2012 Fall

Kentucky Association of Health, Physical Education, Recreation and Dance

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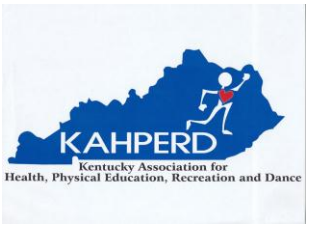

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Message from the President

Greetings! Thank you for reading the most recent issue of the KAHPERD journal. The journal is just one of the outstanding benefits of becoming a KAHPERD member. There are some very exciting things coming to KAHPERD in the next several months. In November, the 103rd annual KAHPERD Convention "*Making a Difference*" was held at the Galt House in Louisville. With the conclusion of that convention, the next KAHPERD annual convention will be Nov. 2014. Yes—I meant to say, 2014. We will not be having a convention in fall 2013 because the Southern District AAHPERD is coming to town! The Lexington Convention Center will be the site of the Southern District AAHPERD/KAHPERD February 17-23, 2014. This marks the first time the Southern District AAHPERD/KAHPERD convention will be held in Kentucky in at least 60 years. It is important that you maintain your KAHPERD membership through 2013 in order to receive the KAHPERD journal *and* to be eligible to register for the Southern District AAHPERD/KAHPERD as a state member.

KAHPERD will continue to offer the benefits that members enjoy through 2013; such as the KAHPERD Journal, Newsletter, PE Summer Workshop, and Student Leadership Conference. In addition, we will host the Southern District Leadership Conference in summer 2013 in Lexington.

We appreciate each and every member and want to keep you informed of these and other exciting activities. If you are not yet on our KAHPERD eNews mailing list, go to the KAHPERD webpage: http://www.kahperd.com and sign up in the textbox found at the bottom right-hand corner of the webpage.

Continue submitting your manuscripts! We appreciate all of the hard work that goes into publishing the KAHPERD journal!

Announcements

(1) KAHPERD 2012 Annual Convention in Louisville, KY: Nov. 11-13, 2012 (Sunday to Tuesday).

Acknowledgement

As the Editor of the KAHPERD Journal, I would like to show my appreciation to the following guest reviewers for their assistance in reviewing this current issue.

Dr. Jenny Dearden, Morehead State University
Mrs. Sue Banister, Morehead State University
Dr. John Newsome, Eastern Kentucky University
Dr. Mark Deaton, Murray State University

In addition, I would like to personal thank Mr. Dean Schneider, my diligent graduate assistant, for helping format the articles.
Sincerely,
Steve Chen

KAHPERD Journal Submission Guideline

SUBMISSION OF A PAPER

The KAHPERD Journal is published twice yearly (spring and fall) by the Kentucky Association for Health, Physical Education, Recreation, and Dance. The journal welcomes the submission of empirical research papers, articles/commentaries, best practices/strategies, interviews, research abstracts (spring Issue only) and book reviews from academics and practitioners. Please read the information below about the aims and scope of the journal, the format and style for submitted material and the submissions protocol. Your work will more likely to be published, if you follow the following guidelines thoroughly.

Articles are accepted via an electronic attachment (must be in Microsoft Word format, doc or docx) through e-mail to the editor before the deadline dates. Submissions should be sent to editor, Steve Chen: s.chen@moreheadstate.edu

Deadlines: Spring issue—March 1 & fall issue—September 1

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AIMS AND SCOPE

The main mission is to bring together academics and practitioners to further the knowledge and understanding of issues and topics related to health, physical education, sport administration and marketing, exercise science, sport coaching, dance, and recreation, etc. We encourage submissions relating to these topics from a variety of perspectives.

CONTENT

All articles should be written primarily to inform senior practitioners and academics involved in areas of health, physical education, recreation and dance.

Research articles should be well grounded conceptually and theoretically, and be methodologically sound. Qualitative and quantitative pieces of research are equally appropriate. A good format to follow

would be: Introduction, Literature Review, Methodology, Results, & Discussion, Conclusion, and Implication. Articles may include an abstract of approximately 150 words including the rationale for the study, methods used, key findings and conclusions. Article should not exceed 10 double-spaced pages (including the references).

Reviews of books and/or reports are welcome (around 1000-2000 words). Information concerning the book/report must be sent to the editor.

Interviews (it would be nice to discuss with the editor beforehand) and best practice/strategy papers of 1,500-3,000 words should be objective and informative rather than promotional and should follow the following format: Objective/Background/Discussion and Practical Implication.

Research abstracts (300 words or less) are welcome and limited to the spring issue only. The submitted abstracts should have been presented (either an oral or a poster presentation) in the KAHPERD annual conference in the previous year.

*The editor is keen to discuss and advise on proposed research projects, but this is no guarantee of publication.

FORMAT AND STYLE

Manuscripts should follow the form of the guidelines for publications outlined in the 6th edition of the Publication Manual of the American Psychological Association.

Tables, charts, pictures, diagrams, drawings and figures should be in black and white, placed on separate pages at the end of the manuscript. They must be submitted photo ready and reproduced to fit into a standard print column of 3.5 inches. Only one copy of each illustration is required, and captions and proper citations should be typed on the bottom of the table and diagrams. Jargon should be reduced to a minimum, with technical language and acronyms clearly defined. The accuracy of any citations is the responsibility of the author(s).

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For more specific style questions, please consult a recent edition of the journal.

SUBMISSIONS PROTOCOL

Submission of a paper to the publication implies agreement of the author(s) that copyright rests with KAHPERD Journal when the paper is published.

KAHPERD Journal will not accept any submissions that are under review with other publications. All manuscripts submitted will be peer reviewed by 3 members of the editorial board. To be accepted for publication in the journal, the article must be approved by no less than 2 of the 3 reviewers. Authors will normally receive a decision regarding publication within six to 12 weeks. Rejected manuscripts will not be returned.

Effects of a NIOST Standards Based After-School Physical Activity Program on Health-Related Fitness in Elementary School Children

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Abstract

Insufficient levels of physical activity have contributed to the epidemic of childhood obesity in the United States. After-school based physical activity programs may positively impact this problem. The purpose of this 12-week study was to describe the implementation and evaluation of a National Institute on Out of School Time standards based after-school physical activity program on health-related fitness variables in elementary school children (n=14) ranging in age from 5-11 years old. Children participated twice per week for 60 minutes each session. Physical activities included Geomotion mats, sport stacking cups, and outdoor activities. Data analysis was done using the statistical software Statistical Package for the Social Sciences (SPSS, version 17.0). Significant reductions in body fat percentage were found along with significant increases in height and body weight. Although the results of this program were overall positive, future research is still needed to reexamine the effect a NIOST program can have on the physical fitness levels of students. More research is needed to determine the feasibility of replicating this program.

Keywords: physical activity, children, NOIST, after-school, obesity, body composition, health-related fitness

Introduction

Childhood obesity has become an epidemic in the United States. Levy and Petty (2008) found the number of children in the United States who are obese has more than tripled in the past 30 years for children ages 6-11. The problem is especially troubling in Kentucky with the prevalence of overweight and obesity in children 10-17 years of age increasing to 37.1% in 2009. The obesity rate for children 2-4 years old in Kentucky is among the highest in the country with over 20% obese (CDC, 2010). The multifactorial nature of childhood obesity makes it a difficult problem to solve. One of the main factors contributing to the problem is the consistent decline in both structured and unstructured physical activity. Environmental influences such as increases in the amount of screen time and limited supervised activity time both contribute to this decline. Also, the limited number of safe, community friendly recreation areas can result in a decrease in physical activity levels particularly in lower socioeconomic status neighborhoods. Physical education can be used to teach children and their parents about the benefits of being physically active and that being active involves games and fun activities, not just work. It also adds to the amount of supervised activity time for children allowing them to be more active in a safe environment.

Because children spend much of their day in school, there are many opportunities to influence their physical activity levels. Quality physical education curricula can make a difference; however, daily physical education participation is decreasing (Siegel, 2008). After-school programs have been called upon to pick of the “slack” and can be successful at increasing physical activity (Carson & Reibolt, 2011). In 2011, the National Institute for Out of School Time (NIOST) adopted standards for physical activity

during out of school time (National Institute on Out of School Time, 2011). See Table 1 for these standards. The NIOST standards seek to combine physical activity with learning and confidence building in after school programs. These standards can help establish programs that emphasize teamwork and result in more active children. They can also contribute to physical education by giving children a more structured, fun filled environment while learning new ways to be active and healthy. Murray, Udermann, Reineke, and Battista (2009) found that the energy expenditure for elementary students participating in speed stacking just while standing was 3.1 METs which is similar to physical education activities such as volleyball, dance, and bowling. As a result, speed stacking that combines movement can be quite vigorous activity which abides by one of the standards of NIOST which calls for fifty percent of activity time be filled with vigorous activity.

Table 1

NIOST Standards for Physical Activity During Out of School Time

• Dedicates at least 20% or at least 30 minutes of morning or afterschool program time to physical activity (60 minutes for a full day program)
• Provides physical activities in which students are moderately to vigorously active for at least 50% of the physical activity time
• Play takes place outdoors whenever possible.
• Ensures that daily physical activity time includes aerobic and age-appropriate muscle- and bone strengthening and cardio-respiratory fitness activities
• Includes a variety of physical activity options aimed at engaging students in fun, recreational, and life-long learning opportunities
• Offers unstructured free play or structured activities that involve all program attendees.
• Offers non-competitive activities
• Offers activities that are adaptable, accessible and inclusive of children with all abilities, including physical, sensory and intellectual disabilities.
• Conducts physical activities that are integrated with enrichment, academic, or recreation content; goal-driven, planned, sequentially designed and delivered, safe, inclusive, developmentally appropriate, and success-oriented

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The purpose of this study is to describe the implementation and evaluation of an NOIST standards based after-school physical activity program on health-related fitness variables in elementary school aged children.

Methods

Participants

The 12-week study utilized a convenience sample of elementary students (n=14) ranging in age from five to eleven years old. The mean height and weight of the participants before the treatment was implemented were 52.09 inches and 98.25 pounds respectively; and pre-testing body mass index and body fat percentage were 25.1 and 36.93 percent respectively.

Treatment

The study was conducted in an after-school program with two sixty minute sessions per week during the spring of 2011. Exercise sessions were conducted in the school's gymnasium and outside play areas. Three undergraduate students from the Kentucky Wesleyan College Department of Kinesiology and Health Promotion and Department of Education designed and conducted the program. Activities were chosen following the NIOST standards and focused on muscular strength and endurance, cardiorespiratory fitness, and flexibility. One activity was speed stacking. Various games involving muscular strength and cardio games utilized the sport stacking cups regularly during the program. Geomotion mats, which combine learning with physical activity, were also a part of the program (GeoMotion, 2011). GeoMotion's concept of Learnicize encourages children to improve their math, literacy, and reading skills while being active rather than sitting at a desk (GeoMotion, 2011). Three GeoMotion mats are available (clock, nutrition, numbers), but only the nutrition mat was used for our program (GeoMotion, 2011). The following are examples of some of the games and activities the participants did during the program:

Cardiorespiratory Fitness	Muscular Strength and Endurance
Freeze Tag	Crab Walk
Sharks and Swimmers Tag	Sport Stacking in push-up position
Octopus Tag	Sit-up sport stacking
Free Play	Relay Races
Soccer Dribbling	Basketball Shooting
Jump Rope	Geomotion Nutrition Mat

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In regards to the NOIST standards, our program consisted of sixty minutes of physical activity time both days of the week; and fifty percent of that time utilized activities that kept the participants moving at a moderate to vigorous pace. Lesson plans were created for each day allowing for well thought-out games that strived to include age appropriate muscular strength and endurance, flexibility, and cardiovascular activities each session. When weather permitted, games were played outside; and free time the last five to ten minutes of the session was allowed. Some of the games included educational components particularly the use of the Geomotion nutrition mats on occasion, and the participants learned new games and ways to be active throughout the program. Researchers worked to encourage team work among the participants and sought to build confidence in their abilities to accomplish a task while avoiding more competitive centered games. The selected activities were also able to be done with a wide range of ages from six years old to eleven years old; and as a result, allowed students of all abilities and developmental stages to participate.

Testing Protocol

The first two days of the program were used for pre-testing the students after school, and the post-testing was conducted on the last day of school during the day. The following health-related fitness variables were measured pre and post intervention.

1. Body Mass Index (BMI): Many large epidemiological studies have shown increases in chronic disease risk with increases in BMI. Height and weight are required to calculate BMI.
2. Body Composition (%): Anthropometric measurements of skinfold thickness were used to estimate body fatness. Two sites, calf and triceps, were measured using Lange calipers.
3. Flexibility: Flexibility training is recommended at all ages to ensure safe activity. The traditional sit and reach test were used to measure low-back and hamstring flexibility.
4. Muscular Strength/Endurance: The curl up test was used to measure abdominal strength and endurance. The 90 degree push up test was used to measure arm and shoulder strength (The President's Challenge, n.d.).

Height and weight were measured first, followed by percent body fat through skinfold calipers. Flexibility and muscular strength and endurance were measured last.

Statistical Analysis

The statistical software Statistical Package for the Social Sciences (SPSS, version 17.0) was used for statistical analysis. Paired-samples T-Tests were used to examine changes in the outcome measures pre and post intervention ($p<.05$).

Results

After going through the 12-week exercise program, there were no significant differences found in flexibility, muscular strength/endurance, or body mass index. There was a statistically significant decrease in body fat percentage over the course of the study. Body weight and height were significantly higher at the end of the study. See Table 2 for results of paired sample T-tests.

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Table 2. *Results of Paired-Samples T-Tests*

					95% Confidence Interval of the Difference				
Pair	Test (Pre vs. Post)	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
1	Body Weight	4.46	3.69	.99	2.33	6.59	4.53	13	*.001
2	Height	1.45	1.35	.36	.67	2.23	4.01	13	*.001

3	Body Mass Index	.09	1.81	.48	-.94	1.14	.21	13	.840
4	Body Fat	-7.80	4.26	1.14	-10.26	-5.35	-6.86	13	*.000
5	Flexibility	-.29	2.03	.54	-1.46	.89	-.53	13	.607
6	Curlups	.07	3.89	1.04	-2.18	2.32	.07	13	.946
7	Pushups	-1.00	6.35	1.70	-4.67	2.67	-.59	13	.566

*p<.05

Discussion

According to the results, significant reductions in body fat percentage were found in our study. This is an important finding considering there were significant increases in body weight and height. The increases in body weight and height are not surprising because maturation in participants this age is expected. The maturation process complicates measurement of many physiological variables in children. A positive result was the lack of a significant increase in body mass index which only increased from 25.09 to 25.19. In fact, five of the fourteen participants showed reductions in body mass index. Although, it would have been optimum for significant reductions in BMI to occur, the decreases in body fat percentage are more important for the long term health of the participants.

The lack of significant improvements in muscular strength and endurance may be explained by the lack of motivation of the participants during the post testing. Several factors may have influenced the post results including fatigue from field day and lack of motivation due to the end of school. Administration of the post-testing was rescheduled from the original day planned due to bad weather. Participants had to be pulled from their classes on the last day of school in order to get our testing completed, and the location of the testing had to be done in a smaller area due to lack of availability of other rooms. This was a limitation that was unexpected for our post testing procedures and could have affected our results. More muscular strength/endurance activities may need to be added to the program. Flexibility in children is not an issue so we would not expect large improvements in this outcome measure.

Conclusions

Overall, our program generated positive improvements in some of our fitness variables. Students displayed a willingness to try activities and exhibited more confidence in their abilities to complete those activities. Because our program maintained a very structured format throughout the twelve weeks, the results could potentially be duplicated in other programs. It also met many of the NIOST standards in addition to creating positive outcomes. As a result, it could be used as a standard for other after school programs seeking to emphasize physical activity and learning. Although the results with our program were positive, future research is still needed to see the effect that a NIOST standards-based activities program can have on the physical fitness levels of students; and since our sample was small, research is needed to determine whether the results can be replicated in other programs.

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A Close Look at the Diversity of Lacrosse

Matt Fultz, Morehead State University
Steve Chen, Morehead State University

Introduction

Lacrosse was a popular Native American sport in the Pre-Columbian era in North America before European settlement (Eitzen & Sage, 2009). This sport has a rich tradition as the Canadian Parliament recognized it as Canada's "national summer sport" (Vennum, 1994). In America, lacrosse has been a widely popular sport in much of the New England region for decades. More recently, the sport has gained popularity in other areas of the country, like California and Colorado. This sport at the collegiate level also received national attention, since more games have been televised on the Entertainment and Sport Programming Network (ESPN) channels as part of National Collegiate Athletics Association (NCAA) Championship series. While the sport is continuing to grow outside of its traditional geographic area, it is still struggling to attract a more diversified group of athletes. Lacrosse, which has been around in some form for almost 300 years, is still very much dominated by white athletes. Embracing diversity has been a consistent educational philosophy and goal that is emphasized by the NCAA. Therefore, the lack of minority participation in lacrosse is an issue that is closely scrutinized by the NCAA's Office of Diversity and Inclusion. According to the NCAA Student Athlete Race/Ethnicity Report (NCAA, 2010), white athletes made up 91.4 percent for male lacrosse players and 90.6 percent of female players. Black athletes, however, made up just 2.2 percent of male athletes and 2.4 percent of female participants at the Division-I level. Less than 10 percent of the student-athletes playing NCAA lacrosse were black. That statistic carries over to both men's and women's lacrosse in all three divisions (Ricardi, 2011). To help the readers understand the diversity issue concerning this particular sport, the authors will address three questions in this essay: (1) What are the challenges in trying to diversify the sport of lacrosse? (2) What progress has been made? And (3) what can be done to encourage more participation from minority athletes with different backgrounds, races, and ethnicities?

Challenges and Issues for Promoting Lacrosse

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Since Lacrosse began to gain popularity in the 1990's, there have been efforts to try and help the sport become more diversified, but a variety of challenges have caused the diversification of the sport to be a very slow process. Clare Lochary of *Lacrosse Magazine* (the official publication of the United States Lacrosse) interviewed eight individuals who helped diversify the sport. Lochary wishes to reveal the challenges that those eight individual are facing. One of her interviewees, Adam Silva, a Hispanic descent and assistant coach of Jacksonville University, stated that one of the biggest reasons that many minorities do not play the sport is the cost, especially at the club level (Lochary, 2011). Silva explained that it is unfortunate that the cost of the summer travel programs is so high for minority children to attend. It is at those events that most of the college scouting occurs. Even the value of getting a college scholarship is not high enough to offset the cost, since most lacrosse scholarships are only partial in nature. This fact drastically discourages potential young athletes to attend the summer competitions. Along the same lines, John Walker, the assistant coach of University of Virginia, also stated that the cost of club play keeps minorities from playing the game until they are older. This delay puts them behind their white counterparts. Walker further stated that most of these kids of color are not even getting into the game until eighth grade. By the time a player gets to the stage of being recruited, s/he is probably

not at the skill level where s/he needs to be (Lochary, 2011). Based on Silva's and Walker's comments (Lochary, 2011), readers may visualize how an individual's financial status and ethnic background can impact one's sport participation.

While Silva and Walker were concerned about the participation of minorities at the club level, Emily Helm, the President and CEO of MetroLacrosse in Boston, Massachusetts, has a variety of different challenges to deal with. Helm's organization is trying to bring the sport to youth in urban areas of Boston. She said that the biggest problem in promoting lacrosse is trying to find the consistent and reliable means of transportation for her young players. In addition to finding means of transportation, Helm also needs to find adequate facilities for kids to play in a sprawling metropolis (Lochary, 2011). Other challenges listed by the panelists included: (a) the presumed exclusivity of the sport; (b) the unfamiliarity to the sport by many minority parents; and (c) parents' unwillingness to spend the money for the equipment and training. Despite existence of the long list of challenges, progress is still needed to be made.

Minority Participation in Lacrosse

In 2002, African Americans made up only one percent of the total male collegiate lacrosse players. The percentage of African Americans playing the sport at the collegiate level had increased more than twofold (to 2.4) percent in 2010 (NCAA, 2010). The percentage of African American women playing lacrosse has also increased during that period. The increase has not only occurred in playing fields; strides, albeit small, have also been made in the coaching realm as well. Just last year, the Naval Academy named Rick Sowell as the head coach of its men's lacrosse team (Snyder, 2012). Sowell is the only African American head coach in men's collegiate lacrosse. He takes over one of the most heralded programs in the country. The Midshipmen have won 17 national championships in the program's 104 year history. While the hiring of Sowell is a step in the right direction toward diversity, there is still much progress to be made.

Practical Strategies for Promoting and Diversifying Lacrosse

While lacrosse is not a new sport by any stretch of the imagination, it was not until the past three decades that this sport branched out of its origin (New England region) and became more popular nationwide. In order to continuously increase the number of participants, lacrosse advocates must do a better job of attracting more athletes from various backgrounds. Here is a list of areas to focus on: (a) decreasing the cost of participating at the club level, (b) investing more into inner city programs, (c) initiating more programs in secondary schools, and (d) promoting the current or former minority star players.

Nearly every one of the eight panelists interviewed by Lochary (2011) indicated that the cost of club lacrosse was a main barrier keeping minorities out of the sport. If the cost can be lowered through corporate sponsorships, then participation should increase. Apparel manufacturing companies such as Nike, Adidas, and Under Armour have all sponsored amateur athletic teams in a variety of sports (football and basketball). They probably would be willing to donate shoe and apparels to support youth lacrosse leagues. Local restaurants, car dealerships, and real estate agencies surrounding the clubs may also sponsor the teams to promote the business. Since lacrosse has been predicted as a sport with great

growth in popularity (Burton & O'Reilly, 2010), there should be myriad business opportunities for those aforementioned companies to attract players, parents, and fans.

It is unlikely that the sponsorship deals alone would offset the entire cost of participation. Scholarships funded by private donations could be another way to reduce the cost for some players. Several soccer clubs have utilized this model, where businesses, alumni, or other benefactors may donate money to the team. The donations can either reduce the overall fees associated with playing for the team or subsidize the individual players based on need.

If the cost of playing at the club level cannot be reduced substantially, then other forms of play, especially for young players, must be explored. Walker mentioned that many minorities do not receive college scholarships due to the lack of exposure to college coaches and early playing experience (Lochary, 2011). A possible solution to this issue would be starting programs at middle schools, especially at those areas where the sport is already popular. In fact, participation in US high school lacrosse grew 52.8% from 1990 to2008 (Burton & O'Reilly, 2010). Lacrosse is a perfect game to be introduced at the secondary school level due to its rich historical tradition and high scoring action (Burton & O'Reilly, 2010). The additional cost of the equipment, such as helmets and pads, would be nominal compared to what is paid for football equipment. Furthermore, this sport will offer a great experience to more young ladies and help the school administrators ease some of the concerns toward the Title IX compliance (e.g., low female participation rate).

Just as school districts may invest in lacrosse at the middle school level, the national governing body of this sport, United States Lacrosse (USL) should also invest more money on developing the sport in inner city areas. USL could initiate programs like Major League Baseball's RBI (Reviving Baseball in Inner City) Program (Major League Baseball, n.d.), which is all about making baseball accessible to youth in inner city communities. There are similar programs promoting lacrosse such as MetroLacrosse and BRIDGE program (MetroLacrose, 2010; Ricardi, 2011); however, most of these programs are all independently operated and do not have the strong financial support like the Major League Baseball or a national governing body. If a singular program can be developed and maintained by USL, then it would be easier to carry the message to cities and standardize the playing format across the country.

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If a new inner city program can be developed, a vital thing to accomplish is making the sport relevant to more young athletes. USL can do this by promoting current or former minority star players. This is not just important for the inner city leagues, but all level of lacrosse as a whole. Minority youth players need to see those heroic (or star) figures in public; then they can begin to adore, worship and imitate those famous players (Hirsch, 2009). Most Americans may not realize that Jim Brown was not just a Hall of Fame NFL running back; he was also a standout lacrosse player at Syracuse (Ricardi, 2011). If all potential minority athletes see is the typical white lacrosse player in advertisements and publications, then their interest of the sport is not going to escalate as much as if they saw someone of their own race. Some of the minority lacrosse athletes who could be of great impact to the young generation include Chazz Woodson (2008 Major League Lacrosse, MLL All-Star player), Gary Nelson (first black All-Ivy League lacrosse player), Billy Daye (former Tar Heels All-ACC star), John Christmas (an MLL player), Damien Davis (former Princeton All-Star and professional player in Portland), Kyle Harrison (former NCAA champion) and the Howard University female black team, etc. (Bryam Hills Youth Lacrosse, n.d.; Farmer, 2009; Hirsch, 2009; Kopf, 2010). It is simply up to the leaders of the sport to promote them.

None of these possible solutions offers a quick fix to the lack of diversity in lacrosse. It is going to be a lengthy proposition, no matter what the sport administrators, coaches, and educators decide to do. However, if those lacrosse advocates are serious about making lacrosse more diversified, then they would need to take more proactive measures. Raising funds to lower the participation cost, investing in inner city and middle school programs, and promoting minority athletes are just three out of several possibilities for speeding up the process of diversification of lacrosse.

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The Boston Marathon: A Historical Analysis through the Examination of Qualifying Standards, Financial Impacts, and Social Influences. (PART I)

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Opening Comments (Introduction)

Since 1897, the Boston Marathon has evolved into a race of utmost prominence. It became the longest running marathon in history as it celebrated its 116th anniversary on April 16th, 2012. This race can be seen as the common man's Olympics, as it attracts the most elite and avid runners from diverse backgrounds across the globe. According to the Boston Athletic Association (B.A.A.), for the past 116 years, the number of entrants entering this pristine endurance race has increased from a low of 18, during its inaugural race in 1897, to 26,656 distance runners in 2012 (Boston Athletic Association (B.A.A., 2012k; B.A.A., 2012a). Throughout its history, the figures have fluctuated greatly and reached a height of 38,708 entrants in the 100th running of the Boston Marathon in 1996 (B.A.A., 2012k). To determine what has influenced this fluctuation in participants, a literature review was conducted through examination of academic articles, books, and social networking sites. Additionally, the authors visited the city of Boston and the Boston Athletic Association headquarters in order to acquire supplementary evidence. The objective of this study was to analyze the social influences that have advanced the significance of this race, financial impacts regarding sponsorships and charities, as well as the overall effect of qualifying standards.

Background

The history of the marathon began in the earliest epoch known to mankind. According to, Columbia Electric Encyclopedia (C.E.E., 2009a), this sport began around 490 B.C. subsequent to the end of the Battle of Marathon. This clash was amongst the Persian Empire and Greece where the city of Marathon lies. After the Battle of Marathon was over, the Greek Army sent one of their soldiers to Athens to announce the word of victory (Baldwin, 1998). This warrior, Pheidippides, spanned the distance of approximately twenty-two miles from Marathon to Athens to announce, "Rejoice! We conquer!", before collapsing to his death (Columbia Electronic Encyclopedia (C.E.E.), 2009b). Despite the questionable validity of this thousand-year-old tale, this is how the legend of the marathon began. Thousands of years later, the Athenians honored Pheidippides by reconstructing his route from Marathon to Athens. This 24.5 mile trail was commemorated as an event during the first official modern-day Olympic Games held in Athens in 1896 (Higdon, 1995). Spiridon Loues, a Greek shepherd who was competing along with 24 other men, took the gold medal and set the first record for the marathon event with a time of 2 hours 58 minutes, 50 seconds. Spectator, John Graham, US Olympic Team Manager, and a group of American enthusiasts were enthralled with the idea of the marathon race and decided to host a similar event on American soil (B.A.A., 2012j). On April 19th, 1897, the originally entitled "American Marathon," launched from Metcalf's Mill in Ashland, Massachusetts and continued to its finish on Irvington Street in Boston, MA (Higdon, 1995).

When examining the evolution of the Boston Marathon (since 1897), it can be seen that the number of entrants have increased and decreased throughout time in response to particular historical events and

stages. These historical events and stages include but are not limited to: the establishment of the Boston Athletic Association and the Boston Marathon, World War I, the roaring 1920's, the Great Depression, World War II, the running boom, the introduction of women, and modern day running. In addition to this, several important runners have impacted the Boston Marathon and its followers through their record-breaking victories and accomplishments. This phenomenon clearly illustrates the theory of social influence. The social influence theory can be described by the influence an individual or a group of individuals may have on another, and how he or she reacts to such a stimulus (Rashott, 2006). This article highlighted those historical events and social implications of the Boston Marathon, so readers can better understand the significance and social impact of this running event in the American society.

Social Impact and Historical Significance of the Event
The Establishment of the B.A.A. and the Boston Marathon

The Boston Athletic Association (B.A.A.) essentially chose a route to mimic the 1896 Olympic Marathon. Because the Olympic Marathon finished on an oval track in Athens, the Boston Marathon concluded on a similar track constructed on Irvington Street in Boston (Higdon, 1995). The B.A.A. had to be strategic about the design of the course. They wanted the course to be a combination of both the Olympic Marathon and the route of the Lexington and Concord Battles of the American Revolutionary War. This was in an effort to memorialize Paul Revere's famous ride in 1775 (Higdon, 1995). After several designs, the established path was from Ashland, MA to Boston, MA. One of the crucial explanations for this was due to the Albany railroad running parallel between the two cities. Strategically, the railroad could transport runners from Boston and also transport officials, spectators, and the media anywhere on the course come race day. In addition, the train could serve as a way to view the runners throughout the 24.5 mile route. Lastly, this route was almost identical to the Olympic Marathon in regard to elevation gain and loss (Higdon, 1995).

On April 19, 1897, only 15 athletes toed the starting line, which had been hurriedly drawn across the dirt street by the foot of a B.A.A. member. Only 10 of the 15 runners completed the first Boston Marathon (B.A.A., 2012k; Johnson & Johnson, 2009). With the introduction of such a distance at a time when the typical endurance race was a mere mile in length, the runners of the American Marathon were considered valiant and even reckless (Higdon, 1995). During that time, there was no available research concerning: (a) endurance races, (b) training methods, or (c) the physiologic effects of distance running. After some time the marathon distance lengthened from 24.5 miles to 26 miles 385 yards. To this day the marathon maintains its 26 miles 385 yard distance. According to Higdon (2011), the marathon was adjusted to this length of 26.2 miles during the 1908 Olympics in London. Queen Alexandria and King Edward VII demanded the distance be changed to accommodate the position of the royal family's "royal box," which sat 385 yards around the track from the original finish line (Higdon, 2011; Perros, 2001). The 42.195 kilometer distance was not "set in stone" until 1921 when the International Association of Athletics Federation (I.A.A.F.) devised rule 240 that stated: "The standard distances for men and women shall be...Marathon (42.195km)…" the distance of 26 miles and 385 yards as the official distance of the marathon (Zemper 10, 2008; I.A.A.F. 185, 2008). This standardization was an effort to make record keeping less problematic for competing racers. The B.A.A. finally adopted the standardized marathon distance in 1924 (Derderian, 1996).

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From the day of the inaugural race in 1897, the ancient foot race that was the Boston Marathon became very popular among spectators and those who live for the sport of running. In 1900, the *Boston Globe* reported 25,000 spectators. In 1902, it grew to 100,000, and since 1903 it has reached an astonishing 500,000 viewers along the course (Higdon, 1995). With the abundance of spectators and runners, the B.A.A. reported that today, the race is the second largest sporting event other than the Super Bowl (B.A.A., 2012e).

World War I

It is clear that as a new event emerges, it becomes further publicized by use of marketing strategies, thus, public participation increases as the event progresses. This is an accurate description of what occurred from 1897 to 1909 when the Boston Marathon reached 182 entrants, up from the original 18. During World War I however, the number of entrants spiraled downward from 1912 to a low of 48 applicants in 1919. In response to this sudden decrease, in 1918, the B.A.A. hosted a military relay in place of the Boston Marathon in hopes of buttressing both Navy and Army servicemen heading to Germany (B.A.A., 2012j). The military relay is actually the only event in the Boston Marathon's history where such a replacement of the marathon took place (Baggett, 2004). Instead of individual runners, there were 10 men per team and each would run 2.5 miles. The Navy ran in their white military uniforms and the army in their khaki uniforms. To make matters worse, both sported their polished military boots (Derderian, 1996). According to Derderian (2003), the servicemen were "poorly trained and ill equipped" to run such a race, but the army became victorious with a winning team from Camp Devens, MA with a time of 2:24:53 (B.A.A. 2012j).

Roaring '20s

The number of entrants for the Boston Marathon began to pick up and reach a total of 285 in 1928 following World War I. During this time of the "roaring 1920's," there was much economic growth. By the 1920's, America began to develop automobiles, real-estate doubled in value, and Americans were spending more money following World War I (Allen, 2001). While analyzing the results of the 1920's, it is found that Derderian (1996) was correct when he proposed that this decade was comprised of faster marathoners. New course records were set repeatedly in the 1920s. This can be attributed due to the establishment of rule 240 by the I.A.A.F. in which the course was 197 yards short of the 26.2 mile distance in 1924. Several of the "new" course records were set as the course altered several times during this decade (Derderian, 1996; B.A.A., 2012e; B.A.A., 2012g). The increase of entrants, as mentioned above, can be partially explained by the increased ability of individuals to spend supplementary money traveling, the development of automobiles, and the increase in advertising. This increase in advertising was brought on by the invention of the radio and an escalation in newspapers and information contained within (Allen, 2001). With the invention of the radio, the Boston Marathon race could be heard live from all over the country. This increase in publicity led to an increase in social influences and ultimately impacted groups and individual's emotional connection to the race.

The Great Depression

Following the economic boom of the 1920's, further economic influences including depression and recession significantly impacted the number of entrants in the Boston Marathon. According to an article published in the New York Times, people tend to concentrate on self-improvement and less costly

activities when economic times are harsh and harmful to mental health (Cowen, 2009). For many individuals, running is an activity and stress reliever that is cost effective. In 1929, the B.A.A., Boston Marathon, and the United States entered the Great Depression and were struck by dismal social and economic conditions through the 1930's (Allen, 2001). By 1936, the B.A.A. was forced into bankruptcy and sold their clubhouse (B.A.A., 2012c). During recessions and depressions, there is a positive relationship among individuals when comparing those who train and have lost their job or received fewer hours per week. In other words, when individuals lose their job or receive fewer hours at work, they have more time to increase their training for recreational activities (such as marathons).

World War II

Though the Boston Marathon was not cancelled during World War II, data shows the participants decreased during the (World War II). American military entrants begin to increase, but the number of total entrants decreased. As the war continued, the Boston Marathon experienced a low of 80 entrants toward the end of the war in 1944. As soon as the war was over in 1945 and servicemen began to return home, the number of entrants increased to 193 runners by 1948 (B.A.A., 2012k). The number of entrants surpassed double the amount in 1944.

The Running Boom

By the year 1967, there were 741 entrants at the Boston Marathon. In 1968, the Boston Marathon quickly surpassed 1,000 and by 1969 there were 1,342 entrants (B.A.A, 2012k). Consequently, we can see that the Boston Marathon increased by 600 entrants during this period.
This increase can be explained by social influences that occurred from the late 1960's through the 1970's and even continued into the 1980's as well. During this time, the following occurred: (a) women began to unofficially run the Boston Marathon and years later become official, (b) "aerobics" was introduced, (c) studies regarding running emerged, and (d) certainly a time of American pride from elite runners was established. This time in history was a big turning point for the running and fitness industry. History coined this era the "running boom" (O'Brien, 1998).

Introduction of Women

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For some, the running boom can be considered a direct result of the introduction of women into competitive racing. As mentioned previously, the B.A.A. maintained strict opposition to the inclusion of women into the Boston Marathon. In 1966, however, Roberta Gibbs was the first woman to unofficially compete in the Boston Marathon and finish (Hosler, 1980). Her race was considered unofficial because she was prohibited from registering to run due to the barring of women. In the subsequent year, one of the major milestones regarding the Boston Marathon took place on April 19th, 1967 and was heard nationwide. On this day in history, a young lady by the name of Kathrine Switzer, or "K.V. Switzer" as her official entry read, entered the Boston Marathon. With the signature of "K.V. Switzer," Marathon officials assumed the entrant to be Karl Switzer and without hesitation, they accepted "him" into the Boston Marathon (Palm Beach Post, 1973).

When the race took place at noon, it became apparent there was a female amongst the competing runners. In an attempt to disqualify Ms. Switzer and prevent her from running, Jock Semple, famous guardian of the race, hurled himself toward Switzer in order to remove her race bib (Associated Press,

2006). A scuffle broke out between Kathrine's boyfriend, Tom Miller, and Semple. Immediately, Switzer took off at full speed to run from Jock. Although she finished, the Amateur Athletic Union (A.A.U.) suspended her from racing. This event fueled the attention of the media and encouraged the inclusion of women into the world of competitive racing. It was not until 1972 when women were finally allowed to participate (Palm Beach Post, 1973). This amendment would greatly influence the number of entrants in coming years.

The running boom of the 1970s was such a turning point for running that one individual told a reporter that, "People would get up and run into the horizon, and careers and marriages and all kinds of things were taking a backseat" (Atkin, 1996). As the 1970's continued, the fitness world became a multi-billion dollar industry and the performances of runners were improved as new training ideas were developed and incorporated into training regimens. The marathon received such a wealth of attention that the Boston Marathon jumped from 403 participants in 1964 to 6,924 in 1984 (Carmichael, 2007). In 1966, Bob Anderson created the *Distance Running News* which individuals today would know by the magazine renamed as *Runner's World*. This magazine flourished with the running boom taking place and its popularity has since climbed in popularity (Brant, 2006).

During this point in time, aerobic research became more popular and was advocated as a therapy or means to prevent heart disease. Though the marathon is not a health event, training for such a race leads to one living a healthy and fulfilling lifestyle as described in the writings of both Doctor George Sheehan and Doctor Kenneth Cooper (Tunstall, 2007). Dr. George Sheehan was a cardiologist and in many regards viewed as creating the phenomenon of recreational running. Not only did he run 22 Boston Marathons and set a world age-group record at 50 years old with a time of 4 minutes 47 seconds, but he was also a premier writer and guru of health and fitness (Litsky, 1993; Higdon, 1995). He wrote many books, essays and columns within several highly regarded magazines and journals. Doctor Sheehan was honored by President Bill Clinton for the wealth of knowledge he exhibited regarding health and fitness. Clinton called Sheehan "the guru of running" (Litsky, 1993; Sheehan, 2008). Dr. Kenneth Cooper, on the other hand, was the "father of aerobics" and wrote the book *Aerobics* in 1968 (Cooper, 2012). With the notion of "aerobics" introduced in 1968, his work was directly responsible for its development. Aerobics research and participation has since evolved tremendously and diversely.

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Due to the overwhelming popularity of the event and the number of entrants increasing drastically between 1967 and 1969, the B.A.A. officials thought it necessary to regulate the field size. Therefore, in an effort to maintain the marathon's prestige and decrease the number of entrants, starting in 1970, the B.A.A. instituted rule #3: qualifying standards (Derderian, 1996). This amendment allowed individuals to take part in the race only if the Long Distance Running Chairman of the A.A.U. of the individual's district (or coach) could submit documentation acknowledging the athlete was gifted enough to run 26.2 miles in less than 4 hours (Derderian, 1996). Despite the efforts to regulate the field size, the emergence of qualifying standards for the Boston Marathon still motivated individuals to train harder to compete at Boston as this was the only other qualifying event outside of the Olympic Games. The number of entrants was faintly reduced to 1,174 runners in 1971 (B.A.A., 2012k). In response, the B.A.A. once again tightened the qualifying standard to further control the field size. It was recommended that males now must finish the race within 3 hours 30 minutes and 59 seconds. With the introduction of women to the marathon and the growing popularity of marathon training in the female population, the qualifying standards were modified to include women in 1972 (Higdon, 1995).

During the most recent recession, a Wall Street Journal article reported the number of marathon runners in 2009 who could qualify for Boston with use of the Boston Marathon 2010 qualifying standards increased by 39% in comparison to 2008 (Albergotti, 2009). Many individuals were stressed and needed structure in their lives to prevent "just sitting around" (Albergotti, 2009). George Mannes, author of a *Runner's World* article titled *B.Q. or DIE,* quoted Christine Whelan, Ph.D., that times of depressions and recessions "are great for self-help" (Mannes, 2011).

Some of America's most beloved marathoners have also played a significant role in the development of the running boom and the continued support for the sport of running. A few examples include: (a) Frank Shorter, who won a gold medal in marathon racing for the United States at the Munich Olympic Games in 1972; (b) Steve Prefontaine, who won seven NCAA titles and broke 14 American records; and (c) Bill Rodgers, who gallantly won the Boston Marathon on four separate occasions (Hersh, 2012; Higdon, 2005; National Distance Running Hall of Fame, 2010; USA Track & Field, 2012). Each of these famous athletes broke records, encouraged followers, and inspired the hearts of millions. In addition to these great men and their contribution to the running boom, in 1972 the Boston Marathon introduced a revolutionary wheelchair division. There was only one stipulation Bob Hall would have done in order to participate in the Boston Marathon and finish under 3 hours is using his hospital-like wheelchair (B.A.A., 2012h; B.A.A., 2012j; Higdon, 1995). Bob Hall successfully completed the race with a time of 2 hours 58 minutes and coined Boston the "pinnacle" of racing at one's highest ability (Higdon, 1995).
All of the events that contributed to the running boom had a direct correlation to the increasing number of entrants each year. The common person had a chance to follow in the footsteps of the elite runners, mentioned above, and they were more than willing to train hard. The Boston Marathon became so popular in the 1970's, that the attendance went from 1,174 in 1970 to an astronomical 7,927 entrants in 1979 (B.A.A., 2012k). The B.A.A. did not have enough individuals to staff the event! In an effort to accommodate these rising numbers, the B.A.A. increased qualifying standards frequently during the 1970's. For the 1977 Boston Marathon, standards tightened to 3 hours 00 minutes 59 seconds for males and 3 hours 30 minutes for females and *masters* runners (40 years of age and older) from 1977 to 1980. During the 1980 Boston Marathon, the fastest standards were implemented in all of Boston Marathon history with a qualifying time of 2 hours 50 minutes and 59 seconds for males, 3 hours 10 minutes 59 seconds for *master's* men; 3 hours 20 minutes for females, and 3 hours 30 minutes 59 seconds for *master's* women (Higdon, 1995). The 1980 qualifying times, however, did not deter participation for long. The number of entrants dropped from 7,927 in 1979 to 5,417 in 1980, but jumped to 7,647 by 1982 (B.A.A., 2012k).

(To be continued)

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The Practice of Videotape Analysis to Augment Pre-Service Teachers use of Class Time

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Abstract

The value of engaging the teacher education candidate in a variety of field experiences (FE) is neither minimized nor underestimated in Physical Education Teacher Education (PETE) programs as it is expected by the National Council for Accreditation of Teacher Education (NCATE, 2008). The goal of PETE programs is to develop physical education teachers who demonstrate acceptable competency in a variety of areas as stated by the National Association of Sport and Physical Education (NASPE, 2009). The purpose of this study was to examine Pre-service Teachers' ability to manage class time in order to create a positive environment for learning and to investigate differences between the times PTs spent on activity, management, instruction and/or waiting against pre-established standards based on the literature (50% activity, 22.5% instruction, 17.5% management & 10% wait). The participants in this study were ten college–aged PTs enrolled in an Elementary Physical Education Practicum course, which is a requirement for the PETE curriculum. Each PT was videotaped at least 4 times during the five-week experience. Each participant was assigned a number (1 to 10) at random and alphabetical letter (A and B) to distinguish their identity and gender. The analysis was performed at the investigator's office. Both videos of each subject were analyzed the same day using Studiocode® software. The findings of the study show that PTs decreased management time from 15.2% to 14.4%, a result which was better than the 17.5% pre-established. PTs decreased instruction time from 25.7 to 25.1%, which was still better than the pre-established 22.5%. Time spent in activity improved as it increased from 49.6% to 51%, which exceeding the pre-established 50%. Wait time went from 9.2% to 9.1%, meeting the pre-established 10%. The present study supports the continued use of well designed FEs and the incorporation of videotaping as a means of visual feedback. Jensen et al. (1994) found that reflections of videotaped teaching samples have been shown to have potential for assisting PTs in their professional development. Planners/Designers of PETE programs should continue to find ways to incorporate videotaping to enhance the development of PTs' teaching and reflective skills.

Introduction

The value of engaging the teacher education candidate in a variety of field experiences (FEs) is neither minimized nor underestimated in Physical Education Teacher Education (PETE) programs as required by the National Council for Accreditation of Teacher Education (NCATE, 2008). NCATE (2008) states that new professionals who graduate from an accredited institution should attain the necessary content, pedagogical and professional knowledge, and skills to teach both independently and collaboratively while applying effective teaching methods, reflect on practice, and act on feedback.
PETE programs continue to use FEs to provide pre-service teachers (PTs) the opportunity to become immersed into a class environment as they interact with teachers and students (Napper-Owen, Marston, Volkinburg, Afeman & Brewer, 2008) through observing and assisting a cooperating teacher and

conducting teaching (Larson, 2005). The literature shows that FEs, that usually are completed prior to student teaching, range from observation to full-scale teaching (Siedentop, 2001, p. 265). It is during FEs that PTs observe/practice professional teaching (Rich & Hannafin, 2008) and discover how schools operate day to day (Dodds, 1989).

To enhance students' preparation during FEs, PETE programs of many other institutions (including the institution researched in this inquiry) integrate technology by utilizing video to record their student teachers (STs) as well as PTs during FEs, and (b) coding/analysis software to evaluate those experiences. The literature has shown that videotaping of PTs has been used since the 1960s by teacher educators at Stamford University (McCurry, 1999) and is a strong asset for the professional development of teachers (Santagata, Gallimore & Stigler, 2005) helping PTs learn skills and reflect on their teaching experiences (Greenwalt, 2006). The use of videotaping provides opportunity for self-reflection and analysis of the teaching segment; the students have the opportunity to see themselves in action (Jensen, Sheptston, Connor & Killmer, 1994), observe their teaching behaviors, conduct a careful critique of their performance (King, 2008), and determine variables of teaching effectiveness (Kounin & Doyle, 1975). Videotaping has been used successfully in support of differing approaches to teacher training and development (McCurry, 1999) and it is considered to be a positive component to the field experience (Benton-Kupper, 2001). Recent studies have shown support of the use of videotape analysis in FE settings. Ramos (2011) found that PTs felt strongly to using videotaping analysis to reflect on their teaching skills. Similarly Pruzak, Dye, Graham, and Graser (2010) also found that students felt they had received far more feedback than had they not analyzed their own lessons.

Through well designed FEs, PETE programs develop physical education teachers who demonstrate acceptable performance (competency) as suggested by NCATE and in a variety of areas as stated by the National Association of Sport and Physical Education (NASPE, 2009). Among those areas, NASPE states that beginner teachers should be able to organize, allocate, and manage resources (e.g., students, time, space, equipment, activities, teacher attention) to provide active and equitable learning experience. The pre-established percentages were based on the literature with a focus on achieving 50% activity time, a national goal for school physical education as stated by the U.S. Department of Health and Human Service (USDHHS, 2000). The 22.5% instruction time and 17.5% management time were based on averages from Siedentop findings (1991). He found that instruction takes from 15 to 30 percent and management from 15 to 20 percent of class time. These percentages left a 10% wait time to be used as the standard criteria for purposes of this study.

The primary purpose of this study was to examine PTs' ability to manage class time in order to create a positive environment for learning and obtain 50% activity time during instruction, a national goal for school physical education as stated by the U.S. Department of Health and Human Service (USDHHS, 2000). Rink (2010) suggests activity/practice time is perhaps the single most critical element in the learning of a motor skill or the development of fitness and ineffective time management can lead students to minimize active participation with subsequent negative impact on their attitudes towards physical activity (Silverman & Scrabis, 2004). A secondary purpose was to investigate differences between the times PTs spent on activity, management, instruction, and/or waiting against the pre-established standards for this study, based on the literature (50% activity, 22.5% instruction, 17.5% management & 10% wait).

Since participants in this study are still developing and inexperienced, was expected that PTs would show weaknesses in time management; (Some of these weakness were described as arranging the environment for learning, maintaining and developing student appropriate behavior, and engagement in content) one of the most difficult functions of teaching for beginning teachers (Rink, 2010). Previous studies have found percentages from 12.1% (Phillips & Carlisle, 1983) to 33.1% (Vasiliadou, Derri, Galanis & Emmanouilidou, 2009) as time spent in managerial tasks. Siedentop (1991) found that management typically accounts for 15 to 20 percent of the class. Table 1 illustrates the standards used as guidelines for the study.

Table 1: Standards for the Study

Category	**Video**	**Requirement**
Management	1st	PTs will spend more than 17% of their class time in managerial tasks
Activity	1st	PTs will spend less than 50% of their class time in activity or movement tasks
Management	2nd	PTs will spend less than 17% of their class time in managerial tasks
Activity	2nd	PTs will spend more than 50% of their class time in activity or movement tasks

Method

Participants

The participants in this study were ten college-aged PTs enrolled in required PETE Elementary Physical Education Practicum and Methods courses. During a 5-week period the PTs taught twice per week at four local schools to students in grades 3 through 6 as part of the course requirements. Each PT had approximately 12 to 15 students to work with during each lesson. The schools classes were 45 minutes in length.

Each participant was videotaped at least 4 times for course purposes. Participants' lessons were videotaped once a week during the five-week experience. PTs were required to observe, analyze and reflect on each video after each lesson. The analysis of videos took place in the Physical Education Pedagogy Lab. PTs analyzed their videos using Studiocode® software to categorize specific events such as activity time, instruction time, management time, and wait time using a duration recording technique. Duration recording is an observational technique that provides information on the use of time (Rink, 2010).

Because PTs were assigned to four different schools, a variety of units of study (activities) were taught, such as fitness, football, soccer, and volleyball. All classes were taught indoors and schools had appropriate amount of equipment for students to be actively involved.

Protocol and Apparatus

A random number from 1 to 10 was assigned to each participant and his/her videos were analyzed in order. Participants' videos were given the number and either the letter A or B to identify his/her videos for comparison purposes and deidentify them for coding. For this study only the first and last video of each PT were used. Videos and results were saved in a 1T My Book® external hard drive. Analysis of the videos was performed by the same investigator, who has two years of experience working with

Studiocode®. The analysis was performed at the principal investigator's office. Both videos of each subject were analyzed the same day. One day for each subject. (not a complete sentence here) Analysis was done using a Code window (See Figure 1) available in Studiocode®.

Coding Procedures

Within the Code Window, the investigator had a variety of buttons to code the activities in videos. Each button was preset to evaluate each segment of the video known as duration recoding. At least 51% of the students had to be involved in that particular segment of the class. The investigator clicked each individual button according to its definition: Activity Time, Instruction Time, Management Time & Wait Time. When one button was activated the other three were turned off automatically so that each area was accurately measured. At the end of each coding session the software program provides the investigator with a quick way to obtain the results for the duration recording using an Instance Frequency Report (IFR). The IFR presents the numbers in actual minutes and percentages in a Transcription Window for each part of the lesson (see Figure 2). The minutes and percentages were then compared from each participant's 1st and last video and overall performance as a group. Prusak (2010) determined the reliability of pre-service teachers' skills to use Studiocode®, and the results indicated that students can achieve moderate to high levels of agreement with expert coders. Therefore, suggesting the reliability and validity of one expert coder coding all of the video's in this study.

Definition of Terms

Table 1 presents the coding guide used in this study as suggested by Graham et al, (2007, p. 243) for the Duration Recording System.

Table 2: Coding Guide for the Duration Recording System

Category	Definition	Examples
Activity	Time when most students (51% or more) are involved in physical movement.	Performing exercises: dance or gymnastics: participating in a group or individual game
Instruction	Time when students (51% or more) have an opportunity to learn.	Listening to a lecture, watching demonstrations, participating in class discussion, answering teacher's questions
Management	Most students (51% or more) in activities where there is no instruction, demonstration, or practice.	Changing activities, numbering off for an activity, listening to roll call, getting out or pulling equipment, getting into line
Wait	Time not defined by the other three categories. Most students (51% or more) are not active.	Waiting for class to begin, or waiting for instruction to resume, waiting in line for a turn

Results

The findings of the study show that on average (Table 1) PTs' performance managing class time was better than what was expected by the investigators staying under the 17.5% pre-established. PTs

decreased their management time from 15.2% to 14.4%. The lowest percentage was 8.2% and the highest was 22.4% (Table 2). The results were similar to the 12.1% obtained by Phillips and Carlisle (1983). In their study, they referred to those individual reaching the standards as effective physical educators. Other studies showed ineffective teachers might spend as much management time as 17% (Zeng, Leung, Liu & Hipscher, 2009), 28% (Martin & Kulinna (2005), and 33.1% Vasiliadou, et, al.2009). By the end of the 5-week experience PTs improved activity time as it increased from 49.6% to 51%, surpassing the pre-established standard of 50%, the national goal for school physical education as stated by the USDHHS (2000). The lowest percentage was 33.4% and the highest was 63.1%. The results can be explained by PTs ability to reduce the time spent in both management and instruction time.
As a group, PTs in the present study slightly decreased instruction time by lowering their times from 25.7% to 25.1% by the end of the experience. The lowest percentage was 13.7% and the highest was 42.5%. Though PTs in this study did not meet the pre-established 22.5%, these results are slightly better than those obtained by Zeng, et.al. (2009) and Martin and Kulinna's (2005). Their teachers spent 28.8% and 44% of their time instructing, respectively. The study by Vasiliadou, et, al. (2009) obtained results where teachers spent only 16% of their time instructing.
PTs slightly improved their wait time after the 5-week experience as they lowered their times from 9.2% to 9.1%, staying under the pre-established 10%. The lowest percentage was 3.9% and the highest was 18.2%. The results were better than the 9.7% obtained by Zeng, et, al. (2005), but not as good as the 2.8% obtained by Vasiliadou, et, al. (2009).

Discussion

The findings of the study show that PTs met the criteria of 50% Activity time by the end of their teaching experience. The improvement on the time-use may suggest that PTs might have benefited from the exposure provided during the well-designed FE which incorporated videotaping to enhance the development of PTs' teaching and reflective skills. These results are aligned with those obtained by Gurvitch and Metzler (2009), who suggested that PTs attained a mastery experience in the form of successful teaching performance in authentic environments, provided in FEs, having experienced teaching opportunities over a 5-week period. The investigators feel that if PTs had met the pre-established percentage of 22.5% for instruction, this might have resulted in a greater amount of time spent in activity time.

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The findings were better than expected relating to Management Time as PTs met the criteria of 17.5% from their first teaching experience. PTs improved even more by the end of the FE. PTs seem to have learned how to prepare the gymnasium, where to place equipment, how to transition from one task to the next through the analysis of videos from their lessons. Benton-Kupper (2001) worked with subjects who were able to gain insight into their individual teaching techniques through this venue and found it to be a positive component to the experience.

Though there were not significant differences from their first teaching experience to their last one, investigators of this study felt that incorporating videotape analysis to the FEs enhanced the PTs preparation and experience. The findings of this study were aligned with the literature supporting the use of videotaping in FEs as a tool to provide feedback to PTs. King (2008) found that after several reflections PTs felt that a visual record of their teaching inspired them to reflect more critically and to focus on their teaching skills.

The findings seem to support the use of videotape to enhance PTs teaching skills as found by Jensen et al. (1994) who found that reflections of videotaped teaching samples have been shown to have potential for assisting PTs in their professional development. However, investigators of this study suggest the need to compare between groups of PTs who analyze their videos throughout their FEs and PTs who do not have access to videos of their lessons. To better identify the effects of videotape analysis to enhance teacher preparation, one may address this idea as the future study direction.

The continued integration of video analysis during FEs is highly supported by the investigators of this study, because it provides PTs the opportunity to watch themselves in action. "The more and better information you can get about your own teaching behavior and the behavior of the students you are teaching, the easier it will be for you to improve" (Siedentop, 1991, p. 49).

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Figure 1. Shows the Code Window created and utilized in this study to analyze the videos for Preservice teachers' use of time.

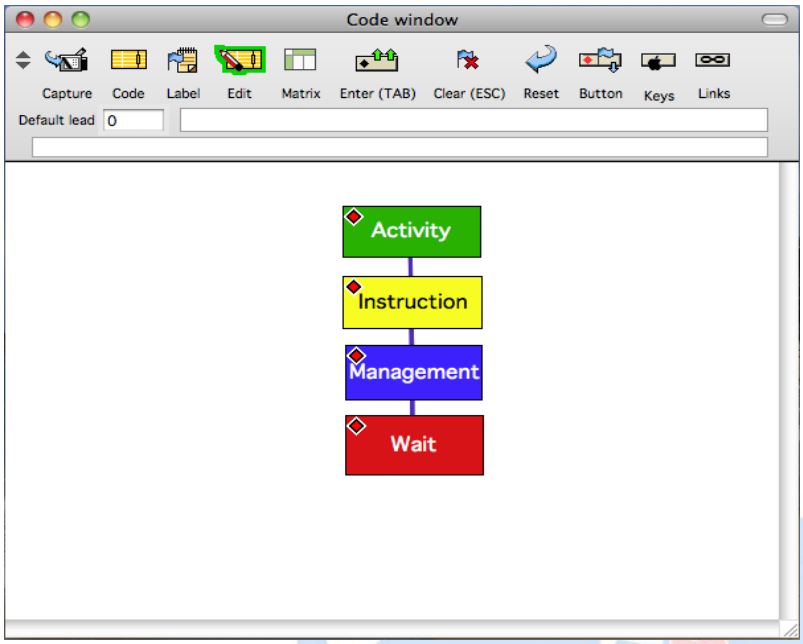

Figure 2. Studiocode® digital analysis software, used to code teaching episodes. Upper left corner shows the transcription window; upper right shows the code window; bottom shows labeled instances.

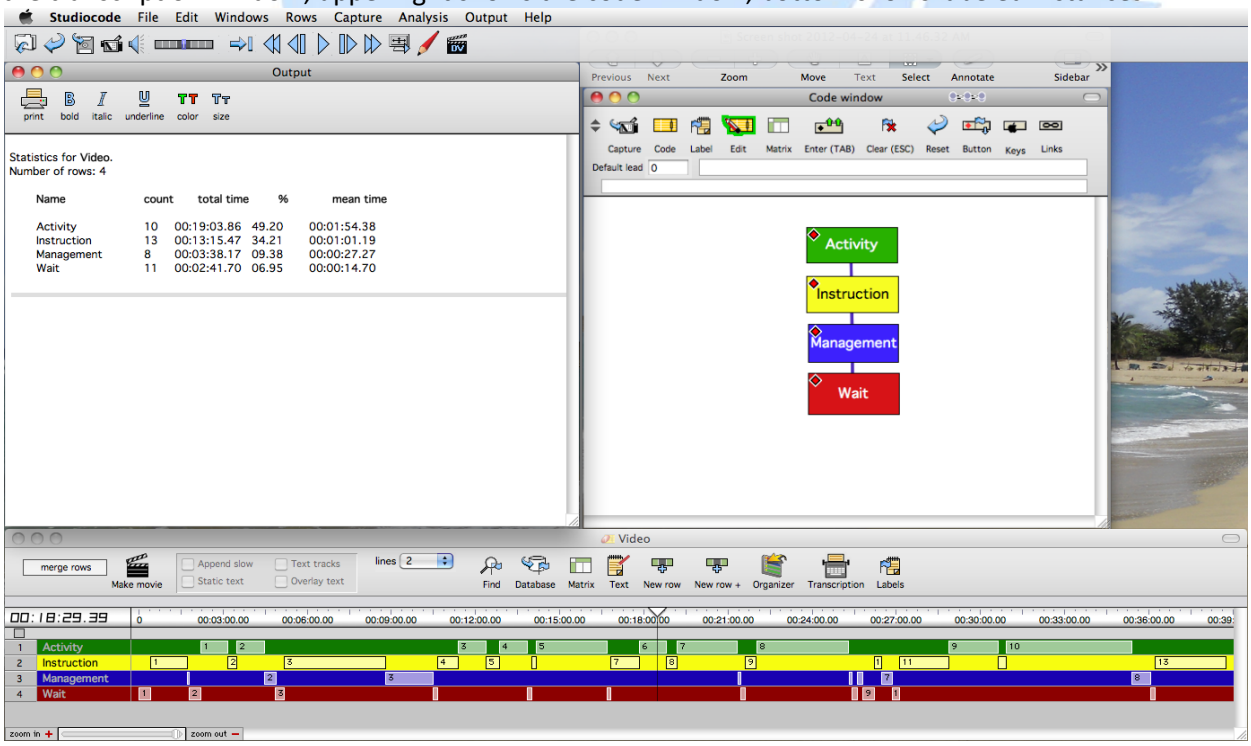

Table 3: Presents the averages for Activity Time, Instruction Time, Management Time and Wait time for both lessons and the Pre-established percentages.

TABLE 1	Activity	Instruction	Management	Wait
Pre-Established	**50%**	**22.50%**	**17.50%**	**10%**
1st Lesson	49.60%	25.70%	15.20%	9.2
4th Lesson	51%	25.10%	14.40%	9.1

Table 4: Presents the individual results for each subject for Activity Time, Instruction Time, Management Time and Wait time for both lessons.

Subject	Video 1	Video 4	Video 1	Video 4	Video 1	Video 4	Video 1	Video 4
	Activity	Activity	Instruction	Instruction	Mgmt	Mgmt	Wait	Wait
	%	%	%	%	%	%	%	%
1	49.2	34.71	34.21	39.58	9.38	15.59	6.95	10.29
2	33.41	41.5	36.51	42.52	22.45	8.2	7.6	7.52
3	33.73	49.26	35.38	24.8	13.15	11.12	18.25	14.65
4	51.88	51.69	19.67	17.46	12.7	21.12	15.6	8.32
5	51.09	63.16	18.18	10.01	21.69	18.09	8.82	8.58
6	51.92	55.23	21.45	24.77	17.75	15.8	8.77	3.99
7	59.3	60.44	19.78	20.89	17.15	13.52	3.27	4.9
8	49.73	59.93	30.83	18.95	12.98	11.26	6.35	9.84
9	54.38	41.44	28.09	30.62	12.51	16.36	4.85	11.49
10	61.48	52.96	13.71	22.08	12.71	13.68	11.9	11.96
Total	**49.61**	**51.032**	**25.78**	**25.168**	**15.25**	**14.47**	**9.236**	**9.154**

Website Design and Development among NRPA (COAPRT) Accredited Recreation Academic Programs

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Abstract

This study identified practices in website design and development for college and university academic recreation programs accredited by the National Recreation and Park Association (NRPA) Council on Accreditation [body now known as Council on Accreditation, of Parks, Recreation, Tourism and Related Professions (COAPRT)]. Emphasis was placed upon design, content, governance, and development. This was the first known study to identify current website trends at nationally accredited recreation programs. The results of this study showed that faculty members were most often responsible for their program's website construction, content and design input, and maintenance. Students did not play a large role in these responsibilities. The websites were most commonly maintained monthly. The most common component available on program websites was the information that served as marketing and recruiting tools. The majority of websites did not contain components for student entertainment or communication. Over half of the websites included links to professional organizations' homepages. Just under half of the websites did not include a link to the National Recreation and Park Association. Practical suggestions for developing and maintaining an effective program website were provided.

Keywords: Information technology, NRPA, recreation administration, webmaster, website governance, website design, website development, and website maintenance.

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Introduction

The impact of technology on society advances every day. One such impact is the use of websites by colleges and universities. The Internet has been found to be an important element in higher education settings (Matthews & Schrum, 2003). Virtually every college and university across the country has its own website (Mechitov, Moshkovich, Underwood, & Taylor, 2001). Campus departments and programs (including recreation program) routinely use websites for marketing, information dissemination, and facilitation of educational processes. Therefore, academics programs must have effective websites to compete for students. The Internet is becoming increasingly popular as an instructional tool in higher education (Nachmias & Segev, 2003). Information can be shared, results disseminated, and research projects publicized (Thelwall, Vaughan, Cothey, Li, & Smith, 2003). Online interaction and communication can lead to a greater

sense of community for students and can lead to a decrease in the number of dropouts (Rovai, 2002).

The content of a website is critical for student usage. Students access large amounts of information from academic websites for many different purposes (Nachmias & Segev, 2003). Students often favor websites containing specific information and tend to dislike websites lacking needed information (Mechitov et al., 2001). Students most often evaluate academic sites based upon website design (Mechitov et al., 2001). The manner in which information is accessed is also very important. In addition, a website should be accessible to all persons, including those with disabilities (Clyde, 2001; Javaid, 2003). Since effective websites can aid in recruitment of students and faculty and support for the educational processes, in order to maximize the benefits of a recreation program website, the program administrators must become familiar with website design, development and maintenance to target their audience. Factors such as design, content, governance, and development should be considered before a website is implemented.

Organizations utilize a variety of strategies to develop and maintain websites. Some colleges and universities place the responsibility for websites on individual departments (Hine, 2001). Other campuses require websites to be developed by one person often referred to as the webmaster. It is important to understand how a webmaster's personal characteristics and attitudes influence the final design of the website (Beard & Olsen, 1999). Apparently, national trends in website design and development for recreation programs have yet to be investigated. The information found in this study may allow program administrators to compare their programs with benchmark institutions. To achieve the aforementioned research goal, five research questions were of particular interest for this study:

1. Who is most often responsible for governance of academic websites?
2. Who is most often responsible for development of academic websites?
3. Do students have input for the design and development of academic websites?
4. What components are included in academic websites?
5. Are factors such as accessibility and compatibility considered for academic websites?

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Method

Participants

Data were collected by using an online survey instrument created with E-listen software. Participants in this study were program administrators at NRPA accredited college and university recreation programs (*n=98*). These Recreation academic program administrators were selected as the population of interest by the principal investigator and co-authors to fill out the information relating to the official website of their institution's recreation program. Their contact information was obtained from the National Recreation and Park Association database of accredited programs. NRPA representatives were contacted to confirm database accuracy. The primary investigator collected other necessary respondents' institutional data via the Internet. No names or other forms

of program identification were published. Only individuals involved in the research had access to this information. There were no apparent risks to the subjects completing the survey. Completion of the survey served as evidence of informed consent.

Instrumentation

The questions in the survey instrument were developed for data collection purposes using a panel consisting of three university faculty members as suggested by Patten (2001). An initial survey invitation was e-mailed to program administrators at college and university recreation programs, two additional follow-up invitations were sent to the administrators. Six demographic survey questions related to participating institutions and academic programs. Five questions focused on the development and governance of program websites. Five questions were associated to the content and design of websites. The final question allowed participants to provide additional relevant comments. Participants were given the option to respond "Other" and write in answers where applicable.

A field test of the instrument was conducted using five individuals with previous research and/or website development experience. The test was conducted prior to data collection to ensure both the instructions and wordings were clear, and the format of the instrument was understandable. The field test participants were encouraged to ask questions or make comments. The responses were considered, and appropriate changes were made.

Data Analysis

Survey data were entered into the Statistical Analysis System (SAS) computer software program for data analysis. Descriptive statistics were utilized to identify measures of central tendency. Frequency distributions were calculated to address the research questions.

Results

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Results were organized into three main categories: (a) general data of respondents' institutions, (b) development, governance, and maintenance, and (c) website content and design.

General Data of Respondents' Institutions

Institutional enrollment of all respondents' institutions averaged 17,337 students. The median enrollment was 15,976. Enrollments ranged from 1,300 to 38,000 students. The average number of full-time faculty in the recreation program was six members. The median number of full-time faculty in the program was five members. The smallest and largest number of full-time faculty reported was two and sixteen members respectively. Twenty-three respondents (72%) indicated a master's degree was offered in their program. Two respondents' school (7%) offered a doctorate program. The averaged program size was 203 students. The median program size was 182.5 students. The smallest and largest programs reported were 56 and 389 students respectively.

Development, Governance, and Maintenance (see Table 1 for more details)

The development of program websites was mainly attributed to faculty (72%). Administrators (IT staff) recorded the second highest frequency with eight responses (25%). Seven respondents (22%) described students as being at least partially responsible for website creation. Alumni, College/Marking staff, Dean's Office, Department technician, and Secretary were each credited with one response (3% each).

Faculty members were the dominant source of input for program website content with thirty-one responses (97%). Administrators (IT staff) followed faculty with twelve responses (38%). Eight respondents (25%) suggested students have input into the content of websites. Two respondents (6%) reported Dean's Offices/Admissions/Marketing staff giving input. Non-IT administrators, Secretary, and Staff were each represented by one respondent (3% each).

Faculty were also identified as the key determinants of website design with thirty-one responses (97%) and Administrators (IT staff) following faculty as the second highly identified determinant with sixteen responses (50%). Eight respondents (25%) credited students with input on the content of websites. Secretary received two responses (6%). Department Technician and Non-IT administrators were each represented once (3% each).

The role of maintaining program websites was mainly belong to faculty (with twenty responses, 63%), and Administrators (IT staff) following faculty as next key choice with 9 responses (28%). Secretaries were given maintenance responsibilities at four programs (13%). Department webmaster/Technician and Private developer each had two responses (6%). College/Marking staff and Dean's office were each represented by one respondent (3% each).

Website maintenance may include adding new features to attract visitors, updating information or even redesigning the structure or layout of the site. Respondents were asked on how often program websites were updated. Twelve respondents (41%) claimed websites were maintained monthly. Eight respondents (28%) reported maintenance took place once each semester, followed by yearly (*n = 3*, 17%), then daily (*n = 2*, 7%) and weekly (*n = 2*, 7%). All respondents reported at least some type of routine website maintenance.

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Website Content and Design (see Table 2 for more details)

Respondents reported a wide variety of components currently available on their official program websites. The most frequently selected components were Degrees offered (*n = 31*, 97%), Program contact information (*n = 31*, 97%), Program information (*n = 30*, 94%), Link to institution's homepage (*n = 29*, 91%), Course offerings (*n = 28*, 88%), Faculty profiles (*n = 27*, 84%), and Possible careers in recreation (*n = 24*, 75%). Readers may refer to Table 2 for detailed results of rated components.

Eighteen respondents (56%) declared their website was linked to the National Recreation and Park Association's homepage. Respondents were also asked to indicate the availability of visible site maps on their site. Ten responded Not sure (31%), nine responded Yes (28%), and eight responded No (25%). Five respondents (16%) indicated their website did not have a site map.

Respondents were asked to identify which the Internet browsers were compatible with their website. Twenty-seven respondents (87%) indicated their website was compatible with Microsoft Internet Explorer. Twenty-two respondents (71%) indicated their website was compatible with Netscape Communicator. One subject (3%) responded their website was compatible with all common browsers. Another subject (3%) responded their website was compatible with Safari. [Note: Several current browsers were not widely available at the time of the study.]

Regarding to the special accommodation, eighteen respondents (56%) did not know if their website was accessible for people with disabilities. Eight respondents (25%) suggested their website was not accessible and six respondents (19%) claimed their website was accessible by people with disabilities.

Overall, study results suggest faculty members were most often responsible for program website construction, content and design decisions, and maintenance. Students did not play a significant role in these tasks. Websites were most commonly maintained on a monthly basis. The most common component available on program websites was the information that served as marketing and recruiting tools. The majority of websites did not contain components for student entertainment or communication. Over half of the websites included links to professional organization sites. Just over half of the program websites included links to the National Recreation and Park Association.

Discussion and Implications

Faculty members were most often listed as being involved in the creation of the program websites followed by Administrators (IT staff) and students. This finding indicated that institutions would not typically pay professionals to maintain and develop their websites. Only four respondents noted hiring a private developer for website creation. These results might reflect a lack of funding or a program's current funding priorities. This could explain why some websites were created by alumni and office associates. It is important for all website developers to possess or obtain the appropriate training and knowledge for effective website development (Hine, 2001). As technology evolves, it is also important to stay current in the changes of systems and software updates. Thus, there is a need to make sure website developers attend web designing and developing workshops every so often throughout the year (Greene, 2008). Considering the very low number of programs hiring help, and the fast pace of change, departments need to make sure that those designing/maintaining sites get the training and support needed. Information technology (IT) department on many campuses can assist with this at little to no cost. Students on campus with great technical skills can often be found to assist as interns or paid student workers at reasonable rates.

Faculty members were the most prevalent group (97%) for inputting the content of program websites. Administrators (IT staff) followed far behind with 38% and students with 25%. Students often rate websites higher if they have access to specific information. Such information might

include department and program majors and minors for graduate and undergraduate degree students or seekers, student organizations, listing of faculty and staff as well as a contact us page. Some websites today may have 'extra' features such as multimedia components: sound, audio, video, or animation within the page (Mechitov et al., 2001). These features help make sites appealing and worth visiting because they allow the viewer to participate in watching and listening (Spinxwebdesign, 2009). Faculty members need to be trained or reminded from time to time of those options that are available for updates. For example, the rise of several social media avenues highlights an ever-changing environment that needs attention. The way things were done five years ago probably isn't good enough anymore.

In general, a website should be informative, so it can advertise, sell or market to a particular audience. The ultimate goal should be to build a 'brand' meaning start a program with the highest intention of enhancing its image (Adityasnv, 2009). Since students do not appear to have enough input about the design of program websites, this trend should be improved. The website should not be only for recruitment of new students, the current students can also use it as a resource. This information gives a good reason for academic departments to engage their students in the design or update process. By doing so, departments may build and establish closer ties with their students.

Website maintenance is necessary as technology advances. People may grow tired of the site if information becomes outdated. Maintenances are needed, when images or goals of programs change as well. Maintenance frequency can also be used as an indicator of how programs view the importance of their website. It appears that resources should be dedicated to ensure websites are updated regularly by a qualified individual. Many professional and academic expectations placed on faculty members may inhibit their ability to serve in this capacity. One possible accommodation might be giving faculty stipends or release time to maintain websites. In a period of decreasing budgets and increased faculty expectations, this suggestion may seem impractical. However, faculty and administrators will need to deal other challenges, if the website fails to support or recruit students in a program. Programs should discuss how often content needs to be revisited and considered for update and create a calendar and detailed task list for each area that needs evaluating. Although there isn't a magic number, one might consider to updating at least once each semester.

The amount of content accessed by students on Web-supported course sites is extremely high (Nachmias & Segev, 2003). Students look for specific information on academic sites and become frustrated if they can't find the information needed (Mechitov et al., 2001). The most frequently selected components in the current study were degrees offered, program contact information, program information, link to institution's homepage, course offerings, faculty profiles, and possible careers in recreation. With the exception of a link to the institution's homepage, the most popular components were directly related to the field of recreation. These components allow students and prospective students to learn about the field, the program, general requirements, the faculty, and how to make contact with a representative of the program. Academic programs are encouraged to examine their websites to see which of these components they include on their sites.

Over sixty percent of respondents indicated their website contained links to professional organizations. Membership in professional organizations provides sources of knowledge and resources, networking opportunities, and training and development opportunities. Providing students with links to these organizations' websites could result in increased recreation student memberships and networking. Academic programs may miss a great opportunity to reinforce professional development if their website is missing key professional information. Lastly, if programs value their accreditation, it seems natural to want to provide an acknowledgement of that and a link to that accrediting organizing. This will help students and other visitor learn more about the standards guiding the educational process in the programs.

The results of the current study indicate only 28% of websites in the study had a constantly visible site map and 31% responded "Not sure". Furthermore, 16% of respondents indicated their website had no site map. Users will stay at and search a site with a visible site map longer than those without a site map (Danielson, 2002). They make less use of the browser's "Back" button and explore deeper into the website without returning to the homepage (Danielson, 2002). An well-designed academic website should be easy to navigate because students become frustrated if they can't find the information they need (Mechitov et al., 2001). Developing a strong navigational structure will help ensure site visitors can be assure of easily finding what they need.

Many people with disabilities use "non-standard" browsing technology such as audio readers and screen magnifiers. An academic website must be accessible to individuals using these alternative types of technology (Clyde, 2001; Javaid, 2003). It was surprising to find that 25% of websites were not accessible by people with disabilities and 56% of respondents weren't sure. The data are consistent with the results of a survey of 1,000 government, business, and leisure sites conducted by the Disability Rights Commission in which only 19% of websites met the minimum standards for website accessibility. Programs can be legally penalized under the Disability Discrimination Act (Huber, 2004; Thomas, 2004). Programs are strongly encouraged to consult their campus offices for assistance and site assessment for compliance.

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A website is a powerful tool for any organization. Elements such as design and content have a direct impact on usability of the website and user perception of an organization. Programs planning to develop a new website or redesign an existing site may use the results from this study to determine who can be most appropriate candidate for website construction and maintenance. Since the Internet has been an integral part of higher education, further research in this area will help programs create and manage more effective websites.

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Table 1

Person(s) Responsible for Website: Creation, Content Input, Design Input, or Maintenance

Title	Creation Frequency(%)	Content Input Frequency(%)	Design Input Frequency(%)	Maintenance Frequency(%)
Faculty	23 (72)	31 (97)	31 (97)	20 (63)
Administrators (IT Staff)	8 (25)	12 (38)	16 (50)	9 (28)
Students	7 (22)	8 (25)	8 (25)	1 (3)
Private Developer	4 (13)	1 (3)	3 (9)	2 (6)
Secretary	1 (3)	1 (3)	2 (6)	4 (13)
Dean/Admission/Marketing Staff	1 (3)	2 (6)	1 (3)	1 (3)
Department Technician or Webmaster	1 (3)	n/a	1 (3)	2 (6)
College/Marketing Staff	1 (3)	n/a	n/a	1 (3)
Non-IT Administrators	n/a	1 (3)	1 (3)	n/a
Staff	n/a	1 (3)	n/a	n/a
Alumni	1 (3)	n/a	n/a	n/a

Note. n/a = title not included in response to question

Table 2. *Components on the Website*

Component	Freq.	%	Component	Freq.	%
Degrees offered	31	97	Hit counter	6	19
Program contact information	31	97	Recreation advisory committee	6	19
Program information	30	94	Search engine	6	19
Link to institution's homepage	29	91	Awards/Scholarships	3	9
Course offerings	28	88	Student testimonials	3	9
Faculty profiles	27	84	Thumbnail picture index	3	9
Possible careers in recreation	24	75	Audio or video downloads	1	3
Mission statement	22	69	Chat area	1	3
NRPA accreditation	22	69	Disclaimer	1	3
Pictures of faculty	22	69	Flash objects	1	3
Links to personal faculty pages	21	66	Alumni news	1	3
Links to professional organizations	20	63	Alumni registry	1	3
Course syllabi	16	50	Announcements	1	3
Department logos	15	47	Campus map	1	3
Pictures of students	15	47	Course outlines	1	3
Program history	15	47	Current events	1	3
Webmaster contact information	15	47	Intern handbook	1	3
Admission applicant form	13	41	Program newsletter	1	3
Internship opportunities	13	41	Special events	1	3
Brochures	9	28	Student clubs	1	3
Job listings	9	28	Student manual	1	3
Site index	8	25	Web cam option	1	3

Note. (n=32)

Peer-Reviewed Abstract

The Effect of E-mail-based correspondence on Exercise Adherence and Health Outcomes in Healthy Sedentary Adults

A. J. Mortara, Take Care Health

ABSTRACT

Objective

The purpose of this study was to evaluate the ability of an email based intervention to enhance exercise compliance, physical activity, and related health outcomes.

Methods

Thirty-four (34) subjects adhered to the study's guidelines and thus were included in the final data analysis. The intervention was based on the framework of the Transtheoretical Model. At baseline, subjects completed a self-motivation assessment to measure motivation to exercise, and a stage of change questionnaire to measure physical activity behavior. In addition, blood pressure, height, body mass, body mass index (BMI), relative body fat, and hamstring flexibility were assessed. Subjects were then stratified into intervention and control groups by physical activity stage of change. The intervention lasted four months. During this time, subjects wore a pedometer to objectively track physical activity behavior and reported their weekly pedometer step counts. Subjects in the intervention group received weekly emails designed to increase motivation levels and progress them through the Transtheoretical stages.

Results

There were no significant changes in the intervention or control groups' step counts over 16 weeks. However, body mass and BMI decreased significantly ($p<.05$). There was a significant increase in motivation in both groups from baseline to post-testing, however the post-testing mean motivation score was low (<24). There was also a clear shift from pre-action to action stages of change.

Conclusions

Results from this study indicate no significant increases in physical activity associated with the intervention. Future interventions should increase the level of interaction between the subjects and a fitness professional in order to increase these effects.

KEYWORDS: exercise, internet, transtheoretical model, motivation, pedometer

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