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A Message from the Kentucky SHAPE President

Hello fellow KYSHAPE members and journal readers,

As a member of KYSHAPE and the board, I first appreciate all the efforts of Dr. Steve Chen and his team for the work they do in publishing such a great journal that has information that is so beneficial for all professionals in Kentucky. I am also so honored to be serving as your KYSHAPE president for the 2022-2023 year. Continuing with our Move Thrive theme, I want to take a moment to extend beyond Move Thrive. We, as KYSHAPE members and educators want to provide opportunities for our students to move and thrive as adults once they leave us. My question for you is, who is supporting you as you provide these opportunities for our students? In other words, "Who is on your team?" Just know that KYSHAPE is always on your team. I encourage you to become a KYSHAPE member and please don't hesitate to reach out to any board member for any assistance you may need. Thank you all for what you do to help shape our students and look forward to another AMAZING KYSHAPE year!

Sincerely,

LaDonda Porter
Physical Education--Beaumont Middle School (Fayette Co.)
KYSHAPE President 2022

Acknowledgement

As the Editors of the Kentucky SHAPE Journal, we would like to show our appreciation to the following guest-reviewers for their assistance in reviewing this current issue.

Dr. Michelle Davis Gerken, Eastern Kentucky University; Dr. Dr. Shea Brgoch, Western Kentucky University; Dr. Michael Bradley, Arkansas Tech University; Dr. Maes Hu, St. Ambrose University; Dr. Gavin Washington, Kentucky State University; Dr. Ted Peetz, Belmont University; Dr. Carol O'Neal, University of Louisville; and Dr. Donovan Ross, Morehead State University

Sincerely,

Dr. Tricia Jordan, Kentucky SHAPE Co-Editor
Dr. Gina Blunt Gonzalez, Kentucky SHAPE Journal Co-Editor
Dr. Steve Chen, Kentucky SHAPE Journal Managing Editor

Kentucky SHAPE Journal Submission Guideline

SUBMISSION OF A PAPER

The *Kentucky SHAPE Journal* (formerly *KAHPERD Journal*) is published twice yearly (spring and fall) by the Kentucky SHAPE. 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 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 one of the co-editors below based on the topic (nature) and discipline of the study:

- For an article related to health and physical education, health promotion, exercise science and exercise physiology, please email the submission to Gina Gonzalez: ggonzalez2@saybrook.edu
- For an article related to recreation and sport management/administration, sport sociology, and sport coaching, please email the submission to Tricia Jordan (tricia.jordan@wku.edu)

Deadlines:

Spring issue—March 1

Fall issue—September 1

Estimated publishing time: Spring issue—Mid May & Fall issue—Late November

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.

FORMAT AND STYLE

When preparing manuscripts for publication in the *Kentucky SHAPE Journal*, authors should follow the guidelines set forth in the *Publication Manual of the American Psychological Association*, Seventh Edition, 2019. Manuscripts should not be submitted for publication elsewhere at the same time being reviewed by *Kentucky SHAPE Journal*. Authors are advised to proof the typing, and check references for accuracy. Articles should include an abstract of approximately 150 words including the rationale for the study, methods used, key findings and

conclusions. Manuscripts should not exceed 20 double-spaced pages (not including references, tables, and figures).

The manuscript must be typed double-spaced, including the abstracts and references; please number each line. 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; please clearly mark where the tables/figures belong in the text. 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.

CONTENT

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

Research Manuscripts

Research articles should be well-grounded conceptually and theoretically, and be methodologically sound. Qualitative and quantitative pieces of research are equally appropriate. Formatting suggestion: Introduction, Literature Review, Methodology, Results, & Discussion, Conclusion, and Implication.

Book Reviews

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

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

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

Case Studies

The purpose of using case studies in learning environments is to stimulate critical thinking. Such thinking skills as problem-solving, decision-making, creative thinking, visualizing, knowing how to learn, and reasoning should be stimulated as your case is discussed in learning environments.

The guidelines found below provide authors guidance in writing case studies for publication in the *KAHPERD Journal*:

1. Use narrative form when writing your case(s). Consider telling a brief story about a controversial or problematic issue or incident in the field of discipline selected from the list of suggested subject areas, competencies, and educational levels. The story could, for example, illustrate principles or theories, describe events, and/or address problems or situations related to the topic(s) you choose. You may include data to be analyzed or illustrated. Include a key character with a problem or dilemma to solve. Within the case, the key character may or may not attempt to solve the issue within the case.

2.

For Example:

Suggested Subject Area	Competencies	Focus	Educational Level
Alcohol sponsorship and sales at collegiate venues	Diversity, ethics, decision making, social responsibility	Sport Management	Undergraduate, Graduate, or both
Class management	Leadership, strategic planning, communication	PE	Undergraduate, Graduate, or both
Design of fitness programs	Scientific training, First Aid training, sport psychology	Exercise science	Undergraduate, Graduate, or both
Tourism economic impact study	Economy, analytic skills, event planning	Recreation	Undergraduate, Graduate, or both
Developing a weight watching program	Nutrition, exercise knowledge, motivation....	Health, and health promotion	Undergraduate, Graduate, or both
Preparing a dance gala	Strategic planning, event management, dance performance	Dance	Undergraduate, Graduate, or both

3. The case can be based on reality or fictional scenario. It can also evolve from one’s own or others’ actual experience. It can be deeply personal and reflective, yet it should be written objectively. The case is intended to simulate real life; therefore, the case does not have to be unrealistically neat. Rather, the issue can be messy and complex.
4. Case authors should provide questions and solution ideas. Often, when writing and discussing case(s), it is advised to allow readers to discuss analyses and compromise, make their own interpretations, and draw their own inferences regarding solutions. Although solutions may not always extensively included, case authors are encouraged to cover detailed solutions that helps educators discuss the cases in a more informed and insightful way with students.
5. To provide an optimal learning opportunity through the case(s), four elements should be included in the case study submission:

- a. Abstract and learning objectives: a summary of case and its purpose, learning outcomes and applications (75-150 words)

Fill in the following boxes

Suggested Subject Area	Competencies	Focus	Educational Level

- b. Introduction of case: presentation of issues, challenges, problems, and various thoughts
- c. Teaching notes: addressing discussion questions, guidelines for discussions, and pros and cons of different solutions
- d. References

SUBMISSIONS AND REVIEW PROTOCOL

Submission of a paper to the publication implies agreement of the author(s) that copyright rests with *Kentucky SHAPE Journal* when the paper is published. *Kentucky SHAPE Journal* will not accept any submissions that are under review with other publications. All manuscripts submitted will be peer-reviewed by 2 to 3 professionals/experts. Authors will normally receive a decision regarding publication within six to eight weeks. Rejected manuscripts will not be returned.

(Peer Reviewed Article)

Marketing for the DreamWork Wrestling: How to Keep a Small Entrepreneurial Business and Dream Alive!

Jennifer Mak, Marshall University
Steve Shih-Chia Chen, Morehead State University
Elizabeth Allen,
Karen Doran, Morehead State University

Abstract

This case study is about helping a newly established small wrestling entertainment business identify and select appropriate marketing strategies to survive and thrive financially. The small entrepreneurial company had four partners with great passion for wrestling and marketing, but also limited funds and business experience. Past failures of other franchises, such as Xtreme Wrestling Federation, Amateur Championship Wrestling, and Disney Wrestling Organization, had made them extremely cautious about avoiding mistakes to maintain and expand the business. Readers will get to learn and discuss the unique aspect of the wrestling business and identify effective marketing strategies for operating a wrestling entertainment business.

Keywords: marketing strategies, wrestling, entrepreneurship, niche sport

Learning Objectives

Suggested Subject Area	Competencies	Focus	Educational Level
Sport marketing, recreation, professional wrestling, sport academy, entrepreneurship	Promotion, business planning & management, marketing	Sport and recreation management	Both Undergraduate and Graduate

Introduction of Case

Rocky Johnson is breathing hard and sweating while working out in a well air-conditioned gym. As a former part-time professional wrestler and weight training instructor, Johnson has many thoughts going through his mind during his exercise routine. He believes it is about time to quit this low-pay personal training job amidst the coronavirus (COVID-19) pandemic and pursue his dream of starting a private wrestling business. Since Johnson was a sixth grader, he has dreamed about being a professional wrestling of the World Wrestling Entertainment (WWE) one day. Since he was a kid, he faithfully watched those colossal competitive men wrestling on the television all the time. He has dreamed about fighting in the ring and becomes a renowned a world champion one day.

By the time Johnson was in junior high, he searched for scraps of metal and wood to build a series of wrestling rings in the front yard of his house. Many neighborhood friends came to compete with

Johnson in his rings. They worked together to put on shows for their communities and nearby small towns. In 2006, Johnson met his mentor, Josh Pain (Josh Thomas outside of wrestling) in a wrestling tour event. Johnson's passion for wrestling caught Pain's attention. Johnson had the build, talent, and the strength, but his skills had been mostly self-taught. With Johnson's parents' permission, Pain took Johnson to his training school and became his mentor. Johnson and Pain worked together for six years until 2012. As for Johnson, working and training with Pain was the best time of his life. He was determined to choose wrestling as his career and believed that he and Pain would work their way to the WWE.

Johnson's Mentor and Facts about the Wrestling Business

Josh Pain began his own wrestling business venture in the summer of 2001 by joining Jon Gruen's Xtreme Wrestling Federation (XWF). He briefly worked with a couple of other short-lived organizations (please refer to Appendix A). Then in 2006, Pain formally launched his company Disney Wrestling Organization (DWO) with four other partners in Albuquerque, New Mexico. With Pain's ingenuity, his wrestlers were able to compete in an actual ring as opposed to a trampoline. The bigger and more sophisticated rings allowed the Pain's organization to expand its repertoires. However, DWO went out of business in early 2012. Pain and his partners had solely focused their business on improving the acts of the shows. They did not spend enough effort to manage their training school, and plan and promote live-event tours based on financial principles. Due to the closure of the business, most of DWO's primary trainees moved away and started a different chapter of their lives thus abandoning wrestling.

A New Hope in the Pandemic: THE DREAMWORK WRESTLING (DWW)

Despite the closure of the DWO, Johnson has never given up his hope and passion for wrestling. From 2013 to 2019, Johnson continued to participate in many small semi-pro events in Ohio. Now in his early 30s, he still gets in the ring to compete. While working as a semi-professional wrestler, he obtained an Associate Degree in General Business and the certification in strength training and conditioning. He resides in Louisville, KY and works as a personal trainer.

The 2019 movie, *Fighting with My Family*, has captivated Johnson's imagination and spirit. He learned about how Mr. Ricky Knight operated a family-oriented business, World Association of Wrestling in London, England to promote professional staged wrestling (History vs. Hollywood, 2020). Both Ricky's son and daughter, Zach and Saraya Knight were star wrestlers who helped run the family tours and earned the ticket to the WWE trial. Saraya Knight eventually made the professional rank and became the first champion of the Diva competitions. Johnson realized his dream was not just a dream. If the Knight family could do it, so could he!

The fitness industry was severely impacted during the COVID-19 pandemic; however, most of the operations have gradually recovered after the ease of the lockdown restriction and better control of the infection. If the surge of the COVID-19 infection can be controlled, Johnson's business may thrive when lives return to normal as people seeking for fun and entertainment again. As the matter of fact, the stories and photo of Georgia Independent Professional Wrestling featured in Sports

Illustrated during the COVID pandemic period gave Johnson great confidence about starting his new wrestling business. If other small independent wrestling program can survived during that difficult time, his new business can find a way to thrive as well. Therefore, Johnson eagerly reconnects with his former training mates, the brother and sister dynamic duo, Joe and Paige Maddox and the computer geek, Kong Chung, to discuss the idea of forming a wrestling entertainment company. Much to Johnson’s surprise, these good old pals also hold the same ambition for conducting a wrestling business.

“The Time is Now!”

With that being said, Johnson and his partners start a new wrestling entity, called DreamWork Wrestling (DWW). They realized that they must learn from the DWO’s failures and find ways to keep their new business survived. Many of the other small-scaled wrestling companies such as XWF and DWO were not considered successful or legitimate businesses because of their loose organizational structure and lack of profitability. Johnson believes that each of his partners has different skill sets to contribute to the organization’s success. Table 1 highlights each partner’s experience and role within the organization, DWW.

Table 1. A brief introduction of the partners/owners of DWW

Partner	Experience and Role
Josh Maddox	As a former trainee of DWO, Josh loves being part of the show. Josh grew up watching WWE events and had been involved with wrestling for approximately five years. Josh will be responsible for marketing, sales, production, and personnel management. He will be both a competitor and an announcer of the events. Josh will also oversee the hiring process, training, and employee performance under his Chief Human Resources Officer (CHRO) position.
Paige Maddox	Paige, the younger sister of Josh, is also a former trainee of DWO. After leaving DWO, Paige became a collegiate cheerleader and earned a degree in Business Administration. After graduation she ran a gymnastic tumbling academy with her teammates. She is also an experienced personal trainer who knows how to operate a training facility and academy. Paige will be responsible for analyzing and reviewing financial data, reporting financial performance, preparing budgets, marketing, and monitoring expenditure and costs.
Kong Chung	Kong joined DWO to pursue his dream like his childhood hero, Hulk Hogan. He is a computer engineer and worked as a programmer and graphic designer for six years. He has a six-figure annual salary and a solid stock portfolio. He is certainly the wealthiest partner among the group. Kong will use his computer and graphic design skills to oversee marketing activities, advertising, public relations, social media marketing, and all forms of information.
Rocky Johnson	Rocky has been involved in wrestling for eight years. He competes in an Ohio-based wrestling organization as a semi-professional athlete. He is the most experienced partner in terms of his involvement in the sport of wrestling and understanding the wrestling business. Rocky will be the Chief Executive Officer

	(CEO) of the company. He is ultimately responsible for the success of the new company.
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Conclusion and Questions

Rocky Johnson had dreamed most of his life of being involved in professional wrestling. The impact of COVID-19 pandemic made Johnson realize that he needed to either devote himself and carry out his planned career or give up the dream. He and a group of potential partners now have an opportunity to start a wrestling association and formalize his dream. However, starting a new niche business like wrestling is no easy task especially during this pandemic period (Fetchko, Roy, & Clow, 2019; Parkhouse, Turner, & Miloch, 2011). Much of the wrestling business is based on attendance and crowds (The Lane's Report, 2021, April 7). A clear survival goal is making the DWW a developmental organization for both WWE and All Elite Wrestling (AEW). In order to successfully operate DWW, the partners will need to address the following business questions.

1. What are the mission, goals, and objectives for the DWW to carry out? (University of Minnesota Library, 2015)
2. Where is the ideal location for setting up the headquarters and targeted region for running the events? (Feel free to refer to Sherrill's article (2010) for information)
3. What are effective marketing strategies for promoting the two major products of the DWW, the wrestling events and the training academy? And,
4. Will the DWW be a feasible business? Please conduct a SWOT (strengths, weaknesses, opportunities, threats) analysis to help determine the success of a wrestling entertainment business.

Teaching Notes

This case is designed to engage all students participating in a group discussion (for a 90-minute session or two 50-minute sessions). The instructor can present the case through a series of PowerPoint slides. Divide the class into groups that consist of 4-5 students. Give each group 30 minutes to examine the case and respond to all five discussion questions. Each student in the group will choose one of the business partner's role to play. Then allow another 10 minutes for the group members to develop a short presentation covering the following three key tasks: (1) developing mission, goals, and objectives for the DWW, (2) various marketing strategies, and (3) determining the feasibility of the DWW. If additional time is available, then the instructor can ask the groups to create a table/grid showing the organizational structure and roles of the different positions. All groups will present their answers and turn in their presentation outlines to the instructor for sharing with their peers. The instructors can further decide how to let all groups present their responses and further debate whether the responses are rational and realistic.

Epilogue

Unlike the traditional four major professional sports in North America (National Football League, Major League Baseball, National Basketball Association, and National Hockey League), staged professional wrestling was considered as a niche entertainment business with less marketing

research, attention, and devotion. The World Wrestling Entertainment (WWE) is one of the most successful sports entertainment firm among Forbes Magazine's Top 200 small companies today (Helleu, 2019; Skion, 208). We must not forget that it was once a small local business in Stamford, Connecticut, which had grown into a global brand. WWE's success was credited to the adoption of a 'Made at Home' strategy that controls its wrestling events and product from creation to distribution. This is not much different from what small-scale independent wrestling companies attempt to do. The persona of staged wrestling was something original, engaging, fun to watch, inspiring and total entertainment (Rathee, 2017). However, merely creating and producing exciting wrestling matches alone is not enough to guarantee the business' success. The DWW must also focus on the managerial and business aspect of its operation.

Attempting to operate a wrestling business can be a risky challenge, since the business targets a niche market and the past failure is evident (i.e., Josh Pain's DWO). The traveling wrestling events can be seen as modern-day circus tours. Nevertheless, most of major WWE stars (including John Cena and The Miz) have been trained by the small independent wrestling companies and competed in small venues and arenas. The Ohio Valley Wrestling is a great example showing that a small company can still attract large investors from Louisville, KY, if it is run properly (The Lane's Report, 2021, January 5). The COVID-19 infection continue to remain at a high level, this certainly would make operating live-events more challenging and costly. It would be interesting to look at how students determine the feasibility for running a wrestling business under the pandemic situation. A couple of special advantages that Johnson and his partners may have over Pain's DWO are the popularity of social media marketing and the maturity of video-streaming technology. Perhaps these two advantages would help Johnson's DWW to become more profitable. Lastly, even if the entertainment portion of the business (the wrestling event) do not make huge profits, Johnson and friends can still operate a sustainable gymnasium school alone to prevent the failure of their business.

Suggested Answers to the Discussion Questions

1. What are the mission, goals, and objectives for the DWW to carry out?

Answer: DreamWork Wrestling (DWW) is an organization that promotes semi-professional and professional wrestling as an exciting entertainment and trains female wrestling enthusiasts to reach their dream of becoming world-class entertainers.

Primary goals and objectives of the DWW may include:

Goal 1: Promote the sport of wrestling

Objectives: Create matches for wrestlers to compete. Recruit semi-professional wrestlers and young prospect students to train and perform.

Goal 2: Increase brand awareness

*Objectives: Use social media to promote activities and the brand. Use social media accounts to do giveaways and get their name out there. Engage in public relations activities.

Goal 3: Create an entertaining atmosphere and a memorable fan experience

*Objectives: Identify the need and wants of fans. Offer a high quality of concession sales items and entertainment, i.e.: drinks, food, highlight films, and music.

Goal 4: Ensure the financial success

*Objectives: Allocate adequate startup capital. Prepare the budget wisely. Generate sponsorships.

Goal 5: Create a comfortable and safe environment for fans and employees

*Objective: Follow safety protocols during the Covid-19 pandemic.

Goal 6 Influence the life of youths

*Objective: Teach young students life skills, confidence, work ethic, and mental toughness.

2. Where is the ideal location for setting up the headquarters and targeted region for running the events? (Feel free to refer to Sherrill's article (2010) for information)

Answer: The authors believe the primary income sources of DWW are likely to be community tours, matches and a training academy. A couple of good locations for setting up the company headquarter include Mobile and Birmingham, Alabama. According to a report of the Street and Smith's SportBusiness Journal, both cities were ranked among Top-10 geographic markets in the country for professional wrestling. They are within 2.5 hours traveling distance to other large university campuses, such as Alabama and Auburn. It would be relatively easy for DWW to conduct tours by visiting college towns. The city of New Orleans is also not too far away, if large events are planned that may require a bigger stage and fan base for shows.

3. What are effective marketing strategies for promoting the two major products of the DWW, the wrestling events and the training academy?

Answer: The DWW needs to excel in some basic operational schemes that are commonly seen in small start-up pro-wrestling businesses. Many practices may include duplicating the strengths demonstrated by WWE, and some other related franchises, such as AEW (Oestriecher, 2019). Here is a to-do list that may help the DWW launch its operation.

- 1) Organizing tours to visit cities and metropolitan areas that have an appropriately sized fan base who are interested in wrestling entertainment.
- 2) Negotiating a great deal for the facility cost of arenas or convention centers.
- 3) Operating and maintaining good enrollment for its training school.
- 4) Obtaining sponsorship deals with friendly community businesses. It would be a great if Johnson and friends can earn the endorsement or partnership of existing WWE stars. This type of deal can further promote the DWW brand.
- 5) Creating attractive apparels and souvenirs for sales.
- 6) Creating a strong presence in social media platforms by providing stories, match-information, promotions, and highlights, etc (Dykens, 2010).
- 7) Using social media to raise awareness on issues related to communities (i.e., gender equity). DWW can also focus on promoting its events as a family-entertainment to low-income working class, since the majority of the wrestling fans are made of that specific demographic group (Dykens, 2010; Sikon, 2018).
- 8) Developing multi-screen experiences on DWW's official websites. And,
- 9) Creating a social media ambassador to start trends and build storylines.

- 10) Follow the best practices of some existing training schools. Seek and hire experienced instructor to inspire new talents, so they can learn their craft in a safe and controlled environment and minimize the risk of being injured in training and competition (Cohen, 2018; Wilkinson, 2019)

The ability to identify proper location, targeted consumers, and promotional means is essential for the survival of the wrestling travel-tours. Table 2 displays specific characteristics and demographics of wrestling fans for further references. Table 3 contains the social media landscape of the WWE. The information covered in these two tables can help the organization (DWW) more effectively target its consumers and understand the needs of general wrestling fans.

Table 2: An in-depth report about avid WWE fan base (by Street & Smith's SportsBusiness Journal, 2013, April 22)

Category	Percentage
Gender	
Male	62.8%
Female	37.2%
Age	
Generation Y (18-29)	29.1%
Generation X (30-44)	35.8%
Others	35%
Education	
High School graduate or less	65.6%
Any college	34.4%
Ethnicity	
White	52%+
Hispanic	20.4%
Black	26%
Annual Income	
\$49,999 or less	70.4%
\$50000 or more	27.6%
Children in household	
None	51.7%
One or more	48.3%
Top 3 Geographic Markets	
Little Rock, Arkansas	9.5%
Harlingen-McAllen, TX & Memphis, TN (tied)	9.3%
New Orleans	8.3%

Table 3. WWE's Social Media Landscape (Based on Wilson, 2015)

Platform and Number of Followers	Content focus	Post Volume
Facebook (more than 24,503,201)	News, promotions, performer profiles, video highlights from weekly TV programming, polls, and exclusive interviews	Approximately one new post per hour – with most posts receiving a minimum of 20,000 likes or more.
Twitter (5 million and growing)	News, fan interaction, Q and A’s with superstars, retweet superstar tweets, and photos/video from live events.	Multiple posts per hour.
Google+ (3.5 Million+)	News, promotions, performer profiles, video highlights from weekly TV programming, and exclusive website content.	Approximately 10 posts per day.
YouTube (5 million+ subscribers)	Promotional videos, superstar features, TV programming summary videos, recaps, full length episodes, classic videos, original webisodes.	2.6 Billion+ video views.
Instagram (1.5 million)	Fan photos and exclusive behind the scenes content.	3-5 posts daily.

4. Will the DWW be a feasible business? Please conduct a SWOT (strengths, weaknesses, opportunities, threats) analysis to help determine the success of a wrestling entertainment business.

Answer: Students seem to have split opinions on the feasibility of the proposed business. Some do not think it is a feasible idea to start a brand-new wrestling entertainment business currently during this pandemic. People barely can go to their own child’s middle school basketball games. With that being said, there will be excessive restrictions on attendance capacity. These rules will be extremely difficult to overcome. In addition, the organization will spend more cleaning cost to keep the fans safe. These four individuals may be capable of running this unique entertainment business successfully if we are not in the middle of the pandemic. They have knowledge, funds, and passion to do it. They need to find the target market and mode the proper talents to gain recognition. They would struggle a little bit with the business due to their limited business experience. It is going to take a lot of effort along with serious teamwork from all partners to make that happen. The following paragraphs display the responses in the SWOT analysis conducted by the students.

Strengths:

- All four business members have a background of knowledge in wrestling.
- Each partner’s passion for wrestling (This is Rocky Johnson’s lifelong dream and vision).
- Paige has a degree in business administration.
- Kong is a programmer and graphic designer.
- Joe will bring the show to life with his passion and knowledge of wrestling.

- Rocky has a lot of experience in knowing the responsibilities of the Director of Training.
- They have seen failed companies before. They can gain experience and avoid the mistakes.

Weakness:

- Wrestling is not necessarily popular in Eastern Kentucky. They may have trouble getting an audience.
- None of these four business members has ever ran a wrestling business before – they lack experience in this. In another word, they may not have business expertise to make this a successful venture.
- They may not have enough capital to make it work without bringing in other investors.
- They do not have a previous reputation / they are not “well-known” people.
- There is a lot to learn, since this is new to all the business co-owners.
- They may face challenges in recruiting athletes and competitors.
- The industry itself is a niche business with limited demand. It may need a high start-up cost to start the operation.

Opportunities:

- There may be few competitors in the region if a market is carefully selected.
- Opportunity for attracting and building loyal fan-base,
- Since this is an unusual thing in Eastern Kentucky, the media would be all over it.
- People’s lives have “slowed down” in a sense due to the pandemic – they may be more aware of what is going on in their community.
- Now more than ever, people are focusing on supporting their city small businesses.

Threats:

- They are opening a brand-new business in the middle of a pandemic
- Possibility of getting shut down
- Less of an audience due to the fear of COVID-19
- Smaller capacity number
- It is going to be expensive to start this business from scratch.
- The big wrestling businesses have an advantage over them. How can they compete against WWE or AEW?

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(Peer-Reviewed Article)**Outcomes of Incorporating a Service-Learning Course Trip into a Park Management Course: An Exploratory Examination of Student Perceived Personal and Professional Development**

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Abstract

In higher education, parks and recreation departments strive to ensure students matriculate with a diverse set of knowledge, skills, abilities, (KSAs) and experiences. Service learning is a high-impact pedagogy that integrates meaningful community service with instruction and reflection to enrich the learning experience(s). While many instructors utilize service-learning, more needs to be known to understand student's personal and professional growth during and after the experience. Through student reflection interviews, researchers found service-learning to be a valuable pedagogy that has much potential to meet various course goals while nurturing personal and professional student development through the planned experiences.

Keywords: Service-learning, experiential education, parks, recreation, civic engagement, course assessment

Introduction

Academic parks and recreation departments strive to ensure students matriculating with a diverse set of knowledge, skills, abilities, (KSAs) and experiences. The purpose of pursuing a robust learning experience or result really seeks to achieve several, perhaps unwritten, outcomes. Creating engaged citizens, successful professionals, and involved alumni are a few core tenets that most professors and academic administration strive for in their graduating students. While there is certainly a wide array of pedagogies to employ to attain various results, service-learning is a pedagogy gaining popularity in how it encourages engaged citizenship, fosters professional KSAs, and fosters transformative experiences that cultivates engaged alumni (Social Change 101, 2015). Service-learning is adaptable to various areas of study and may be especially beneficial in parks and recreation. Through summative student reflections in a park management course at Eastern Kentucky University, authors found service-learning to be a vehicle that may provide incredible outcomes that vary per student.

About Service-Learning

Service-learning acts as the combination of two experiences colleges expect their students to have throughout their institution: community service and education (Arizona State University, n. d.). Service learning is a high-impact teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities (Eastern Kentucky University, 2016). Using these two explanations to understand service-learning as a whole, service-learning may be best described as the acquisition of knowledge and skills through study and the contribution to the welfare of others. John Dewey, an American philosopher, believed education should relate to the everyday lives of the students, providing them the tools and skills they need in order to better their futures and communities (Giles & Eyler, 1994). John Dewey was not the only visionary to this school of thought. Many others shared similar philosophies within their education systems and communities worldwide. Over the last century, Dewey's opinion has been fulfilled by schools, universities, and organizations alike. Groups are taking common breaks from school to extend the educational period and create opportunities to serve their communities. These programs become widely known and often include both faculty/staff and students who travel to different destinations. Programs, like Alternative Spring Break, are where college students elect to spend their spring break serving others and learning about a different community, organization, or general lifestyles (Giles & Eyler, 1994). Besides Alternative Spring Breaks and community-offered experiences, universities are offering their interpretation of service-learning.

One such university that incorporates service-learning into its curriculum is Vanderbilt University. Within their Center for Teaching, Assistant Director Joe Bandy defines service-learning as "giv[ing] students' experiential opportunities to learn in real-world contexts and develop skills of community engagement while affording community partners opportunities to address significant needs" (Bandy, 2017, para 3). In addition to his introduction, Bandy explains the different types of service-learning and its benefits to students, faculty, universities, and communities. These could include hands on experiences (working in the field), aiding organizations with research to make informed decisions, application-based research, and much more (Bandy, 2017; McDaniel, 1970).

As a general rule, service-learning opportunities do not always demonstrate their importance to the students immediately. Some lessons involved are realized during the reflection period, where students think back to their experience and analyze what they did, why they did what they did, and how and why it is essential to their time as a student (Prentice & Robinson, 2010). This transference of learning relating to their experience and applying this to their lives is an important step in the reflection process. The initial and long-term benefits are why many academics units are embedding service-learning into and throughout their curriculum.

An Example of Recreation and Park Administration's Service-Learning Program

Eastern Kentucky University (EKU) encourages service-learning throughout the entire university by embedding unique opportunities through and in addition to the general education and major specific curriculums. Further, administration encourage faculty to facilitate service-learning experiences in all courses where applicable (Eastern Kentucky University, 2021).

Within the Recreation and Park Administration department (RPA) at EKU, students partake in various service-learning opportunities. From introductory courses to those at the graduate level, community involvement and service to the professional are intimately intertwined with academic success. In a variety of courses, students work to plan events (such as the Halloween Hoedown and Easter Extravaganza for Richmond's Parks and Recreation department as well as other municipal recreation departments), engage in volunteer work, aid organizations helping special populations, and so much more. Through the departmental research methods course, the department partners with organizations like Kentucky Brewgrass Trail, Raven Run Nature Sanctuary, Big South Forks National River and Recreation Area, and The Daniel Boone National Forest (and many more) to complete various needed visitor studies (Eastern Kentucky University, 2021). Professional partnerships like these offer students the opportunity to apply the skills and knowledge attained in the classroom in a practical way that benefits both the community and the profession. That is a prime example of service-learning at the superior level.

In addition to service learning embedded in many of the required courses, students must complete three courses of fieldwork to gain diverse professional experiences. The first fieldwork experience (1 academic credit hour) is an introductory course of 45 hours with an agency, organization or department. Faculty encourage students to shadow a job or career in a field of interest. The student is tasked with analyzing activities the organization leads and reflecting on their experience. The second fieldwork experience (2 academic credit hours) encompasses 90 hours of hands-on work with a different agency or organization, requiring the student to explore a diversity of fields and experiences. In this course, students must plan, implement and lead activities or events for the organization, allowing them to showcase knowledge and skills learned in programming and leadership courses. Prior to their final fieldwork experience, students complete a course (Senior Seminar, 3 credit hours) where they prepare resumes and portfolios, gain interview experience and networking skills, and complete their senior project. This course, combined with the previous courses, provides students with the foundation to begin their final internship. The final fieldwork experience is the internship (12 credit hours). For this course, students complete 480 hours of work or with an organization related to their degree concentration and future professional aspirations. Within the course, students are required to develop and assess programs/events, begin expanding their professional network and complete several self-assessments related to their performance and development.

Embedding Service-Learning into The Curriculum

In addition to these experiences, faculty in the department offer select courses where service learning is the primary mode of learning throughout the entirety of the course. One such course is Park Management (REC 530), which is required for natural resource recreation management students and available to other students to take as an elective. Park Management explores park purposes and operations with an emphasis on natural resources and visitor management. Along with this, faculty and guest speakers explore park design, managing wildlife and natural resources, public relations, policy development, cultural and historical interpretation and management, and much more. To provide an immersive experience, faculty developed Park Management to

incorporate a travel and service-learning experience for the two weeks directly after the conclusion of each spring academic term. Students spend one week (Monday through Friday) preparing for the trip, engaging in lectures, and completing initial assignments. The second week (Saturday to the following Sunday), faculty and students leave for a field experience that includes stops at wildlife refuges, state parks, national parks, and lands managed by the United States Forest Service. Historically, the primary destination and the core service-learning component has been Cumberland Island National Seashore (CUIS), a National Park Service (NPS) property.

Each year an assortment of park employees meet with students throughout their time on the island. These employees work as park law enforcement rangers, fire management officers, facility software management specialists, environmental biologists, interpretive rangers, facility managers, maintenance, and administration. The students, through structured seminars and unstructured interactions, learn the details of positions and how NPS is a diverse organization with many working pieces to form one cohesive unit. The service-learning component, which changes year to year, usually required 12-15 hours of work per student and is spread out over 2 to 3 days. This makes time for educational and leisure time while onsite. Students typically work alongside a facility or maintenance manager, who directs them through the service work. Previous service projects include trail maintenance, invasive species removal, cultural restoration, and so forth. Throughout the week of service and the course trip, students complete daily written debriefings, reflections related to the activities of the day and how the opportunities promoted personal and professional development. Students are tasked with completing this in a journal format as an assignment for the course. The course concludes with students finishing their final reflection writings (submitting the journal as part of the graded items in the course) and completing a service-learning assessment. Students depart from the course and trip with many shared education opportunities, memories, and photographs.

Benefits and Impact of a Service Learning Course

Methodology

Within the course (REC 530), the researchers completed interviews with undergraduate students about service-learning and course outcomes. The researchers developed four qualitative interview questions to better understand student's thoughts regarding personal and professional outcomes from their service-learning experience (Table 1). These questions were solely used to understand how the service-learning project(s) in this course affected the student's personal and professional development and were not used to evaluate the course as a whole, the instruction methodology of the course, or the instructors of the course. All students in the course had the opportunity to participate and could participate on their own free will and answered only the questions included in Table 1. In total, 17 undergraduate (10 female & 7 male) and two graduate students were enrolled in the course. The researcher interviewed four female and three male undergraduate students. All interviewees were recreation and park administration majors and engaged in the service-learning experience on CUIS. To keep their information confidential, students who participated in the interviews were assigned numbers for identification purposes where appropriate in the interview analysis and discussion

Table 1. Qualitative Interview Questions for Service Outcomes

1. What were your personal, academic, and professional outcome perceptions of your involvement in the service-learning project in this course?
2. To what extent do you believe the service-learning project and this course affected your future in the field of study?
3. How do you compare this course to other courses in the major?
4. How would you leverage more investment (of any kind) to provide these experiences for future students?

Personal Development, Academic and Professional Preparation

Overall, the students interviewed understood the general premise of the service-learning project. Some responses amongst their personal, academic, and professional perceived outcomes overlapped while others were unique per student. Overall, three (43%) of the students in the class believed they would make new friends during the service-learning component of the class and three (43%) others believed they would get to know their classmates on a more personal level. The remaining student (14%) student mentioned team building, which perhaps aligned with the six individuals who the friendship components of the class. Of note, three (43%) students acknowledged they had fun, in addition to the education and development components, during the service-learning experience.

Six (86%) students stated they learned about park management in a general sense, with one student noting this experience would help he/she explore other RPA concentrations outside of their current one. One student mentioned they learned something more than what a textbook or PowerPoint presentation had to offer, due to the hands-on component of the service-learning project. Another student viewed the service-learning project as a conclusion to their undergraduate experience and mentioned taking time to reflect on their accomplishments after their upcoming graduation ceremony. One student explained that their previous experience in park management; but specified that it was at a local level and not at the national level like NPS. This student also mentioned they thought they would learn more than park management through the service-learning component and wanted to apply more of the information gained to their current job.

Affecting the Field of Study

All interviewees saw the service-learning experience as an opportunity to explore career fields and find out if working in the National Park Service is a career path worthy of further exploration. One student (No. 6) specifically mentioned experience from the course trip may help narrow their career interests. Another student had a similar statement, as they would apply the information and experience as they continue to craft their career goals. In regard to how students viewed a possible future career in the NPS, four students appreciated employees discussing specifics of their positions, and two noted their gratitude for the opportunity to discuss position duties and career paths with the park superintendent and the maintenance manager.

Four students (i.e., No. 2, 3, 6, & 7) had similar statements in their interviews regarding the relationship between the NPS site service-learning experience and implications related to their future endeavors. Three students said it gave them an introduction and explanation of the federal process of park management and three students said they learned about the professional needs to work in the NPS. Two students said the information gained from the service-learning experience could be relevant and applicable to any future job. Interestingly, two students mentioned this experience as having helped them determine they are not interested in pursuing a career in the National Park Service.

Course Comparison

Most (5) of the students interviewed noted that service-learning is something they believe makes the RPA major unique. They noted things like working with professionals as being special (3), enjoying the opportunity to work and learn outside the classroom (3), and the opportunity to get out of “the building” to learn (1). A few other notable themes were many students enjoyed the current course (REC 530) than others in the major, felt the learning was more immersive, and enjoyed the “hands on” nature of the course. Several noted that more courses should be structured like the Park Management course to get students “out and dirty” and “engaged in the real profession.”

Discussion and Implications

Based on the collective responses to the interview questions, students understood the premise of the course and had a good grasp of the overarching definition and philosophy of service-learning. For students in RPA, Park Management is a unique course. Students are taken outside of the classroom for a week of complete engagement; they are mentally, physically, and emotionally engaged for the entirety of the course trip. Based on the student interviews, students feel the courses offered in RPA, and the service-learning experiences embedded in those courses, make RPA a special department at EKU. Specifically, their experiences during the Park Management course trip helped them in their development and understanding career paths in their profession.

Overall, this research endeavor was meant to provide a general understanding of how students felt in regard to the service-learning opportunity within a course trip. For the students enrolled in Park Management, it proved to be incredibly beneficial. Students would benefit from more service-learning opportunities like the ones offered in Park Management (REC 530). Incorporating service-learning and course trips are not without challenges, as developing these opportunities is quite time-consuming for the course instructor(s), site staff, and students. One aspect that may be worth investigation is offering this type of course, the combination of a service-learning engagement while on a course excursion of an extended timeframe, during a normal fall or spring semester. There are certain barriers to students taking summer courses, including time and financial resources. Offering such a course during a traditional semester may increase student interest and enrollment. This may require different sites and plans to be considered but may prove fruitful in other areas.

One final aspect to consider is to develop a better assessment tool to increase the understanding of the wide array of outcomes attained by providing students course trips with a service-learning component. While the results in this exploratory study are certainly positive, a specific assessment tool could provide much more information to better develop and offer course and service projects in the future.

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(Peer-Reviewed Article)**The Benefits of Animal Assisted Therapy**

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Introduction

With all of the difficulties that students have faced in the past few years, one may argue that there is a need for additional support. One possible way to provide this is through animal-assisted therapy. Animal assisted therapy comes in a variety of forms and there are numerous benefits for those that take part. There have been several studies showing a reduction in stress, and an increase in social behavior. This aspect is especially noticeable in children with behavioral issues. Children that have difficulty within social settings would emotionally open up more readily and become more aware of their surroundings when an animal was present (Davis, et al., 2015). Davis and his colleagues contend that animals improve clients emotionally, physically, socially, mentally, and spiritually. As we progress as a society overcoming the pandemic, racial upheaval, and political divisiveness the need for this intervention is growing. Though there is now a COVID vaccine for children available from 6 months in age, returning students may be apprehensive returning to school. Students are also adjusting to returning to normal school life and socialization. Adults are also navigating returning to a normal life post pandemic and the stress that comes with it. Animal Assisted Therapy may bring benefits not only for children but for adults as well.

The purpose of this paper is to provide findings from a literature review pertaining to the benefits of the use of animals for individuals with and without disabilities. The paper ends with implications for Recreation Therapy practice.

Literature review

Research indicates that there are numerous physical and mental benefits from animal assisted therapy. Stanley-Hermaans and Miller (2002) identified several physical ways animals are beneficial to humans. These benefits include lowered blood pressure, reduced stress and help with regaining coordination and strength. Those are just a few of the physical benefits. Animal Assisted therapy the client also benefits emotionally and mentally. Murry (2002) refers to research conducted that indicates children with emotional & behavioral disorders (EBD) are able to learn essential social skills with animals. She states that “these interactions provided children identified as EBD with experiences in settings with naturally occurring limits, nurturing and caring for another, play opportunities and other social interactions, and common interests with other humans” (Murry, 2002, p. 11). Animals are an alternative way for children to learn, especially when they may not feel comfortable talking with an adult. The animal can provide a safe ear to “listen” and not judge them based on what they are saying.

Animal Assisted Therapy has been an effective treatment for hundreds of years. The intervention dates to the 1850's when Florence Nightingale suggested keeping a pet would be good for health (Stanley-Hermaans & Miller, 2002). Animals have provided psychological and physiological benefits to patients. Stanley-Hermaans & Miller (2018) refer to several studies in their investigation that showed significant improvements in patients, such as an average decrease in hypertension among 60 study participants.

Children with autism spectrum disorder (ASD) and Down Syndrome (DS) can benefit from animal assisted therapy as an intervention. According to Griffioen, Steen, Verheggen, Enders-Slegers, and Cox (2019), an important aspect of social interaction is behavioral synchrony. Behavioral synchrony is dyadic interaction between two people regulating social, emotional and cognitive growth. According to Griffioen, et. al., (2019), students with ASD and DS can benefit from animal assisted therapy or dog therapy. Synchrony occurs between two individuals when interacting. Synchrony is emotional, communicative, verbal and non-verbal expressions between two or more individuals.

Griffioen, et.al., (2019), believe this therapy can be beneficial for the child with ASD or DS. The therapy consists of structured one-on-one or small group sessions, offered by trained professionals who use certified therapy dogs. The treatment requires the active involvement of the participant and has specific therapeutic goals depending on the participant's needs.

Initial literature research showed that the majority of animal assisted therapy performed uses dogs. However, almost any kind of pet, small animal, or farm animal may be used. Cats, horses, dogs, dolphins, and even llamas may be used for treatment or in a classroom. According to the Animal Assisted Therapy International website ([www. https://aatinternational.com/](https://aatinternational.com/)) cats are becoming increasingly popular therapy animals. Children are learning essential skills by taking care of cats, while older patients in nursing homes are kept company by them. Clients with motor skill difficulties may find an increase in abilities by petting and playing with the cat.

Horses are used for therapy for a variety of different reasons. Riding produces physical benefits such as balance, but the emotional and social benefits are outstanding. According to a study performed by Dunlop and Tsantefski (2018), children learned to overcome their fears. Dunlop and Tsantefski discussed the feeling of safety with the horses, being understood, showing affection important to the horse and to the person giving the affection, therefore the person has a sense of the horse's behavior being predictable and manageable. All of this produced enjoyment for the child and the horse.

Animal Assisted Therapy is not without risks. Proper safety precautions must be in place to ensure the well-being of the patient. Frequent handwashing, up to date vaccines, as well as ensuring the animal is well groomed will help to prevent diseases (Stanley-Hermaans & Miller, 2002). Animals must also possess a friendly, gentle demeanor in order for the children to pet, play with, or ride the animal. Stanley-Hermaans & Miller also state that the client must act appropriately with the animal not mistreat the animal in any fashion. Trust must be established for both parties, the student and the animal.

Methodology

The researchers performed a literature analysis to discover further information about animal assisted therapy and emotional support for students in elementary or secondary education systems. The articles used for this research paper must have been peer-reviewed, published within a scholarly journal, and pertaining to the subject of animal assisted therapy. Only databases supported through the EBSCOhost database library were used. The researchers found four different journals with articles pertaining to the topic.

Conclusion

Though there still needs to be research completed to determine if animal assisted therapy is truly a best practice, it is safe to say it does have benefits. Benefits range from lowered blood pressure to increased social skills. Animals are useful in a variety of different ways i.e. teach proper social skills and caring skills. The benefits far outnumber the risks of animal assisted therapy. As long as precautions are taken and safety is always the number one priority, the researcher found animals will be a valuable tool for recreation therapy in a school. Certified Therapeutic Recreation Specialists (CTRS) are trained to handle a variety of animals in a school. The CTRS can work alongside the teacher to support the student. The school needs to gain approval from the superintendent and principals to use within the school and the district. The school would develop a policy regarding how the animal will be cared for while on school property, a parent permission form for the student to be involved in the animal-assisted program, toileting of the animal while on school property, housing of vaccination records and who is responsible for oversight of the program. Animal-assisted therapy is an excellent tool to use with certain students with disabilities like ASD and DS, but safeguards are necessary for all to benefit. Now that society has reopened it could be a good attempt to try something different for support for children going back to school. Hospitals have seen the value of animal-assisted programs when working with children in a hospital setting. The same could occur in an educational setting.

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(Peer-Reviewed Article)**Longevity versus Looks: Perceived Benefits of Exercise among Kentucky University Students**

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Abstract

As college students gain newfound freedom, they are at a pivotal moment to shift their health habits. The purpose of this study was to analyze college students' perceived benefits of exercise, whether it be longevity or aesthetic appearance related to demographic factors. This study included a diverse sample of students attending a regional Kentucky university, all recruited through a campus fitness-testing event. Participants completed the "Exercise Benefits and Barriers" (EBBS; Sechrist, Walker, & Pender, 1987) survey and various fitness tests. Study findings indicate insignificant relationships across the benefit of living longer in relation to age (traditional versus non-traditional), obesity status, and class standing. However, exercising to improve appearance was significantly reported more often across genders and improving longevity across obesity statuses. Based on these results, we recommend future student focused exercise interventions for students to include the importance of exercise benefits (both appearance and longevity). Additionally, exercise as a factor of susceptibility to improve cues to actions for individuals- to exercise should be constant. Given the importance of appearance benefits, future health promotion efforts should leverage this benefit to motivate students to be active.

Keywords: EBBS, college students, longevity, appearance, exercise benefits

Introduction

Longevity and appearance are often cited as important benefits of exercise (Farren, Zhang, Martin, Thomas, 2017). Physical activity across one's lifespan is a crucial indicator of health outcomes both physiologically and psychologically (Blair & Morris, 2009). Insight regarding the perceived benefits of exercise offer public health professionals' valuable knowledge on what motivates adults to exercise a promise of health or aesthetic satisfaction. Examining the unique population of college students may provide an insight to their world views about physical activity and its benefits

According to the American Heart Association (n.d.) physical activity recommendations for adults include 150 – 300 minutes (about 2 and a half hours-5 hours) of moderate intensity aerobic activity or 75 – 150 (1.25 – 2.5 hours) minutes of intense aerobic activity per week. A CDC study (2021a) shows that despite these recommendations as of 2019 only about 23% of American adults (18+)

meet the aerobic-activity and muscle-strengthening guidelines. This guideline adherence highlights an increase from previous years; in 1998 only 14% of American adults met the same guidelines (“Data Finder”, 2021). However, physical activity levels remain low among American adults. According to Corder, Ogilvie, and Slujis (2009), physical activity levels typically decline from childhood to adulthood. With this factor in play, early adulthood interventions should focus on effective ways to establish physical activity habits and to maintain those habits throughout their life.

Overall, the age-adjusted prevalence of obesity among United States. adults was 42.4% in 2017–2018 (Hales, Carroll, Fryar, & Ogden, 2020). Obesity rates varied across age groups and indicated the prevalence was 40.0% among younger adults aged 20–39, 44.8% among middle-aged adults aged 40–59, and 42.8% among older adults aged 60 and over (Hales et al., 2020). Compared to other states in America, Kentucky ranked sixth in obesity (Robert Wood Johnson Foundation, n.d. a) and number one in physical inactivity (Robert Wood Johnson Foundation, n.d. b). In 2019, 34.7% of Kentucky adults (18+) reported being obese and 35.4% of adults reported being overweight by BMI standards (CDC, 2021a). Poor exercise habits are associated with rising rates in national health care costs and premature deaths due to chronic diseases across life stages (CDC, 2021b). Establishing healthy habits among undergraduate students may serve as a catalyst for habitual physical activity into adulthood thus increasing health benefits for these adults as they age (Essiet, Baharom, Shahar, & Uzochukwu, 2017).

Health behavior theories serve as a guideline to assessing habits and providing tailored interventions to specific populations (Rural Health Information Hub, 2018). Instruments such as the Exercise Benefits and Barriers Survey (EBBS; Sechrist, Walker, & Pender, 1987) utilizes Health Belief Model (HBM) components (Rosenstock, 1974) to determine individuals’ perceived benefits and barriers to exercising (Sechrist, Walker, Pender, 1987). Sechrist et al. (1987) developed this instrument to address a research need highlighted through interviews and literature, and tested it for internal consistency, construct validity, and test-retest reliability. This instrument is critical for researchers to understand what drives individuals to exercise. A study by Stutts (2002) highlighted this need when he asked adult (18+) recruits from local churches, workplaces, and an evening college program for adult learners to take the EBBS. Stutts (2002) reported that self-efficacy was the main predictor in exercise and was positively correlated with higher perceived EBBS benefits for participants. In addition, EBBS benefits are noted as significantly accounting for the variance of college physical activity levels (Brown, 2005). For both studies the EBBS benefits included a range of items examining physical, psychological, and social factors. The correlation of EBBS benefits and self-efficacy on one’s activity levels indicate its critical role for adults to maintain exercise regimens. Currently, no known research studies have assessed the perceived benefits of exercise among Kentucky college students at a regional university.

The purpose of this study was to assess the perceived benefits of exercise for students attending a regional Kentucky university. It was hypothesized that female students would be more likely to report exercising for appearance reasons than their male student counterparts. Researchers hypothesized that older students and students with obesity will be more likely to report wanting to exercise for health reasons than younger students and non-obese students. Using the HBM

(Rosenstock, 1974) to guide the study, we aimed to assess how perceived benefits influenced one's physical activity levels using the EBBS.

Literature Review

Exercise Behaviors & College Students

Von Ah, Ebert, Ngamvitroj, Park, & Kang (2004) examined predictors of college students' health behaviors such as physical activity. A cross-sectional study at the University of Alabama recruited 161 students enrolled in an introductory psychology course to complete a self-reported questionnaire (Von Ah et al., 2004). The survey included items from the Perceived Stress Scale, Social Support Questionnaire, a study curated Self-Efficacy report and Health Behavior Questionnaire, the Sun Behavior Protective Scale, components of HBM, and elements from the Behavioral Risk Factor Surveillance System/Youth Risk Behavior Surveillance System (Von Ah et al., 2004). Von Ah et al. (2004) found that the HBM components and self-efficacy played a large role in binge drinking and self-efficacy mediated barriers with increased severity. Self-efficacy also moderated the perceived barriers to physical activity and nutrition protection behaviors such as a balanced diet.

In a similar study by Kim, Ahn, & No (2012), the HBM model components were applied to college students' health behaviors in relation to behavioral intention. A Qualtrics survey focusing on nutrition knowledge, nutrition confidence, HBM components, and the behavioral intentions to eat healthy/be physically active was delivered. A total of 251 responses were collected from undergraduate students in a southwest region of the United States. The study found that HBM components in relation to college health behaviors revealed that higher levels of nutrition confidence led to positive health beliefs and behavioral intention to exercise. HBM components note critical factors in individuals' health habits.

Saghafi-Asl, Aliasgharzadeh, & Asghari-Jafarabadi's (2020) assessed behavioral intentions to manage body weight among a group of female students attending Tabriz University in Iran. Data were collected via personal interviews with a curated structured questionnaire including 89-items on perceptual and behavioral categories of HBM components. Researchers (Saghafi-Asl et al., 2020) found that strong intentions for weight management was related to higher levels of perceived severity (consequences of being overweight), susceptibility (obesity risk), and self-efficacy (self-confidence to change habits) in dieting and exercise behaviors. BMI was also significantly predicted by the following variables: perceived severity, perceived barriers, and self-efficacy in dietary decisions (Saghafi-Asl et al., 2020).

Barriers to Exercise and Gender

Despite individuals' intentions and supporting variables, barriers are an important aspect to consider for interventions. Das and Evans (2014) examined weight management barriers in relation to HBM components. Through nominal group sessions a total of 45 first-year college students were included to discuss their perceived barriers. The benefits of weight management ranged from

physical attractiveness, quality-of-life domains (social connection, mental health, etc.), career/financial reasons, the ability to live a full life, and both internal (time management), and external issues (campus resources; Das & Evans, 2014). Male participants relayed benefits more so for career/financial reasonings while female participants reported independence/full life of multitasking benefits. In relation to barriers, male participants focused more on external causes (resources/programs) while female participants reported internal causes (i.e.- poor time management).

Further research on barriers by Eichhorn, Bruner, Short, and Abraham (2018) examined factors that affected college students exercise habits to address a campus needs to boost activity and reduce obesity/obesity-related disease risks. A total of 124 students participated in a convenience sample. Additional barriers found include homework loads for students, bad weather, and winter months, all of which decreased exercise participation (Eichhorn et al., 2018). In another study by Anjali and Sabhawal (2018), perceived barriers to exercise were examined among college students. With the formation of eight focus groups a total of 67 students' responses were assessed; it was revealed that barriers within the socio-ecological framework include time constraints, tiredness, stress, family control, and safety issues (Anjali et al., 2018).

Aside from the aspects of typical student life, individual demographics influence barriers to exercise. In a study by Kulavic, Hultquist, and McLester (2013), motivational factors and barriers to exercise were analyzed among traditional and non-traditional college students. A sample of 746 college students were studied with the majority being traditional status students (n = 628). Surveys were completed with items including a demographic questionnaire, barriers to being active quiz, and exercise motivations inventory. Kulavic et al. (2013) found that the significant barriers between these groups included a fear of injury, lack of resources, and lack of skill. Motivational factors also differed between these groups further highlighting the need for interventions to address differences in age for college students' exercise behaviors.

Psychosocial Factors

Researchers Zhang, Martin, and Thomas (2017) examined the relationship of sex, self-efficacy, outcome expectancy, and social support to meeting exercise guidelines for a sample of 396 college. According to Farren et al. (2017), physical activity levels were found to be affected by an individual's sex as it moderates outcomes expectancy, social support levels, and exercise self-efficacy. In a similar study by Frederick, Williams, Castillo-Hernández, and Evans (2020) sex and school year were analyzed in relation to exercise behaviors and the perceived benefits/barriers of college students. A sample of 862 college students were surveyed using the International Physical Activity Questionnaire, EBBS, and resistance training questions. Researchers (Frederick, Williams, Castillo-Hernández, & Evans, 2020) found that sex and school year did not significantly influence perceived barriers and benefits to exercise. However, benefit scores and some subscales were noted as higher for males and first year students than female and upperclassmen respondents highlighting a potential need for differing interventions by sex, and school year (Frederick et al, 2020).

Methods

Participants

Study participants included a sample of undergraduate students (N = 610) enrolled at a regional university in eastern Kentucky. Participants were recruited through a free “*Fitness Five*” fitness testing event on campus. After completing informed consent forms participants engaged in fitness testing including but not limited to waist circumference measures, wall squats, push-ups, self-reported height, and weight. In addition, all participants completed the Exercise Benefits/Barriers (EBBS) survey to conclude the event.

Instruments

The EBBS survey instrument consisted of a 43-item questionnaire (Sechrist, Walker, & Pender, 1987). This instrument was created in response to research needs on this topic via interviews and current literature; it also has been tested for internal consistency, construct validity, and test re-test reliability (Sechrist et al., 1987). Responses to each question were provided according to a four-point Likert scale with “Strongly Agree” coded as 1, “Agree” coded as 2, “Disagree” coded as 3, and “Strongly Disagree” coded as 4. The EBBS scale included 29-items focusing on benefits and 14-items on barriers. This study compared the perceived benefits to exercise focusing specifically on longevity and appearance aesthetics. From the 43-item scale, eight items were analyzed and then narrowed to the two items below.

EBBS Items:

1. I will live longer if I exercise.
2. Exercise improves the way my body looks.

Demographic items examined respondents sex, age, year in school, and waist circumference (inches as measured by event workers).

Procedures

Participants were recruited through a free fitness testing event known as the *Fitness Five* to all undergraduate students enrolled in a wellness course. Participants completed an informed consent form, the Exercise Benefits & Barriers Scale survey (EBBS; Frederick, Williams, Castillo-Hernández, & Evans, 2020), and various fitness test stations. In this research we focus only on the two EBBS items, demographic variables, and waist circumference data. Participants’ waist circumference was measured by student workers via placing a tape measure at the mid-torso or umbilicus level and recording the value in inches. Obesity levels were defined by this measurement being over 35 inches for females and over 40 inches for males (ACSM, 2018). Body Mass Index (BMI) was also collected at this event; however, this study solely focused on waist circumference. This was done because waist circumference is a stronger indicator of obesity by visceral fat distribution. This was later coded in the data set based on the stated cut off points.

Data Analysis

Collected data were coded and organized into an Excel Workbook, then imported into SPSS or further data analysis. Descriptive frequencies included gender, age (traditional versus non-traditional), class standing, and obesity rating (obese versus non-obese). Chi squared tests were run to compare perceived benefits (8-items) to any differences according to demographic variables which included gender, age, and obesity level based upon waist circumference categories. Significance levels were set at the standard p-value < 0.05.

Results

The focus of this study was to gauge what benefits motivated college students to continue their exercise habits. Table 1 below breaks down the sample demographic characteristics. Regarding gender, the sample was nearly even with roughly 51% being male and 49% female. The majority of respondents (93%) reported a traditional student status (under the age of 23 years) and about 7% of respondents reported being non-traditional (23+). When broken down by year, the majority of the sample were freshmen (71%), with 11% sophomores, 11% juniors, and 7% seniors. Lastly, based on conversions of reported waist circumferences the majority of the sample (80%) were non-obese (N = 20%).

Table 1. The Sample's Demographics

Category		N	%
Total		608	100
Sex	Male	297	50.9
	Female	287	49.1
Age	Traditional (18-22 years old)	564	93.1
	Non-Traditional (23+)	42	6.9
Class Year	Freshmen	426	71
	Sophomore	68	11.3
	Junior	63	10.5
	Senior	43	7.2
Body Type	Obese	119	19.9
	Non-Obese	478	79.9
Total		608	100

Results did not support that more female respondents would report they strongly agree/agree to the benefit of exercise being appearance; thus, we failed to reject the null hypothesis. As shown below in Table Two, both male (95.84%) and female (95.86%) respondents strongly agree or agree with the statement “Exercise will keep me looking good”. There was no statistically significant difference between gender and their aesthetic perception of appearance benefits from exercise, $\chi^2(1, n= 567) = 0.375, p=0.829$. Both males and females were similar in their belief that, “Exercise will keep me looking good”.

Table 2. Appearance Benefit Rating by Gender

“Exercise will keep me looking good”	Gender	
	Male	Female
Strongly Agree- Agree	(277) 95.84%	(266) 95.68%
Strongly Disagree- Disagree	(12) 4.15%	(12) 4.31%
Total	100%= 289	100%=278
$\chi^2 (1) = 0.375, p = 0.829$		

It was hypothesized that non-traditional students (23+ years old) would be more concerned with the health benefits of exercise when compared with traditional students (18-22 years old). Yet as shown in table three, the majority of students strongly agreed or agreed with the statement “I will live longer if I exercise”, therefore there was no statistically significant association observed, $\chi^2 (1, n= 591) = 0.032, p = 0.859$. In other words, both younger and older students believed, “I will live longer if I exercise”.

Table 3. Longevity Benefit Rating by Traditional Status

“I will live longer if I exercise”	Student Type	
	Traditional Student	Non-Traditional Student
Strongly Agree- Agree	(526) 95.81%	(40) 95.23%
Strongly Disagree- Disagree	(23) 4.18%	(2) 4.76%
Total	100%= 549	100%= 42
$\chi^2 (1) = 0.032, p = 0.859$		

It was hypothesized that obese respondents would be more concerned with longevity health benefits, reporting strongly agree/agree at a higher rate than non-obese respondents. The majority of respondents, regardless of obesity status, strongly agreed or agreed to the statement “I will live longer if I exercise” (Table 4). There was no significant relationship revealed between exercise perceptions of longevity and obesity status, Fisher’s Exact test, two tailed, $p = 1.0$. Both obese and non-obese students believed, “I will live longer if I exercise”.

Table 4. Longevity Benefit Rating by Obesity Status

“I will live longer if I exercise”	Obese Status	
	Obese	Non-Obese
Strongly Agree- Agree	110 (96.5%)	447 (95.7%)
Strongly Disagree- Disagree	4 (3.5%)	20 (4.3%)
Total	100% = 114	100% = 467
Fisher’s Exact Test, two tailed, $p = 1.0$		

Lastly, it was hypothesized that upperclassmen would be more likely to report strongly agree/agree to longevity being an exercise benefit, given their increased knowledge base. However, the majority of respondents across classes (95.2%) strongly agreed or agreed to the statement of

exercise contributing to longevity therefore did not show a statistically significant association, Fishers Exact Test, two tailed, $p = 0.789$. Both upperclassmen, and underclassmen were similar in their belief that, “I will live longer if I exercise”.

Table 5. Longevity Benefits by Class Standing

“I will live longer if I exercise”	Class Standing	
	Upperclassmen	Underclassmen
Strongly Agree- Agree	99 (95.2%)	460 (95.8%)
Strongly Disagree- Disagree	5 (4.8%)	20 (4.2%)
Total	100%= 104	100%= 480
Fisher’s Exact Test, two tailed, $p = .789$		

Discussion

The initial aim of this study was to assess the perceived benefits of exercise held by college students attending a regional Kentucky university. However, the study’s results were surprising because all hypotheses were proven insignificant. It was initially hypothesized that demographic factors would play a larger role in perceptions of exercise benefits. Physical activity levels vary drastically across populations therefore it is no surprise that health beliefs surrounding them do as well. No differences were seen based on age group, obesity status, class standing, or longevity benefits. Gender also was not found to play a significant role in perceived appearance benefits. Both males and females were similar in the belief that, “Exercise will keep me looking good”. Unlike current literature, it appears that perceived benefits of appearance and living longer were universal in this sample. To address this among students, public health leaders may look to new ways to continue to reach said students through social media, classroom instruction, and recreational center health promotion campaigns. These activities can be geared to solidify student’s understanding of how our health is influenced by our exercise habits. Further actions to support these efforts include requiring wellness and physical education courses among all Kentucky universities to provide a base line of health knowledge to improve health outcomes.

Conclusion

Overall, this study offers further insight into influencing factors on individuals’ motivation to exercise. Further research is needed of college students’ perceived benefits to boost cues to action. The EBBS instrument is a useful tool to continue research to understand students’ perceptions of exercise and support future health interventions. Limitations of this study include data restrictions given the use of secondary data and a convenience sample. If the study were to be replicated, it should include the variable of whether participants met current exercise recommendations as a baseline for their perceived benefits. Future research should aim to encompass more variables to understand what truly drives individuals to continue exercising if not longevity and appearance. Given the results, further interventions are necessary to support current students by providing them

with knowledge about the lifelong benefits of exercise. Potential messages may tie in the benefit of exercise for aesthetic reasonings to motivate students to exercise. Future efforts must highlight the connection between one's exercise habits and their health to improve health outcomes and individuals' quality of life.

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(Peer-Reviewed Article)**College Sport Fans' Perceptions within the Impact of Name, Image and Likeness Policy**

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Introduction

The lawsuit of *O'Bannon v. NCAA* (2015) has changed the landscape of collegiate sports by entertaining the possibility of monetarily compensating student-athletes for their athletic services (Maghamez, 2015). Paying student-athletes has been a controversial issue in the sports world for years (Mondello & Beckham, 2002; Sullivan, 2014; Weaver, 2015). Recently, the National Association of Collegiate Athletics (NCAA) had faced a series of contentious challenges (i.e., the attempted unionization by collegiate football players and monumental-related lawsuits) about “pay for play” (Nocera, 2016; Strauss, 2017). The introduction of College Athletes Bill of Rights on December 17, 2020, and the United States Supreme Court’s rule on the *NCAA v. Alston* (2021) eventually paved the way for collegiate student-athletes to receive monetary benefits through the use of their name, image, and likeness (NIL) (Poyfair, 2022; The Drake Group, 2021). Those legislative movements have made NCAA change its restrictive view and practice of amateurism as well as grant the athletes to profit from the NIL deals (Associated Press, 2021). As the adoption of the NIL practices is still in an infancy stage, this study took an initial approach to examine a specific group of college sport fans’ perceptions on the impact of the NIL policy. The aim of our study was to gain an understanding of the NIL policy’s popularity, marketing impact, and issues and concerns associated with the NIL reported in past reports and literature.

Literature Review

Various business organizations and entities, such as sponsors, institutions, sport agents, and advertising firms are all eager to gain new insights on the practical implications of NIL, as they get ready to abide by the new rules and carry out the NIL deals. Most of the literature or reports related to the NIL topic in this early stage can be categorized into three main areas : (1) discussions associated with the legality and fairness of the NIL policy that granted student-athletes’ rights for monetary profit and the NCAA’s overreaching monopolized control (e.g., athletes’ rights for getting paid and protected, and NCAA’s restriction on paying athletes) (Booker, 2020; Drozdowski, 2021; Ridpath et al, 2020; The Drake Group, 2020); (2) impact, significance, and future challenges and concerns associated with implementation of the NIL policy (e.g, death of amateurism, fogging the educational mission of collegiate athletics; and difficulties for preventing or monitoring future violations) (Gerace, 2021; McCarthy, 2020a and 2020b; Rainsberger, 2022; Walsh, 2021), and (3) issues and trends related to execution of the NIL deals and their marketing implications (e.g., popularity of the NIL policies among athletes, examples of ways player can

make money, and who are popular commodities). (Grambeau, 2021; The Lane Report, 2021; Smith & Broughton, 2021; Zagoria, 2021; Wakefield et al., 2021)

NCAA's New Policies on NIL

On June 30, 2021, the NCAA's Division-1 Board of Directors approved an interim name, image and likeness (NIL) policy. This new policy allows all student-athletes of all three divisions to be compensated for their NIL starting on July 1, 2021, regardless of whether their state has a NIL law in place or not (National Collegiate Athletic Association, 2021; NCSA, 2021). Student-athletes who competed in states without an NIL law may have the right to receive compensation for their NIL; however, they must not violate pay-for-play or receive financial incentives to sign with (or remain at) a program. The NCAA NIL rules are relatively short with three pages in length and do not intend to override any newly established NIL rules passed by the state or conference (National Collegiate Athletic Association, 2021; NCAA, 2022). In other words, the NCAA don't allow boosters to pay students-athletes and don't let endorsement deals influence recruiting. (Tully & Dorabaugh, 2021). It is noted the NCAA rules do not prohibit a high school student-athlete to monetize from NIL deal, but the student must heed to the potential violation of high school sports association rules which may jeopardize the student's eligibility (NCSA, 2021).

Numerous legal reviews and reports have shown the public interest for supporting student-athletes being paid for their service and devotion to the universities' athletic programs (Lawson, 2019). The rationales for supporting athletes getting paid often centered on the following discussions: (1) student-athletes being exploited for their excessive time and commitment in athletics, (2) the NCAA's far reaching control and possible antitrust violation of athletes' rights, (3) rising cases brought by athletes about their rights for unionization, and (4) an outdated philosophy of amateurism (Hall, 2021; Gerace, 2021; McCarthy, 2020a; Sullivan, 2014; The Drake Group, 2021; Walsh, 2021; Weiss, 2020).

Although the NCAA had granted the possibility for the student-athletes to pursue the NIL deals, the new NIL policy raised a lot of questions and concerns from the institutions' administrators. For examples, administrators may fear that the students-athletes would gain monetary benefits for their NIL deals from boosters or existed sponsors. These types of activities are difficult to monitor and unacceptable according to the official policies of the NCAA (Tully & Dorabaugh, 2021). In addition, administrators also worry the NIL deals associated certain institutions or programs would cause fierce battles and potential violation for recruiting (Jenson, 2020; Rainsberger, 2022; Walsh, 2021).

Institutions across the nation had engaged in the debate on the pros and cons of this new legislation, while observing many state governments taking the initiatives in passing the NIL related legislation (Kleps, 2021; LeBron et al, n.d.; McCarthy, 2020b; Rainsberger, 2022). In general, people supported the notion of giving NIL compensation to students (Kleps, 2021; Lawson, 2019; Smith, & Broughton, 2021). Engaging in the NIL deals may help students learn to give back to the community (Tracy, 2015; Zagoria, 2021). Nevertheless, administrators have further concern about the gender equity, non-revenue v. revenue disparity, and decision-making for priorities (Barnhart,

2021; Grambeau, 2021). They also expressed their concerns about students spending too much time in working instead of studying and difficulties in monitoring the NIL deals (to avoid potential violations and scandals) (Jensen, 2020). They worried that states with favorable NIL legislation would create recruiting battles for attracting talented athletes. Student-athletes expressed a desire for more understanding and knowledge surrounding the NIL subject (Grambeau, 2021). Therefore, it is imperative to address formal education on rules and clarification for student-athletes (Hamilton, 2020; Jenson, 2019).

The NIL concept opened up a large amount of sponsorship opportunities for college athletics and athletes (Tully & Rorabaugh, 2021). Agencies such as INFLCR and Opendorse had invested heavily to collaborate with schools and recruit athletes as clients (Gregory, 2021). Many news reports have showcased how student-athletes landed the NIL deals with local restaurants, car dealerships, real estate agencies, retailers, fashion shops, media, and non-profit organizations (Ditota, 2021; Murphy, 2021; Thompson, 2021; Zagoria, 2021). According to Kunkel et al. (2021), student-athletes' strong presence in various social media platforms (i.e., Twitter and Instagram) clearly demonstrated their NIL value based on the influencer marketing industry standard rates. Evidently, teams and individual can obtained deals that brought them five- to six-figure income annually (Maestas, & Belzer, 2020; Murphy, 2021; Roberts, 2021). With a lot at stake in college sports sponsorship, marketers must carefully examine the changes of the social media marketing and develop a most-fit strategy and campaign to connect the brands, properties, and consumers (Maestas, & Belzer, 2020; Wakefield et al., 2021).

Since much literature's perspective toward the NIL topic has focused on the student-athletes, school administrators, and business sectors, this study attempted to explore the public's view on the issue. The authors specifically examined a college basketball fan-group's opinion on how the NIL policy affect their favorite team and institution. The findings might show the level of public support on the policy, as well as the marketing implications provided by the NIL deals.

Methods

Participants and Procedure

The respondents of this study were 68 (46% males and 54% females) college basketball fans. The authors initially invited 150 active followers of a Facebook fan club webpage of a powerhouse college basketball program in Kentucky to participate in the survey. We ended up getting complete responses from 45% of invitees. After receiving the IRB approval letter on January 10, 2022; a letter of invitation and instruction were sent to the participants' Facebook account in late January 2022. After indicating their willingness of participation, the authors would communicate with the respondents via email and guided them to complete an online survey powered by Qualtrics. The data collection process started from late January and completed around early April 2022. This sample consisted mainly of an avid fan group of a popular Kentucky basketball team, with 82.4% were identified as a college basketball fan and 70% over the age of 55 years old.

Instrumentation

The online survey questionnaire included 22 items with five items related to the basic demographic information and respondents' fan status. There were seven open-ended questions concerning the impact of the NIL policy on the players, the team, the institution, and its overall impact on the sports and competitive environment. The remainder of the ten fixed-choice questions (nine "yes" or "no" questions, and one with multiple-choices) reflected the respondents' opinions on controversial issues (i.e., support for paying the student-athletes and impact on college basketball) (Gardner, 2019; Grambeau, 2021; McCarthy, 2020b,) implementing concerns (i.e., sharing and distribution of income, recruiting, and players' commitment) (Jenson, 2020; Rainsberger, 2022) , and financial benefits (i.e., projection of earning and marketing potential) (Wakefield et al., 2021; Smith & Broughton, 2021; Zagoria, 2021) that the NIL policy may generate based on the literature, news reports, and articles.

Data Analysis

The results of the nine yes or no questions and one multiple-choice question were presented in percentage and frequencies of responses. As for the responses of open-ended questions, each author analyzed all qualitative responses by reading them and creating themes. Then we further compared and combined all themes that we had created for consistency and accuracy. All co-authors rechecked the accuracy of frequency counts and consistency for categorized themes. The generation of the themes was a common acceptable method for analyzing the qualitative responses (Andrew et al., 2020). Four tables were composed to illustrate the impact of the NIL policy on the student-athletes and the team. They exhibited how the NIL policy may affect the future trends and sport competitions.

Results

Responses on the fixed-choice questions

In general, over 60% of respondents ($n = 41$) favored the idea that "student-athletes get paid" in addition to their athletic scholarship. About 75% of respondents ($n = 51$) claimed that they were familiar with the news about the NCAA approving the "NIL" policy. Respondents also believed the new "NIL" policy will likely bring positive impact to college basketball and should curtail the trend of the "one-and-done" phenomenon. Regarding the obtainment of NIL deals, less than half (47%; $n = 32$) favored the idea of allowing the school's athletic program to help its players in obtaining a "NIL deal. In addition, the majority of respondents (over 70%, $n = 48$) also did not think athletes with a NIL deal should have to share their compensation with their teammates or other teams. In terms of the NIL policy's effect on marketing, over 82% of respondents ($n = 56$) would not purchase the product or use the service that is sponsored by their favorite college team's players. Nor did they turn away from a product or service that is sponsored by the rivalry team's player, either.

In terms of the projected potential financial benefit that the NIL deal may bring, the respondents were quite optimistic about the size of the deals. Among the four possible choices of deal sizes, more than a half of the respondents (53%) believed the student-athletes could receive over \$5,000 or more annually for compensation. Only less than 15% of individuals perceived that the number of deals would be less than \$1,000 annually.

Analyses of open-ended responses

Table 1 to 4 showed the authors’ summaries of the respondents’ open-ended comments. The first three tables (Table 1 to 3) addressed the impact of the NIL policy on players, the player’s team, and college sport in general. The authors typically divided the responses on each topic into two categories, positive or negative. The responses in the positive category tended to reflect those respondents had a favorable view on the new NIL policy or believed it would bring beneficial impact. Table 4 specifically highlighted the issues and concerns related to implementation of the NIL policy. More total comments were collected concerning the impact of the NIL policy on the players and their team with a total of 72 and 65 statements, respectively. Readers can identify the main themes within each category and the number of responses associated with each theme.

It seemed the NIL rule would bring more positive benefits for the student-athletes (players) and their team. The primary reasons were associated with: (1) players can stay in school longer, since they can receive additional financial support to continue their education, and (2) a team with players who get NIL deals will gain more recognition and attract more newcomers to join, thus improve the team’s reputation and recruiting power. However, more negative views (32 comments) were given regarding how the NIL rules may impact college basketball (in the open-ended responses). The respondents tended to worry that the policy may create jealousy among players, since some stars would be able to obtain the lucrative NIL deals, yet most average players would not get the same deals. Six themes were further generated as concerns related to implementation of the NIL policy in the future. Respondents expressed if the policy is to be executed, it must be done properly. Student-athletes must be informed clearly and cannot be misled. Deals must be signed fairly in order to protect the students’ rights. This also means that student-athletes have a lot of responsibilities on their own to learn about the policy and the content of the contract.

Table 1. The impact of the NIL policy on players

Tendency and Comments	Frequency counts
Positive: 4 themes	46
Student-athletes will stay in school longer	22
Students will be allowed to earn extra income	18
Student will play harder	4
Why not??	2
Negative: 3 themes	22
The policy is problematic (i.e., students won’t act like students, jealousy may exist among players)	12
Players can be bought by the schools	8
Student-athletes may leave the team even sooner (becoming greedier)	2
No impact or not sure	4
Total	72

Table 2. The impact of the new policy on the team

Tendency and Comments	Frequency counts
Positive (Support the Policy): 3 themes	28

The policy will help strengthen the team (i.e., better recruitment & image)	16
This makes the team keeps its players longer	8
This policy may stop the “one and done” practice	2
Negative (Against the Policy): 2 themes	26
The policy is problematic (i.e., it creates recruiting battles, it may cause more cheating, and the program becomes commercialized)	24
Teams will spend more money in recruiting	2
Impact may go both ways	4
No impact or not sure	7
Total	65

Table 3. Overall impact of the new policy on college basketball

Tendency and Comments	Frequency counts
More positive: 3 themes	14
The policy will help retention of players	6
This will make players play harder	6
The policy will make players’ life easier (with additional financial support)	2
More Negative: 4 themes	32
The policy may create jealousy among players	18
The policy will affect morale of the team	6
Player may not work hard anymore (being content with the deals)	4
Players may leave for pro to seek bigger contracts	4
Impact may go both ways	2
Not sure or No impact	7
Total	55

Table 4. Issues and concerns related to implementation of the NIL policy

Tendency and Comments: 6 themes	Frequency counts
It must be done properly (i.e., cannot mislead the athletes; deals must be fair)	24
Athletes have a lot more responsibilities on their own	8
It all comes to money and power	6
The school becomes the conduit of the players and the sponsors	4
No need for this policy (i.e., if one needs money, then go pro)	4
The policy will do good for athletes and their school	2
Total	48

Discussion and Conclusions

Most of the respondents (75%) claimed they were familiar with the news and nuances associated with the “NIL” policies. Based on the inputs of the respondents, it showed some perspective and thoughts were aligned with some scholars and administrators (Gardner, 2019; Lawson, 2019;

Murphy, 2021). Although scholars may concern about the general basketball fans' expertise and knowledge on the NCAA's new NIL policies and believe this issue should be viewed as a limitation of the study. However, the authors would like to offer an interesting of point to counter this view. We wonder if average American citizens would need to be a lawyer or expertise of the Constitution to be able to judge on the January 6 incident as an insurrection or sedition. Sport fans can certainly determine on the advantages and disadvantages of this new policy and give their opinions about the impact of the NIL rules. In general, people agreed that this new policy seemed to be able to bring more benefits than harms to players, teams, and the sport. However, when we examined the detailed comments from the open-ended responses, more negative concerns and worries began to surface. While looking at the perceived negative impact of the NIL policy, the respondents worried about the new policy ruining the essence of amateurism and making the college sport too commercialized. Players may lose sight of their student role by focusing on making promotional deals instead of their academic works. They also foresaw the potential contentious recruiting battles among institutions in those states that had actively passed the NIL legislations. Some critics had warned that institutions located in states that passed progressive NIL legislations might gain advantages in attracting prospective recruits. The authors suspected, to some extent this policy and the new "transfer portal" could significantly increase the number of transfer students and stir up more controversies. Some respondents also addressed the concern of players getting jealous at each other. They worried individuals who cannot ink any NIL deals may envy those who have one. This would create friction among players and destroy the team chemistry. On the other hand, we do not know whether securing a NIL deal would adversely affect a players' work ethics or not. Some people assumed this will keep players more motivated and play harder. Others argue it would make them content with what they have, so they will not try harder. From an equity standpoint, our study showed the majority of respondents did not think that athletes with a NIL deal needed to share their compensation with teammates or other sports teams. The authors thought these findings were intriguing, because this notion seemed to defy the equal sharing principle promoted by the NCAA. As the debates about allowing student-athletes to be paid heat up, Besser (2016) reminded us that non-revenue sports would be destroyed, if there was no proper revenue sharing mechanism or marketing strategies to help them. Perhaps, it is this notion causing others to worry about star players turning selfish and greedy. According to a NIL activities report posted by the SportsBusiness Journal (Smith, 2022), The social media posts (i.e., influencers, content creation, and brand promotion) accounted for 72% of commercial activity by college athletes. Players who play in football and basketball seem to have advantages in securing both team-sponsored and/or individual NIL deals, since they dominate the NIL activity by creating 40% of all deals (Balasaygun, 2022; Smith, 2022). There may not be any fair treatment or practice that can make non-revenue generating sports athlete receive the same amount of financial support as football and basketball players.

Another unique point of the finding was that more than a half of respondents did not want the school's athletic program to help its players pursue a NIL deal. We assumed there were some logical reasons for the respondents to have this thought. After all, an institution is an educational organization, it may not be a good idea to be over commercialized by involving in negotiation and obtainment of students' business opportunities. The athletic administrators may also concern about its existing sponsors would ink a NIL deal with the student-athletes. Apparently, this is something

that a NCAA-affiliated institution cannot do under the rules (McInerney, 2021). Small universities' athletic departments may not have enough manpower to find additional sponsors or resources for students to land NIL deals. Yet, most schools still attempt to monitor student-athletes' NIL agreements and require athletes to report their cases back to the department. The administrators would ensure that students do not work with businesses or agencies that are considered to be predatory (i.e., loan sharks), not in the best interest in representing the institution's philosophy and mission (i.e., online gambling sites or casinos), and not socially appropriate for students to get involved (i.e., strip clubs). On the other hand, some scholars actively supported and championed the concept of institutions closely involving in the negotiation and obtainment of students' NIL deals. There are a lot of new information and rules to be learned and familiarized (Gerace, 2021; Grambeau, 2021). Who is in the best position to educate the student-athletes about all nuances related to the NIL policy? Educational divisions such as sport management, marketing, and communication, along with the athletic department, can offer courses and workshops to educate student-athletes about the understanding of the rules and guidelines, and practical skills for obtaining deals. The authors would agree that offering education about the topic of NIL is in the best interest of the students.

Several articles reiterated how sport organizations and sponsors can capitalize on the promotional and advertising opportunities created by the NIL policy (Ditota, 2021; Thompson, 2021). Surprisingly, this unique sample consisting of many senior citizens did not show great interest in purchasing the product or using the service that is endorsed by either their favorite college team's players or rivalry team's players. Most of the athletes who become extremely popular or famous for the NIL deals tend to work their way through social media. Although the individual popularity of the athlete endorser may soar sky high, there is not a whole lot of concrete evidence showing consumers' perception or awareness about the endorsed products or services having changed. For senior citizens who likely have longer life and shopping experience than teenagers, promoting oneself on Instagram or Youtube is more like a gig. They would need more "meat" to be convinced that the endorsed products or services are good. So far, there seems to be clear financial incentives for athletes to pursue the NIL deals, and many people have sympathized with athletes' financial constraint and supported athletes' pursue. However, other than allowing athletes to profit for the monetary gain, the marketing implication of the NIL deals should be more closely examined. The elder consumers would not be easily persuaded to trust a product by simply viewing promotional clips on the social media. Thus, presenting young athletes to promote products to senior citizens would be sound like a good "fit" according to Wakefield et al. (2021).

Suggestions for Future Studies

This study has limited its focus on obtaining the responses from a specific college basketball fan club. Due to the small size of sample and the unique concentration of respondents' age, the authors would offer a few suggestions for future researchers. To better understand general public's perception about the NIL policy, future researchers can expand the surveys to general fans of various size of institutions from different geographic regions. To effectively monitor the benefits of the NIL deals, the athletic departments may encourage the students to report their deals, so the institution can keep the record and database more transparent. The information can be further used

to prepare training and workshops for students. Like accessing effectiveness of any sponsorship, the researchers can explore different methods to help local partners track down the athlete endorsers' effectiveness and learn about viewers' expectations and satisfactions toward the endorsed products or services.

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(Peer-Reviewed Article)**Competencies and Challenges in Leading Nonprofit Organizations: An Assessment of Chief Executive Officers**

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Abstract

In today's ever-changing environment, leaders play a key role in the success or failure of a nonprofit organization. The current study examines both the leadership characteristics of nonprofit CEOs and the competencies sought of new professional entering the public sector. Research results indicate nonprofit CEOs believe they exhibit a high level of transformational leadership qualities including idealized attribute, idealized behavior, and intellectual stimulation. As a result, CEOs believe they go beyond self-interest for the good of the group, consider the moral and ethical consequences of decisions, and emphasize the importance of having a collective sense of mission. In terms of idealized behavior, they believe their actions illustrate confidence in the achievement of set goals. While working with their team members, they believe in seeking differing perspectives. In terms of leadership competencies of entry level professionals, CEOs indicate seeking individuals with professional abilities such as organizing skill, creativity, strong communication skills, initiative, and devotion to the nonprofit.

Keywords: CEO, challenges, competencies, entry-level, leadership, nonprofit

Introduction

Leaders of non-profit organizations face a multitude of responsibilities pertaining to the overall administrative aspects of the agency. Arguably, the most challenging and significant task is providing multi-faceted, competent leadership to the organization. There are many competencies sought by non-profit organizations when seeking a chief executive officer. The areas of potentially desired competency revolve around supervising and developing staff, business and management acumen, team building, collaboration, ethical decision-making, and financial management to name a few (Boyer et al., 2019; Gordon & Martin, 2019; Megheirkouni 2017; Thach & Thompson, 2007). Research supports the idea that leadership skills should be enhanced as young professionals develop. Both the National Association of Schools of Public Affairs and Administration (NASPAA) and the Nonprofit Academic Centers Council (NACC) provided benchmarks for the accreditation of schools that provide training opportunities for those seeking careers in the public service sector. NACC covers topics that range from understanding how the volunteer and philanthropic sector fit into society to day-to-day management competencies such as nonprofit law, financing, governance, human resource management, and decision-making (NACC, 2015). Currently, research supports initiatives that implement leadership competency development as part of post-secondary education (Howard, et al., 2017; Croft & Seemiller, 2017; Seemiller, 2016a;

Seemiller 2016 b; Seemiller, 2013). Those seeking to understand professional competencies have examined this from the prospective of specific career paths and positions (Ahmed, 2005; Hurd, 2005; Schneider et al., 2006; Thach &Thompson, 2007; Megheirkouni, 2017; Gordon & Martin, 2019; Boyer et al., 2019).

The purpose of this investigation was to assess the perceived leadership competencies of chief executive officers that direct nonprofit organizations. Additionally, this study collected perceptions of significant challenges associated with leading nonprofit organizations. Information regarding leadership skills sought when hiring new staff was gathered as well.

Literature Review

Competencies

Researchers have long attempted to understand the competencies that lead to success of managers (Horton et al., 2002). Seemiller (2013) defines competencies as “knowledge, values, abilities, and behaviors that contribute to one’s effectiveness in a role or task” (p. 94). Defillippi and Arthur (1994) refine the definition of competencies into three categories, such as skill, meaning, and relationship development. These categories focus on knowledge and skills (know-how competencies), motivation and personal meaning (know-why competencies), and interpersonal relations and career networks (know-whom competencies). Horton et al. (2002) posit the management of competencies rather than an analysis of formal qualifications or experience refocuses the emphasis to abilities, knowledge, attitudes, and behaviors that lead to success. This competency-based approach facilitates the determination of underlying competencies associated with different professional positions thereby enhancing an organization's ability to recruit, select, train, develop, and reward individuals. Since each organization potentially has different core competencies that lead to success, the development of a competence-based job framework and the identification of competencies within this framework is a complicated process.

Early competency models focused on clusters of activities that lead to success (Boyatzis, 1982). Within this framework, Boyatzis focused on organizational goal achievement, managing, and directing organizational members, leadership, and controlling. Bennis (1984) suggested successful leaders focus on managing attention, meaning, trust and self. Hence, by knowing themselves, these leaders demonstrate a level of commitment that facilitates buy-in while clearly communicating a vision, creating meaning for actions of those they lead. At the same time these leader’s actions facilitate trust. Moving competence research forward, Javidan (1998) developed a means to operationalize competence using a Delphi model to link strategic planning, organizational resources, capabilities, and core competencies. Horton et al. (2002) suggest this development enabled organizations to understand and obtain the competencies that could lead to success in a competitive environment. Many of the identified competencies align with traditional functions of managing including planning, organizing, staffing, directing, or leading, and controlling or evaluating (Sawyer, et al., 2015).

As the workplace diversifies, or globalizes, leadership ability is a sought-after competency. Thus, competencies in this diversified workplace potentially change. Seeking to understand the competencies of successful leaders, researchers began formulating the foundation of global leadership taxonomy (Mendenhall & Osland, 2002; Alldredge & Nilan, 2003). This framework provided insights into those leadership competencies regardless of leadership within public, private, or nonprofit organizations and provided insights into those whose leadership sphere included multinational cultures (Osland, 2018). What emerged was a six-dimension taxonomy of global leadership grouping 56 global leadership competencies. Dimensions within this taxonomy included skills pertaining to relationship development, organizing, vision, business acumen, cognitive ability, and individual traits (Mendenhall & Osland, 2002). Tubbs and Schultz (2006) continued to examine competencies, that lead to organizational success through the lens of leadership development, proposing a framework of both competencies and meta-competencies of leaderships. Including a personality and values component, this taxonomy grouped 50 leadership abilities into overarching categories that covered understanding of the big picture, leadership, attitude, communication, innovation, change management, and teamwork.

As Bird (2018) noted, researchers, seeking to understand leadership through a global lens significantly expanded analyzing multiple competencies. Most recently, Reiche, et al. (2017) revised global leadership concepts proposing a new framework incorporating context, role, and leadership theory. What resulted is a grid that incorporates level of task and relationship complexity ranging from low to high with associated leadership behaviors classified as connective, integrative, incremental, and operational global leadership.

Delving deeper into the specific skills, knowledge, and abilities sought by employers we find a broad range of competencies sought by organizations using the competency models developed. Ahmed (2005) used position announcements from organizations seeking CEOs to develop an understanding of what organizations sought when hiring for the position. From these announcements, the research concluded an educational background with specific connections of the sector was important. Namely, of those organizations including educational requirements within their announcement, 63% listed areas that related to non-profit, social work, and healthcare to name a few. The top five competencies sought by these organizations included fundraising, previous experience in the non-profit sector, administration or management skills, leadership, and financial management skills. Interestingly, strategic planning was the seventh most sought competency (Ahmed, 2005). Thach and Thompson (2007) sought to understand if differences or similarities existed in the leadership competencies needed within non-profit and for-profit organizations. The researchers found a significant amount of overlap between the leadership competencies within the two sectors. For instance, the top competencies selected by leaders in both sectors included honesty and integrity, collaboration or being a team player, and developing others. Regarding areas of competency difference, for-profit leaders selected time management, self-knowledge, and marketing or sales competencies more than their public-sector peers. Leaders within the public and non-profit sector selected conflict management and the ability to be inspirational more often than for-profit leaders. Thach and Thompson (2007) concluded that work context may explain these differences. For instance, since public and nonprofit organizations seek to address social issues using limited resources, the ability to be inspirational was more important.

Likewise, time management and marketing/sales competency emphasis may stem from differing reward systems within each sector.

Continuing the examination of leadership competencies sought by nonprofit sport organizations, Megheirkouni (2017) found leaders within different sport organizations need competencies within four areas: understanding the whole, communication, general management, relationship management, and change management. In terms of competencies related to understanding the whole organizations, leaders were sought that possessed decision making, problem solving, critical thinking and analysis skills. Communication competencies stemmed from a desire to effectively deliver the message to the audience. These skills included good body language, active listening skills, and the ability to negotiate and develop dialogues with others, while change competencies focused on meeting both internal and external needs of the organization. Finally, general management relation competencies focused on developing relationships with both staff members and other organizational stakeholders.

Seeking to understand the competencies CEOs will need to possess in the future, Gordon and Martin (2019) interviewed leaders of America's Most Admired Companies. Study participants emphasized that future leaders will need "the vision, the passion, and the character to lead their business into the future" (Gordon & Martin, 2019, p. 47). Research findings confirmed the importance of talent and experience while also suggesting a need for leaders who appreciate diversity and possess a global IQ. Those leading organizations into the future should also possess the ability to problem solve and recognize talent. These findings would seem to intuitively relate to what would aid those seeking to lead nonprofit organizations into the future.

Further differentiating our understanding of leadership, Boyer et al. (2019) sought to understand how executives from international nongovernmental organizations (INGOs) behave when navigating daily operational activities. As part of this investigation the researchers focused on the leadership behaviors of 137 senior level CEOs garnering their beliefs tied to approaches utilized by the CEOs. The researchers examined differences in leadership approaches when CEOs worked in partnerships and when they did not. While working within their own organization and in partnerships, leaders share consensus-driven and visionary leader's styles. However, difference did exist between internal and externally focused leadership perspectives. Research findings suggest that leaders who were not involved in collaborative partnerships placed more emphasis on task, decision decisiveness, cost-effectiveness, and communication through marketing and outreach. Their peers working in partnerships place more emphasis on relationship management behaviors and motivational leadership. Boyer et al. (2019) summarized this finding suggesting the emphasis of visionary and consensus-driven leadership style equated to nonhierarchical workplaces in which a key driver of organizational member motivation stemmed from team building and organization mission. However, a more task focused approach occurred when leaders did not work in partnerships. Since many nonprofit organizations work within their organization and often seek outside partners to support their initiatives, understanding the difference in leadership approaches and developing both skills sets is vitally important.

Entry-Level Competencies

Researchers focusing on entry-level competencies have examined the areas of entering a profession. Though this focus identifies job specific competencies, some overlap exists in the areas of communication, interpersonal skills, and leadership. For instance, focusing on the entry-level skills sought by those seeking to hire campus recreation and sport managers include prior experience, communication skills, and graduate degrees (Schneider et al., 2006). Likewise, examining entry-level skills needed by sport ticket sales professionals, Peirce and Irwin (2016) found important competencies clustered into eight areas including: (1) knowledge and skill development, (2) relationship building, (3) communication skills, opening the sale, consultative or adaptive sales, closing, maximizing each call, and service and education. Findings from both aforementioned studies support the idea both position specific and competencies independent of position, such as communication skills, are important. Examining through the lens of competencies sought, Fulthorp and D' Eloia (2015) found that hiring managers of entry-level municipal recreation professionals sought competencies in the areas of leadership, communication, professional practice, community relations, interpersonal skills, and inclusion. These findings aligned with earlier research findings suggesting it is important for entry level professionals to possess the ability to communicate clearly with staff, the public, and customers, possess knowledge of professional practices, and manage multiple tasks effectively (Hurd, 2005).

Incorporating soft skills into their list of competencies, Chase and Masberg (2008) also investigated the entry-level skills sought by park and recreation agencies as part of their study to help universities understand and address the needs of these agencies. From this study, 15 categories of skills emerged including several soft skills. For instance, personality included fun, being patient, being practical, common sense, good attitude, and ambitious, while other soft skills included adaptable, flexible, creative, multi-tasking, responsible, reliable, good judgment, follow through, work ethic, integrity/ accountability, and mature.

Adding to the understanding of entry level competencies, Beggs et al. (2018) examined potential differences of perception of competencies needed sampling entry- level, mid-level, and upper-level campus recreation employees. Research findings indicated the level of an employee prioritizing entry level competencies played a role in the importance placed on a competency. For instance, while examining how the three levels rated competencies associated with financial management competencies like debt financing, revenue generation, and building reserves, reveals that both entry-level and mid-level employees perceived these competencies more important than upper-level employees (Beggs et al. 2018).

While many recreation and sport organization operate as nonprofit or governmental organizations, researchers have also examined competencies needed for administrators within different nonprofit organizations. Boyd (2003) sought to understand the competencies needed to take volunteer 4H administrators into the next decade. Results suggest five core competencies including organizational leadership, systems leadership, organizational culture, people skills, and management skills. Like those entering recreation and sports organizations, personal skills and leadership competencies were important. Additional competencies related to understanding volunteer management as well as the culture and system the individual worked.

Challenges Facing NPO

Many consulting groups, that support the work of nonprofit and human service sector organizations, examine changes those organizations face as part of their day-to-day operations. WIPFLI (2018) reported several changes facing nonprofits. These included government regulation and tax reform with specific concerns relating to questions around the impact of the economy and standard deductions for taxable contributions impacting the total donations received by nonprofits. Fund raising challenges continue as nonprofits reported concerns around increasing competition for donor funds. The Alford group suggests the fiscal concerns faced by the sector stem from “How do nonprofits change pre-existing patterns and identify new funding sources, such as self-generating revenues from monetizing assets like unused building space?” (University of Notre Dame, 2020, para 4-8). The third challenge was associated with staffing and volunteer recruitment. In this instance, agencies reported concerns associated with finding people to work as increasing office demands met with increasing employment numbers and wages. An additional change was outdated software impacting reporting and transparency while continuing the use of manual and/or paper-based reporting.

WIPFLI reported the final challenge faced by nonprofit organizations was member recruitment and retention. Alford (University of Notre Dame, 2020) suggested this same challenge summarizing it as a need to make the organization stand out from others. Further explaining a need to utilize the nonprofit’s brand to help establish supports. This effort could be enhanced as nonprofit organizations address two additional challenges shared by Alford, namely addressing concerns of legitimacy and effectiveness. The legitimacy concern ties closely with WIPFLI transparency concern as nonprofit organizations struggle to overcome skepticism associated with misuse of funding. While the effectiveness issue stems from a struggle to establish, meet, and effectively communicate the organizations goals and objectives to potential donors. Finally, Alford echoes a concern associated with staffing and technology issues and suggested nonprofit organizations struggle to build a solid foundation or infrastructure (University of Notre Dame, 2020).

The Forbes Nonprofit Council predicted 2020 would continue to include the recruitment and development of talent, operating in uncertain economic environment, and questions of sustainability, but may also include challenges unique to the media and technology driven culture nonprofit organizations operate (Forbes Nonprofit Council, 2019). This list of challenges includes a new need to meet lacking mental health issues with limited to little financial support, a need to shift priorities stemming from political and social driven issues and increasing nano needs. Final challenges nonprofit organizations may face include a greater need to collaborate with other organizations to aid resource creation and sustainability, and shift to address more housing needs of communities.

Methodology

An overview of the research design, context, participants, instrument, and procedures employed to perform the study is detailed. Additionally, data analysis techniques are explained.

Research Design and Context

This study sought input from, chief executive officers responsible for leading their respective organization and made use of both qualitative and quantitative research methods. Statistical data were collected from participants via an electronic survey.

Participants

Chief Executive Officers and Executive Directors of nonprofit organizations in the Commonwealth of Kentucky served as the key respondents of this study. Using a convenience sampling method, the researchers identified Chief Executive Officers and Executive Directors of organizations that were members of the Kentucky Nonprofit Network (KNN) as potential participants ($N = 796$). The KNN is the Commonwealth's state association of nonprofit organizations with a mission to strengthen and advance the public sector through a unified public policy voice, education, technical assistance, networking opportunities and sharing of best practices (Kentucky Nonprofit Network, 2020).

Instrument

An electronic survey was developed using questions from the Multifactor Leadership Questionnaire (Bass & Avolio, 2004), as well as open-ended questions crafted by the research team. The Multifactor Leadership Questionnaire (MLQ) is a psychological inventory consisting of questions used to describe a participant's leadership style as they perceive it. The MLQ, purchased by the researchers for use in this study, is designed to measure leadership types and identify leadership characteristics (Bass & Avolio, 2004). The MLQ was used because it is a common leadership questionnaire used in multiple studies examining leadership. When utilized by organizations, the MLQ may be helpful as part of a feedback process for managers, when selecting organizational members for training programs, or selecting candidates for training or promotion (Avolio & Bass, 2004). The survey included 47 questions and consisted of Likert scales and open response answer types. The format of the instrument allows for self-rating or rating by others. Incorporating multiple leadership styles, the MLQ assesses transformational, transactional, and Laissez-Faire leadership assessments. For example, contingent reward (CR) and management-by-exception-active (MBEA) are labeled transactional leadership while management-by-exception-passive (MBEP) and Laissez -Faire are considered passive-avoidant leadership (Avolio & Bass, 2004). The MLQ also assesses outcomes of leaderships including leadership extra effort (EE), leadership effectiveness (EFF), and Leadership satisfaction (SAT). Cronbach's coefficient alphas range from .63 to .92.

Procedures

Upon Institutional Review Board (IRB) approval, the electronic survey was distributed using the software Qualtrics© (Provo, UT, USA). The survey link was sent to all chief executive officers of nonprofit organizations who were members of the KNN. Distribution of the survey link occurred

with the KNN sending an initial email blast to their members, inviting them to participate in the study. Information regarding the purpose of the study, an implied informed consent, and specific instructions on how to complete and submit the survey was provided. Two weeks after the initial email blast, a follow-up/reminder blast was sent again by the KNN. All IRB protocols were followed throughout the duration of the study. Data was collected in a four-week period from October 1 – November 1, 2017.

An incentive was offered to participants to obtain more participation in the summary. Participants completing the survey were given the opportunity enter a random drawing to win a \$100 gift card for their organization.

Data were analyzed first to evaluate participate engagement. Of the 113 completed responses, 51 were removed due to several missing responses resulting in 62 cases for analysis. Quantitative survey data were analyzed using the computer software program Microsoft Excel and IBM SPSS Statistics 25 descriptive statistics were used to report the results of the MLQ. The researchers used inductive analysis to understand themes that emerged from the two open-ended questions (Patton, 2015). Specifically, the constant comparative method of data analysis was utilized (Glaser & Strauss, 1967). The method allowed researchers to gather participant responses and compare each to emergent themes. The process allowed researchers to thoroughly review each response noting potential themes. Notes were then grouped into categories. From emergent categories the potential themes developed. The process was repeated until all open-ended response were reviewed (Merriam, 1998). Researchers completed this process individually and then met to discuss and review emergent themes. Patton (2015) suggests the quality of research relies on the thick description that supports each theme. The details of each theme provide the transferability of the data rather than generalizability (Merriam, 1998). Additionally, it is equally important to select participants with first-hand knowledge of the topic under investigation (Merriam, 1998).

Results

CEO Believes in Leadership Beliefs

CEOs participating in the investigation report exhibiting a high level of transformation leadership qualities as measured by questions within the IA, IB IM, and IS subscales of the MLQ. Means for IA questions range from 3.82 to 4.56. The highest mean relates to the CEO's belief that they go beyond their individual interests for the group's benefit. The lowest mean is associated to the CEOs belief that they display a sense of power. The means for questions measuring IB range from 4.03 to 4.77. The highest mean relates to the CEO's feeling they consider moral/ethical consequences when making decisions. While the lowest mean links to the leader's decision of important values and beliefs. IS means range from 4.08 to 4.49. The lowest mean is reported for the CEO's regard of looking for new ways to complete assignments while the highest mean is connected to the leaders work to seek different perspectives when solving problems. Means for the final transformational leader subscale, IC, range from 3.95 to 4.61. The lowest mean ties to the CEO's coaching and mentoring activities while the highest mean ties to treating organizational members

as “individuals” versus “just a group member.” Table 1 summarizes transformational leadership constructs.

Table 1. Transformational Leadership

Category	Mean	SD
<i>Idealized Attribute (IA)</i>		
I instill pride on others for being associated with me	4.08	.86
I go beyond self-interest for the good of the group	4.56	.62
I act in ways that build other’ respect for me	4.34	.60
I display a sense of power and confidence	3.82	.90
<i>Idealized Behavior (IB)</i>		
I talk about my most important values and believes	4.03	.88
I specify the importance of having a strong sense of purpose	4.40	.75
I consider the moral and ethical consequences of decisions	4.77	.42
I emphasize the importance of having a collective sense of mission	4.56	.64
<i>Inspirational Motivation (IM)</i>		
I talk optimistically about the future	4.47	.69
I talk enthusiastically about what needs to be accomplished	4.47	.59
I avoid making decisions	1.68	.63
I express confidence that goals will be achieved	4.56	.50
<i>Intellectual Stimulation (IS)</i>		
Reexamine assumptions to questions whether appropriate	4.24	.74
I seek differencing perspectives when solving problems	4.49	.64
I get others to look at problems form many different angles	4.17	.64
I suggest new ways of looking at how to complete assignments	4.08	.73
<i>Individual Consideration (IC)</i>		
I spend time teaching and coaching	3.95	.78
I treat others as individuals rather than just as a member of a group	4.61	.55
I consider an individual as having different needs, abilities, and aspirations from others	4.37	.71
I help others to develop their strengths	4.20	.74

N = 62

Examining the CEO’s assessment of transactional leadership behaviors, the two highest means are associated with the CR questions evaluating the leader’s expression of satisfaction when organizational members meet expectations (*M* = 4.73). The second highest mean is connected to the CEO’s discussion of responsibilities with organizational members (*m* = 4.02). Means for behaviors associated the MLQ MBEA subscale ranged from 2.48 to 3.26. In this instance the highest mean is associated with focusing on expressing satisfaction when others meet expectations. Table 2 summarizes transactional leadership constructs.

Table 2. Transactional Leadership

Category	Mean	SD
<i>Contingent Reward (CR)</i>		
Effective meeting organizational needs	3.88	1.07
I discuss in specific terms who is responsible for achieving performance targets	4.02	.80

I make clear what one can expect to receive when performance goals re achieved	3.82	.89
I express satisfaction when others meet expectations	4.73	.45
<i>Management by Exception Active (MBEA)</i>		
I focus attention of irregularities, mistakes, Exceptions. and deviations form standards	3.26	.89
I concentrate my full attention on dealing with mistakes, complaints, and failures	2.95	1.12
I keep track of all mistakes	2.48	1.10
I direct my attention toward failures to meet standards	2.53	.92

N = 62

Passive management by exception subscale means were relatively low with means ranging from 1.63 to 2.47. Relatively few CEO’s reported behaviors associated with laissez-faire leadership behaviors as mean scores for the MLQ LF scale range from 1.34 to 1.70. Table 3 summarizes passive-avoidant leadership constructs.

Table 3. Passive-Avoidant Leadership

Category	Mean	SD
<i>Management-by-Exception-Passive (MBEP)</i>		
I fail to interfere until problems become serious	2.37	.96
I wait for things to go wrong before taking action	1.68	.74
I show that I am a firm believer in “if it ain’t broke, don’t fix it”	2.47	.97
I demonstrate that problems must become chronic before I take action	1.63	.81
<i>Laissez -Faire (LF)</i>		
I avoid getting involved when important issues arise	1.34	.70
I am absent when needed	1.61	.84
I avoid making decisions	1.66	.63
I delay responding to urgent questions	1.70	.90

N = 62

CEOs believed their leadership styles benefit the organization through extra effort (EE), effectiveness (EFF), and leadership satisfaction (SAT). The mean scores for the three MLQ subscales associated with these behaviors range from 3.87 to 4.66. The lowest mean connected to the leaders believe they get their organizational members to do more than what is expected. The highest mean connected with the CEO’s belief they were effective in meeting organizational requirements. Table 4 contains the results for leadership outcome constructs.

Table 4. Outcomes of Leadership

Category	Mean	SD
<i>Extra Effort (EE)</i>		
I get others to do more than they are expected to do	3.78	.86
I heighten others’ desire to succeed	4.24	.72

I increase others' willingness to try harder	4.21	.73
<i>Effectiveness (EFF)</i>		
I am effective in meeting others' job-related needs	4.10	.73
I am effective in representing others to higher authority	4.40	.73
I am effective in meeting organizational requirements	4.66	.60
I lead a group that is effective	4.50	.65
<i>Satisfaction (SAT)</i>		
I use methods of leadership that is satisfying	4.15	.73
I work with others in a satisfactory way	4.52	.54

N = 62

Leadership Skills Sought

The study collected perceptions of leadership skills sought. The themes that emerged from the open-ended questions are reported within this section. Data analysis for this section used inductive reasoning. Overarching themes emerged related to the leadership skills nonprofit executives were seeking when hiring entry level professionals. This included professional ability and attributes (*n* = 105), communication skills (*n* = 36), initiative (*n* = 34), and devotion to nonprofit (*n* = 23). Table 5 summarizes the leadership skills sought.

Table 5. Content Analysis of Leadership Skills Sought When Hiring New Staff

Category	<i>n</i>	%
Professional Ability and Attributes	105	53.0
Organized	13	6.6
Creativity/Innovative	13	6.6
Self-Confident	10	5.0
Integrity	8	4.1
Coachable/Teachable	7	3.5
Problem Solver	6	3.0
Technology Skills	6	3.0
Business Skills	5	2.5
Work Ethic	5	2.5
Flexibility	4	2.0
Compassionate	4	2.0
Intelligent	3	1.5
Persistent	3	1.5
Personable	3	1.5
Risk Taker	3	1.5
Accountable	2	1.0
Dependable	2	1.0
Miscellaneous/Other	8	4.1
Communication Sills	36	18.2
General Communication	10	5.0
Interpersonal Skills	8	4.1
Verbal	7	3.5
Written	5	2.5

Motivator	3	1.5
Listener	2	1.0
Relationship Builder	1	0.5
Initiative	34	17.2
Self-Motivated	16	8.1
Autonomous/Independent	10	5.0
Team Player	8	4.1
Devotion to Nonprofits	23	11.6
Passion	13	6.6
Commitment to Mission	5	2.5
Visionary	5	2.5

Professional Ability and Attributes

Nonprofit leaders sought individuals with many different personal abilities and attributes. Organization ($n = 13$) and Creativity ($n = 13$) and self-confidence ($n = 10$) were among the leading attributes. Other attributes included integrity ($n = 8$) who were coachable/teachable ($n = 7$), processed a problem solver and technology skills tie ($n = 6$). One executive noted “integrity, integrity, integrity,” while another noted “common sense, common courtesy, and Golden Rule.”

Communication Skills

Executives noted the need for future professionals to have strong communication skills. The skills sought included general ($n = 10$), interpersonal skills ($n = 8$), verbal ($n = 7$) and written ($n = 5$) communication. For instance, one executive noted “they will need soft skills in communication because my work is fraught with a higher-than usual need to communicate in different styles for different people.” Another noted, “We really like people who are confident with their writing and speaking skills and not afraid to try new things.” While others made brief comments such as “good communication skills,” “positive and effective communication skills,” “and exceptional communication skills.”

Initiative

The third theme centered on an individual’s ability to show initiative. Important constructs of this theme included self-motivated ($n = 16$) and autonomous/independent ($n = 10$). This theme focused on a willingness to work independently while taking the actions to begin a task while taking the steps to get things accomplished. Executives specifically noted they sought future professionals who could “work independently.” While others sought those willing to take initiative to get things done, and were “self-starters and motivators.”

Devotion to Nonprofit

The final theme that emerged related to an applicant’s passion for the mission or vision of the organization. In this instance executives sought future professionals who were dedicated to the

mission of the organization and communicated passionately about the cause. This was expressed by one applicant as “a passion for the mission.” Another noted they sought future professionals that “show they have dedicated time working to help others, and who bring passion and energy to the position.” While others simply noted “commitment to mission” or “belief in the non-profit mission.”

Challenges Facing Nonprofit Organizations

This study collected perceptions of significant challenges associated with leading nonprofit organizations. The study’s participants provided 145 comments regarding the topic. Six categories developed from the content analysis: (1) financial, (2) human resources, (3) board of directors, (4) competencies, (5) emotional/personal, and (6) community. Table 6 summarizes comments of the Executive Directors’ challenges relative to their position and provides a snapshot of the categories and themes that emerged.

Table 6. Content Analysis of Significant Challenges Associated with Leading Nonprofit Organizations

Category	n	%
Financial	41	28.2
Insufficient Funding	26	17.9
Fundraising	10	6.9
Other	5	3.4
Human Resources	36	24.8
Staffing Issues	19	13.1
Volunteers	9	6.2
Ability to Supervise	5	3.4
Miscellaneous	3	2.1
Board of Directors	25	17.2
Complacency/Disengagement	9	6.2
Training and Development	5	3.4
Recruitment	3	2.1
Turnover	3	2.1
Other	3	2.1
Overbearing	2	1.3
Competencies	23	15.9
Diversity of Skills Needed	7	4.8
Developing Mission and Goals	6	4.2
Miscellaneous Duties	6	4.2
Marketing/Brand Recognition	2	1.3
Creative Thinking/Innovation	2	1.3
Emotional/Personal	13	9.0
Demand of Position	5	3.4
Stress	4	2.9
Work/Life Balance	2	1.3
Other	2	1.3
Community	7	4.8
Miscellaneous	3	2.1

Competition with Other Agencies	2	1.3
Government Relations	2	1.3

The category that generated the most comments regarding perceived challenges was *Financial* ($n = 41$). This category consisted of comments relative to the fiscal challenges associated with leading nonprofit organizations. The two most common themes within this category were *Insufficient Funding* ($n = 26$) and *Fundraising* ($n = 10$). This category was dominated by general comments of regarding funding hardships for the organization as well as challenges with developing and administering creative, successful fundraising initiatives.

Human Resources ($n = 36$) received the second most comments relative to perceived challenges associated with leading nonprofit organizations. This category contained statements about dealing with individuals on a day-to-day basis, particularly agency personnel and volunteers for the organization.

The category that received the third most comments was *Board of Directors* ($n = 25$). This category was made up of feedback directly related to the Executive Director's challenges that stem from the organization's governing body. *Complacency/Disengagement* was the leading theme from this category. *Training and Development* was another notable theme that emerged from the analysis.

Competencies ($n = 23$) was the category that generated the fourth most comments. *Diversity of Skills Needed*, *Developing Mission and Goals*, and *Miscellaneous Duties* (archiving, benchmarking, long-term planning, website maintenance, social media efforts, project management) were leading themes from this category. The fifth category relative to challenges associated with leading nonprofit organizations was *Emotional/Personal* ($n = 13$). Two primary themes made up this category, *Demand of Position* and *Stress*. Comments such as "wearing many hats," "stressful," and "demanding" helped form the themes within the category. A final category that emerged was *Community*. This category was comprised of challenges linked to competition with other agencies and government relations.

Discussion

Researchers concurred that leadership ability is an important component for those nonprofit organization seeking CEOs (Ahmed, 2005, Tubbs & Schultz, 2006, Megheirkouni, 2017; Boyer et al., 2019). Findings of this investigation concur with commonly identified leadership competencies sought. As part of the current investigation those seeking to hire NPO executives sought many other competences including communication, change management, vision, teamwork, ability to develop others, business acumen, overall management skills, as well as vision and passion, and many other characteristics or personal qualities of potential candidates.

When examining the descriptions of skills, abilities, and qualities sought in potential executives of NPOs against the assessment of leaderships of the current nonprofit executives several areas of transformational leadership anecdotally emerge. For instance, agreement with the idealized attribute (IA) statement "going beyond self-interest for the good of the group" would intuitively

associate with skills associated with collaboration, being a team player, or developing others identified in the work of Thach and Thompson (2007). Agreement with the individual consideration (IC) statement “I consider an individual as having different needs, abilities, and aspirations from others” would also suggest an understanding of teamwork and an appreciation of diversity as identified in the work of Gordon & Martin (2019). While the Idealized behavior (IB) “I emphasize the importance of having a collective sense of mission” and the inspirational motivation (IM) statement “I talk optimistically about the future” would anecdotally associate with desires for individuals who have vision or passion (Gordon & Martin, 2019). Likewise, CEO agreement with the intellectual stimulation (IS) statement “I seek differing perspectives when solving problems” would further suggest an understanding of the abilities of teams to achieve more and appreciate diversity.

Examining the leadership skills sought by those CEOs participating in this investigation confirm findings of several competencies identified by Boyd (2003). Specifically, CEOs sought creative critical thinkers who could solve problems while also possessing passion. These competencies fall within Boyd’s systems leadership, organizational culture, and person skills competency categories. An emphasis on verbal and written communication skills sought by Nonprofit CEOs also confirms the findings of others examining entry-level skills across different sport, recreation, and nonprofit career paths (Hurd, 2005, Schneider et al., 2006; Fulthorp & D’Eloia, 2015; Pierce & Irwin, 2016). The desire for those who have initiative, are self-starters or can work independently confirm Hurd’s (2005) interpersonal skills competency. Like those park and recreation agency personnel surveyed in Chase and Masberg (2008) investigation of entry-level employee skills sought, the nonprofit CEOs in this investigation also sought passion. In this instance, emphasis was placed on a passion for the mission of the organization. Likewise, the Nonprofit CEO’s desire for potential employees who can think critically and solve problems also confirm skills sought by park and recreation agency personnel within Chase and Masberg’s (2008) investigation.

Current literature suggests nonprofit organizations face many challenges including concerns associated with funding and economic environment in which they operate (WIPFLI, 2018, Forbes, 2020, University of Notre Dame, 2020), lack of new donors or competition for donors (WIPFLI, 2018), report transparency and legitimacy related to effectiveness (University of Norte Dame, 2020), and talent recruitment or staffing concerns (WIPFLI, 2018, University of Norte Dame, 2020). The current investigation confirms executives still face fiscal challenges related to insufficient funds and fundraising. Executives participating in this investigation also cited staffing issues and volunteers as their top concerns within human resource management. Additionally, executives shared concerns associated with talent development, including diversity of skills needed and mission or goal development.

Executives within this study further suggested board development and emotional/personal challenges existed. In the area of board development, concerns related to complacency or disengagement, training and development, and board member recruitment. Emotional or personal challenges faced included the general demands of the position, stress, and work-life balance.

Implications for Practice

Results indicated nonprofit leaders believe they lean toward transformational leadership styles while seeking individuals who possess a mix of soft skills to help nonprofits address a wide variety of problems ranging from seeking funding sources to balancing work life. For those training future public sector professionals, in addition to curriculums that develop an understanding of the sector as a whole, emphasis should be placed on opportunities for students to develop their organizational, communication, and other identified soft skills. While teaching creativity, innovation, and initiative is challenging, opportunities to expose students to new experiences, current industry trends, individuals from different sectors employing creative means to address problems while providing experiences that allow students to work outside their current comfort zone may help students examine the sector through. Within the workforce, thoughtful professional development opportunities should seek to help entry level professionals continue to develop skills in key areas identified as part of the study. When facing funding challenges these opportunities might include peer mentoring programs or taking advantage of professional networking and skill development opportunities provide by the local chamber of commerce or higher education institution. In some instance, these opportunities as well as those provided by professional organizations provided scholarship opportunities for participants.

Limitations and Future Research

The study explored the leadership skills and abilities possessed and sought by a variety of executives working in many different areas of the nonprofit sector. The investigation was limited to only one southern state and the self-report format of the survey instrument may have led to somewhat skewed data due to the possibility of inaccurate responses. Future research could explore this topic across multiple states seeking to understand if regional difference exists based on region or community-based issues organizations within the nonprofit sector are addressing. Additionally, the investigation sought the opinion of only nonprofit executives. Future research could explore the topic of abilities, attributes, and competencies sought using a sample of those working in entry level positions within the sector. Likewise, the investigations assessment of leadership perception was assessed from the lens of the nonprofit executive. Future investigations could explore this topic seeking additional input from the nonprofit organization's board of directors, staff, and other key agency volunteers. Finally, information collected related to challenges faced by organizations within the nonprofit sector explore a pre-pandemic environment. Future research could explore the same topic seeking to understand the impact of a global pandemic on agencies working within the nonprofit sector.

Conclusion

Periodically assessing the skills, abilities, and challenges facing any sector has value for those training future professionals as well as the industry. This investigation sought to understand these aspects of nonprofit management in a snapshot of time. Information gathered suggests, that prior to a global pandemic, nonprofit executives viewed their leadership styles align with more transformational leadership characteristics. While executives sought to hire entry level professionals who were organized, creative, possessed communication skills, showed initiative,

and possessed devotion to the nonprofit organization's mission. While organizations working within the sector faced many challenges including funding, staffing, board development, and work-life balance.

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(Peer-Reviewed Article)**EMG Repeatability and Antagonistic Activity from a Computer-Controlled Cable-Driven Weight Training Device**

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Abstract

Exercise with selectorized weight stack machines do not impart oscillatory loads; this in turn limits antagonistic muscle coactivation. Recent advancements include computer-controlled cable-driven strength training devices. Little data have been collected from such devices, including those which measure antagonistic muscle coactivation. This pilot study's rationale is to quantify antagonistic muscle coactivation and EMG repeatability from workouts on a computer-controlled cable-driven strength training device. Methods had men ($n = 8$) do two workouts 48 hours apart on the device with workouts examining three exercises (bench press, standing calf raise, back squat) performed under two loading conditions (oscillatory or non-oscillatory). Per set, subjects did four repetitions against 27.3 kg as surface EMG was obtained from eight muscles. Key findings include no significant RMS differences between loading conditions. Data repeatability showed mixed results. A conclusion can be made that sample size and inter-subject variability impacted data repeatability. Future efforts to elicit greater antagonistic coactivation must first modify the oscillatory module.

Key Words: average RMS, sample heterogeneity, between-subject variability

Introduction

Many strength training modalities exist in modern gyms and health clubs. Among the more popular are cable-based strength training machines equipped with pulleys, selectorized weight stacks, and adjustable pins to choose the proper level of resistance. With cast-iron plates that slide on guide rods as torque is applied, exercise on such machines is a common modality that require less coordination, balance, and kinesthetic awareness than free weights. As a result, this exercise mode is perceived as safer and attracts people for whom safety and lower injury risk is important. Yet this modality offers considerable benefits. For instance, strength training performed by older women, mainly comprised of machine-based exercises, improved both movement and flexibility at the hip and cervical spine (Carniero 2015). Yet one drawback to such machines is limited coactivation of antagonist muscles. As agonist and antagonist muscles simultaneously contract joint stability improves, which is an effect not provided by machines.

Oscillatory loads are lacking from exercise with selectorized weight stack machines, which is why they limit antagonistic muscle coactivation (Lawrence 2015; Ostrowski 2017). However hardware advancements now include a computer-controlled cable-driven device designed for commercial gyms. Created by OxeFit Incorporated (Plano, TX), their XP1 unit uses algorithms to enable dynamic accommodating resistance, eccentric/concentric overloading, and visual tracking of exercise technique in real time (www.Oxefit.com 2022). A unique XP1 feature is its ability to impart oscillations in addition to the actual weight lifted (www.Oxefit.com 2021). One of its software modules generate sinusoidal oscillations to simulate free weight exercises and raise muscle coactivation that can be measured by surface electromyography (sEMG; www.Oxefit.com 2021). Figure 1 shows side and frontal XP1 images with views of its “barbell” secured onto adjustable stanchions from which cables are tethered to provide resistance. The frontal image shows a screen with a touch pad to select protocols and monitor exercise form (please refer to Figure 1).

Successive identical workouts offer opportunities to assess sEMG consistency (www.Labmate.com 2022). Factors impacting consistency include electrode placement, skin resistance, intermuscular crosstalk, and exercise technique (Bosco 1982; De Luca 1997; Goodwin 1999; Scott 2014; Zehr 1997). For example, a 5 mm electrode displacement over multiple sessions can evoke a 60% sEMG change, while cycle ergometry sessions done 48 hours apart saw sEMG values vary 9-12% (Lippold 1967; Rouffet 2008; Stratford 1997). Factors that also elicit variability include force or muscle length changes that displace neuromuscular junctions relative to surface electrode locations (Potvin 1997). Such inter-subject/session variability is why data are normalized, which entails collecting sEMG from maximal voluntary isometric contractions (MVIC) for subsequent comparisons to experimental EMG recordings (Ekstrom 2005).

Measurement consistency refers to data repeatability, which assesses variability from a single instrument or person multiple times under similar conditions (Rothstein 1985; www.Labmate.com 2022). Outcomes from different repeatability studies may vary greatly (Goodwin 1999), and projects that assess responses to novel exercise modalities evoke among the least consistent values (Neuhaus 2016). In addition to sEMG’s inherent variability, there is less consistency from human data with variable load exercise, which stems from their inability to consistently exert similar amounts of effort over successive bouts (De Luca 1997; Neuhaus 2016). Quantifying repeatability from oscillatory and non-oscillatory conditions helps researchers understand XP1 workout responses. It is also useful to compare antagonistic sEMG coactivation for those same conditions (Knuttsen 1997). Since this is the initial XP1 study, these results are considered pilot work toward the overall understanding of this novel modality. This pilot project 1): measures sEMG data repeatability from multiple muscles and successive workouts, and 2): compares antagonistic sEMG activity from oscillatory and non-oscillatory conditions. We hypothesize 1): acceptable data repeatability and 2): higher antagonist sEMG coactivation from XP1 oscillations.

Materials and Methods

Subjects

Prior to data collection, approval was granted by a university-based institutional review board (IRB # 21.0581). Each subject made two visits to the test facility, which allowed measurement of data repeatability across workouts. Per subject, visits were spaced 48 hours apart and they were instructed to arrive well rested. Eight healthy men gave written informed consent. While their strength training background varied, most had no XP1 workout experience. Since limited familiarity with the novel device is potentially a very large source of variability, at their first visits subjects did a series of practice repetitions against no added load on the XP1 for each (bench press, calf raise, back squat) exercise. When researchers felt comfortable with the subject's exercise technique, the researchers proceeded with EMG electrode preparation.

sEMG preparation for data collection

Subjects sat quietly as their skin was prepped for electrode placement, which entailed shaving at sites of interest where participants' hair was deemed excessive, per documentation from the manufacturer (De Luca 2008). sEMG preparation then entailed rubbing alcohol prep pads over electrode placement sites for all subjects. Pre-amplified wireless surface EMG electrodes, with 10-mm spacing (De Luca 2008) were placed directly over muscle bellies on the right side of subject's bodies for the following: biceps brachii, triceps brachii, lateral (middle) deltoid, pectoralis major, rectus femoris, biceps femoris, medial gastrocnemius and tibialis anterior. Electrodes were attached using their center-to-center lines parallel to muscle fiber orientation, in accordance with SENIAM (Surface EMG for Non-Invasive Assessment of Muscles) guidelines, with double-sided tape pads pre-cut by the manufacturer to specifically fit the shape and spacing of the electrode contacts (Hermens 2000; Scott 2014). Electrodes were secured with elastic self-adherent wrap to ensure electrode/skin surface fixation for the remainder of subject's visits.

Subjects then did a series of MVICs, for muscles to which electrodes were applied, to enable subsequent data normalization. Per muscle, MVICs were done in the same sequence (biceps brachii, triceps brachii, pectoralis major, lateral deltoid, rectus femoris, biceps femoris, medial gastrocnemius, soleus) for all subjects. The MVICs for a given muscle were completed before beginning the next muscle in the sequence. Per muscle, three 3-second MVICs were done as sEMG was recorded at a 1111 Hz sampling frequency (generated by Delsys data acquisition software). Subjects were instructed to not hold their breath during MVIC efforts. The instrumentation acquired signals within a 20-485 Hz bandwidth. The band's lower end was sufficiently high to exclude motion artifact (although potential for motion artifact is inherently less prevalent during isometric tasks); and actual sEMG activity above the upper end was not likely (as observation of sEMG signal content above such higher frequencies is generally limited to signal acquisition with indwelling electrodes). Each MVIC signal was centered (i.e., overall signal mean was subtracted from each sampling instance) to remove bias. A moving window root mean square (RMS) with an approximate 1.3 second window was applied to centered sEMG signals. This window size chosen was short enough to ensure RMS values during middle portions of an MVIC would not include dwell periods, yet still long enough to ensure RMS values throughout a recording were representative of muscle behavior, and that individual sampling instances were not unduly dominated by very brief durations of unusually high or low activity. Per MVIC recording, a mean

peak value for subsequent normalization of task trial EMG signals was determined as the average of the peak RMS values for each of the three activations.

Workout protocol

In a randomized sequence to limit fatigue-induced order effects, subjects did the bench press, calf raise and back squat exercises on the XP1. Per exercise, sets were performed either with or without oscillations. Per workout, they did six sets (three exercises both with and without oscillations). Per exercise, sets entailed four repetitions against a 27.3 kg load. Each exercise is a high-threshold movement that imparts greater muscle activity and evokes adaptations such as strength, power, and hypertrophy (Hibbs 2011; Comerford 2007). Yet repeatability for high-threshold movements is more difficult to achieve (Hibbs 2011). Repetitions were performed at a rate of two seconds per movement (concentric, eccentric) phase. A member of the research team, with a long background in resistive exercise, spotted subjects to limit their injury risk. With the palms of his hands next to, and moving parallel to, the subject's exercise repetition motion, the spotter could safely limit potential injuries. Research participants rested 90 seconds between sets.

Per exercise, sEMG data were obtained at the same rate (1111 Hz) and bandwidth (20-485 Hz) used for MVIC recordings. Exercise sEMG recordings were also RMS window averaged in the same manner as for MVIC recordings. Per laboratory visit, all values within the window averaged RMS signals were then normalized by dividing by the mean peak MVIC value for the corresponding muscles. Normalizing exercise trial sEMG data required data to be expressed as percentage of MVIC (Rouffet 2008). Normalization facilitates comparisons across subjects and sessions by reducing inter-subject and inter-session variability for sEMG (Rouffet 2008). Muscle activation metrics were then extracted from normalized window RMS signals. Peak values from activation bursts for muscles relevant to each exercise were extracted from normalized RMS signals and means of the activation peaks per set were computed. Relevant muscles were the rectus femoris, biceps femoris, medial gastrocnemius and tibialis anterior for the calf raise and back squat exercises. Bench press relevant muscles were the triceps and biceps brachii pectoralis major, and lateral deltoid. RMS repeatability rarely examines multi-joint movements, which comprise two project exercises (Bosco 1982; Gollhofer 1990; Scott 2014; Taylor 1995).

Current study exercises

For the bench press, subjects laid supine on a bench in the middle of the XP1 platform as its barbell rested overhead on stanchions. With their shoulders flexed and elbows extended, subjects removed the barbell such that they supported it over their chests. Repetitions began as subjects inhaled as their shoulders underwent horizontal abduction and their elbows flexed; the latter caused the barbell to descend. The descent occurred in a slow controlled manner as the upper body extensor muscles performed eccentric actions to meet this objective (Konrad 2001). Once the barbell contacted the chest, its movement was momentarily paused. Subjects then exhaled as they began the movement's ascent, which entailed horizontal adduction at the shoulder joint and elbow extension. Upon full elbow extension, the repetition concluded. Figure 2 shows how bench presses were done on the XP1 (please refer to Figure 2).

Calf raises were done in an upright posture with the barbell across the backs of shoulders. With a slight lordosis and full knee extension maintained, subjects exerted plantar flexor torque to fully extend the ankle in a slow controlled manner. Subjects exhaled during the movement's ascent. Upon full ankle extension, the weight of subjects' bodies and the barbell rested on the balls and phalanges of their feet. Subjects then slowly exerted eccentric plantar flexor torque and inhaled as they returned to the movement's starting position. Unlike the other two exercises, calf raises confined visible movement to one joint. Figure 3 shows how calf raises were done on the XP1 (please refer to Figure 3).

Squats were performed with the barbell placed across the back of shoulders and weight equally distributed between the left and right sides of subject's bodies. Feet were kept shoulder width apart and toes pointed 45° laterally from the body's midline. Subjects grasped the barbell and looked straight ahead at the start of the exercise. Repetitions began as they inhaled and slowly descended as they flexed their knees in a controlled fashion. Upon full descent their femurs were parallel to the ground as they maintained a lordotic posture. Ascent immediately began as they exerted lower body extensor torque and exhaled as they maintained lordosis. Repetitions concluded upon full knee extension. Figure 4 depicts back squats performed on the XP1 (please refer to Figure 4).

Oscillatory profile

An XP1 software module, developed for this study, imparted oscillations. Net downward forces were the sum of the baseline load (267 N) plus the oscillating component that followed a sine wave parameterized at a frequency of 10 Hz and an amplitude of 44 N. For statistical analyses comparing non-oscillation and oscillation modes, RMS values were averaged over the last three repetitions per set, as the XP1 does not trigger oscillations until the first repetition is completed.

Statistics

Average RMS data were first examined with standardized residuals to identify outliers, with scores $\geq \pm 1.96$ standard deviations omitted from further analyses. Data were then examined for normality, independence and equal variances with Shapiro-Wilks, Chi-square, and Levene tests, respectively. Per muscle examined with each exercise, average RMS data were compared under non-perturbation and perturbation conditions with one-way ANOVAs for correlated samples.

To assess antagonist activity for non-oscillation and oscillation modes, muscles that oppose agonistic movement per exercise had their activity compared as a percentage of peak prime mover RMS data. For example, for the bench press, the biceps brachii, an antagonist to elbow extension and exercise movement completion, had its activity normalized as a percentage of peak triceps brachii RMS values. For the same exercise, deltoid activity coactivation was normalized as a percentage of peak pectoralis major RMS data. For calf raises, tibialis anterior coactivation was normalized as a percentage of peak medial gastrocnemius RMS data. For back squats, biceps femoris activity was normalized as a percentage of peak rectus femoris RMS data. By normalizing antagonist coactivation, comparisons with high inter-subject and -session variability were abated

(Rouffet 2008). Like RMS analyses, coactivation for non-oscillation and oscillation modes were compared with one-way ANOVAs. An $\alpha = 0.05$ denoted significance per analysis.

Due to the researcher’s limited access to the XP1, power analysis identified the current sample as less than required for standard repeatability studies (Atkinson 1998; www.Danielsoper.com 2022). Thus, the paper offers pilot results on data obtained to date. Type II errors are more frequent, and variability rises, with fewer subjects, which negates accurate interpretations of true differences among paired samples. Thus, the current tests chosen to assess average RMS repeatability were done so to reduce the risk of type II errors (Al-Eid 2019; Nicholson 2017). They include intraclass correlation coefficients (ICC), coefficient of variation (CV%), Pearson product moment correlation coefficients (PPMC), relative standard error of measurement (SEM%) and smallest real difference (SRD). ICC was calculated with a two-way mixed single measures model (Scott 2014; Larsson 2003). CV% was derived as the standard deviation/mean ratio and then multiplied by 100 to express values as a percentage. Sometimes referred to as the within-subject variance, SEM% was computed as: standard deviation $\times ((1 - \text{PPMC})^{0.5} / \text{mean}) \times 100$ to express values as a percentage (Aragon-Vargas 2000; Atkinson 1998; Beckerman 2001). SRD was tabulated as the standard error of the estimate/1.414 ratio, and then multiplied by 2.77.

Results

No subjects were injured from their participation, and each completed all project procedures. No standardized residuals warranted removal of individual data points. The data complied with all ANOVA assumptions. Table 1 provides average peak normalized RMS values for the upper body muscles examined by the bench press exercise. Also in Table 1 are antagonist coactivation results, which are separated by non-oscillation and oscillation modes. Table 1 results include non-significant differences. Table 2 and 3 results, for the calf raise and back squat exercises respectively, show largely non-significant differences between the non-oscillation and oscillation modes. Yet a notable Table 2 exception shows significantly higher average peak normalized RMS values for the tibialis anterior from the oscillation, versus non-oscillation mode.

Table 1. Average peak normalized RMS values (mean \pm sem) for the bench press exercise.

Muscle	Non-oscillation mode	Oscillation mode
Triceps brachii (%MVC)	50.35 \pm 4.1	49.38 \pm 4.30
Biceps brachii (%MVC)	7.90 \pm 1.64	9.54 \pm 1.95
Deltoid (%MVC)	41.54 \pm 11.16	35.19 \pm 8.40
Pectoralis major (%MVC)	106.51 \pm 17.84	111.77 \pm 18.50
% bicep activity as a function of peak triceps activity	19.82 \pm 4.41	22.82 \pm 5.26
% deltoid activity as a function of peak pectoralis major activity	51.76 \pm 15.79	46.23 \pm 11.62

Table 2. Average peak normalized RMS values (mean \pm sem) for the calf raise exercise.

Muscle	Non-oscillation mode	Oscillation mode
Rectus femoris (%MVC)	12.85 \pm 1.30	13.48 \pm 1.23

Biceps femoris (%MVC)	25.90 ± 3.17	21.64 ± 1.38
Tibialis anterior (%MVC)	21.75 ± 1.78	25.55 ± 1.90*
Medial gastrocnemius (%MVC)	124.34 ± 6.71	126.66 ± 6.78
% bicep femoris activity as a function of peak rectus femoris activity	253.86 ± 43.82	208.50 ± 37.51
% tibialis anterior activity as a function of peak medial gastrocnemius activity	13.30 ± 1.42	16.09 ± 1.72

*: significantly (p < 0.05) higher than corresponding non-oscillation mode value.

Table 3. Average peak normalized RMS values (M ± SD) for the back squat exercise.

Muscle	Non-oscillation mode	Oscillation mode
Rectus femoris (%MVC)	69.03 ± 5.75	68.24 ± 5.48
Biceps femoris (%MVC)	35.40 ± 6.08	29.17 ± 4.44
Tibialis anterior (%MVC)	83.81 ± 5.57	81.98 ± 5.56
Medial gastrocnemius (%MVC)	31.74 ± 3.43	29.89 ± 2.57
% bicep femoris activity as a function of peak rectus femoris activity	51.45 ± 10.10	47.32 ± 8.79
% tibialis anterior activity as a function of peak medial gastrocnemius activity	184.94 ± 42.77	276.18 ± 92.50

Tables 4-6 show the EMG intra-workout data repeatability results. Each table shows results for the muscles assessed under the non-oscillatory and oscillatory conditions. Bench press repeatability (Table 4) shows weaker deltoid outcomes, which crosses a joint that allows motion in three planes of movement. In contrast the other muscles had comparatively more repeatable data. Small differences exist between oscillation and non-oscillation modes for the biceps and triceps brachii, while greater inter-mode differences exist for the deltoid and pectoralis major.

Table 4. Intra-workout average RMS data repeatability results for the bench press exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
Biceps brachii					
Non-oscillation	0.95	117.1	0.96	23.42	6.41
Oscillation	0.87	115.4	0.89	4.97	38.28
Triceps brachii					
Non-oscillation	0.93	49.5	0.93	12.86	17.25
Oscillation	0.91	49.3	0.91	14.76	16.83
Deltoid					
Non-oscillation	0.60	175.3	0.89	58.2	54.2
Oscillation	0.28	163.4	0.73	85.1	44.5
Pectoralis major					
Non-oscillation	0.90	94.6	0.96	11.02	18.9
Oscillation	0.25	140.7	0.32	5.64	95.7

Tables 5-6 show intra-workout reliability results for the calf raise and squat respectively. Table 5 tibialis anterior, and Table 6 biceps femoris activity for the oscillation mode, are quite low; both muscles are antagonists to the exercises examined. Higher Table 5 medial gastrocnemius ICC values may be due to the calf raise being a single joint exercise, the only one examined. Tables 5 and 6 results may be generalized as antagonistic muscles, as well as those which no visible joint movement occurred, tended to have more CV% and SEM% variability. There were only minor data repeatability differences between oscillation and non-oscillation modes in Tables 5 and 6.

Table 5. Intra-workout average RMS data repeatability results for the calf raise exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
Rectus femoris					
Non-oscillation	0.87	57.2	0.87	20.6	5.09
Oscillation	0.78	51.6	0.81	22.5	4.8
Biceps femoris					
Non-oscillation	0.75	39.1	0.77	18.7	6.5
Oscillation	0.67	36.1	0.68	1.22	20.4
Medial gastrocnemius					
Non-oscillation	0.92	30.7	0.93	8.1	26.6
Oscillation	0.66	30.3	0.68	17.1	37.6
Tibialis anterior					
Non-oscillation	0.42	60.8	0.48	43.8	9.7
Oscillation	0.53	42.1	0.56	27.7	7.4

Table 6. Intra-workout average RMS data repeatability results for the back squat exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
Rectus femoris					
Non-oscillation	0.90	47.2	0.91	14.17	22.5
Oscillation	0.87	45.4	0.89	15.06	21.45
Biceps femoris					
Non-oscillation	0.75	97.24	0.82	41.2	23.83
Oscillation	0.16	100.0	0.19	90.0	20.92
Medial gastrocnemius					
Non-oscillation	0.82	61.2	0.81	26.6	13.4
Oscillation	0.94	48.7	0.96	9.73	10.09
Tibialis anterior					
Non-oscillation	0.80	37.6	0.81	16.5	21.8
Oscillation	0.67	37.5	0.72	19.82	21.4

Tables 7-9 display inter-workout average RMS data reliability results for the bench press, standing calf raise and back squat exercises, respectively; and are generally lower than those for their corresponding intra-workout outcomes. Tables 7-9 differences between oscillation and non-oscillation modes for inter-workout reliability varied, which suggests the time between workouts was a source of variability. A notable exception to the low data reliability are the medial gastrocnemius results for the standing calf raise (Table 8).

Table 7. Inter-workout average RMS data repeatability results for the bench press exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
Biceps brachii					
Non-oscillation	0.21	117.5	0.20	104.7	6.43
Oscillation	0.18	113.2	0.17	103.1	7.5
Triceps brachii					
Non-oscillation	0.39	49.4	0.51	34.5	17.2
Oscillation	0.23	48.9	0.30	41.6	16.72
Deltoid					
Non-oscillation	0.09	93.6	0.03	92.12	69.14
Oscillation	0.20	111.9	0.29	94.3	103.9
Pectoralis major					
Non-oscillation	0.09	93.6	0.03	92.2	69.14
Oscillation	0.20	111.9	0.29	94.3	103.9

Table 8. Inter-workout average RMS data repeatability results for the calf raise exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
Rectus femoris					
Non-oscillation	0.30	56.1	0.65	33.2	4.99
Oscillation	0.51	49.3	0.85	19.1	4.61
Biceps femoris					
Non-oscillation	0.36	37.0	0.55	24.8	6.13
Oscillation	0.80	33.3	0.77	16.0	4.99
Medial gastrocnemius					
Non-oscillation	0.73	30.52	0.72	16.15	26.4
Oscillation	0.60	25.9	0.76	12.68	21.7
Tibialis anterior					
Non-oscillation	0.32	51.6	0.44	38.7	8.23
Oscillation	0.23	37.1	0.28	31.55	6.57

Table 9. Inter-workout average RMS data repeatability results for the back squat exercise.

Muscle	ICC	CV%	PPMC	SEM%	SRD
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Rectus femoris					
Non-oscillation	0.25	48.25	0.37	38.3	23.5
Oscillation	0.39	42.3	0.65	25.0	19.63
Biceps femoris					
Non-oscillation	0.09	91.5	0.16	83.9	22.5
Oscillation	0.17	76.86	0.25	66.6	15.98
Medial gastrocnemius					
Non-oscillation	0.53	58.07	0.72	30.73	12.93
Oscillation	0.48	49.49	0.62	30.51	10.13
Tibialis anterior					
Non-oscillation	0.50	36.16	0.50	25.57	20.94
Oscillation	0.36	34.66	0.45	25.7	19.84

Discussion

In addition to current paper serving as the very first project to assess XP1 workouts, a project limitation that renders it a pilot study, and its results preliminary, is the low subject number that inflates type II error rates as determined by power analysis. At least 30 subjects are required for an appropriate sample size. Type II error rates rise when 1): samples are small, or 2): when true differences or effects are small, and variability is high. The researchers had limited access to the novel XP1, and plans for its marketing, sales and distribution have yet to be decided, which does not afford opportunities for continued data collection. Thus, the paper's results are preliminary. Other limitations include EMG's inherent variability due to rapid muscle activity changes from transitory motor unit discharge patterns and rates, as well as different membranous features along adjacent muscle fibers (Scott 2014; Garcia 2018). Such limitations limit data repeatability. Yet Table 4-6 intra-workout values generally show high repeatability for ICC and PPMC, but not CV% and SEM%, values across the muscles, exercises, and modalities examined. This is based on work that implies CV% typically range from 10-15%, while those from sedentary or low-intensity activity see values less than 4% (Stokes 1985; Zehr 1997). A CV% \leq 10% was deemed an acceptable level of reliability (Atkinson 1998; Hopkins 2000; Weir 2005). In contrast, ICC values $<$ 0.75-0.80 are acceptable, which is a common occurrence in Tables 4-6 (Kovaleski 1997). Tables 1-3 show the XP1 oscillation mode, when compared to the non-oscillation mode, does not provide more antagonist muscle coactivation.

It is important to compare current pilot data with studies that also assessed EMG repeatability and reliability. To assess sEMG normalization, nine men did multiple maximal sprint cycling and MVIC tests (Rouffet 2008). Since normalization partly depends on data repeatability (Rouffet 2008), this metric was assessed by CV%, and sEMG values were obtained for six lower body muscles. Results showed CV% values varied from 10-23 for the MVIC tests, while those for cycling ranged from 8-20. CV% values are less than those of the current project, perhaps due to differences in exercise intensity (Rouffet 2008). To measure sEMG reliability of the multifidus and iliocostalis lumborum pars thoracis, 15 subjects did numerous exercises designed to treat low

back pain on three occasions (Daneels 2001). Twenty-two bodyweight exercises were divided into four categories aimed at coordination, stabilization, balance, and strength. ICC results for average sEMG values were consistently good, with higher values for strength exercises. A notable exception was exercises to improve balance. Reliability was better for the multifidus. Inter-muscle differences were attributed to the influence arm and shoulder motion have on iliocostalis lumborum pars thoracis activity, which makes it harder to achieve higher levels of data reliability (Biedermann 1990; Thompson 1993).

Differences between the Daneels' and current project may be due to the exercises and muscles examined, as the former focused solely on those of the lower back (Daneels 2001). Another study compared peak and average RMS values for muscles that stabilize the body's core during exercise (Hibbs 2011). Ten men had their sEMG activity measured from the rectus abdominis, external oblique, internal oblique, multifidus, latissimus dorsi, longissimus, gluteus maximus and rectus femoris. CV% were derived from five core exercises. Results showed CV% were higher than those of the current study. Differences between the core muscle and current studies are likely due to the exercise protocol used and ease of muscle recruitment (Hibbs 2011).

Other studies assessed sEMG, but with movement rates that approach those of athletic competition (Fauth 2010; Goodwin 1999). Women (n = 15) provided sEMG data from vertical jumps (Goodwin 1999). Per subject, two sessions were done 14 days apart. Data were collected from the rectus femoris, vastus medialis, biceps femoris and gastrocnemius. Reliability was measured with ICC per muscle. ICC values were 0.88, 0.70, 0.24 and 0.01 for the rectus femoris, vastus medialis, biceps femoris and gastrocnemius respectively. In addition to their biarticular anatomy, the biceps femoris and gastrocnemius have central lead points near adjacent muscles that raise the likelihood of crosstalk and less reliability (De Luca 1997). Results suggest EMG repeatability is dependent upon the muscle examined (Goodwin 1999). EMG was also measured from jumping and sprinting with rapid directional changes as subjects (12 men, 12 women) did a series of performance tests (Fauth 2010). Quadriceps and hamstring sEMG were collected concurrently for each test. In agreement with current results, ICC values were high (> 0.80), while CV% ranged from 5.4-148.7% (Fauth 2010). Similar ICC and CV% outcomes were seen from rehabilitative hip (Bolga 2007) and squat (Earl 2001) studies that targeted the quadriceps.

Some repeatability studies examined exercises like those of the current project (Garcia 2018; Larsson 2003; Scott 2014). Intra-session sEMG was assessed from concentric bench presses at four (50%, 60%, 70% and 80% of 1RM) loads (Garcia 2018). Men (n = 12) made four visits, spaced 3-4 days apart, in which data were collected at one of the 1RM percentages as pectoralis major and triceps brachii sEMG were obtained. Pectoralis major ICC and CV% values ranged from 0.98-0.99 and 8.0-13.7 respectively, while those for the triceps brachii varied from 0.89-0.99 and 10.7-16.7. It was concluded sEMG results varied by the statistic used (Garcia 2018). To assess RMS reliability from isokinetic knee extensor tests, ten men and ten women made two laboratory visits spaced 7-8 days apart (Larsson 2003). Vastus medialis, rectus femoris, vastus lateralis and biceps femoris RMS data were collected during 100 concentric-only repetitions at a rate of $90^{\circ} \cdot \text{sec}^{-1}$. Data reliability was assessed by ICC and SEM. Results showed quadriceps data generally exhibited high (≥ 0.80) RMS reliability as measured by ICC. Yet SEM results for each muscle had variability that ranged from 9-69 (Larsson 2003). To assess hip and knee extensor EMG reliability

from the squat, 12 men did two multi-set workouts (Scott 2014). Intra- and inter-test data reliability were assessed as EMG was collected from the gluteus maximus, biceps femoris, vastus medialis and vastus lateralis. Results included higher intra-, as compared to inter-, test reliability. Intra-test CV% results show a large range of scores, several of which exceed current pilot values. Inter-test CV% values were even greater. Electrode reapplication for second workouts was cited as a potential source of inter-test variability (Scott 2014).

It is of interest noting some of the current results had high data repeatability, unlike outcomes from prior studies (Fauth 2010; Larsson 2003). Current ICC and PPMC outcomes generally show, but not CV% and SEM%, high repeatability. Differences in repeatability between the current and prior (Fauth 2010; Larsson 2003) studies are likely due to the statistics employed and sample composition. Regarding current ICC results, subjects performed repetitions at similar rates. In turn, between-subject variability is very low which can inflate ICC values (Atkinson 1998; Hopkins 2000; Weir 2005). The ICC is dependent on between-subject variability while CV% relates to individual variability, and the latter is inherently high with sEMG and unaffected by the measurement range (Atkinson 1998; Hopkins 2000; Weir 2005). This may explain why current pilot results show high repeatability for ICC, but not CV% and SEM (Atkinson 1998; Hopkins 2000; Weir 2005)

EMG studies with repeatability results comparable to the current project's, namely high ICC but lower CV% and SEM% values, had similar numbers of male and female subjects (Fauth 2010; Larsson 2003). The Faust and Larsson studies each produced ICC values ≥ 0.80 (Fauth 2010; Larsson 2003). Like Fauth et al., the Bolga and Earl studies each had similar numbers of men and women (Bolga 2007; Earl 2001; Fauth 2010). ICC is considered a direction approximation of data reliability and is dependent on between-subject variability (Atkinson 1998; Hopkins 2000; Weir 2005). In contrast, CV% measurements are dependent upon individual variability (Atkinson 1998; Garcia 2018; Weir 2005). CV% results are also independent of the range of measured values, which may in part explain why current results for this statistic exceed those seen previously (Atkinson 1998; Garcia 2018; Weir 2005). In similar fashion, Larsson's isokinetic study had large between-subject variability and a sample comprised of equal numbers of men and women (Larsson 2003). Results included high ICC, but a large range of SEM, values (Larsson 2003). Future EMG research should employ multiple statistical tests for a more comprehensive analysis (Fauth 2010; Scott 2014). Current results are a function of the sample, data collection methods, and statistical tests employed (Garcia 2018). Tables 1-3 results suggest the XP1 perturbation profile should be altered to offer more antagonist muscle coactivation during exercise repetitions to better simulate the response seen with free weight strength training.

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Appendices

Figure 1. Side and frontal images of the XP1 (OxeFit; Plano, TX).

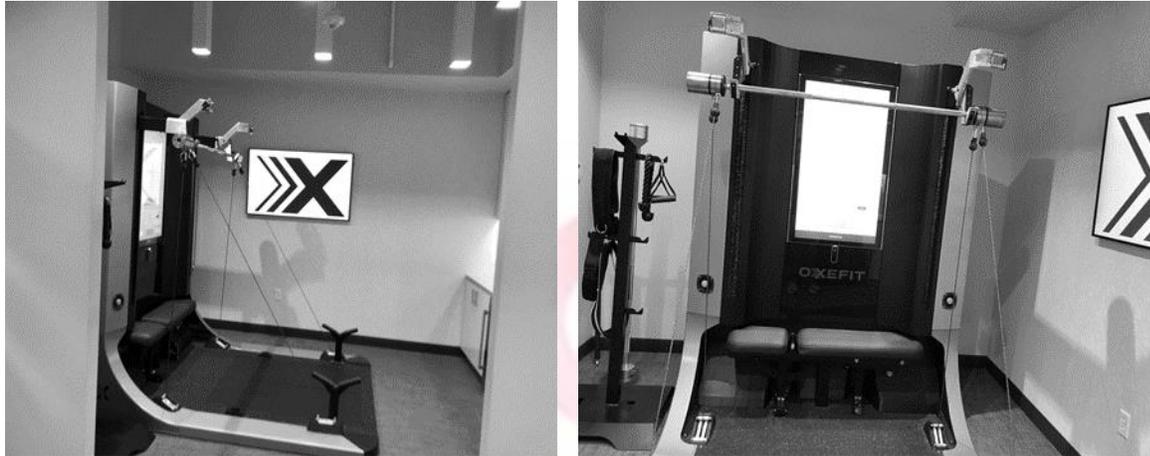


Figure 2. The bench press exercise performed on the XP1.

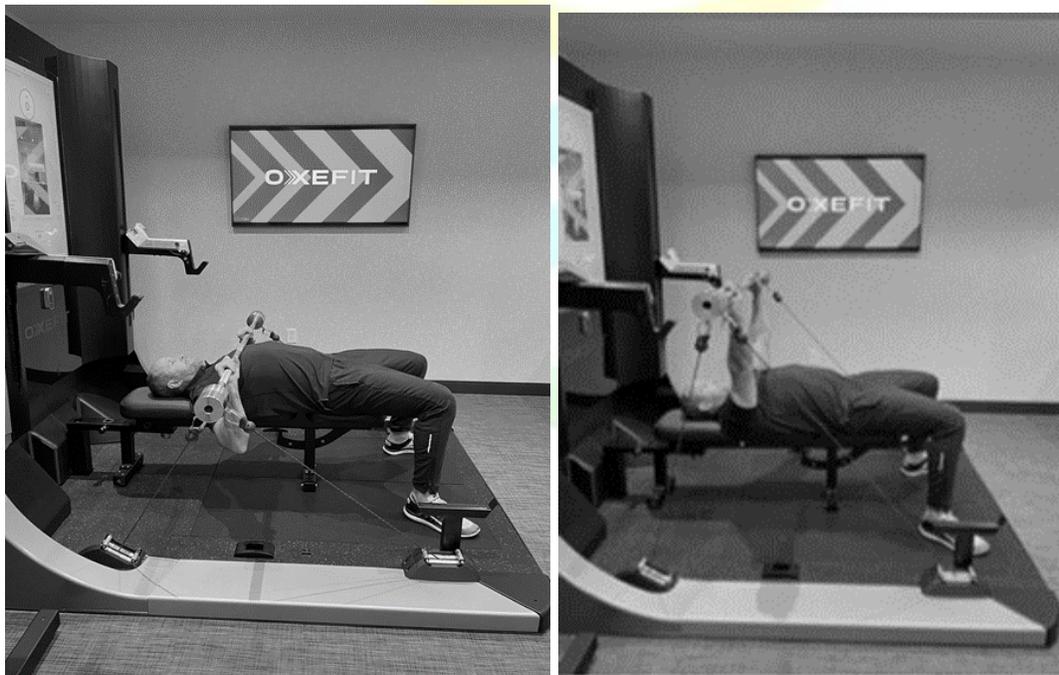


Figure 3. The calf raise exercise performed on the XP1.



Figure 4. The squat exercise performed on the XP1.

