of the total variance of the instrument (Anderson et al., 1998).

Data Collection

The researchers received permission for the study from the university committee for the protection of human subjects. Permission to collect data from students was obtained from a very large and diverse inner-city school district in Texas. A stratified sample of students who had either totally completed all traditional physical education classes or who all substituted their physical education graduation requirements by participating on an athletic team/teams were used for the study. All data was collected from students in one day by the lead investigator at the high school. Student and parental consent forms were obtained from all participants before data were collected. Before data were collected, the nature of the instrument and the measurements that would be obtained were explained to all participants. Participants were informed that all measurements would be confidential, and that individual results would not be seen by any other students, personnel, teachers, or administrators. All forms were in English and no student requested a translation.

Data Analysis

T-test analysis was used to test for differences in exercise identity rates between students who completed physical education classes and students who participated on athletic teams. The independent variable for the study was students who took physical education and students who participated on athletic teams. The dependent variable was the exercise identity scores of students determined by the EIS. The Alpha level for significance was established at the $p < .05$ level.

Results

A two-tailed T-test determined that the students that had substituted their physical education graduation requirement by participating in athletics had significantly higher exercise identity rates than the physical education students. The mean score on the EIS for physical education students was 32.9 and for the athletes it was 45.4. The difference in exercise identity between physical education students and the athletes on exercise identity was significant at the $p < .000$ level. Means and standard deviations for the groups are presented in Table 1.

Table 1. *Means, Standard Deviation, F Ratio, and P Value for Significance of EIS Scores for High School Physical Education Students and Athletes*

Group	M	SD	T	P
PE	32.9	14.0	5.96	0.000
Athletics	45.4	11.4		

p value for significance is .05.

Discussion

This study was conducted to determine if exercise identity rates would be higher for students who completed traditional physical education classes at the high school level when compared to students who substituted their physical education graduation requirement by participating in athletics. The data analysis determined that the students who fulfilled their physical education requirement by participating on athletic teams had significantly higher rates of exercise identity than students in traditional physical education classes.

Cognitive Instruction and Exercise Identity

Learning in physical education is through the affective, cognitive, and psychomotor domains. Students in the physical education and athletic team groups both received instruction to improve their psychomotor skills; however, only the students in physical education received cognitive instruction specifically designed to improve their knowledge of how lifelong exercise and physical activity would benefit and improve their long-term health. Several researchers have emphasized the importance that health and physical fitness knowledge plays in promoting healthy and physically active lifestyles in school children that will carry over into adulthood (Corbin, 2000; McKenzie & Sallis, 1996; Morrow et al.; 1999; Sallis & Patrick, 1994). While the cognitive domain is an important aspect of instruction in physical education; many researchers have reported that increased health and fitness knowledge related to nutrition (Chapman & Toma, 1997), cardiovascular disease (Suminski et al., 1999), sexuality and sexually transmitted diseases (Johnson, Rozmus, & Edmisson, 1999), smoking (Schofield, Lynagh, & Mishra, 2003), and physical activity (Morrow et al., 2004) did not result in improved fitness behaviors. Simply knowing the benefits of how regular exercise

and lifelong physical activity will improve student health did not seem to be enough on its own to improve the exercise identity of the students in these studies.

Affective Instruction and Exercise Identity

The results of this study seem to suggest that positive affective values and attitudes related to and developed through regular exercise, physical activity, and participation in sport significantly impacted the exercise identities of the athletes in the study. The athletes seemed to have developed and internalized stronger exercise identities through their sport participation than the students that took physical education. "Knowledge can have little impact on a person's behavior if one's social identity carries the message that he or she is not the kind of person who engages in such behavior" (Storer et al., 1997, pp. 266-267).

Sport Team Participation and Exercise Identity

Another factor that could account for the significant differences in exercise identity rates of the students is that most of the students that participated in athletics continued participating on their athletic teams after they finished their graduation requirements for physical education. The athletes continued to have opportunities for supervised practices, scrimmages, games, competitions, conditioning, and training sessions with coaches associated with their sports before and/or after-school during their sophomore, junior and senior years in high school. The students who had taken physical education to fulfill their graduation requirements had no opportunities available from the school to participate in supervised after-school physical activities. According to the exercise identity literature, the on-going participation of the athletes in after-school physical activity and on school sponsored sports teams would have continued to strengthen their exercise identities.

Physical Education, After-School Physical Activities and Intramural Clubs

The researchers recommend that physical education be a required course in schools for every year and that no other classes be allowed to substitute for the physical education requirement. Participation in after-school physical activities and intramural programs; that are supervised by certified physical educators, should be made available to all students in an attempt to increase rates of physical activity and to help develop and reinforce positive exercise identities in all students. The Centers for Disease Control and Prevention (2000) recommended that supervised after school activities and programs, like intramurals and physical activity clubs, need to be developed and implemented on a national level for all school children. Wechsler, Devereaux, Davis, and Collins (2000) recommended that all schools should offer quality intramural programs that feature a diverse selection of competitive and non-competitive, structured, and unstructured activities that meet the needs, interests, and abilities of all students. After school programs would provide students with the opportunity to be physically active and to engage in regular exercise behaviors that will improve their exercise identities and motivate them to be more active on a regular basis. By improving the affective aspects of physical education, like exercise identity, students will be motivated to adopt new behaviors that will help them develop and maintain healthier and more active lifestyles.

Implications

Physical inactivity has contributed to an unprecedented epidemic of childhood obesity that is currently plaguing the United States (Centers for Disease Control and Prevention, 2000). Quality physical education classes taught by licensed physical educators (NASPE, 2002) should provide a daily minimum of 60 minutes of moderate to vigorous levels of physical activity for elementary students (Corbin, Pangrazi, Beighle, Le Masurier, & Morgan, 2004) and 45 minutes to secondary students (NASPE, 2004).

These physical education classes should incorporate curriculums that help students develop knowledge, attitudes, skills, behaviors, and confidence to adopt and maintain physically active lifestyles, while providing opportunities for enjoyable physical activity (CDC, 2000). To ensure quality instruction, physical education classes must be limited to the class sizes of other school subjects (CDC, 2000; NASPE, 2002).

Texas needs to develop standardized assessment instruments that will accurately measure information on health and physical education knowledge, attitudes, and fitness levels of all high school students. Students that are inactive, overweight/obese, have low rates of fitness knowledge, and low exercise identity rates need to be identified and evaluated throughout their entire public school education (K – 12). Curriculums need to be specifically created that will improve exercise identity and motivate all students to be more physically active and exercise on a regular basis.

Physical activity instruments like pedometers, heart rate monitors, and questionnaires like the PDPAR could be used by physical educators to assess if students are currently achieving recommended rates of physical activity and exercise to maintain proper health. Simple body composition assessments like the body mass index, waist to hip ratio, and percent body fat could be used to evaluate possible future health risks for students. The EIS could also be used to assess current and future attitudes of students towards exercise and physical activity. Recent research has shown that children as young as three are not active enough and are developing overly sedentary lifestyles and behaviors (Reilly et al., 2004). An estimated 10.4% of two to five year-olds, 15.3% of 6 to 11 year-olds, and 15.5% of 12 to 19 year-olds are overweight (Ogden, Flegal, Carroll, & Johnson, 2002). Among children 6 to 19, 31% are at risk of being overweight (Hedley et al., 2004). By using these types of assessments together, educators could quickly and easily identify and intervene with students who are sedentary, overweight/obese, and have poor exercise identities.

Recommendations for Future Study

Data for this study were collected from a very limited population. Further data needs to be collected from an expanded population of participants distributed across the United States to determine if significant differences in exercise identity exist between physical education students and athletes at the national level. Further research is also recommended to determine if significant differences between physical education students and athletes regarding exercise identity would persist as they aged and graduated from high school and were no longer associated with high school teams and clubs.

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