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Elegence and Stregnth!!

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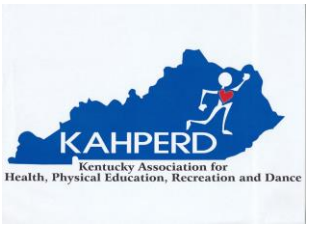

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A Message from the KAHPERD President

A Message from Your President

Greetings from your president to my fellow KAHPERD members and readers of this Journal! Once again Dr Chen has worked tirelessly on KAHPERD's behalf in making our state journal an instrument that gives us quality information. Needless to say we owe him a big thank you for his continued involvement in creating a strong research component to our organization.

I want to personally thank each and every one of you that submitted a poster presentation or presented a session at the Southern Convention hosted by KAHPERD in Lexington this past February. The research area and session availability of our profession continues to enhance the knowledge base and impacts our teaching abilities in such a positive way. Thanks to all our Kentucky presenters for such a solid backbone and bulk of the sessions offered at the convention. Proposals for next fall's convention Sunday November 16th through Tuesday November 18th can be submitted on the KAHPERD website up to June 1st.

Thank you, you the reader for your continued involvement with the students in our Commonwealth. Through your collective efforts our children will become better prepared for the challenges of tomorrow. We too must pass to them the skills, knowledge, and persistence that education can provide them!

Jim Hinerman, KAHPERD President
Eastern Kentucky University

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. A J Motara, Berea College; Dr. Jack Rutherford, Eastern Kentucky University; Dr. Raymond Poffs, Western Kentucky University; Dr. Monica Magner, Morehead State University;& Dr. Kristi King, University of Louisville

In addition, I would like to personal thank Ms. Kayla Keeton, my diligent graduate assistant, for helping format the articles.

Sincerely,
Steve Chen, KAHPERD Journal Editor

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

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).

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.

High School Coaches' Continuing Education Delivery Preferences

Brooke E. Forester, University of South Alabama
Shelley L. Holden, University of South Alabama
Christopher J. Keshock, University of South Alabama
Robert J. Heitman, University of South Alabama

Abstract

According to the National Federation of High State High School Associations (NFHS), there are approximately 7.6 million high school athletes across the country (NFHS, 2013). These athletes are led by coaches who often seek continuing education opportunities to further their professional development. Continuing education for coaches and coaching academic programs enhance coaches' skills, but also may provide an avenue for coaches and school districts to meet the National Association for Sport and Physical Education (NASPE) coaching standards. The purpose of the study was to examine the preferences of continuing education delivery methods among high school coaches. Data were collected through online surveys. Both male (n = 74) and female (n = 29) head and assistant coaches participated in the study. The participating coaches (N = 103) were presented with six options of content delivery methods. Data were analyzed using a 5x2 mixed model ANOVA. The within subjects factor was delivery method (1. live, 2. books, 3.on-line, 4. hybrid, and 5. DVD/video) and the between subjects factor, gender. Results showed a significant main effect for delivery method $F(4,404)=13.198$, $p<.001$ but not gender (males $M=3.343\pm1.08$; females $M=3.345\pm1.12$; $p>.05$). Post Hoc comparisons found the highest rated delivery method (live course $M=3.991\pm1.378$) to be significantly different ($p\leq.05$) from books ($M=2.709\pm1.218$), on-line ($M=3.325\pm1.182$), and hybrid ($M=3.250\pm1.283$) methods but not DVD/video ($M=3.530\pm1.136$). To date, there has been little research conducted with American high school coaches' continuing education. Continuing education research including other subjects however provides contrasting results. Nurse practitioners prefer in-person conferences most (Charles & Mamary, 2002) while Canadian sport coaches seem to prefer to learn from a variety of sources (Erickson, Bruner, MacDonald, & Cote, 2008). Results of the current study would be useful for the development of continuing education content for coaches and to assist academicians in better understanding the intricacies of coaching education.

Groups Structure Influence on Self-Esteem among Physically Disabled Individuals

James C. Broughton, Murray State University
Francis T. Pleban, Murray State University

Abstract

Background: Participation by persons with disabilities in heterogeneous versus homogeneous grouping experiences (Navar, 1991) has been debated among institutional and community human service providers (as cited in Stumbo, 2009). Over the past forty plus years, Public Laws (Shank, 2009) have pushed for more emphasis on enabling disabled persons to become integrated members' of society. **Study Purpose:** This study compared homogeneous versus heterogeneous groupings for physically disabled participants in recreational settings; related to participant self-esteem. **Study Rational:** Previous research (Stumbo & Peterson, 2009) suggests due to differing physical, social, and emotional levels of development, not all disabled people are immediately ready to be integrated into various social settings (as cited in Stumbo, 2009). However, Public Laws have been designed to integrate disabled people as soon as possible. **Methods:** A cross-sectional research design, utilizing a simple random sample from a mailing list of 1300 Physically Disabled Individuals residing in six states. **Procedures:** Rosenberg's Self-Esteem scale was utilized and administered to 197 physically disabled individuals regularly participating in various recreational activities. Group structure was determined from responses to participation frequency with others who were free of a disability. **Data Analysis:** ANOVA ($p<.05$ level of significance) was conducted to analyze differences between group means. **Results**: Individuals participating in heterogeneous outdoor recreational settings, reported slightly more positive self-esteem than those in homogenous grouping ($p=.03$). However, no significant differences in self-esteem between homogeneous and heterogeneous groups of physically disabled individuals in other recreational settings were reported. **Conclusions:** Self-esteem and appropriate group structure for activity participation is individualistic and must be determined based on the functional strength of the individual. Individuals should have freedom to choose which style of group best fits their needs and interest. Finally, it is important to note this study was not a pre-post causal model but simply a statement of contrast.

The collaborative efforts between a university and local non-profit agency to prevent dating violence in adolescents

Megan K. Surles, University of North Carolina at Wilmington

Abstract

This study assessed the impact of a dating violence prevention program, "Safe Dates", with the involvement of a local university and non-profit organization. "Safe Dates", has been designed to educate its' participants, in ten, 50 minutes sessions regarding dating and sexual violence, gender stereotyping, and community resources available. The study was conducted among seven North Carolina public schools, serving approximately 850 eighth grade students and 60 trained university students (peer educators), per year, for three years. Peer educators were required to complete 12 hours of dating violence and curriculum training, along with extensive background checks and drug screens, prior to entering the schools. At the first and final sessions of the curricula, the students were given a pre-test and post-test, which was developed by the North Carolina Coalition Against Sexual Assault (NCCASA), to assess knowledge and behavior change over the course of the "Safe Dates" program. Qualitative and quantitative data were collected from three sources: curriculum materials and activities, observation, and pre and post tests. After analysis and evaluation of the pre and post-tests, adolescents reported significant increases in their understanding, awareness, attitudes, and behaviors regarding dating abuse and sexual violence. Overall, demonstrating moderate to extensive exponential growth in adolescents' between the timeframes of the pre-test, ten course sessions, and post-test. Most program effects were achieved by the collaboration and assistance between a local non-profit organization and the university students who became peer educators. The Safe Dates program provides adolescents with key information, strategies and resources for preventing dating violence, which is otherwise not taught in the school system. This program shows essential promise in the field of health education.

Walkable Scores for an East Texas County and Physical Activity Implications

W. W. S. Njororai, University of Texas at Tyler

Abstract

This study involved collection of Walk Score data for a purposely selected East Texas County including 15 different Zip Codes. This data were accessed from www.walkscore.com in the fall of 2012. The Walk Score has previously been validated as viable data for establishing the physical activity profile of a community. The Walk Score is a number between 0 and 100 that measures the walkability of any address. The scoring between 90 and 100 is a walker's paradise where daily errands do not require a car; 70 to 89, is very walkable as most errands can be accomplished on foot; 50 to 69 is somewhat walkable as some errands can be accomplished on foot; 25 to 49 is car dependent as most errands require a car and 0 to 24 is car dependent as almost all errands require using a car. The results revealed that the following zip codes had a zero walkable score including 75706,75707, 75708; the following were extremely car dependent 75709 (05%), 75705 (09%), 75704 (02 %), 75703 (14%); for these ones, most errands require the use of a car including 75798 (32%), 75799 (34%), and 75702 (40%); the 75701 zip code was somewhat walkable scoring 69%; while the other zip codes were very walkable as most errands can be accomplished on foot including 75711 (71%), 75710 (86%), 75712 (86%), and 75713 (86%). Thus out of 15 Zip Codes in this East Texas County, only 4 (26.67%) merited a walkable score of above 70% showing how heavily car dependent these areas are. It is recommended that policy makers strive to provide for physical activity friendly environments to accommodate safe walking and biking if the physical activity profile of this East Texas locality, as well as elsewhere in the state, is to improve.

Peak Performance for Traditional and Sabermetric Statistics in MLB Pitchers from 1900-2012

R. Michael Cathey, Tennessee Tech University
Michael B. Phillips, Tennessee Tech University

Abstract

Age at peak performance has been studied on athletes from a variety of different sporting events such as the Olympics (De Garay, Levine, & Carter, 1974; Schulz & Curnow 1988) and a variety of other sports including track and field, swimming, baseball, tennis and golf. Studies of peak performance for baseball have primarily focused on traditional statistics (wins, strikeouts, innings pitched) (Schulz, Musa, Staszewski & Siegler, 1994) and found that pitchers had a peak performance between the ages of 27 and 30 for traditional statistics (Schulz & Curnow, 1988). This study identified the age of peak performance for various sabermetric and traditional statistics for pitchers from Major League Baseball from 1900 – 2012. The age of league leaders in Major League Baseball from the years 1901 – 2012 were gathered from baseball-reference.com (n = 3,756). Means and standard deviations (SD) for each of the specific categories (wins above replacement, adjusted earned run average, walks/hits per inning pitched, strikeouts per inning pitched, walks per inning pitched, and hits per inning pitched) were calculated based on the age of the player during the year they were the league leader. A One-Way Analysis of Variance (ANOVA) was conducted to determine if there was a difference between statistics that were viewed as traditional and sabermetric measures. Pitchers from 1900 to 2012 had similar performance standards as those that were calculated based on the previous studies. Age of peak performance for pitchers ranged from 27 to 31 Strikeouts per 9 IP (M = 27.13, SD = 4.58), Wins above Replacement (M = 28.73, SD = 4.30), Wins (M = 28.97, SD = 3.98), Saves (M = 29.77, SD = 4.12), Win Probability Added (M = 28.77, SD = 4.19), Earned Run Average (M = 28.96, SD = 4.38), Walks & Hits per 9 IP (M = 29.89, SD = 4.41), Strikeouts (M = 28.26,SD = 4.41), Innings Pitched (M = 28.90, SD = 3.92), and Bases On Balls per 9 IP (M = 31.16, SD = 4.48). There was no significant difference between traditional and sabermetric measures of Age of Peak Performance (p = .79).

Effects of pre-surgical education on patient expectations in total knee replacements

Steven Furney, Texas State University
Natasha Alden, Resolute Health

Abstract

Each year over 27 million Americans are diagnosed with osteoarthritis (OA). OA is characterized by the erosion of articular cartilage, osteophyte formation and joint-space narrowing. Total-knee arthroplasties (TKA) or total-knee replacements have been shown to be a cost-effective, successful, reliable, and low-risk treatment option for those suffering from moderate to severe end-stage OA. Forty-two consecutive participants, ranging in age from 50 to 85, undergoing unilateral TKA were selected from two orthopaedic surgical practices. The surgeons and patients completed the Hospital for Special Surgery: Total Knee Replacement Expectation Survey (HSS:TKR Survey). Participants in the control group received the standard pre-surgical class. Participants in the intervention group received the standard pre-surgical education class plus an additional module addressing long-term recovery and function. There were no statistically significant differences between the surgeon's and the participant's pre-surgical scores pertaining to surgical expectations on the HSS:TKR Survey. It was anticipated that participants receiving the additional long-term expectations module would positively benefit from the additional education. It was of interest that using the participant's level of education as a variable, those with higher than a high school education had expectations that better coincided with the expectations established by the surgeon. Results may indicate that perhaps the curriculum of the pre-surgical education course needs to be reviewed and revised in order to better target a variety of adult learners.

Transgender Student Inclusion on College Campuses in the Ohio River Valley: A Comparison of Policies and Best Practices

Molly McKinney, ABD, Eastern Kentucky University
Blake Flaugher, MPH, University of Kentucky, AIDS Volunteers, Inc.

Abstract

Background: The face of the "typical" college student is changing. More and more students are identifying as transgender, gender-queer, androgynous, and a plethora of other gender-variant identities (Beemyn, 2005). It has been found that in general, sexual minorities are disproportionately affected by health issues including: substance abuse, overweight and obesity, mental health issues, injury and violence, responsible sexual behavior, access to care, and tobacco use (Mayer, Bradford, Makadon, Stall, Goldhammer & Landers, 2008). Many of these health issues follow sexual minority students to campus. Specifically, transgender students are faced with a multitude of obstacles on campus, ranging from housing accommodations to bathroom policies. **Methods:** The current study is a qualitative review of policies dealing with the physical, mental, and social health of transgender students on campus. Policies from all four-year public Ohio, Kentucky and Indiana universities were compared to best practices as set forth by Beemyn, Domingu, Pettitt, & Smith (2005). **Findings:** Housing policies remain particularly problematic on the majority of campuses. A single room with private bath is the solution many schools offer; unfortunately this option is cost-prohibitive for many students. Inability to use preferred name on official documents was another issue the majority of policies did not address. Policies regarding restroom use were variable, as many campuses had made strides to eliminate this particular problem. Solutions addressing the shortcomings are also enumerated.

Systematic Observation for Evaluating Umpire Performance

Robert J. Doan PhD, University of Southern Mississippi
Murray F. Mitchell PhD, University of South Carolina

Abstract

Sports officials are challenged to make many split-second decisions that can mean the difference between victory and defeat for all levels of competitors. Systematic observation tools have the potential to provide cost-effective real-time information on complex performances for remediation and assessment. The purpose of this study was to develop a tool for the evaluation of baseball umpires, more specifically base umpires. The Qualitative Base Umpire Measures of Performance Scale (Q-BUMPS) was developed from a similar instrument designed to measure the performance of physical education teachers (QMTPS). The Q-BUMP tool focuses attention on seven dimensions of performance that can be important in aiding a base umpire in making the correct call (Type of play, timing, correct first step, hustle to call, proper angle, timing of call, and timing to next position). Data were collected on 12 umpires across 12 games, at the Columbia (South Carolina) Baseball Umpire Association Clinic in the summer of 2013. The most consistently identified areas of weakness for umpires was the speed/decision time to get into position to make the call on a play (too slow) and slowness or indecisiveness to move to the next position following a ruling on a play. These two dimensions and an overall score on the instrument clearly discriminated between stronger and weaker umpires. Overall scores for weaker (but still experienced) base umpires ranged from 50 to 55%, while scores for the stronger base umpires was typically above 90%. These results are important for two possible applications. First, the instrument provides explicit performance data that can be used in a post-game evaluation to improve future base umpire performances. Second, the overall scores from this tool can be used to help administrators ensure that the top officials are awarded the top competitions (i.e., competitive league, tournament and playoff games).

Effects of an Adapted Physical Education Training Package on Teaching Motor Skills to Secondary Students with Low Incidence Disabilities

Michael K. Laughlin, University of Wisconsin

Abstract

Secondary students with low incidence disabilities (SSLID) represent a small student population transitioning away from school settings despite significant limitations to motor movement, due to the severe and profound nature of their disabilities. Adapted physical educators often rely upon unique approaches to facilitate functional motor skill (FMS) acquisition for students with disabilities. Despite adapted physical educator expertise, SSLID continually receive FMS acquisition instruction from assorted professionals, including special education teachers, due to intricate health needs, school-level constraints, and availability of qualified personnel. Yet, special educators are faced with instructional challenges which can include excessive paperwork and lack of available motor assessments. As such, the purpose of this study was to examine the effects of a training package consisting of the Flex Grid Teaching Model (FGTM) along with adapted physical education consultation, on special education teacher FMS acquisition instruction to SSLID. I implemented a multiple baseline across subjects design to measure the rate at which three secondary special education teachers implemented acquisition instruction featuring three specific teaching methods (systematic prompting, specific reinforcement plan, and chained individualized task analysis sequence) during one-to-one instruction with one student from each teacher's self-contained classroom. Following baseline measure, each teacher was trained to use the FGTM and given ongoing, individualized consultation. Baseline and intervention results were equated to percentages and converted to data points for visual inspection across six classic criteria used with applied behavior analysis. Descriptive statistics, interobserver agreement, and treatment integrity data was collected in addition to social validity of the training package. Results indicated a functional relationship exists between use of the training package and an increase in teacher FMS acquisition instruction. While further investigation is required, this study demonstrated the training package can benefit special education teachers whom provide FMS acquisition instruction to SSLID.

Descriptive account of a speedball sport education season in the after school setting

Zachary Wahl-Alexander, University of Alabama
Jenni Jensen, University of Alabama
Vivian Fowler, University of Alabama

Abstract

Sport Education (SE) is a contemporary curriculum and instruction model that aims to develop competent, literate, and enthusiastic sportspeople (Siedentop, Hastie, van der Mars, 2011). SE heavily promotes students taking responsibility for their own learning, as they stay in persisting groups (teams) for the duration of the unit, which is typically longer than regular physical education. The purpose of this study was to provide a descriptive account of a Speedball sport education season in an after school setting, and examine the teachers' perceived efficacy of the season.
One instructor (Sport Pedagogy Graduate Teaching Assistant) and 20 students on five teams participated in an eight week Speedball sport education season. The season consisted of 18 one hour lessons including a pre-season, regular season, post season and culminating event. Data was collected from individual interviews (prior, during and after the program) stimulated recall interviews, informal interviews throughout the program, and critical incident reflections following each lesson. Analytic induction and constant comparison were used to analyze the data.
The results suggest that the instructor was confronted with binary issues while facilitating the speedball season; a) programing issues and b) regularity of attendance. Conversely, the instructor described the program as successful due to the widespread appreciate of the season, the support from administration / faculty, and a dramatic increase in ability level of all students. Although there were obstacles which had to be overtaken in order to successfully complete the SE season, the end result was a success.

Pilot trend analysis on the electrolyte lost patterns during preseason training for DII volleyball athletes

George T. White, Southern Arkansas University
Jan Kiilsgaard, Southern Arkansas University
Ron Smith, Southern Arkansas University

Abstract

The pilot study has a twofold purpose: (1) To perfect collection techniques for a larger study where elite athletes, male and female, will be compared on electrolyte loss during intense preseason training. And (2) Describe the electrolyte loss/recovery rate (Na, K, Ca) of DII volleyball athletes during intense week long preseason workouts. Sweat samples were collected three times during each practice session: (a) immediately after warm up, (b) midpoint of practice, and (c) after last conditioning drill.
The athletes' spines were cleaned with an alcohol gauze pad before each practice. Sterile swabs were swiped from hip to scapula and back to hip. The swabs were sealed and frozen until analysis was conducted in the Natural Resource Research Center at SAU and were measured in mg/L. Three samples were collected at each practice on Monday and Thursday. The initial data (N=5) indicated there was a continued increase in the loss rate of both Potassium and Sodium with a recovery between morning and afternoon practices. Calcium loss patterns were more intriguing. Calcium loss was greatest during the warm up both morning and evening and decreased as practice progressed. There was a substantial increase in the amount of Calcium lost between Monday and Thursday (See Calcium Loss Rate: Table 1).

LEADERSHIP STYLES
PHYSICAL EDUCATION PROGRAMS vs. OBESITY EPIDEMIC

Todd Farmer, Lindsey Wilson College

Introduction

Research shows that today's children and adolescents live in a social and physical environment that makes it easy to over-eat, easy to be sedentary, and inconvenient to be active (Van Staveren & Dale, 2004; King, 2013). Due to poor nutrition and sedentary lifestyles, children born in this generation may have a shorter life span than their parents (Office of the Surgeon General, 2005; Thorpe, 2005). Seventeen percent of the children in the United States are overweight, with a body weight at or exceeding the 95th percentile on Body Mass Index-for-their age group (Ogden, Carroll, Kit, & Flegel, 2009-2010). The rise in childhood obesity has been associated with the rise in diabetes, hypertension, hyperlipidemia, and a range of social and mental disorders among children (Thorpe, 2005). Obesity-related diseases result in 300,000 deaths per year and health care costs in excess of $117 billion per year in the United States (Belser, Morris, & Hasselbeck, 2012; Penn Medicine, 2014; Barlow & Dietz, 2014). For this reason, this research also has implications for the medical community. The implications for the medical community include a decrease in the number of people seeking treatment for preventable diseases (Office of the Surgeon General, 2005). Other potential positive outcomes are controlling health care costs, and maintaining a high quality of life throughout life (Cone, 2004).

Professionals in health and physical education have an increasingly important role in public policy and research agendas to increase physical activity among young people in the United States (Beaudet, Acquaviva & Grube, 2004). Sparling , Owen, Lambert & Haskell (2000) suggested that if physical activity promotion were to succeed as a public health initiative, a multidisciplinary team approach would be required. As university physical education administrators influence university athletics and K-12 physical education by certifying new physical education teachers, strong, and effective leadership at the university level is imperative to promote physical education programs to improve the health and well-being of youth in America (Ryan, Bridges, & Yerg, 2000).

In order to influence the professional development of future physical education teachers, physical education administrators must continue to inform and educate, investigate and advocate, and above all, believe that an active lifestyle is a healthy formula for life (Cone, 2004; Thorpe, 2005). Despite the increased support that physical activity continues to receive from outside sources such as mainstream media and in ongoing media campaigns, physical education administrators have the responsibility to integrate media campaigns to promote physical education as an important component of quality education and long-term health (Cone, 2004). According to Johnson (2005), physical educators are responsible to ensure physical education has a legitimate and respected place within a school curriculum.

Purpose of Study

Although obesity is one reason why leadership effectiveness at the university physical education administrator level is important; however, the main emphasis of this research study was not on the potential health consequences of sedentary living, but rather the influence and importance of effective physical education leaders to improve the health and well-being of young people.
Effective leadership is necessary to meet the changing and escalating demands of university physical education (Copeland & Stenzel, 2004; Sparling et al., 2000). University physical education administrators are responsible for securing and administering sufficient budgets, finding and managing experienced personnel, developing and maintaining quality physical education, participating in public relation

activities, and teaching and advising undergraduate as well as graduate students (Mobley, 1997). University physical education administrators are responsible for demonstrating that course content also has value to physical education leadership, and must generate awareness and acceptance of the purposes and missions of the organization and motivate the staff to look beyond their self-interests for the good of the students' overall academic achievement (Einstein & Humphreys, 2001). Most physical educators know and understand that a quality physical education program improves student learning; however, being able to demonstrate its importance successfully can be a challenge (Copeland & Stenzel, 2004). To reach the goal of strong effective leadership for physical education administrators at the university level and to demonstrate its importance effectively, the transformational and transactional leadership styles were the basis of this research study. The purpose of this cross-sectional, descriptive study was to examine the leadership styles of physical education administrators at four-year universities across the United States with an enrollment from 1,000 to 10,000 students.

Theoretical Framework

The transformational leadership style is associated with participation in coordinating and integrating activities as opposed to controlling and directing the work of groups (Friedman, 2000; Weiskittel, 1999). Transformational leadership occurs when one or more persons work with others in a way that both leaders and followers encourage one another to higher levels of motivation and morality (Harrison, 1999; Kezar, 2002). The current study findings suggest transformational leadership styles correlate with effectiveness ratings, overall performance of the organization, and satisfaction and effort (Einstein & Humphreys, 2001). In short, a transformational leadership style was most often associated with committed employees and a healthy work environment (Avolio & Bass, 2004; McCaslin 2001).
Friedman and Langbert (2000) defined transformational leadership as "leadership that motivates followers to ignore self-interests and work for the larger good of the organization to achieve significant accomplishments" (p. l). McCaslin (2001) stated that transformational leaders are more visionary and inspirational in approach. They tend to communicate clear and acceptable vision and goals with which employees can identify, and tend to engender intense emotion in their followers. A transformational leader must be a person of strong convictions, determined, self-confident, and emotionally expressive, and his or her followers must want to identify with the leader as a person (Avolio & Bass, 2004; Einstein & Humphreys, 2001; Hood, Poulson, Mason, Walker, & Dixon, 2009,). Transformational leaders create new learning opportunities along with a supportive climate in which to grow, and recognize individual differences in terms of needs and desires. Transformational leaders spend time teaching and coaching; they treat others as individuals, rather than just a member of the group, consider each individual as having different needs, abilities, and aspirations, and help others to develop their strengths (Avolio & Bass, 2004).

Conversely, a transactional leadership style tends to define expectations and promote performance to achieve goals. Transactional leaders also tend to depend on threats and punishment to pressure employees; do not trust employees, and do not allow for employee input (Pagewise, 2002). Based on the review of the literature, there was a great deal of criticism toward transactional leadership. The criticism leveled against this form of leadership posited businesses or organizations with many transactional leaders tended to have higher turnover and absenteeism than other organizations (McCaslin, 2001). In addition, some research indicates that Generation X employees, a large part of the American workforce, are highly resistant to the transactional style of leadership (Pagewise, 2002). Overall, the review of the literature explained the importance of physical education leaders and the manner in which transactional and transformational styles affect employees and organizations.

Methods

Instrumentation

A quantitative survey instrument that measured two constructs of leadership, transformational and transactional, was administered to physical education administrators and their staff. The survey was a 4-point likert scale with 0 = "not at all," "1 = once in a while," "2 = sometimes," "3 = fairly often," and 4 = "frequently if not always." This study focused on transformational and transactional leadership styles as defined by the Multifactor Leadership Questionnaire MLQ 5X survey instrument to describe the leadership of physical education administrators.

Since 1980, studies have shown the MLQ 5X to be a reliable and valid instrument for differentiating "highly effective [leaders] from ineffective leaders in military, government, educational, manufacturing, high technology, church correctional, hospital and volunteer organizations" (Avolio & Bass, 2004, p. 12). Based on the results of the proposed study, inferences were made about trends in the leadership behaviors and authority of physical education administrators.

Data Collection

In 2006 physical education administrators and their staff members were instructed to go to a customized personal Web page and complete the Informed Consent Form and either the MLQ 5X Leader Form for leaders or MLQ 5X Rater Form for staff online. The Mind Garden System Web page provided each university, physical education administrator, and staff member a confidential identification number for each person completing the survey. Responses entered on the MLQ 5X are confidential and were reported by survey identification numbers. The MLQ 5X survey is designed to collect information pertaining only to the style of leadership practiced by the physical education administrator and does not measure his or her performance. All results were reported anonymously, using group data. The coded identification number was used to facilitate data collection and SPSS computer analysis of data. Participants, physical education administrators and their staff were given a deadline of three weeks to complete their assessments. The Mind Garden System Web page indicated completion of each survey.

A total of 150 individuals, 75 physical education administrators and 75 staff members, participated in the study. The participants answered a total of 45 questions; leaders were given the MLQ 5X Leader Form and staff members were given the MLQ 5X Rater Form. The MLQ 5X survey was designed to collect information pertaining only to the style of leadership practiced by the physical education administrator. The physical education administrators invited staff to volunteer in a quantitative study of administrative leadership styles in university physical education departments.

Table 1. Leaders' and Raters' Mean Ratings for the MLQ 5X 12 Leadership Constructs

Leadership constructs	Leaders		Raters	
	N	*M*	*N*	*M*
Transactional				
Contingent reward	74	2.86	75	3.07
MBE passive	75	1.12	75	0.99
MBE active	75	1.45	75	1.41
Laissez faire	75	0.47	75	0.51
Effectiveness	75	3.18	75	3.35
Extra effort	75	2.63	74	3.04
Satisfaction	75	3.10	75	3.46
Transformational				
Intellectual stimulation	75	2.89	75	3.09
Idealized behavior	75	3.19	75	3.19
Idealized attributes	75	3.00	75	3.16

Inspirational motivation	75	3.15	75	3.35
Individual consideration	75	3.12	75	3.25
Total Transactional score (7 items)	74	2.12	74	2.27
Total Transformational score (5 items)	75	3.07	75	3.21
Valid *n*	74		74	

Note. 4-point likert scale with 1 indicating "once in a while" and 4 indicating "frequently if not always". Missing 1, *N* = Sample size, *M* = Mean, Leaders = Administrators, Raters = Staff, faculty members

Table 1 compares the Leader and Rater construct scores for the 12 leadership constructs on the Multifactor Leadership Questionnaire, MLQ 5X. There are five transformational constructs and seven transactional constructs. Transformational constructs are Idealized influence (attributed), Idealized influence (behavior), Inspirational motivation, and Intellectual stimulation and Individual consideration. The seven factor leadership models for transactional leadership are Contingent reward, Management-by-exception (active), Management-by-exception (passive), Laissez-faire leadership, Extra effort, Effectiveness, and Satisfaction.

Results

A paired sample *t* test was appropriate because the research was conducted to compare leadership styles of university physical education administrators and the physical education administrators' leadership style as perceived by their staff. Both the staff and administrators were evaluating the leadership style of the administrator. The paired sample *t* test compares the means of two variables. In this case the independent variables were position, physical education administrator, and staff. The dependent variable was leadership style perceptions. The paired sample *t* test computes the difference between the two variables for each case, and tests to see if the average difference is significantly different from zero (Archambault, 2000). Paired sample *t* test allows a determination on the statistical difference of a difference between two paired means. The term paired means that there is a correspondence between observations from each population (SAS Institute, 1999). The observed data are from matched participants and are drawn from a population with a normal distribution. Participants are paired with participants as alike as possible (TEXA Soft, 2002). Paired sample *t* tests are exactly what the name implies. In this case, there is a connection between scores in one group and the scores in the other (Kuzma & Bohnenblust, 2005).

Demographics

The sample for this quantitative study was taken from the population of university physical education administrators who are employed at four-year universities across the United States with an enrollment from 1,000 to 10,000 students. The 2005-2006 College Coaches Directory lists a total population of 551 universities that meet the size criteria and all of the 551 four-year universities listed offer undergraduate programs in physical education for teacher education.

The sample was compiled from the 2005-06 College Coaches Directory, with 1 to 13 universities selected in each state across the United States to achieve a stratified sample of 150 individuals, 75 physical education administrators, and 75 staff members, who were asked to participate in this study. In order to obtain an external measure of university physical education administrators' leadership behaviors and authority, physical education administrators completed the MLQ 5X Leaders Form and their staff completed the MLQ 5X Rater Form.

The results of the survey demonstrated that physical education administrative leaders' average transformational leadership ratings of (M = 3.07) were higher than their average transactional leadership ratings of (M = 2.12), as measured by the MLQ 5X. The results indicated certain transformational

leadership constructs, Idealized Behavior (*M* = 3.19), Inspirational Motivation (*M* = 3.15), and Individual Consideration (*M* = 3.12) were the most frequently used leadership styles. Based on survey results, leaders tended to rate their style and behaviors as transformational on a "Fairly Often" basis. This study result was consistent with previous research that suggested transformational leaders tend to define themselves as inspiring, motivating, and considerate (Einstein & Humphreys, 2001; McCaslin, 2001). The research suggested inspiring, motivating, and consideration qualities were present in leaders that have a high level of employee commitment. The research findings were important because such leadership may be instrumental in training effective physical education administrative leaders in the future. The physical education administrators' highest rating on transactional leadership was Effectiveness (*M* = 3.18).

The results of the study demonstrated the staff, faculty members', and coaches' average transformational leadership ratings of (*M* = 3.21) were higher than their average transactional leadership ratings of (*M* = 2.27) as measured by the MLQ 5X. The staff members rated physical education administrators as highly transformational. Inspirational Motivation (*M* = 3.35) and Individual Consideration (*M* = 3.25) were the highest rated aspect of transformational leadership that subordinates believed administrators possessed. Avolio and Bass (2004) stated Inspirational Motivation leaders would talk enthusiastically about what needs to be accomplished, articulate a compelling vision for the future, and express confidence that goals will be accomplished. McCaslin (2001) stated transformational leaders are more visionary and inspirational in approach. Additionally, the staff also rated physical education administrators as demonstrating Effectiveness (*M* = 3.35). These results are consistent with the ideas asserted in the literature review that transformational leaders tend to be effective. According to Avolio and Bass (2004), transactional effectiveness leaders heighten others' desire to succeed and increase others' willingness to try harder. The leader's effectiveness appears to relate to transformational leadership in that transformational leaders tend to motivate employees and individualize learning and goals (Armstrong, 2001). Motivating employees plays an important role in ensuring that leaders are effective and have the ability to properly train future leaders.

Physical education administrators rated their own style as transformational. Transformational administrators who were surveyed believed they possessed a leadership style that encouraged and inspired employees. More specifically the study suggested, as it related to the transformational leadership trait of Idealized Behavior, administrators gave themselves high ratings of "Fairly often" or "Frequently, if not always" on the Multifactor Leadership Questionnaire MLQ 5X survey. Based on the study results, the administrators believed their leadership style stresses important beliefs, specifies the importance of having a strong sense of purpose, considers the moral and ethical consequences of decisions, and emphasizes the importance of having a collective sense of mission (Avolio & Bass, 2004). Transformational leadership traits were consistent with the characteristics that are needed to develop other leaders. As related to the realm of physical education and training future physical education teachers, the presence of transformational leadership traits in administrators serve as a positive influence (Avolio & Bass, 2004).

The study also found most administrators believed their leadership style consisted of Inspirational Motivation and Individual Consideration. In other words, the administrators believed the manner in which they lead inspired and motivated staff members. In addition, staff ratings of administrators as related to Individual Consideration means administrators are cognizant of the fact that individuals have different styles of learning and working in a group. According to the literature review, leaders that possess inspirational and motivational characteristic work hard to bring out the best attributes in their subordinates (Kark & Boas, 2002). This in turn increased the self-worth and self-efficacy of the subordinate because this technique transmitted the message leaders believed in the abilities of the subordinate (Kark & Boas). In addition, leaders with inspirational and motivational traits tended to act as mentors and coaches in the development and training of future leaders. The leader/subordinate relationship was nurtured through a supportive environment that recognized the needs of individuals, both to meet their needs and their goals.

Although leaders' average ratings leaned towards transformational leadership style, there were some transactional characteristics leaders seemed to embrace. These characteristics included Transactional Effectiveness and Transactional Satisfaction. According to the literature review, Transactional Effectiveness is a positive leadership characteristic to possess even if the overall style of leadership is transformational (Avolio & Bass, 2004). The literature asserted those with Transactional Effectiveness as a leadership quality heightened the desire of others to succeed and to increase others' willingness to try harder (Avolio & Bass). In addition, the literature review pointed out that a Transactional Effectiveness leadership style allowed others to meet job related needs (Avolio & Bass). Transactional Effectiveness leadership aided employees in representing their group to a higher authority, meeting organizational requirements, and in leading the group (Avolio & Bass). There was also a similarity between the findings and the literature review as it related to Transactional Satisfaction. The literature review explained leaders with this quality tended to utilize leadership techniques that were satisfying and they worked with others in a satisfactory way (Avolio & Bass). Thus, although these are defined as transactional qualities there is evidence these qualities were also consistent with the overall characteristics of transformational leaders. Transactional qualities like the desire for others to succeed, the ability to lead a group, and the ability to work well with others in a satisfactory way are also characteristics of transformational leadership.

Overall, as related to the first research question, the study demonstrated leaders were very confident that the manner in which they manage was beneficial to their staff and their departments as a whole. When leaders are confident and tend to communicate clear and acceptable vision and goals, programs being offered will be effective as related to the training and development of new physical education instructors.

The study revealed staff, faculty, and coaches rated the leadership style of the administrators as more transformational than transactional. As related to the area of the transformational construct, Inspired Motivation, the staff, faculty members and coaches rated their physical education administrator's leadership style as more transformational with a rating of (Rater M = 3.35 and the Leader M = 3.15). Inspirational Motivation leaders tended to be enthusiastic concerning what needed to be accomplished, articulated a compelling vision of the future, and expressed confidence goals would be accomplished (Avolio & Bass, 2004).

In addition, the literature reported overall transformational leaders tended to be more visionary and inspirational in their approach (McCaslin, 2001). The perception subordinates had for transformational leaders tended to be that of clear communication. In addition, transformational leaders tended to communicate clear and acceptable vision and goals with which employees could identify (McCaslin, 2001).

Specifically to the four questions on the MLQ 5X, which identified the effectiveness of leaders, many subordinates gave administrators high ratings. The high rating of (M = 3.35) by the subordinates was the greatest evidence that the leadership style of the administrators was accomplishing the goal of making great physical education leaders. The results demonstrated that staff members gave physical education administrators higher rating than the physical education administrators gave themselves in terms of transformational leadership.

The following are definitions of terms for Leadership Constructs that have been discussed in the Results of the Study.

	Definition of Terms
	Views the leader-follower relationship as a process of exchange. They tend to gain compliance by offering rewards for performance and compliance or threatening punishment for non-performance and non-

Transactional leadership	compliance (McCaslin, 2001).
Contingent reward	Clarifies expectation and offers recognition when goals are achieved. The clarification of goals and objectives and providing of recognition once goals are achieved should result in individuals and groups achieving expected levels of performance (Avolio & Bass, 2004).
Management-by-exception (passive)	The (passive) employer does not interfere until a concern or problem exists. These types of employers believe if there is not a problem then why change the procedure (Avolio & Bass, 2004). The leader fails to interfere until problems become serious, waits for things to go wrong before taking action, and demonstrates that problems must become chronic before taking any action.
Management-by exception (active)	Focuses attention on mistakes or failures. The employer keeps a record of mistakes and uses these documents to bring desired results (Avolio & Bass, 2004). The leaders concentrate their full attention on handling mistakes, complaints, and failures. The employer keeps a record of mistakes, uses these documents to bring desired results and directs their attention toward failures to meet standards (Avolio & Bass).
Laissez-faire	Leaders display the following behaviors: they avoid getting involved when important issues arise, they are absent when needed, they avoid making decisions, and they delay responding to urgent questions (Avolio & Bass, 2004). Punishments are not always mentioned, but are well understood, and formal systems of discipline are usually in place (Pagewise, 2002).
Extra effort, effective, and satisfaction with leadership	In the transactional leadership style of extra effort, the leaders get others to do more than the subordinates are expected to do. Effectiveness leaders heighten others' desire to succeed and increase others' willingness to try harder. Under the satisfaction category, the leadership style uses methods of leadership that are satisfying, and they work with others in a satisfactory way (Avolio & Bass).
Transformational leadership	Effective leadership is willing to take time to discuss issues, and to answer questions or give feedback (Kezar, 2002). This is leadership that motivates followers to ignore self-interests and work for the larger good of the organization to achieve significant endeavors (Friedman & Langbert, 2000).

Intellectual Stimulation	"Intellectual stimulation, charismatic leadership, inspirational leadership are major components of transformational leadership" (Bass, 1990, p. 221). The leaders stimulate their followers' effort to be innovative and creative. They solicit new and creative solutions to problems from followers, who are included in the process of addressing problems and finding solutions (Avlio & Bass, 2004).
Idealized influence (behavior)	This has four characteristics: talks about his/her most important beliefs, specifies the importance of having a strong sense of purpose, considers the moral and ethical consequences of decisions, and emphasizes the importance of having a collective sense of mission (Avolio & Bass, 2004).
Idealized influence (attributed)	Has four characteristics: instills pride in others for being associated with him/her, goes beyond self-interest for the good of the group, acts in ways that build associate respect, and displays a sense of power and confidence (Avolio & Bass, 2004).
Inspired motivation	Based on the following items: envisioning attractive future outcomes which they can ultimately envision for themselves (Avolio & Bass, 2004). A leader with inspired motivation talks about the future, feels enthusiastically about what needs to be accomplished, sets a vision for the future, and has faith that goals will be accomplished.
Individual consideration	Teaching each person as an individual trying to bring out the best in that person. This intellectual stimulation will increase the follower's self-worth and self efficacy because these approaches transmit the message that the leader believes in the follower's ability (Kark & Boas, 2002).

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Health Issues Affecting College Student's Academic Performance

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Abstract

The American College Health Association (ACHA) is the nation's principal advocate and leadership organization for college and university health, represents a diverse membership that provides and supports the delivery of health care, disease prevention, and wellness services for the nation's 18 million college students. The ACHA-National College Health Assessment II (ACHA-NCHA II) is a survey instrument created by the ACHA to assist college health service providers, health educators, counselors, and administrators in collecting data about their students' habits, behaviors, and perceptions on the most prevalent health topics. The purpose of this paper is to report the results of the ACHA-NCHA II given at one university. This study highlights the 10 most frequently identified health issues experienced by college students which have impacted academic performance for a midsized (estimated enrollment of 20,000) university in the Southern United States. The identified concerns are consistent with the findings of other nationwide schools' health providers, educators and administrators.

Introduction

The American College Health Association (ACHA), the nation's principal advocate and leadership organization for college and university health, represents a diverse membership that provides and supports the delivery of health care, disease prevention, and wellness services for the nation's 18 million college students (http://www.acha-ncha.org/). On-campus health service professionals play a vital role in the academic success and retention of students in higher education (Dusselier, L., Dunn, B., Wang, Y., Shelley II, M.C., & Whalen, D.F., 2005). A wide range of health behaviors affecting university and college student's GPAs have been identified. The concerns most commonly identified include stress, sleep habits, exercise/nutritional habits, flu related illness, time management, relationship difficulties, and concern for troubled friends and family (Trockel, Barnes, & Egget, 2000). The identification of health problems on campus helps to ensure program development supporting students' overall health, academic success and retention.

The ACHA-National College Health Assessment II (ACHA-NCHA II) is a national survey instrument created by the ACHA to assist college health service providers, health educators, counselors, and administrators in collecting data about students' habits, behaviors, and perceptions on the most prevalent health topics. The ACHA initiated the original ACHA-NCHA survey in 2000, and the instrument was used nationwide through the spring 2008 data collection period. The ACHA-NCHA II now provides the largest known comprehensive data set on the health of college students, providing the college health and higher education fields with a vast spectrum of information on student health.

The purpose of this study was to determine the 10 most frequently identified health issues experienced by college students that impacted academic performance. College enrollment is on the rise among traditional aged students and this transition from adolescence to adulthood is a time of change that is both demanding and stressful (Pederson, 2012). However, completion rates have decreased for the past three decades (Bowler, 2009). College tuition is also rising nationally, so it proves beneficial to examine factors related to academic success and retention of current college students. College students face unique challenges at a developmentally crucial time. It is important for researchers to understand student health and academic issues so they can improve upon the university services as necessary. This study examines

health factors related to academic performance helping practitioners improve upon programs offered to students at the university.

Methods

This study sample consisted of 845 participants from a midsized university in the Southern United States. The participants were selected utilizing a stratified random sample from across the university campus in a variety of classes. Data were collected using the ACHA-NCHA II instrument described in the introduction. All surveys were administered by health service professionals from the university Health Service department.

The ACHA-NCHA II is a 65-question instrument that focuses on the general health topics of college students covering disease and injury prevention, academic impacts, violence, abusive relationships and personal safety, alcohol, tobacco, other drug use, sexual behavior, nutrition and exercise, mental health, and sleep http://www.acha-ncha.org/support.html . Level
of impacts on academic performance were defined and classified in this study as: (1) received a lower grade on an exam, or an important project; (2) received a lower grade in the course; (3) received an incomplete or dropped the course; (4) or experienced a significant disruption in thesis, dissertation, research, or practicum work. The data revealed students' habits, behaviors, and perceptions on the most prevalent health topics as determined by the ACHA for the last 12 months.

The mean age of students surveyed was 20.64 years with a median age of 20.0 years with 63.1% of respondents falling between 18-20 years of age. Of those remaining, 30.8% were 21-24 years, 3.6% were 25-29 years and 2.5% were 30+ years of age. The majority of participants were White (81.4%), with 11.0% Black, 1.9% Latino, 2.0% Asian, 2.2% Other, 1.9% Biracial and 0.9% Native Americans responding.

Results

Results showed 92.8% (91.7 % male and 93.3 % female) described their health as good, very good or excellent, while only 54.3 % of the surveyed college students (59.4 % male and 51.9 % female) reflected their health as very good or excellent. The top ten health factors identified in the study were; stress (20.8 %), sleep difficulties (15.5 %), work (12.7 %), anxiety (12.0 %), cold/flu/sore throat (11.9 %), relationship difficulties (10.4 %), internet use/computer games (10.1 %), depression (8.8 %), alcohol use (8.4 %), and the death of a friend or family member (7.2 %). As previous research shows, stress plays a huge role in the academic performance of students in higher education and is increasing (Stallman, 2010).

Stress was the highest reported factor that impacted academic performance of this population. Table 2, level of stress within the past 12 months, further illustrates how males tend to report less stress than females do. The females reported higher stress levels in four out of five categories. However, it is interesting to note that majority of both males and females report having “average (or moderate) stress”. The largest discrepancy in “more than average stress” was found between the genders.

Table 1. Factors Affecting Academic Performance

Stress: 20.8 %*	Finances: 4.3 %
Sleep difficulties: 15.5 %*	Homesickness: 3.4
Work: 12.7 %*	Allergies: 3.3 %
Anxiety: 12.0 %*	Learning disability: 2.7 %
Cold/Flu/Sore throat: 11.9 %*	Chronic or serious illness: 2.3 %
Relationship difficulties: 10.4 %*	Injury: 2.1
Internet use/computer games: 10.1 %*	Chronic pain: 1.9 %
Depression: 8.8 %*	Drug use: 1.8 %
Alcohol use: 8.4 %*	Pregnancy (yours or partner's): 1.3 %
Death of friend/family: 7.2%*	Discrimination: 1.2 %
Concern for friend/family 7.0%	Assault (physical): 1.2 %
ADHD: 5.7 %	Eating disorder/problem: 1.1 %
Extracurricular activities: 5.7 %	Assault (sexual): 1.0 %
Infection/Bronchitis/Strep throat: 5.0 %	(STD/I): 0.8 %
Roommate difficulties: 5.0 %	Gambling: 0.7 %

* Top ten factors (ranked right to left)

Table 2. Level of Stress within the Past 12 months

Stress Levels in Percentages			
Percent (%)	Male	Female	Total
No stress	5.2	1.8	3.3
Less than average stress	16.2	4.9	9.4
Average stress	48.2	44.4	45.8
More than average stress	25.3	40.9	34.6
Tremendous stress	5.2	8.0	6.8

Tables 3-7 illustrate the percentages when students displayed feelings of being overwhelmed, feeling hopelessness, exhausted and lonely in school. These feelings contribute to stress and the feelings of anxiety which are highly reported as affecting grades in college students. Females again displayed higher percentages than their male counterparts in every category. Tables 3 and 4, which illustrate feelings of being overwhelmed and feelings of hopelessness, show the same trend in discrepancy between the genders, however it is important to note that while females reported feelings of being overwhelmed at 90%, they only reported feelings of hopelessness at 49%. A similar statistic was displayed with the

males, reporting feelings of being overwhelmed at 71.9% but only reporting feeling hopelessness at 37.3%. This is important because even though data shows almost all students feel overwhelmed at some point, only half of those display feelings of hopelessness. Both men and female groups exemplify a pattern of being overwhelmed but report a much lower percentage of feeling hopeless.

Table 3. Percentages of individuals who have felt overwhelmed while in college.

Felt Overwhelmed			
Percent (%)	Male	Female	Total
No, never	22.0	6.6	12.8
No, not last 12 months	6.1	3.5	4.6
Yes, last 2 weeks	34.3	49.0	43.3
Yes, last 30 days	13.8	19.5	17.1
Yes, in last 12 months	23.9	21.5	22.3
Any time within the last 12 months	71.9	90.0	82.7

Table 4. Percentages of Hopelessness felt while in college.

Felt Things Were Hopeless			
Percent (%)	Male	Female	Total
No, never	47.2	34.0	39.1
No, not last 12 months	15.0	17.1	16.3
Yes, last 2 weeks	11.3	12.1	12.1
Yes, last 30 days	7.1	12.1	10.1
Yes, in last 12 months	19.3	24.7	22.4
Any time within the last 12 months	37.7	49.0	44.6

Table 5, which displays individuals' feelings of exhaustion, suggests more similarity between the genders, with both females and males having similar levels of feelings of exhaustion (not from physical activity), however females still displayed feeling more exhausted. Table 6, which indicates loneliness again display the males tending to not feel as lonely as the females.

Table 5. Percentages of individuals who have felt exhausted while in college.

Felt Exhausted (not from physical activity)			
Percent (%)	Male	Female	Total
No, never	26.9	8.6	16.1
No, not last 12 months	8.6	8.8	8.6
Yes, last 2 weeks	31.5	44.2	39.1
Yes, last 30 days	11.9	17.6	15.2
Yes, in last 12 months	21.1	20.9	20.9
Any time within the last 12 months	64.5	82.6	75.3

Table 6. Percentages of feelings of loneliness while in college.

Felt Lonely			
Percent (%)	Male	Female	Total
No, never	40.6	21.7	29.2

No, not last 12 months	16.3	20.1	18.6
Yes, last 2 weeks	15.4	19.7	18.0
Yes, last 30 days	8.6	13.9	11.8
Yes, in last 12 months	19.1	24.6	22.5
Any time within the last 12 months	43.1	58.2	52.3

The statistics in Table 7 reflect the occurrence of issues that have been traumatic or very difficult to handle. Again, like previous findings, females displayed higher percentages in every area except for career related issues. Nearly the same amount of females and males expressed the finance issue as traumatic. The top two categories within this table affecting both genders were academics and intimate relationships. Students indicated their academics were very hard to handle, and revealed pressure coming from academics to be even more traumatic to them than losing a family member.

Table 7. Issues that have been traumatic or very difficult to handle

Percent (%)	Male	Female	Total
Academics	33.2	42.7	39.2
Career-related issue	23.5	15.2	18.6
Death of family member or friend	14.5	25.6	21.2
Family problems	20.0	31.9	27.3
Intimate relationships	26.8	40.1	34.8
Other social relationships	18.2	28.1	23.9
Finances	28.4	31.5	30.3
Health problem of family member or partner	10.2	20.2	16.3

Drinking on college and university campuses among students continues to be a significant concern and health related issue for administrators and health service organizations. Drinking is not only common on college campuses but research suggests it is increasing (Johnston, O'Malley, Bachman, & Schulenberg, 2005). Table 8 displays the reported alcohol use for all students within the past 30 days compared with how often students perceived the typical student on campus used substances within the same time period. The last line of each table combines all categories of any use in the last 30 days. This table shows that more males drink than females do both in actual and perceived use. This table also shows a large discrepancy in student's actual use as compared the perceived use. The largest discrepancies are in the area of "never used" and "used all 30 days". This suggests that students are overestimating the amount of alcohol use by their peers.

Table 8. Reported Alcohol Use Versus Perceived Use

	Alcohol Actual Use			Perceived Use		
Percent (%)	Male	Female	Total	Male	Female	Total
Never used	22.0	24.3	23.6	3.5	2.9	3.4
Used, but not in the last 30 days	12.4	18.6	15.7	2.2	2.3	2.2
Used 1-9 days	41.0	44.2	42.9	26.1	26.6	26.4
Used 10-29 days	22.0	12.9	16.8	42.1	47.2	44.9
Used all 30 days	2.5	0.0	1.0	26.1	21.0	23.1

Any use within the last 30 days	65.5	57.1	60.7	94.3	94.8	94.4

Conclusions

According to Haines (1996), bouts of depression correlate with negative academic performance and self-reported mood ratings are better predictors of academic performance than other measures of intelligence. Depression is linked to the factors measured by the ACHA. Recent national ACHA data has showed that stress is a leading impediment to academic performance outranking the other top 10 impediments to learning. Nationally, the top impediments include; alcohol use, cold, flu, sore throat, sleep difficulties, concern for a troubled friend or family member and relationship difficulties. This study of a midsized southern university reflects that of the national data trends. Our study showed stress as the top ranked health factor impacted academic performance. Stress is on the rise on college campuses with recent studies showing the highest levels among freshmen since data collection began (Pryor, Hurtado, DeAngelo, Palucki, Blake, & Tran, 2010). If practitioners can improve general mental health related to anxiety it can protect against academic impairment. National ACHA data is available to the public each year and the group encourages use of the survey instrument to improve services at each institution. While there are trends nationally, it is important for individual institutions to understand the dynamics on their campus.

Previous research has shown that stress is a part of campus life and impacts how students cope with the demanding college lifestyle (Arthur, 1998). Other studies show a relationship between high stress levels and poor health among college students and a connection between disease and stress (Damush, et. al. 1997; Dusselier, et al. 2005). According to Misra, McKean, West, & Russo (2000), college students experience stress at predictable times during a semester due to academics, finances and a lack of time management skills. Health professionals can use such information in developing interventions for students. It is also important to consider gender differences in regards to stress reflected in this study. According to Sharma and Kaur (2011) these gender differences peak during adolescence years. Females also seem to experience more self-imposed stress and physiological reactions to stress (Misra & McKean, 2000). Regarding time management and procrastination there seems to be no differences between genders (Sharman & Kaur, 2011). However, both are related to academic stress.

This study highlights concerns for health administrators and services on campus across the United States. Data from this study is consistent with national trends. The identification of such issues can aid in programming to improve the overall health and academic performance of students. It is also important to recognize the impact of the various factors on academics and the overall wellbeing of university and college age populations.

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Profile of Secondary Health and Physical Education Teachers in Kentucky

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Abstract

Previous research has indicated a gap in the study of professional experiences and professional development for secondary health and physical education teachers across the nation. During the Fall Semester of 2013, 346 secondary health and physical education teachers across the state of Kentucky were sent an electronic copy of the Kentucky Health and Physical Education Profile Survey via e-mail. Of those 346 participants, 96 completed the on-line survey for a response rate of 27.7%. The Kentucky Health and Physical Education Profile Survey was utilized to assess secondary (9th-12th grade) health and physical education teachers' professional experiences and perceptions. Questions related to professional experiences and expertise included: years taught; number of subjects taught; class scheduling; average number of students and minutes taught for each class; required textbooks, professional development preferences; and, coaching experience and impact on teaching. Additional questions focused on teachers' perceptions of their school administrators, fellow teachers, and parents' attitudes towards health and physical education. The results showed that teachers' age influenced response patterns. For instance, teachers over the age of forty were significantly more likely to possess an undergraduate degree in physical education only compared to degrees in both health and physical education degrees for younger teachers ($p<.05$), and as a result, teachers older than forty were significantly more likely to have a minor compared to younger teachers ($p<.05$). Furthermore, teachers over the age of forty were significantly more likely to report coaching duties to positively impact their teaching compared to younger teaching coaches ($p<.05$). Finally, teachers younger than forty were significantly more likely to report current KAHPERD membership compared to older teachers ($p<.05$). The results may imply a need to stress or emphasize a certain type of training, certification program, or awareness of certain issues.

Introduction

Before secondary health and physical education in the state of Kentucky can be improved, it is necessary to understand the current environment including teachers experiences and preferences. A review of the literature showed a paucity of studies focusing on secondary physical education and health teachers' professional experiences and needs. Therefore, the purpose of this paper is to describe the method and results of a survey administered to secondary (9^{th}-12^{th} grade) health and physical education teachers across the state of Kentucky in order to assess their self-reported perceptions and professional experiences regarding health and physical education. Examination of these results will foster the creation of a profile that can guide the development of relevant professional development training for this valuable population of teachers.

The Kentucky Health and Physical Education Profile Survey

The Kentucky Health and Physical Education Profile Survey was utilized to develop a profile of secondary (9^{th}-12^{th} grade) health and physical education teachers' professional experiences and perceptions. The 30 item survey combined a variety of questions based on professional experiences and perceptions. Questions based on professional experiences included; years taught, school subjects taught, class scheduling, number of classes taught, average number of students enrolled, average minutes taught

for each class, required textbooks, additional classes taught, professional development completed, and coaching experiences. Additional questions surveyed teachers' perceptions of their school administrators, fellow teachers, and parental support towards health and physical education, as well as their attitudes/perceived values for health and physical education in the classroom.

Data Collection

During the fall 2013 semester, 346 secondary health and physical education teachers in the state of Kentucky were sent an electronic copy of the Kentucky Health and Physical Education Profile Survey via e-mail. Health and physical education teachers e-mail addresses were gathered by using the website (http://www.greatschools.org/schools/districts/Kentucky/KY) which provided a list of the 177 public school districts in Kentucky, where each district had a list of high schools in that district. Google search engine was used to find each high school's website. From there, current Kentucky secondary (9th - 12th grade) health and physical education teachers' e-mails were accessed from each public school district's website. The Kentucky Health and Physical Education Profile Survey was distributed via e-mail to participants during the fall 2013 semester. A cover letter was included in the e-mail, which notified participants of the purpose of the study. Two follow-up e-mails were sent and of the 346 participants sampled, 96 completed the on-line survey for a response rate of 27.7%.

Primary Univariate Findings

Demographics

- Over half (57.3%) of the participants sampled were male.
- Participants sampled age group included: 20-29 (8.3%); 30-39 (45.8%); 40-49 (20.8%); 50-59 (22.9%); and, 60 or older (2.1%).

Education

- Undergraduate major for participants included: 51% physical education; 33.3% both- health and physical education; 4.2% health education; and, 11.5% other.
- Undergraduate minor for participants included: 37.5% health education; 5.2% physical education; 36.5% no minor; and, 20.8% other.
- Master's degree for participants included: 22.9% physical education; 11.5% health education; 4.2% currently taking classes towards master's degree; 1.0% no master's degree; and, 60.4% other (e.g., administration, counseling, special education, sports administration).
- The 2012 CDC School Health Profiles indicated that only 79.1% of middle or high school lead health education teachers were certified to teach health education (Demissie et al., 2013).

Professional Experiences

- Regarding subject(s) currently taught: 66.7% taught both-health and physical education; 20.8% taught only physical education; 8.3% taught only health education; and, 11.5% taught other classes besides health or physical education.
- Concerning number of years taught for health education: 1-5 years (18.8%); 6-10 years (32.3%); 11-15 years (17.7%); 16-20 years (3.1%); 21-25 years (7.3%); 26-30 years (3.1%); 31 plus years (2.1%); and, N/A (they do not teach health education) (15.6%).
- Regarding number of years taught for physical education: 1-5 years (22.1%); 6-10 years (28.4%); 11-15 years (20.0%); 16-20 years (7.4%); 21-25 years (6.3%); 26-30 years (5.3%); 31 plus years (4.2%); and, N/A (they do not teach physical education) (6.3%).

- Over half (57.5%) of participants reported that they teach health education classes on a semester schedule; 25.3% on a 9 week schedule; and, 17.2% on a trimester schedule.
- Almost two-thirds (62.5%) of participants reported that they teach physical education classes on a semester schedule; 20.5% on a 9 week schedule; and, 17% on a trimester schedule.
- Regarding how many students on average each health education teacher has enrolled per class, 11.5% reported 15-24 students; 65.6% reported 25-34 students; 7.3% reported 35-44 students; and, 0% reported fewer than 15 students or greater than 45 students. Relatively few, 14.6% reported N/A (teachers reported as not teaching health education).
- Regarding how many students on average each physical education teacher has enrolled per class, 8.3% reported 16-24 students; 66.7% reported 25-34 students; 14.6% reported 35-44 students; 3.1% reported 45 or more students; and, 0% reported fewer than 15 students. Relatively few, 5.2% reported N/A (teachers reported as not teaching physical education).
- Over half (57.9%) of the participants indicated that they have a required textbook for their health education class but only 22.9% provide a copy of the required textbook to each student. Physical education teachers reported that 87.5% do not have a required textbook for their physical education class.
- Over 82% of participants reported that their school does not offer a summer health education course and similarly, 83.2% reported that their school does not offer a summer physical education course.

Professional Development

- Over three-fourths (78.1%) of participants reported that they are currently not a Kentucky Association for Health, Physical Education, Recreation, and Dance (KAHPERD) member. (See Figure 1).
- The majority (63.5%) of participants indicated that they have not attended a professional development training provided by the Kentucky Department of Education within the past 12 months. Most, 82.3% of participants reported that they have not attended a professional development training provided by KAHPERD within the past 12 months. (See Figure 1). The 2012 CDC School Health Profiles indicated that 83.9% of secondary schools in which at least one Physical Education Teacher or Specialist received professional development on Physical education during the two years before the 2012 survey (Demissie et al., 2013).
- Participants reported that for future professional development trainings offered in the next 12 months, 41.7% preferred them to be hosted either state-wide or regionally; 36.5% preferred regionally; 9.4% preferred statewide; and, 12.5% indicated that their school would not allow attendance at professional development events during school hours. (See Figure 2).
- Participants reported that when it came to professional development trainings offered during the next 12 months, 39.6% would prefer them to be on program review; 36.5% on teaching strategies; 12.5% on national standards; 4.2% on evaluation; and, 7.3% other.

Perceptions

- Participants were asked if they had perceived more support, less support, or no change in support for implementing health education/physical education in the school's curriculum during the past 18-24 months, over half (55.2%) of participants reported that they have perceived no change in support from school administration; 77.1% no change in support from fellow teachers; and, 79.8% no change in support from parents. (See Figure 3).
- Participants were asked to rate the attitudes/perceived values of health education using a Likert Scale based on the following options: very low, low, no difference, high or very high. (See Figure

4). They were also asked to assess these attitudes as they pertained to school administrators, fellow teachers, and parents. The results for these three groups indicated:
    - Relatively few teachers (5.2%) reported that school administrators show a very low attitude/perceived value for health education; 18.8% low; 29.2% no difference; 28.1% high; and, 13.5% very high.
    - Just under ten percent of teachers (9.4%) reported that fellow teachers show a very low attitude/perceived value for health education; 22.9% low; 36.5% no difference; 20.8% high; and, 5.2% very high.
    - Relatively few teachers (8.3%) reported that parents show a very low attitude/perceived value for health education; 20.8% low; 41% no difference; 17.7% high; and, 4.2% very high.
- Participants were asked to rate the attitudes/perceived values of physical education using a Likert Scale based on the following options: very low, low, no difference, high or very high (See Figure 5).They were also asked to assess these attitudes as they pertained to school administrators, fellow teachers, and parents. The results for these three groups indicated:
    - Just over ten percent of teachers (10.5%) reported that school administrators show a very low attitude/perceived value for physical education; 24.2% low; 23.2% no difference; 27.4% high; and, 11.6% very high.
    - Just over ten percent of teachers (10.4%) reported that fellow teachers show a very low attitude/perceived value for physical education; 32.3% low; 32.3% no difference; 17.7% high; and, 4.2% very high.
    - Just over ten percent of teachers (10.5%) reported that parents show a very low attitude/perceived value for physical education; 27.4% low; 38.9% no difference; 12.6% high; and, 4.2% very high.

Coaching

- Over one-third (38.5%) of participants currently coach at least one athletic team; 17.7% coach 2 athletic teams; 4.2% coach either 3 or 4 athletic teams; and, 31.3% currently do not coach. Over half (64.6%) of participants reported that coaching an athletic team has had a positive impact on their teaching.

Primary Bivariate Findings

To determine whether there were any demographic factors (e.g., sex, undergraduate major) influencing the results, we performed bivariate analyses in the form of Chi-squares tests for all nominal variables with proportional results. The only demographic variable that showed any differences that were statistically significant focused on age of the teachers. These results are described below.

- A Chi-square test produced a significant difference with teachers over the age of forty reporting to be significantly more likely to possess an undergraduate degree in physical education only (77.2%) compared to younger teachers (28.8%). Younger teachers were significantly more likely to report both a physical education and health degree compared to teacher over the age of forty (50.0% vs 13.6% respectively, $p<.05$).
- Teachers over the age of forty were significantly more likely to report having a minor compared to younger teachers (75.0% vs 44.2% respectively, $p<.05$). Furthermore, teacher over the age of forty were more likely to report a minor in health compared to younger teachers (47.7% vs 28.8% respectively, $p<.05$).
- Teachers generally reported coaching duties to have a positive impact on their teaching with a couple of notable differences. Teachers over the age of forty were significantly more likely to report coaching duties to positively impact their teaching compared to younger teaching coaches

(67.4% vs 59.6% respectively) and less likely to report coaching duties to have a negative impact on their teaching (2.1% vs 11.5% respectively).

- Teachers younger than forty were significantly more likely to report current KAHPERD membership compared to older teachers (26.9% vs 15.9% respectively, $p<.05$).

Discussion

One notable limitation of this profile of Kentucky secondary health and physical education teachers concerns the relatively low response rate (27.7%). However, the undergraduate degrees and minors reported by teachers that were primarily physical education or both physical education and health education are consistent with national and state proportions for teacher professional preparation (Demissie et al., 2013).

Teachers' response patterns were surprisingly consistent regarding their sex or college education. Age was the only demographic variable that showed significant differences in teachers' response patterns. For instance, concerning undergraduate education, teachers over the age of forty were more likely to possess a degree in physical education compared to their younger colleagues. Additionally, teachers over the age of forty were significantly more likely to obtain a minor, and a minor specifically in health, compared to their younger colleagues. This is presumably due to the more recent trend of younger teachers being dual certified in at least two areas, most likely health and physical education. This recent trend is likely being partially driven by school districts preferring to hire teachers who possess this dual certification in health and physical education. Because of this new competitive job market, an increased number of higher education institutions are starting to offer health promotion/health education concentrations within physical education degree programs (Burns, Whiddon, & Richter, 2006). That none of the responses were different by sex or college education suggests that secondary physical education and health teachers share experiences that are not that different. As researchers, we should take heed and try to treat this consistency of reporting as perhaps a sign of greater validity to the response patterns we have observed.

Over 95% of teachers who reported coaching at least one athletic team indicated that it positively impacted their teaching. In one study, coaches used strategies such as keywords, peer evaluations, taking advantage of teachable moments, and volunteer work to help build strong life skills for their student-athletes. Student-athletes stated how these strategies helped them learn skills, such as social courtesy, respect, self-awareness, perseverance, teamwork, and leadership, which are useful in the workforce and/or in postsecondary education (Camire, Trudel, & Forneris, 2012). Interestingly, examination of the results indicated that teachers over the age of forty were more likely to report coaching duties to have a positive impact on their teaching and were less likely to report coaching as having a negative impact on their teaching compared to younger teachers. This could be because many younger teachers are encouraged to take on leadership roles, such as coaching an athletic team or volunteering their time for other extracurricular activities. This added involvement in a variety of school activities comes at a time when young teachers are also focused on achieving tenure and who are often pursuing advanced degrees. Researchers of a study focusing on work load and new teachers described that for teachers just joining the educational work force, many found it difficult to simultaneously teach, plan for teaching, and maintain effective implementation of their plans in the classroom. Many of these novel tasks are on top of a potential greater work load of coaching an athletic team. Results from that same study suggest that teachers in their first two years of teaching require substantial periods of time to acquire knowledge of classroom practice, not so much focusing on involvement in extra-curricular activities (Pietsch, & Williamson, 2010). Future studies of secondary teachers who coach athletic teams may want to focus on these aspects of potential overwhelming workload.

In terms of professional development, it was alarming to note that 78% of participants were currently not KAHPERD members. Interestingly, the teachers reporting the greatest membership were teachers in the 30-39 year old age group. Younger and older teachers were significantly less likely to be members. According to the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), there are several benefits of becoming a national or state member which include; access to professional development tools, discounted rates on national and state registrations, products, continuing education, opportunities to apply for grants, scholarships, awards, networking opportunities and other personal benefits (American Alliance for Health, Physical Education, Recreation and Dance, 2014). The fact that relatively few teachers are taking advantages of this professional membership warrants further examination which might focus on obstacles to membership such as modes of delivery, lack of professional development funds, or other incentives provided by the schools.

Additionally, 63.5% of participants indicated that they had not attended a professional development training provided by the Kentucky Department of Education during the past 12 months. Most teachers, 82.3%, reported that they had not attended a professional development training provided by KAHPERD within the past 12 months. Importantly, only 12.5% of teachers reported that their particular school does not allow attendance to professional development events during school hours.

As a result, there needs to be a strong emphasis on the importance of professional development for health and physical education teachers across the state of Kentucky. Teachers have addressed the need for various professional development topics from the survey including; program review, teaching strategies, national standards, evaluation. Over 7% of secondary health and physical education teachers indicated other preferred professional development topics including: budget; assessment; and, college and career readiness. Other researchers concur that teachers must be provided with professional development that meets their instruction needs in order to meet the needs of their students (Kent, 2004). Therefore, increased efforts should be made by the Kentucky Department of Education and Kentucky Association for Health, Physical Education, Recreation, and Dance to form a partnership to accommodate the needs of Kentucky high school health and physical education teachers regarding their professional development.

Research studies rarely answer all empirical inquiries being considered. Indeed, this project has raised as many questions as it has answered. For instance, what specifically would encourage secondary health and physical education teachers to become more active with state and national organizations? It is possible that school districts could do more to foster greater involvement, or perhaps due to limited time constraints, it is easier for teachers to participate in district sponsored professional development that is convenient but not necessarily relevant to their duties. Therefore, based on the findings from this study, a list of recommendations for future researchers has been developed below.

Recommendations

1. Examine the positive benefits coaching brings to classroom teaching duties.
2. Assess workload of new teachers as it pertains to stress levels and job performance.
3. Assess reasons health and physical education teachers are not seeking membership in state and national organizations.
4. Assess which benefits state and national organizations provide that health and physical education teachers find most useful and least useful.
5. Assess Kentucky Department of Education professional development requirements so as to align educational offerings with state requirements.
6. Assess secondary health and physical education teachers preference for professional development content based on content teachers feel is most important and that content they feel least prepared to teach.

7. Identify modes of delivery for professional development (e.g., webinars) health and physical education teachers prefer.
8. Assess institutions of higher education for majors in health education, physical education and dual degree options.
9. Examine undergraduate curricula content of regional institutions of higher education for continuity of offerings to job descriptions. This assessment could include what aspects of the curricula secondary health and physical education teachers found most and least useful to their teaching duties.
10. Examine graduate curricula content of regional institutions of higher education that many teachers utilize to satisfy professional development training requirements. This assessment could include examining graduate programs' curricula content secondary health and physical education teachers found most and least useful to their teaching duties.
11. Examine curricula content of professional development training offered by other agencies and organizations (e.g., Kentucky Department of Education, KAHPERD). This assessment could include examining professional development training content secondary health and physical education teachers found most and least useful to their teaching duties.

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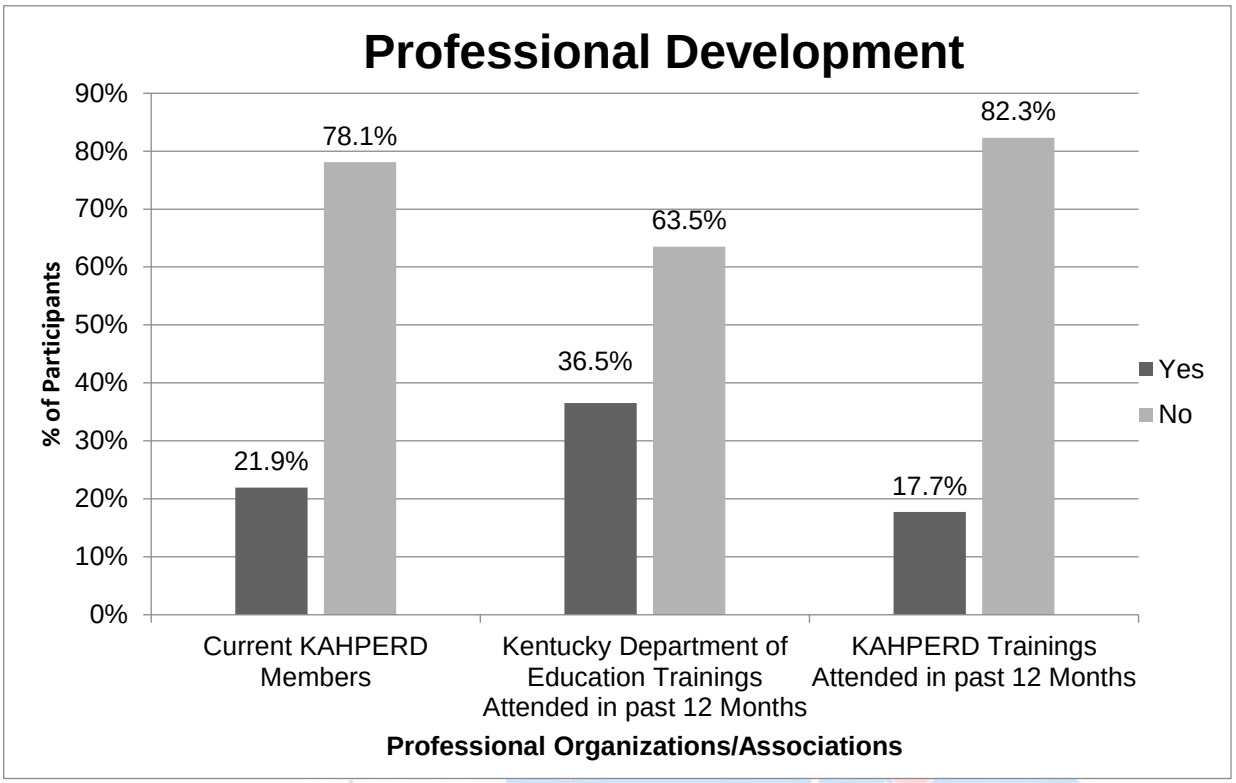

Figure 1. Professional Development. This figure illustrates professional membership and professional development attendance.

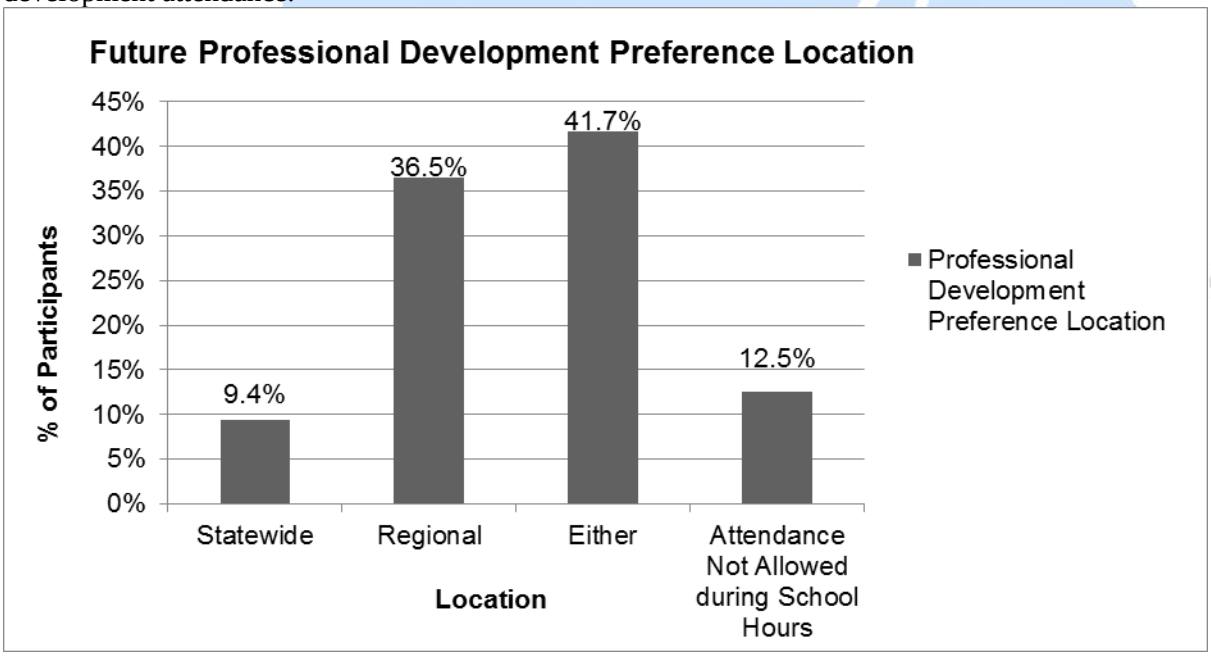

***Figure 2.* Future Professional Development Preference Location. This figure illustrates where teachers would prefer future professional development trainings to be located.**

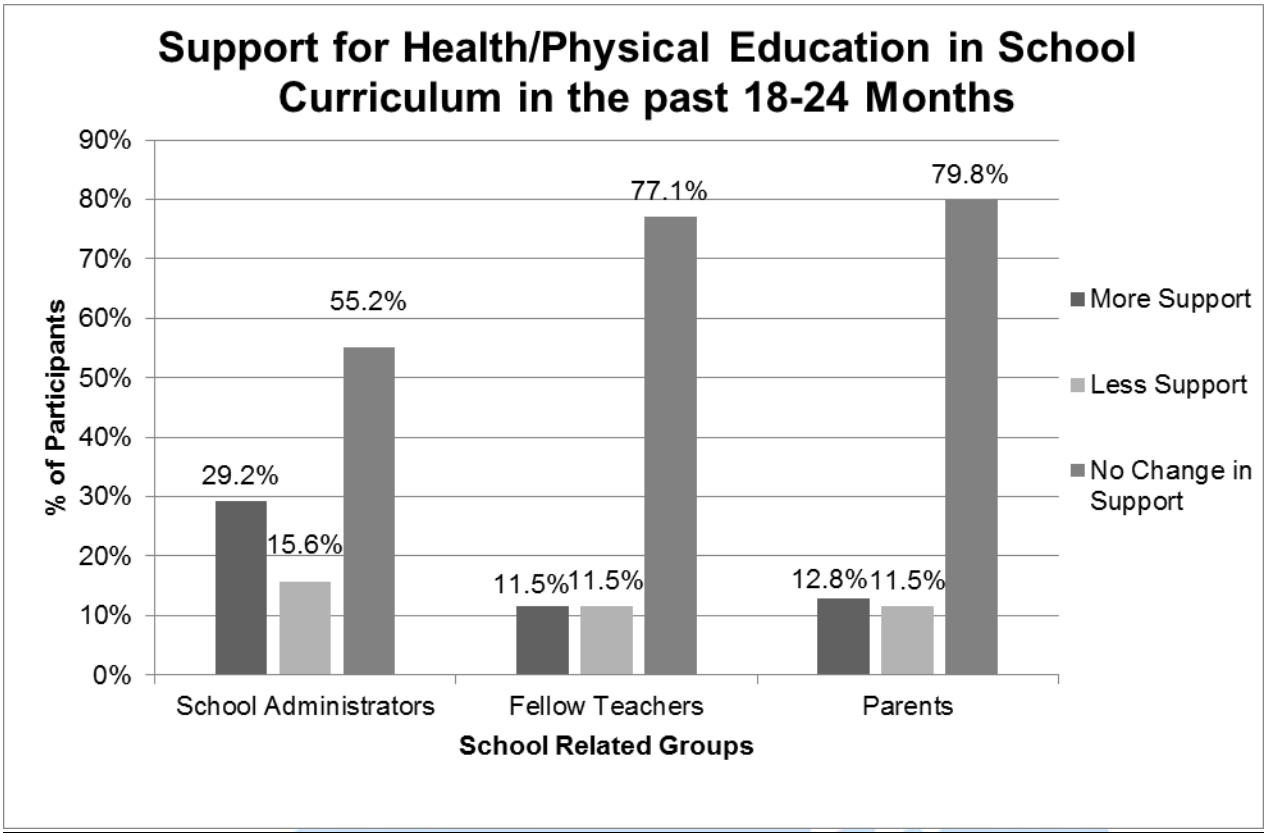

Figure 3. **Support for Health/Physical Education. This figure illustrates how teachers' perceived support for Health/Physical Education from other school related groups.**

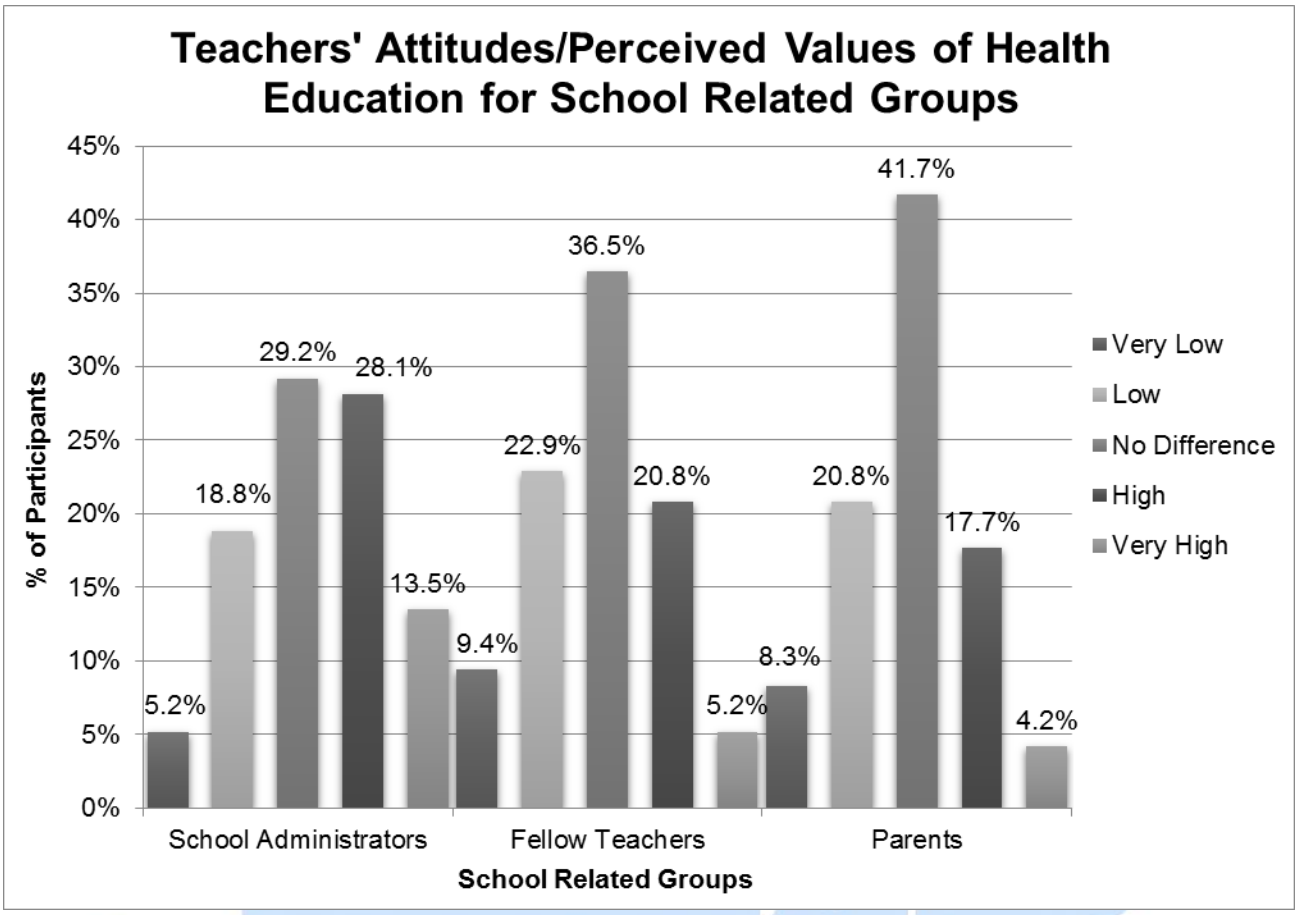

Figure 4. **Teachers' Attitudes/Perceived Values of Health Education. This figure illustrates how teachers' perceived school related groups attitudes/perceived values of health education.**

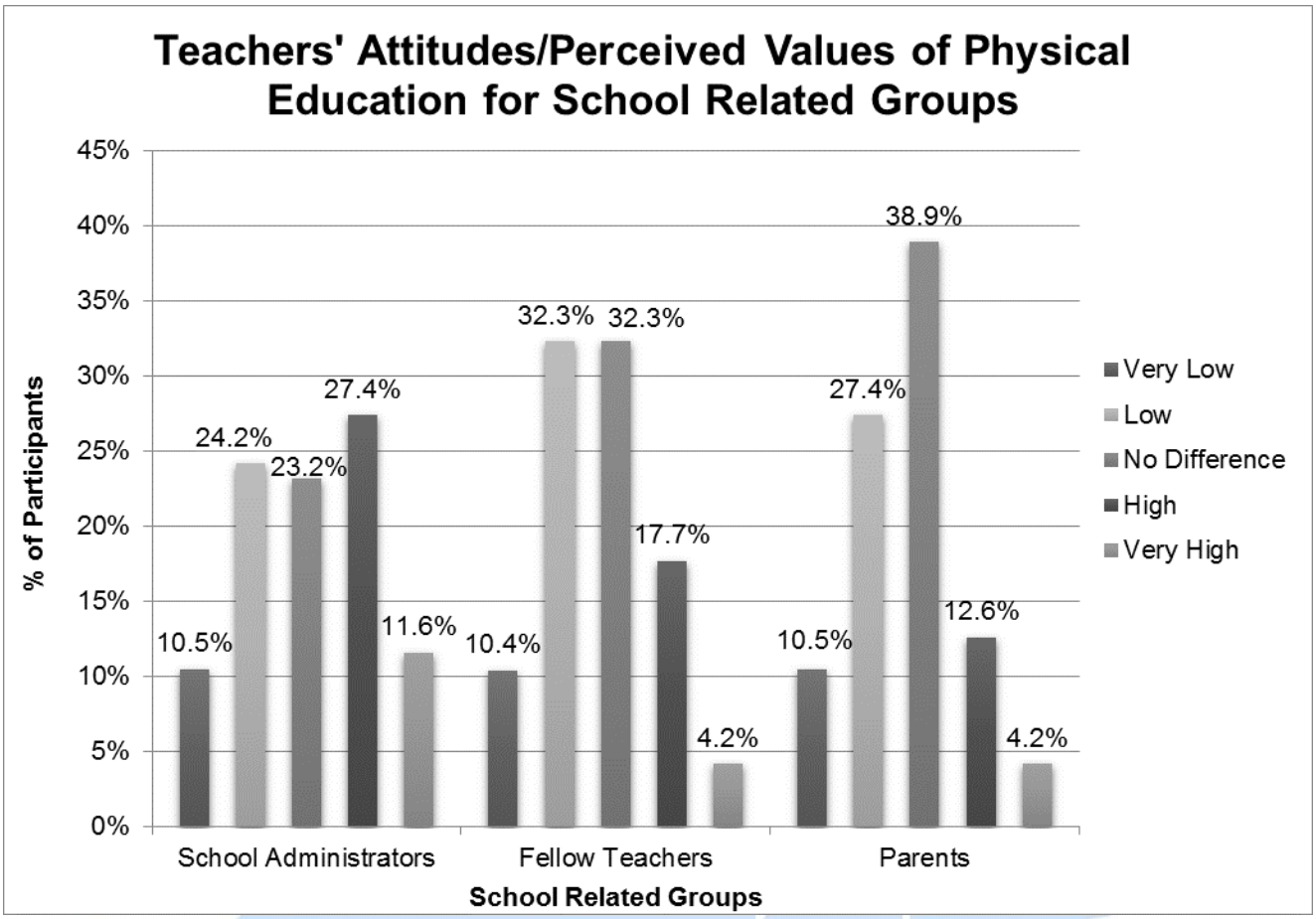

Figure 5. **Teachers' Attitudes/Perceived Values of Physical Education. This figure illustrates how teachers' perceived school related groups attitudes/perceived values of physical education.**

EFFECTS OF A SIXTEEN WEEK ROTATOR CUFF STRENGTHENING AND SCAPULAR STABILIZATION PROGRAM ON COLLEGIATE BASEBALL PITCHERS

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Abstract

Due to overhead throwing mechanics and the abundant number of pitches thrown during a baseball season, shoulder injuries are a common occurrence in pitchers. Since an athlete relies heavily on four main muscles that make up the rotator cuff to accelerate and decelerate the shoulder, any strength deficiencies of those muscles cause the failure of performance and an inevitable injury (Meister, 2000). This study was designed to examine the isokinetic internal and external rotational strength in a concentric manner of shoulder musculature of pitchers participating in Division I NCAA baseball over an entire championship season. In the beginning, the athletes were separated by starting and relieving pitchers, but due to circumstances that were not preventable, the groups and data were collapsed in an effort to have enough statistical power. When analyzing the data from this study there was no significant reduction in peak torque. While it was not the original intent of this research to use the internal rotation data as a control group, these data helped to show that the rotator cuff program and scapular stabilization program maintained the external rotation strength when compared pretest to posttest at 60 degrees/sec and 180 degrees/sec. In contrast, there was a decrease in strength of internal rotation at 60 degrees/sec. The significance in ER and IR pre- and post-test at 60 degrees per second reaffirms that IR strength is greater than ER strength. Since the main focus of this research was on external rotation and scapular stabilization, the data shows the need for internal rotation training as well.

Introduction

Due to overhead throwing mechanics and the abundant number of pitches thrown during a baseball season, shoulder injuries are a common occurrence in pitchers. The mechanics of throwing overhead are not natural to the human body due to the bony structure of the clavicle and scapula along with the articulation of the humerus in the glenohumeral joint. (Meister, 2000) When an overhead thrower completes the full action of throwing, the humerus is forced into the superior aspect of the glenohumeral joint. This is the site within the shoulder where injuries can occur (Meister, 2000). The shoulder is one of the more commonly injured joints in overhead throwing athletes, particularly, baseball pitchers. The statement of a shoulder injury is very broad in a general spectrum. Shoulder injuries such as superior labral (SLAP) tears, bankart lesions, rotator cuff strains and tears, lattisimus dorsi strains, and biceps brachii pathologies are numerous within the overhead throwing athlete. Those injuries can encompass structures such as the rotator cuff (subscapularis, supraspinatus, infraspinatus, and teres minor), scapulothoracic muscles (rhomboids, trapezius, serratus anterior), labrum, capsule, and biceps brachii long and short head. In general, an athlete relies on four main muscles that make up the rotator cuff to accelerate and decelerate the shoulder. Therefore, the strength of the shoulder complex and methods for training shoulder muscles are of great concern for the athletic trainers and exercise physiologists.

Throwing Mechanism and Pathology of Shoulder Injuries

It can be generalized that a baseball pitcher may have excessive total range of motion (internal rotation and external rotation combined) in the dominant throwing shoulder (Wilk, Meister, Andrews, 2002). In an ongoing study of professional baseball players (unpublished data, 2000), Wilk and Arrigo measured the range of motion of 372 baseball players. They found that pitchers exhibit an average of 129.9˚ ± 10˚ of external rotation and 62.6˚ ± 9˚ of internal rotation when passively assessed at 90˚ of abduction. In

pitchers, the external rotation is approximately 7˚ greater in the throwing shoulder when compared with the nonthrowing shoulder, while internal rotation is 7˚ greater in the nonthrowing shoulder (Wilk et. al, 2002). It is also noteworthy that they found left handed pitchers had approximately 7˚ more external rotation and 12˚ more total motion when compared to right handed pitchers. (Wilk et. al, 2002)

An athlete relies on four main muscles (subscapularis, supraspinatus, infraspinatus, and teres minor) that make up the rotator cuff to accelerate and decelerate the shoulder. They also rely on the musculature surrounding the scapula, which would include the rhomboids, latissimus dorsi, teres major, deltoids, and the middle third of the trapezius, to stabilize the shoulder girdle during this movement.

The throwing motion is a complex movement that combines the legs and core that yields a high velocity and a large amount of force in the upper extremity. (Hirashima et. al, 2002) The throwing motion can be broken down into 6 individual steps. In succession from start to finish they are wind-up, early cocking, late cocking, acceleration, deceleration, and follow through. (DiGiovine et. al, 1992)

In general, there is very little chance of injury during the wind-up due to slow velocity and low forces (Wassinger & Myers, 2011). The early and late cocking phase account for nearly 80 percent of the throw time, which lasts about 1500 milliseconds (Wassinger & Myers, 2011). In early cocking the scapula is retracted while the humerus is abducted to nearly 90˚ and is horizontally abducting while externally rotating (Meyer et. al, 2008). The cocking phase is the first point at which biomechanical injuries begin to appear. Internal impingement is often associated with the early cocking phase (Fleisig et. al, 1995). This injury can become even more severe by poor scapular tracking, anterior instability, and incorrect throwing mechanics (Laudner et. al, 2006). Superior labrum anterior to posterior (SLAP) lesions generally occur during the late cocking phase because it creates a peel back mechanism (Burkart et. al, 2003). This will, in turn, cause a significant amount of pain in the shoulder and can cause a decrease in the velocity in which an overhead thrower can generate.

The fourth phase of throwing is the acceleration phase. This phase occurs from the humerus in external rotation in which it will violently and very quickly move to internal rotation (Wassinger & Myers, 2011). Superior labral fraying can occur during acceleration if the humeral stabilizers do not work correctly causing excessive humeral translation to occur (Wassinger & Myers, 2011). Also in this phase, the rotator cuff muscles are responsible for counteracting the distractive forces that could cause the head of the humerus to move improperly through translation, or even worse, dislocation (Wassinger & Myers, 2011).

After ball release in the decelerating phase, slowing the arm from the high acceleration velocities imposes a distractive force at the shoulder which has been demonstrated to approximate body weight (Fleisig et. al, 1999). Due to the abundance of distractive forces acting on the shoulder during deceleration, it can be shown that a majority of shoulder injuries occur here. The reasoning behind this is the huge amount of torque created during deceleration to slow and eventually stop the shoulder falls directly on the posterior cuff musculature, the posterior deltoid and the joint capsule (Wassinger & Myers, 2011). When these structures are not strong enough to withstand these torques is when fraying, shearing, and tearing will occur.

The last phase of the throwing motion is the follow through. The follow through occurs in approximately 300 milliseconds, which equates to approximately 15 percent of the entire time it takes to throw a ball (Pappas et. al, 1985). There are few injuries reported in this phase because deceleration and follow through are generally combined when dealing with injuries.

Examination of Shoulder Strength

If the shoulder complex, which consists of the rotator cuff and scapular stabilizers, has any strength deficiencies and does not work in synchronization with one another, the athlete's shoulder is being set up for failure and an inevitable injury (Meister, 2000). Wilkin and Haddock (2006) presented a study in which they isokinetically measured concentric internal and external rotational strength of National Collegiate Athletic Association Division-II baseball players. They measured rotational strength by mean peak torque at angular velocities of 300 and 450 degrees per second (Wilkin & Haddock, 2006). They also completed the isokinetic testing as a test/retest research. In this research they tested during preseason, midseason, and postseason. Their hypothesis was not accepted because there was no difference in isokinetic internal or external concentric rotational strength from the beginning of the season to the end. (Wilkin & Haddock, 2006). They did show that internal mean peak torque rotational strength was greater than external mean peak torque rotational strength (Wilkin & Haddock, 2006). This study also supports that where the significance in ER and IR pre- and post-test at 60 degrees per second reaffirms that IR strength is greater than ER strength.

Hurd and Kaufman (2012) tested rotational motion in conjunction with strength and pitching mechanics. They found a positive relationship between internal rotator strength and external rotation while pitching. They further used a handheld dynamometer to test internal and external rotational strength at 90 degrees, while they also utilized a 3D motion capture system with reflective markers on the participants to capture the movement portion of the study.

Joshi and colleagues studied the effects of external rotation on scapular muscle fatigue in 2011. They tested 25 male and female athletes with no history of shoulder pain. A surface EMG was used to measure muscle activity in the upper trapezius, lower trapezius, serratus anterior and infraspinatus (Joshi, Thigpen, Bunn, Karas, Padua, 2011). To fatigue the glenohumeral musculature, the researchers instructed the participants to lay prone on an adjustable table, abducted the shoulder to 90 degrees and instructed the individual to move through external rotation of approximately 75 degrees while keeping pace with a metronome until failure (Joshi et. al, 2011). The researchers found a decrease in ascending phase and descending phase lower trapezius activity and increase in descending phase infraspinatus activity after external rotation fatigue, as well as an increase in scapular upward rotation after fatigue. (Joshi et. al, 2012). Other findings stated were that external rotation fatigue contributed to lower scapular musculature contracting incorrectly and scapular dysfunction (Joshi et. al, 2012). A major conclusion was that once the lower trapezius became fatigued and it became altered in its function, it leads to the predisposition of injury to the infraspinatus, which can occur through increased overhead activation (Joshi et. al, 2012). A conclusion of this study was that the success of a rotator cuff strengthening program is dependent on a scapular stabilization program done in conjunction with the rotator cuff program. The study completed by Joshi et. al clearly shows the importance of scapular strength and endurance as it relates to rotator cuff strength and endurance. The importance of having both of these attributes aids in the decrease of shoulder injuries in an overhead athlete.

It seems a proper strength training program of the rotator cuff with the addition of scapular stabilization program may aid in the reduction of shoulder injuries. This study was designed to test the overall importance of incorporating scapular stabilization exercises in a shoulder maintenance program in overhead throwing athletes. It is recognized that a properly functioning scapula and the musculature associated with scapular movement is essential to shoulder function (Lucado, 2011). In this study, the researcher examined whether the addition of a scapular stabilization program can build shoulder strength (external and internal rotational strength) of Division-I baseball players over a 16 week shoulder strengthening program designed to prevent or further reduce shoulder injuries.

Methods

Subjects and Instrumentation

The isokinetic internal and external rotational strength (in a concentric manner of shoulder musculature) of 12 pitchers from an NCAA affiliated Division-I baseball team was studied. Data were collected over a 16 week period in the 2013 season with the consent of each participants. Participants' descriptive data can be seen in Table 1. The isokinetic power was measured by a Biodex® Dynamometer Controller Model 900-760 machine.

Table 1. Descriptive Data of Pitchers

	Age (years)	Height (in)	Weight (lbs)
Starters (n = 4)	21.13 + 1.25	71.00 + 10.27	196.88 + 8.84
Relievers (n =8)	19.75 + 0.96	74.75 + 1.71	217.50 + 35.24
Combined	20.60 + 1.30	74.75 + 1.60	203.75 + 22.17

Treatment and Procedure

Rotational strength is the mean peak torque taken at angular velocities of 60 and 180 degrees per second. To approximate the amount of change in shoulder rotational strength, this study utilized a test/retest format by testing isokinetic strength before and after the season. Measurements of shoulder strength were taken of the dominant shoulder slightly abducted to 40 degrees and only in a concentric/concentric manner for internal and external rotation of the dominant shoulder. This method was chosen for safety reasons and to lessen the chances of injury during the isokinetic testing. The main focus was on isolating the muscles of the rotator cuff and testing them in a safe but functional manner.

For purposes of differentiating the effectiveness of a scapular stabilization program, the starter and relievers were separated during the shoulder maintenance program. The starters utilized the rotator cuff program in conjunction with the scapular stabilization program whereas the relievers only participated in the rotator cuff program (for comparison). Appendix 1 detailed how the Biodex isokinetic testing and pretest set-up were performed.

The shoulder maintenance program that all pitchers completed over the 4-month period was done in a controlled environment. This controlled environment included a treatment table that allowed for the pitchers to properly perform the prone exercises as well as a towel roll that was placed in the axilla area to aid in achieving abduction that allowed for proper training of internal and external rotation. The rotator cuff exercises were completed by all pitchers in a manner of standing, side lying, and prone. All exercises were performed in a prone manner on a treatment table and the athlete was responsible for holding each exercise for a count of six. All pitchers were required to use a 3 pound dumbbell weight and were strictly prohibited from using anything heavier. Their exercise forms was also closely monitored. Verbal cues and a hands-on approach were given to correct their form, if it was improper. The scapular stabilization exercises for starters were referred to as the six pack exercises. These exercises contained a series of six exercises that were performed six times with six seconds in each time duration.

Statistical Analysis

In order to determine a training effect for both external rotation and internal strength rotation (at 60 degrees and 180 degrees per second), a repeated measures ANOVA was performed on the data to determine main within-subjects effects for Time (pre-post) and differences between subjects effects for Group (external rotation and internal rotation), as well as for an interaction effect for time x group on all pre- and post-test data at 60˚/sec and 180˚/sec. Paired t-tests were used to for post- hoc analysis. A level of significance was set at $p < 0.05$.

Results

The results of the ANOVA for 60 degrees per second showed no significant main effect for time [$F(1,12)=2.263$, $p > 0.05$] and no interaction for time*group [$F(1,12)=3.85$, $p > 0.05$]. There was a significant main effect for group [$F(1,12)=605.58$, $p < 0.05$]. The ANOVA for 180 degrees per second also found no significant main effect for time [$F(1,12)=.046$, $p > 0.05$] nor an interaction for time*group [$F(1,12)=.323$, $p > 0.05$], however a main effect for group was seen [$F(1,12)=961.5$, $p < 0.05$]. Post- hoc analysis showed no significant pre-post training differences for 60 degrees per second for external (33.40 ± 1.51 and 33.26 ± 2.22, $p > 0.05$) or for internal (53.67 ± 1.92 and 48.96 ± 3.31, $p > 0.05$). There were also no significant pre-post training differences for 180 degrees per second for external rotation (30.37 ± 1.49 and 31.16 ± 1.71, $p > 0.05$) or for internal rotation (44.35 ± 4.78 and 43.09 ± 1.71, $p > 0.05$). The main effect for group was due to the significant differences between pre-training external rotation and internal rotation at 60 degrees per second (33.40 ± 1.51 and 53.67 ± 1.92, < 0.05, respectively) and post-training external and internal rotation (33.26 ± 2.22 and 48.96 ± 3.31, $p < 0.05$, respectively) and the significant differences between pre-training external rotation (30.37 ± 1.49 and 44.35 ± 4.78, $p < 0.05$, respectively) and internal rotation (31.16 ± 1.71 and 43.09 ± 1.71, $p < 0.05$) at 180 degrees per second (table 2).

In comparing the posttest to the pretest, graph 1 shows change scores (Mean ± SEM) for pre-post training for external rotation at 60 degrees per second (0.58 ± 1.07) and internal rotation (-4.37 ± 2.28), and for external (1.04 ± 1.43) and internal rotation (-0.47 ± 2.25) at 180 degrees per second.

Graph 1. Changes Scores for Pre-Post Training, Means ± SEM

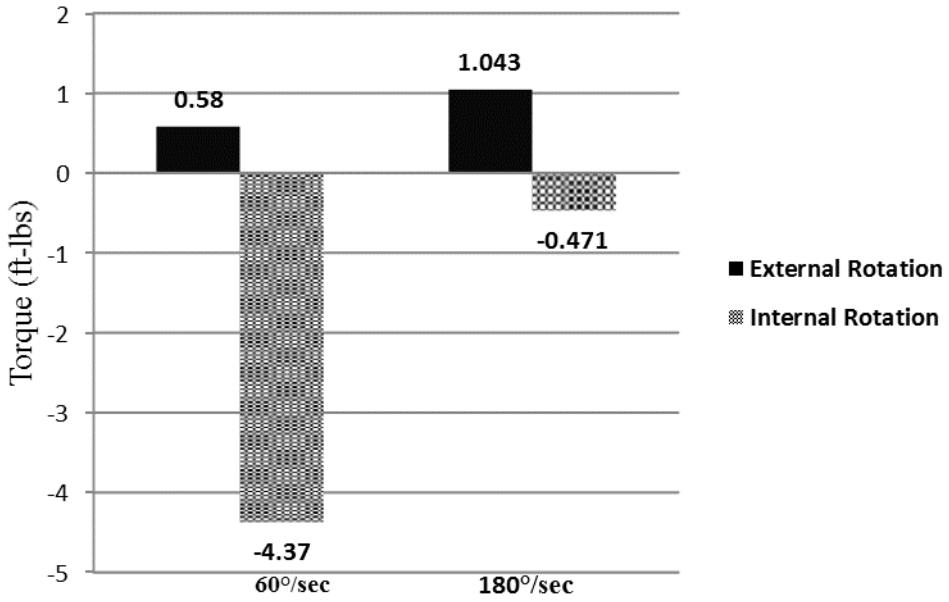

Table 2. Combined shoulder internal and external mean torque values in ft. lbs.

	Number of subjects	External Rotation	Internal Rotation
60˚/sec Pre	12	*33.40 ± 1.51	*53.67 ± 1.92
60˚/sec Post	7	*33.26 ± 2.22	*48.96 ± 3.31
180˚/sec Pre	12	*30.37 ± 1.49	*44.35 ± 4.78
180˚/sec Post	7	*31.16 ± 1.71	*43.09 ± 1.71

* Significant ER/IR difference, $p < 0.05$

Discussion and Conclusions

The results of this study indicate that there was no significant effect of a 16-week scapular stabilization program on external and internal rotators. While it was not the original intent of this research to use the internal rotation data as a control group, these data helped to show that the rotator cuff program and scapular stabilization program utilized maintained the external rotation strength when compared pretest to posttest at 60 degrees/sec and 180 degrees/sec. In contrast, there was a decrease in strength of internal rotation at 60 degrees/sec. The significance in ER and IR pre- and post-test at 60 degrees per second reaffirms that IR strength is greater than ER strength. Since the main focus of this research was on external rotation and scapular stabilization, the data shows the need for internal rotation training as well.

There were no reported injuries by any pitcher, in respect to their shoulder, which limited their playing time in any way during the NCAA championship season. Injuries were suffered by several of the pitchers that did not allow them to be retested, but they were not shoulder related. It was expected that overall shoulder strength would decrease over the course of the NCAA season due to stresses that are put on a pitcher's shoulder each day. For purposes of this study and eccentric isokinetic measurement was not taken for safety reasons. We did not want to cause delayed onset muscle soreness and we were only looking only at the concentric strength of both internal and external rotators.

In future studies, eccentric measurements would be a viable option and should be taken into consideration. When analyzing the data from this study there was no significant reduction in peak torque in starters or relievers. While the scapular stabilization portion of this shoulder maintenance program should be incorporated into shoulder programs, the overall rotator cuff program completed by both starters and relievers may have aided in keeping the rotator cuff strength of all pitchers within reasonable strength ranges in preseason compared to postseason. There was a drop in internal rotation at 60 degrees (from 53.67 ± 1.92 to 48.96 ± 3.31), while there was no significant drop at 180 degrees (from 44.35 ± 4.78 to 43.09 ± 1.71). The drop in internal rotation strength at 60 degrees per second should not have any true significant value. However, with the decrease in strength at 60 degrees per second, it does show the need to incorporate IR strength and maintenance training. Since the degrees per second were so low and the overhead athlete trains their shoulder for throwing at a much higher degree per second, there is the possibility for no correlation.

For a possible repeat of this this test in the future, the degrees per second should include an additional set of degrees per second. An example of this would be 60 degrees per second and 180 degrees per second and 300 degrees per second. This would allow for much more realistic and applicable results to the overhead throwing athlete. The results of internal and external rotation at 180 degrees per second begin to show this attribute. Another possible reason for the drop is that the participants were made to use no

higher weight than three pounds for the rotator cuff strengthening portion. It is possible that a higher weight could have been used (i.e., 5 to 10 pounds for standing exercises and 5 pounds for prone or side lying exercises). The use of more weight throughout the season could have aided in less of a decrease at the 60 degree per second section. External rotation showed no significant drop at the 60 degree per second or the 180 degree per second from pre- to posttest. The reasoning behind this is a majority of the focus of this strengthening program emphasized posterior cuff and scapular stabilizers. An additional aspect to future shoulder training would be to add a plyometric component. This could include exercises with a 2 pound weighted ball that can be utilized in a concentric and eccentric manner. One deficit in this strengthening program is that it did not have any type of eccentric training for the posterior cuff. This becomes essential due to the nature of slowing the arm down after ball release. Future testing should include a wider range of motion being tested concentrically and adding an eccentric load internally. The testing could also include a video component to link very specific ranges of motion and strength training.

Appendix 1. Testing Procedure

Shoulder Set Up	Biodex chair get lowered as far down as possible. Swivel arm gets raised as far up as possible. Utilize the Biodex Shoulder attachment and attach to swivel arm per manufacturer guidelines. Put the arm piece (right or left depending on athlete dominant side) onto swivel arm. Adjust arm holder piece so that the athlete's shoulder is not elevated or depressed, or too far in front of or behind athlete's body. Align elbow joint with axis on swivel arm and make sure the athlete's wrist is in neutral by adjusting hand grip. Unlock and go through the external rotation/internal rotation motion at 90/90, making sure that the elbow is at 90 degrees and the wrist remains neutral. Elbow is abducted 40 degrees from side of body being tested, which is measured utilizing a goniometer.
Actual Testing Steps	The athletes performed 3 warm up repetitions. The athlete received the instruction, "When the light turn green, you are going to do 10 reps as hard and as fast as possible, get to full ROM in ER and IR." After the athlete completed 10 reps, a 1 minute break was given. The instructions were given again "10 reps at a faster speed; this procedure tests more for endurance/stamina as opposed to the first tested for strength." These steps were completed again at 60 degrees per second and 180 degrees per second for a total of two trials on the dominant side at both speeds.

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A Projection of Economic Impact and Benefits of a Proposed Tail System

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Abstract

The purpose of this feasibility study was to justify the rationales for constructing the Dewey Lake Trail System (DLTS) with public funding. The investigators surveyed 119 residents from the surrounding area of Floyd County, Kentucky at the 2011 Jenny Wiley Festival. Results indicated the majority (92%) of the respondents favored the idea of building the trail system. Results also suggested the trail project might attract residents to frequently engage in fishing, walking/hiking, camping, and horseback riding, attending cultural festivals, July 4th fireworks, and other trail and outdoor competitions. The DLTS is projected to generate an annual economic impact of $1.7M to Floyd County, Kentucky. It is logical to assume that the building of the DLTS would be a feasible and profitable endeavor to pursue.

Introduction

Government involvements in constructing roads, parks and recreational facilities often bring positive externalities to the community (Eschenfelder & Li, 2007). Building trail systems do not only benefit the trail users, it may also create benefits such as increasing additional recreational opportunities, revenues, and reputation of a community. According to Bowker, Bergstrom, and Gill (2004), the three social benefits relating to trail use are highly recognized by the users and general public. They include health-related benefits, opportunities for viewing nature, and creation of a healthy and beautiful community. In 2002, local and state governments spent nearly $32 billion on parks and recreation programs (U.S. Census Bureau, 2005). While local governments' commitment to recreational expenditures is clear, numerous states struggle with funding public services due to the limited financial resources in today's economic conditions.

In order to justify governmental investment in recreational resources and identify the potential impact of the projects, market and feasibility studies are often utilized to discover public demands and projected benefits/profits. The primary purpose of this feasibility study is to justify the rationales for constructing the Dewey Lake Trail System by utilizing public funding. This feasibility study was conducted to demonstrate the needs and benefits of constructing the new Dewey Lake Trail System (DLTS). The study covered four specific sections including: (1) background information about the DLTS and its potential clients; (2) discussions on the

economic impact and benefits of trail systems; (3) a survey of potential visitors' interests and expectations and a projection of the economic benefits of developing the DLTS, and (4) summary and conclusions.

About the Dewey Lake Trail System

The majority of the background information on Dewey Lake Trail System (DLTS) was documented from the master plan for recreational trail development prepared by Summit Engineering, Inc. (2008). The DLTS is a non-motorized recreational trail planned and developed by the Floyd County Fiscal Court. The purposes of constructing this trail system are to make a positive contribution to public health, promote the local economy, and foster tourism. There are a few existing tourist attractions surrounding Dewey Lake such as German Bridge Campground, Jenny Wiley State Resort Park, and the Equestrian Center. The originally proposed project was about 56 miles in length to be built in five phases. However, a recent meeting resulted in identifying two main areas of concentration for creating trail loops and a reduction in total mileage to roughly 40 miles (D. Thomas, personal communication, September 23, 2011). The trail system would not be located directly in Jenny Wiley State Resort Pak (JWSRP). The long-term plan suggests that the future phases of the trails would be extended to the JWSRP. The City of Prestonsburg, KY had planned to build a small horse trail to connect the Equine Center to the state park in the future phase. The original projected cost of the trail construction ranged between $0.84M to $1.2M which was funded through grants awarded by the Transportation Enhancements Program and Recreational Trails Program to Floyd County Fiscal Court (Summit Engineering Inc., 2008). The estimated average annual cost for maintaining the trail was about $40,000.

Existing Potential Users of the DLTS

The trail system would be built to serve the general public especially the local residents of Floyd County. The general public may include individual or grouped tourists and those of special-interest groups. Examples of visitors and special interest groups may include trail riders (with horses), students, hikers, campers, scouts, trail racers, wildlife explorers, elk viewers, and participants of fishing (CNHI 2010; CNHI 2011; Hunt, 2011: Prater, 2007).

Research on the population base of the county suggested the DLTS would be a recreational asset capable of attracting a fairly large number of visitors and tourists (Summit Engineering Inc., 2008). Two nearest cities to the proposed trail are Prestonsburg, KY (pop. 3,612) of Floyd County and Paintsville, KY (pop. 4,132) of Johnson County. Prestonsburg is less than 15 miles away from two main attractions near Dewey Lake (German Campground and JWSRP). The distance between Paintsville and JWSRP is slightly more than 12 miles. Paintsville is roughly 25

miles from the German Campground. There are several metropolitan statistical areas (MSA) located within a 100-mile radius of the proposed trails. Those MSAs include Ashland, KY; Huntington, WV; Lexington, KY; the Tri-Cities, TN; and Charleston, WV. Pikeville, KY is another town (pop. >5,000) that is less than 25 miles away from the proposed trail. Residents of these nearby cities could easily enjoy the DLTS and the adjacent tourist attractions with less than two hours of travel time to reach DLTS.

In addition to the local residents, there are several annual cultural festivals and events that may draw visitors to Floyd County. Those visitors could be spontaneous users of the trail while attending the events and festivals at Floyd County or in the JWSRP. Examples of those popular annual events and activities are listed in Table 1 (D. Thomas, personal conversation, September 28, 2011).

Table 1. Popular annual events and activities in Floyd County

Event	Note
Rescue Squad fishing tournament	This event draws 150 competitors and their family annually
Jenny Wiley Festival	More than 8,000 visitors attend annual event in October in Prestonsburg
Highlands Folk Festival	A smaller event with 1,000 attendees that is held in in September in Prestonsburg
Big Sandy River Trail	About 100 boy scouts regularly participate in this walk.
Fourth of July Celebration and Carnival at Archer Park	More than 3,500 people gather downtown to celebrate
Mountain Arts Center "Christmas and Summer" shows	Consistently draw more than 7,000 attendees
Others	Several hundreds of attendees flux into Prestonsburg for the car shows, cruise-in, and burn-out events.

Kentucky has the nation's largest developed state park system with 17 resort parks containing full-service lodges with hotel-type rooms, cottages, and cabins (Kentucky State Park, n.d.). These resort parks offer dining, golf, swimming, marinas, meeting and conference facilities, hiking trails, nature programming and organized activities for children (Kentucky State Parks, 2011a & b). Jenny Wiley State Resort Park is one of Kentucky's 17 resort parks and one of the most visited state resort parks in the eastern region of Kentucky. Within a 12-month period (August 2010 to August 2011), 10,695 rooms were sold with 75.1% of those sales being transient rooms (Sullivan, 2006). The aforementioned figure implied at least 21,000 visitors stayed in the JWSRP in the 12-month period. In addition, 16,768 campers visited the campground sites of the JWSRP from April to September, 2011. In 2011, more than 9,600 people traveled to the JWSRP

for family reunions, special events, and trail hiking/walking competitions. According to the 2011 event schedule of JWSRP, there were 24 elk viewing activities and 10 other dinning (i.e., Valentine's buffet and Buffalo Night) and special events (i.e, canoe trip, Easter egg hunt, Operation Clean Sweep, bow-fishing, Hillbilly Night, and several haunted hay rides, etc.) that would draw more visitors to the state park. Big Sandy Trail Rider Club (BSTRC) had its spring ride that may attract additional potential trail users (Prater, 2007; The Kentucky Horse Council, 2011). The investigators further identified other groups that might be potential users of the planned trail system including geocaching and orienteering groups and mini-triathlon athletes (Trails.com, n.d; Today's Casher, 2004; Unknown, 2008).

Economic impact and benefits of the trails

In this section, the investigators addressed the study results of the benefits and economic impact of trail systems. Based on the collected information, readers should be able to develop a general impression on the importance of having trail systems built to serve the public interests.
The Blossom Trail was developed in 1989 as a way to showcase Fresno County's agriculture, (Oken, 1999). According to Ziegler, the bureau's director of Fresno Convention and Visitors Bureau, the trail brought in publicity for the region in newspapers and magazines from Florida to Texas (Oken, 1999). It also boosted the area's attraction as a film location. Although the bureau did not exactly track the number of visitors to the Blossom Trail, it was estimated the numbers were high due to its national publicity. The Fresno County Blossom Trail officially opened in late February. Each year, the Blossom A's Ford Model-A Club would initiate the self-guided tours locally. There were 18 fully booked tour buses scheduled to visit the Blossom Trail in 1999. Each passenger could easily spend almost $75 dollars during the visit (Oken, 1999). Additional revenues would come from the poster sales, since Fresno's Chamber of Commerce annually commissioned an art contest for the best Fresno County Blossom Trail poster.

Mr. Dick Lepley, the owner of Street Track 'N Tail, had credited the positive economic impact of trail systems on local and rural economies (House Natural Resource, 2011). Even during difficult economic times, in 2009 the estimated economic value of the off- road vehicle retail marketplace was about $14.6 billion dollars (House Natural Resource, 2011). Without the expansions and building of the trail systems, the off-highway vehicle industry recreation will not be able to grow. Lepley further expounded the negative consequences of closing existing trails and preventing the addition of new ones (House Natural Resource, 2011).

A popular well-built trail could attract over 100,000 visits annually (Bower et al., 2004). According to the report of Minnesota State Park System (Parksandtrail.org, n.d.), Minnesota had the second oldest state park system in the country dating back to 1891. Today, the state park system has 1,255 miles of trail. In 2000, 8,513,404 visitors visited the park system with its 66

state parks, six recreation areas, eight waysides and one state trail. About 20% of visitors were out of state travelers and about 10% of the visitors (nearly 800,000 people) were campers. Day use accounts for most of the visits. The amenities of the state parks include picnic sites, historic districts and landmarks, beaches, trails, visitor centers, waysides, horse camps, and natural/scientific areas. There are 1,141 miles of trails open for public use. Nine of the fourteen paved state trails provided 896,373 hours of summertime use.

Both studies of Bowker, Bergstrom, and Gill (2004 and 2007) revealed the characteristics of the trail visitors of Virginia Creeper Trial (VCT) and the economic benefits provided by the trail visitors. The assessment of VCT visitors' demographics (Bowker et al, 2004) showed that a typical trail visitor was likely to be white (99%), college-educated (64%) and male (64%). Adult trail users of ages 56 or older accounted for 30% of all users. The average age and annual household income of the users were 47 and $72,315 respectively. Each visitor would likely bring in a net economic value of $23~$38 per trip and travel with more than three companions.

In the report of Bowker et al. (2004), nonlocal visitors accounted for an estimated 68,769 trail visits. The local visitors contributed 61,305 of the group trail visits. The number of recreation visitors were estimated to be 130, 172. Technically speaking, accurate economic impact analysis can only count the nonlocal visitors' expenditures. Nonlocal participants can be divided into 4 groups: (1) primary trail day users (n=169); (2) primary trail overnight users (n=147); (3) non-primary trail day users (n=23); and (4) non-primary trail overnight users (n=94). It is understandable that nonlocal visitors' spending related to the use of trail is considerably higher than local visitors. In 2004, a total of $1.2M was spent directly in the two-county community. Thus, total economic impact combined local and nonlocal spending was approximately $1.6M annually (Bowker et al, 2007).

A few past trail studies also recorded the significant economic benefits that trail systems generated toward their surrounding community (Bennett, Tranter, & Blaney, 2003; Betz, Bergstrome, & Bowker, 2003; Moore, Girelson, & Graefe, 1994). Direct local expenditures by local and non-local visitors or economic benefits of numerous trails are detailed in Table 2.

Table 2. Revenues/economic benefits of various trails

Trail Name	Location	Economic Benefits	Sources
Heritage Trail	Iowa	$844,200	Moore et al., 1994
St. Marks's Trail	Florida	$536,000	Moore et al., 1994
Lafayette/Moraga Trail	California	$393,960	Moore et al., 1994
Ridgeway National Trail	United Kingdom	£800,000	Bennett et al., 2003
All rail-trails in Georgia	Georgia	$7.5M	Betz et al., 2003

Method

Participants and Procedure

In order to accurately identify the potential visitors' interests toward the newly constructed trail system, the investigators conducted a field survey to solicit information relating to users' expectations and estimated spending for an average trail visit. The investigators adopted a convenience sampling method to invite 119 attendees of the 2011 Jenny Wiley Festival (males = 46.2%, females = 51.3%) completing a survey questionnaire created by the researchers. The Jenny Wiley festival was held from October 5 to 8, 2011; however, the data collection occurred on Oct 8, 2011 from 11:30 a.m. to 4:00 p.m. In general, the participants were approached and recruited by the investigators and three volunteer research assistants at various vendor booths and shops. The investigators and volunteers explained the purpose and goals of the study to each potential participant. Except for seven people, all approached visitors agreed to voluntarily participate in the survey, which took an average of 10 minutes to complete.

In terms of participants' demographic characteristics, the majority of them had a college education or higher (68%). This sample had a fairly good representation from each of the six age-groups. Overall, about 61% of the participants were older than 36 years old. Nearly 64% of the participants indicated their annual household income was greater than $40,000, and average annual income between $40,000 and $80,000 made up the largest of different income groups within the sample.

Instrumentation

The survey contained a total of 34 items. Thirty items in this questionnaire were directly adopted from the works of Bowker, Bergstrom, and Gill (2004 and 2007). It basically covers six categories: (a) participants' habits of trail use (six items); (b) perceived benefits on the provided services (five items); (c) perceived ratings on the potential service issue (eight items); (d) perceived importance on the provided services (nine items); (e) overall support to the building of trail (two items); and (f) demographic information (four items, including the projected spending of each trail visit). In studies of Bowker et al. (2004; 2007), the survey procedure and instruments had been pre-tested and reviewed by an expert panel including the Virginia Department of Conservation and Recreation; Virginia Creeper Trail Club; and Nature Conservancy, etc.). Prior to the distribution of the actual survey, the questionnaire was reviewed and proofread by four panel members. The panel included the Community and Economic Development Associate of the Big Sandy Area Development District, Coordinator of Service Learning of the Center for Regional Engagement, and two faculty members of Sport/Recreation Management. The reliability test revealed that all of the Likert Scale items covering three

categories (a total of 24 items) yielded a high level of internal reliability, with Cronbach Alpha values exceeding .808.

Results

The descriptive results indicated the majority of people (> 60%) took about three trips or more per year. Dewey Lake appeared to draw more crowds (74%) during the summer and fall season as compared to any other time of the year. The survey also revealed that when people go to the lake, they would like to travel with other companions. About two thirds of participants were accompanied by 3-5 friends or family members for each trip. Nearly the same percentage of participants (66%) spent less than $100 for each visit as well. Past studies suggested the average spending of an average visitor was around $20-40 dollars (Betz et al, 2003; Bowker et al., 2004; Bowker et al., 2007). The overwhelming majority supported the idea of constructing the DLTS (92%). Overall, the top-four reasons for using a trail system were: (1) fishing (63.9%), (2) walking (53.8%), (3) camping (44.5%), and (4) hiking (42.9%). Specific features such as camping, lodging, eating places and gift shops are all rated as highly important by more than 50% of the participants.

Several factor analyses were performed to categorize benefits, key issues, and valued features of the trail system. The general benefits of a trail system can be classified in two groups: (a) health and enjoyment, and (b) perceived community services. The key features of a trail system that are valued by the participants are categorized in three groups: (a) dinning and lodging; (b) recreation related facility; and (c) historical and other attractions. Please refer to Tables 3-5 for the detailed results of factor analyses.

Table 3. General perception on perceived benefits (Cronbach Alpha= .856; loading =72.6%)

Factors and Items	Score (M & SD)
Health and Enjoyment (2 items) *Health and nature scenery	3.61 (.49)
Perceived Community Services (2 items) *Providing a sense of community, creating a place for pets	3.14 (.80)

Table 4. Participants' concern on building a trail project (Cronbach Alpha: .808; Loading = 50.0%)

Factors and Items	Score (M & SD)
Dinning and lodging (3 items) *Lodging, eating, and shopping	3.18 (.74)
Historical and other attractions (2 items)	3.57 (.51)

*historical and outdoor sites	
Recreation related facility (3 items) *Campgrounds, trailer space, bike rental	3.08 (.65)

Table 5. Perceived important trail features (Cronbach Alpha: .845; Loading = 64.6%)

Items	Score (M & SD)
Safety/security	3.67 (.67)
Amount of crowds	3.09 (.81)
Parking	3.29 (.80)
Natural scenery	3.74 (.59)
Restrooms	3.41 (.80)
No conflicts with others	3.12 (1.09)
Trail surfaces	3.33 (.70)
Structures/bridges	3.27 (.84)

Table 6 displays the results of the stepwise regression analysis defining the best predictor(s) of the participants' impressions of the trail project (M = 3.65 $\pm$ .54). The overall impression of the project covers two specific items: (a) the willingness to visit the potential new trail and (b) the willingness to support the construction of the new trail. Two acceptable models were formulated to predict the participants' support and use of this new project. Both "perceived community services" and "health and enjoyment" are the two primary factors that would dictate the participants' preference in building the trail project.

Table 6. Best predictors of overall impression on building a new trail system

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	t
1	(Constant)	3.036	.182		16.692**
	Perceived community services	.209	.056	.350	3.737**
2	(Constant)	2.286	.328		6.980**
	Perceived community services	.170	.056	.285	3.038**
	Health and Enjoyment	.242	.089	.255	2.719**

Dependent Variable: Overall impression; **$p < .01$

Economic Impact

In order to predict the economic impact of DLTS, three key elements must be addressed: (a) the estimated total amount of the visitors per year; (b) the average spending of each visitor per trip; and (c) selection of an appropriate multiplier to calculate the estimated impact. According to the collected information and reviewed data, it is known that both the City of Prestonsburg and JWSRP had numerous events and sizable facilities to attract many groups of visitors. The breakdown of each visiting group and calculation of the economic impact based on visitor groups is shown in Table 7. The investigators conservatively estimated the number of "other tour groups." The annual number of "other tour groups" should easily exceed $20,00, if there are more than 60 local hikers, walkers, and anglers visiting the lake each open day. With the number of "other tour groups" set at 20,000, the number of total visitors of Dewey Lake can reach 85,100. The estimation of the number of total visitors was calculated based on numerous secondary references, including newspaper articles on cultural festivals and events, state park brochure, official websites of events, and official documents of bureau of tourisms, and personal conversations with state park rangers. The revenues generated by the trail users can reach nearly $1.3 million, if 50% of all visitors (n = 85,100) have paid a visit to the trail and spent about $30 for their visit (another reasonable estimation). Because the DLST is located in the remote/rural area, the investigators selected a fairly low economic multiplier (1.3) to calculate the impact (Bureau of Bureau of Economic Analysis, 1997). In many economic impact studies of Olympic Games or large scale sporting events, the economic impact could be 2~3 times larger than the actual revenue generation of the event (Locate in Kent, 2009; Pace, 2006). In this case, the estimated economic impact of the DLTS is around $1.7M per year.

Table 7. Estimated Number of total visits to the Dewey Lake Annually

Category	Group	Number
Possible Visitors	Cultural festivals and activities in town	12,000
	Fire work shows	3,500
	State resort park guests	21,000
	State resort park campers	17,000
	Cultural festivals and activities in the resort park	9,600
	Other tour groups coming to the resort park	20,000
	Newly created potential events/activities	2,000
Total Visitors		85,100
Calculation of Potential Revenues	(Total possible visitors)* (Average spending per trip per individual)*(% of visitors willing to visit the trail) = 85,100*$30*50%	$1,276,500
Economic Impact	(Total revenues)*(Economic Multiplier) $1,276,500	Near $1.7M

Summary and Conclusions

In general, the surveyed participants would like to engage in fishing, hiking and walking while visiting the trail. Those activities were all identified as the top-four reasons for using a trail system. Participants also recognize health benefits and enjoyment that the proposed trail system may provide (M = 3.61 out of 5.0 rating). As revealed by the factor analysis, when participants highly identified the benefits of a trail system may bring to the community and individual, they would more likely to support the idea of building it. According to Bowker, Bergstrom, and Gill (2004), the majority of trail users (80%) universally rejected the idea of allowing motorized bicycles or gas-powered golf carts on the trail. Since "safety and security" is recognized as one of key important features of the trail system by the participants, it may be wise to suggest no use of ATVs or other motorized vehicle for this proposed trail project.

This project proposes a notion that potential economic benefits may existed if the trail system is built. There are other positive benefits associated with the building of DLTS recognized by the participants. However, building and maintaining a trail system requires a lot of financial commitment. In order to make our projection of the economic impact of the trail meaningful and realistic, there should be ideal and appropriate outlets for visitors to spend their money during their trail visit. The researchers assumed the fees would be spent in areas such as food, concession sales, and other required admission fees and parking costs. There is a financial advantage to allow a permit-type program collecting fees from users of the trail. However, Summit Engineering (2008) recommended that the trail system be open to the public without a fee. There probably will be no fees applying to the horseback riding patrons as well. The revenues provided by the trail system may need to come from the concession sales and rental fees (i.e., cleaning and maintenance cost) for hosting trail races. At German Bridge Campground, fees for camping are assessed as a source of revenue for operations and maintenance. A high level of survey participants (over 55%) recognized the important features such as eating and shopping. Thus, the service of concession sales should be well planned and provided to generate revenues. The operating and controlling agency of the DLTS (U.S. Army Corps of Engineering) and JWSRP may want to further explore the revenue options (by performing a cost and benefit analysis) in order to provide the visitors with food and beverages efficiently. Perhaps the profits from vending and food services can be more lucrative.

Based on the review of numerous reports and the current study, it is logical to assume that the construction of the DLTS should be well-supported by the community members. This trail system can benefit a variety of clients such as wildlife-related recreationists, trail racers, anglers, state park tourists, and special event attendees. Furthermore, a decent level of economic benefits can also be expected based on the potential estimated number of visitors and projected spending of each individual per trip. Local restaurants, lodging business, and gas stations should be able to

gain more profits due to the increase of visitors and economic boost brought from the tourism. Overall, the collected information has made a strong justification for the Floyd County to build the DLTS with tax dollars.

End notes

Although there is no official report or news release on the construction progress of the proposed trail project, it is known that the State of Kentucky is well committed to support trail projects for recreational and economic development. According to the Lane Report, more than $1.1 million of Recreational Trail Program (RTP) grants were given to develop and maintain 20 trail projects throughout Kentucky in 2013.

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