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How Participation in Team v. Individual Sports Affects the Physical Activity Levels of College Students

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How Participation in Team v. Individual Sports Affects the Physical Activity Levels of
College Students

by

Kellie Jackson

A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
of Honors Requirements

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ABSTRACT

The present study investigated the association between team and individual sports participation and the physical activity levels of college students at the University of Southern Mississippi. Participants (n=72) responded to the International Physical Activity Questionnaire (IPAQ) to determine their physical activity levels over the duration of one week. Participants also responded to the Participation Motivation Questionnaire (PMQ) to examine the similarities and differences in motivation among current, former, and never athletes. Participants who classified themselves as current and former athletes reported spending more time engaged in physical activity than never athletes. Among current athletes, former athletes, and never athletes, all three groups selected physical fitness as the primary motivation for engaging in physical activity. Given that physical activity is a crucial part of living a healthy life, more research is needed to better understand sports participation and the role it has on the physical activity levels of college students.

Keywords: physical activity, college students, exercise, motivation

DEDICATION

I dedicate my thesis to the college students who participated in this study and to college students everywhere who are striving to live a balanced, active life.

ACKNOWLEDGMENTS

I would like to thank the Depot Kitchen and Market, the location in which the bulk of this thesis was written. Specifically, I would like to thank the Depot for supplying me with endless, smoked turkey sandwiches and warm, hazelnut lattes. The sumptuous provisions and comforting atmosphere enabled me to write freely and painlessly.

I would also like to thank my family for their love and support and my thesis advisor, Dr. Porter, for her guidance and encouragement. Without them, the completion of this thesis would not have been possible.

TABLE OF CONTENTS

<u>LIST OF TABLES</u>	ix
<u>LIST OF ABBREVIATIONS</u>	1
<u>CHAPTER I: PREAMBLE</u>	1
<u>CHAPTER II: INTRODUCTION</u>	3
<u>CHAPTER III: METHODS</u>	6
<u>Study design and participants</u>	6
<u>Measures</u>	6
<u>Statistical Analysis</u>	8
<u>CHAPTER IV: RESULTS</u>	9
<u>CHAPTER V: DISCUSSION</u>	13
<u>Conclusions</u>	15
<u>APPENDIX A: IRB Approval Letter</u>	16
<u>REFERENCES</u>	17

LIST OF TABLES

Table 1: Demographic data of the participants.....	10
<u>Table 2: Comparison of physical activity levels among former team and individual athletes.....</u>	<u>11</u>
Table 3: Minutes engaged in various levels of physical activity per week.....	11
<u>Table 4: Dimensions of the Participation Motivation Questionnaire of the participants.</u>	<u>12</u>

LIST OF ABBREVIATIONS

USM	The University of Southern Mississippi
PMQ	Participation Motivation Questionnaire
IPAQ	International Physical Activity Questionnaire

CHAPTER I: PREAMBLE

The inspiration for my research stems from my own experience with physical activity and sports participation. Growing up, my two older sisters were heavily involved in competitive gymnastics, a sport that can be grueling on the body as well as wearing on the nerves. However, participation in gymnastics taught them incredible self-discipline and gave them the confidence to pursue physical activity in every stage of life. Contrary to their experience as individual athletes, I preferred team sports like that of basketball and softball. I found that the experience of playing with a team gave me the confidence to play without fear of failure because my teammates would always be there to share in the responsibility of the game's outcome. However, in the absence of team sports I have found that the skills I so heavily depended on in my adolescence left me feeling at a disadvantage when trying to remain physically active as a college student, independent of the structure of organized team sport.

By reflecting on my own transition from high school to college and the subsequent fluctuation of my physical activity habits, I decided to focus my research efforts on a population that is both accessible and relatable to me: college students. Regarding research, I believe that college students are often shunted into a category that predominantly focuses on either sexually transmitted infections or mental health issues. Although these topics are applicable to the experiences of collegiate students across the United States, I strongly believe that a more significant amount of research must be dedicated to the physical activity levels of college students. My feelings on this topic largely stem from the fact that as a college student, I realize what a critical time this is in my life and that of my peers. Not only are we tasked with choosing a major that will hopefully lead to a career, but we are also in the process of forming habits that have the potential to stay with us well into adulthood. As a result of this realization, my decision to research the physical activity levels of college students seemed like the natural next step for

making sense of my own experience with physical activity as well as preparing to be physically active post-college.

CHAPTER II: INTRODUCTION

According to *Healthy People 2030*, regular physical activity is crucial in preventing disease and premature death (HHS, 2021). Specifically, regular physical activity can reduce the risk of developing chronic diseases. This correlation is extremely relevant because the leading causes of death in the United States are heart disease, cancer, and diabetes – all of which are chronic conditions that can be partially mitigated through behavioral changes such as an increase in physical activity (Kochanek, 2019).

According to the National Center for Education Statistics, the projected number of students enrolled in college in the U.S. was estimated to be 19.7 million students (ED, 2019). This is nearly 8.4% of American adults, qualifying them as a significant portion of the population. The college years lay the foundation for how students will approach physical activity throughout their adult lives. However, from a review of prior research, it is clear that college students are a neglected class regarding research that addresses the association between sports participation and physical activity levels (Keating et al., 2005).

Of the research that is available and specific to college students and physical activity, the scope and depth with which the research addresses the association is quite varied. For instance, some research focuses on increased physical activity being associated with better mental health and lower perceived stress (Vankim, Nelson, 2013). Another branch of research focuses on college students and exercise habits over the course of their freshman and sophomore years, showing a decrease in aerobic exercise and an increase in stretching exercises (Racette et al., 2005). Although this analysis sheds light on the behavioral changes that take place regarding physical activity as college

students progress through their undergraduate career, it takes a very narrow view of the problem by disregarding the impact of sports participation and by focusing solely on the early years of college rather than covering the entirety of the undergraduate experience. Another subset of research focused on the benefits and barriers related to college students engaging in strenuous physical activity and how lower motivation led to lower levels of physical activity (Brown et al., 2006). This particular study was consistent with previous research but is limited in its ability to apply to a more diverse and older college-age population since the study primarily consisted of young, white women.

Previous research regarding physical activity levels and sports participation found that adults who formerly participated in individual sports spent more days in vigorous physical activity than former team athletes (Ball & Bice, 2015). Additionally, previous studies have found that participation in physical activity is often linked with increased academic success. It is unclear whether or not this stems from physical activity itself or sports participation, which often require participants to maintain certain grades (Fox et al., 2010). When comparing individual and team sport athletes, researchers found that individual athletes often possess more individual responsibility to perform well compared to team sport athletes, among whom responsibility is shared (Laborde et al., 2016). This varying approach to sports participation is dependent on the nature of the sport (team or individual) and is evaluated through a survey instrument that measures the motivation behind one's participation in sports.

Participation in team sports versus individual sports is more likely to lead to increased physical activity levels in college students has yet to be definitively determined. For instance, one longitudinal observational study in children used the

Health-related quality of life (HRQoL) measurement and found that children participating in individual sports were more likely to have better moods and emotions compared to children who participated in team sports (Moeijes et al., 2019). The opposite was concluded in a systematic review, which found a stronger association between participation in team sports and higher quality of life compared to individual sport participants (Wu et al., 2017). Although these reviews are somewhat limited in their application to college students, the findings as a whole concluded that frequency of physical activity rather specific sport type was associated with higher quality of life overall. The inconsistency in the findings prompted investigators to evaluate this association in the specific population of college students at The University of Southern Mississippi. The second aim of this study was to compare former and current athlete's physical activity levels with that of never athletes across individual and team sport participants. The present cross-sectional study aimed primarily to investigate whether or not participation in team versus individual sports was associated with increased physical activity among college students.

CHAPTER III: METHODS

Study design and participants

Students from the University of Southern Mississippi (USM) were invited to participate in this cross-sectional study. The time of the study was in the first semester of the 2020-2021 academic year. The inclusion criteria were as follows: the participants should be undergraduate students at USM and must be at least 18 years of age or older. The purpose of the study was explained to each participant through the online consent form. By clicking submit on the online consent form, students agreed to participate. REDCap software was used for survey creation, data collection, and management (Harris et al., 2009). The survey for the study was disseminated through social media platforms such as Instagram and Facebook as well messenger apps such as GroupMe.

Measures

The survey included the Participation Motivation Questionnaire (PMQ) (Gill et al., 1983), the International Physical Activity Questionnaire – Short Form (IPAQ) (Craig et al., 2003) and additional questions specific to each group (current athlete, former athlete, non-athlete, and the sports participated in). The PMQ is a multidimensional measure of participation motivation and was used to assess the students' motivation for participating in physical activity. It consists of 30 reasons regarding one's motivation for sports participation. Participants answered the stem "I am physically active because..." (Gill et al., 1983). A three-point Likert scale was used to indicate preferences from 1 ("very important") to 3 ("not important at all"). A range of questions were combined to form the following domains of motivation: team orientation, achievement/status, fitness, friendship, skill development, fun, energy release, and miscellaneous or situational

factors (Ex: facilities/equipment, parents, friends, instructors, etc.) (Dwyer, 1992). A higher number on the PMQ indicates that a particular domain was of less importance to participants, while a lower number on the PMQ indicates that a particular domain was of more importance to participants. Originally used to address youth motivation for sports participation, PMQ is still useful in assessing adult motivation for physical activity because youth and adults possess similar reasons for engaging in physical activity (Dwyer, 1992).

The IPAQ is an international measure for physical activity that was created in 1998 and underwent extensive testing for validity and reliability across 14 sites during 2000. According to the results of the tests, IPAQ has acceptable measurement properties relative to that of other self-reports (Craig et al., 2003). Specifically, the IPAQ is used for monitoring levels of physical activity among 18-65-year-old participants in diverse settings. Moreover, the IPAQ short, which was used in this study, is most suited for national monitoring. The IPAQ assesses the amount of time participants spend sitting as well as the types of intensity of physical activity that participants do as part of their daily lives. Of the participants who are former and current athletes, participation in team sports versus individual sports and how that relates to their current physical activity levels was examined using IPAQ. Of the participants who are non-athletes, their lack of participation in sports and how it subsequently influences their current physical activity levels compared to that of current and former athlete participants was also examined through IPAQ.

Apart from the PMQ and IPAQ components, the survey included questions related to the demographics of participants. These demographics included class ranking,

gender, age, and race/ethnicity. The survey also included a question that prompted participants to classify themselves as a current, former, or never athlete. Moreover, the survey asked former and current athletes to specify if they participated in a team or individual sport or a combination of the two. Additionally, the survey prompted former team and individual athletes to determine if they were less physically active or the same amount or more physically active after discontinuing sport participation. In total, the survey that participants responded to included 55 questions. However, not all of the data collected was analyzed in this study because it lacked relevance as the aim of the study evolved after data collection.

Statistical Analysis

Means and standard deviations were used to describe the continuous data; counts and percentages were used to describe the categorical data. Chi-squared tests were used to examine potential between group differences. All analyses were conducted in Stata version 15.1 (College Station, TX).

CHAPTER IV: RESULTS

Seventy-two undergraduate students from USM in Hattiesburg, Mississippi participated in this cross-sectional study. Of the seventy-two participants, 5.6% classified themselves as current athletes, 65.3% classified themselves as former athletes, and 29.2% classified themselves as never athletes. Of former athletes, 57.5% of respondents participated in a team sport, while 2.1% participated in an individual sport and 40.4% participated in both team and individual sports. Of the 47 former athletes, all respondents participated in a school-based sport. Of the four current athletes that participated in this study, all respondents participated in a team sport. Table 1 shows the general characteristics of study participants.

Table 2 presents the responses of former team and former individual sport athletes regarding their physical activity levels after ceasing to be an athlete. There was no statistically significant difference between the groups. Table 3 presents the differences in the number of minutes and ranges of current athletes, former athletes, and never athletes spent over the duration of one week engaging in various levels of physical activity. The mean number of minutes that current athletes spent engaging in both moderate and vigorous exercise was 617.5 minutes. While the mean number of minutes for former athletes was 272.6 minutes, and the mean number of minutes for never athletes was 156.9 minutes. However, former athletes and never athletes had a higher mean number of minutes spent walking than current athletes.

Table 4 presents participants' motivation for engaging in physical activity. The most important motive for engaging in physical activities for current athletes, former athletes and never athletes was physical fitness. Apart from physical fitness, current

athletes selected skill development as a motive for engaging in physical activity, while former athletes selected team orientation, and never athletes selected both friendship and skill development as motivating factors for engagement in physical activity.

TABLE 1: Demographic data of the participants

	n=72	
	n	Percentage
Class		
Freshman	3	4.2%
Sophomore	24	33.3%
Junior	20	27.8%
Senior	25	34.7%
Gender		
Male	21	29.2%
Female	51	70.8%
Age (years)	20.3	
Race/Ethnicity		
White	65	90.3%
Black	2	2.8%
Hispanic	3	4.2%
Asian or PI	1	1.4%
Mixed	1	1.4%

TABLE 2: Comparison of physical activity levels among former team and individual athletes

	n	Percentage
Team n=46		
Less active	22	81.5%
Same or more active	5	18.5%
Individual		
Less active	1	100%
Same or more active	0	0%
Both		
Less active	14	77.8%
Same or more active	4	22.2%

TABLE 3: Minutes engaged in various levels of physical activity per week

	n=72		
Range	Current n=4	Former n=47	Never n=21
Moderate	212.5 (223.3)	136.7 (199.5)	93.0 (141.1)
Range	40, 540	0, 840	0, 600
Vigorous	405 (157.8)	148.3 (215.6)	63.9 (87.4)
Range	240, 540	0, 840	0, 300

Moderate + Vigorous	617.5 (345.3)	272.6 (312.9)	156.9 (184.2)
Range	280, 1080	0, 1200	0, 690
Walking	175 (40.4)	370.9 (769.7)	326.9 (586.9)
Range	140, 210	0, 4620	12.5, 2800

TABLE 4: Dimensions of the Participation Motivation Questionnaire of the participants

n=72

Category	Current n=4	Former n=47	Never n=21
Team Orientation	4 (1.4)	5.7 (2.2)	7.0 (1.7)
Achievement/Status	7.5 (1.9)	8.7 (2.3)	9.4 (2.2)
Fitness	3.3 (0.5)	3.6 (1.0)	4.0 (1.7)
Friendship	6.5 (0.6)	5.8 (1.8)	6.3 (1.7)
Skill Development	4.3 (1.3)	6.0 (1.9)	6.3 (1.8)
Fun/excitement/challenge	5 (0.8)	6.2 (2.2)	6.9 (2.5)

CHAPTER V: DISCUSSION

The primary aim of this study was to investigate the association between participation in team and individual sports with the physical activity levels of college students. Since current athletes engaged in more moderate and vigorous physical activity compared to former athletes and former athletes engaged in more moderate and vigorous physical activity compared to never athletes, it is possible that an association between participation in sports of any kind (current or former participation in team or individual sports) with physical activity levels in college students exists. Current athletes spent significantly less time walking compared to former and never athletes. From these results, it is possible to conclude that current athletes can be engaged in vigorous physical activity during their respective sports and still be largely sedentary the rest of the time (Júdice et al., 2014). Also, the number of minutes spent walking for all three groups could have been exaggerated due to self-report because respondents of questionnaires that emphasize exercise typically report higher rates of these behaviors than is justified (Shephard, 2003). Exercise is perceived as an acceptable and valuable behavior that should be practiced frequently, and in their desire to be considered acceptable and normal, respondents will overreport their exercise habits exercise-related questionnaires (Shephard, 2003). Therefore, the results may not be indicative of an association between a lack of sports participation and an increase in the amount of time spent walking.

Of the former team sport athletes surveyed, 81.5% reported that they are less active now than when they were actively participating in sports. Moreover, of the athletes who considered themselves to be a former team and individual sport athletes, 77.8% reported that they are less active now than when they were actively participating in

sports. This could indicate an association between a lower level of physical activity after leaving sports participation. Previous sports participation does not guarantee that former athletes will exhibit continuously high levels of physical activity (Reifsteck et al., 2013).

Participants that identified as current athletes, former athletes, and never athletes selected maintaining fitness as the most important motive for engaging in physical activity. This finding is consistent with other studies that focus on the motivation for engaging in physical activity (Dwyer, 1992). Across all factors of motivation, participants who identified as never athletes appeared to be the least motivated by every factor. As a result, it could be inferred that participants' lack of sports participation could be associated with their lack of motivation to engage in physical activity.

The present study had some potential limitations. One of which was that the study was based on a self-reported, cross-sectional survey, which has the potential for bias when addressing normative behaviors like that of exercise (Shepherd, 2003). Additionally, cross-sectional surveys are unable to determine temporality because it is unclear whether or not the exposure or the disease itself came first (Friis & Sellers, 2021). This means that the results of this study cannot definitively confirm that former or current sports participation of any kind causes an increase in the physical activity levels of college students.

The sample size was small due to a lack of student participation. Moreover, the sample primarily consisted of white women, meaning that the results of this study may not be representative of the population at large. Additionally, the sample included only four current team athletes, no current individual athletes, and only one former individual athlete. This lack of participation made it difficult to find strong associations among the

different groups and caused the aim of the project to shift to comparing team and individual sports participants to simply sports participants and never athletes. In retrospect, more time should have been dedicated to disseminating the survey to diverse sports and student groups on campus. In part, this was inhibited by the COVID-19 restrictions that prevented recruitment from being conducted in an in-person setting, which could have led to increased participation. For future research, it is recommended that further investigation in this field include a more diverse sample of participants in terms of age, race, gender, and athlete status.

Conclusions

Current and former participation in sports could be associated with higher physical activity levels of college students than those who never participated in sports. Current, former, and never athletes are all potentially motivated to engage in physical activity by a desire to maintain fitness. The encouragement of sports participation in elementary and high schools could teach healthy physical activity habits that could continue into the collegiate years.

APPENDIX A: IRB APPROVAL LETTER

Office of
Research Integrity



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NOTICE

OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.
- Face-to-Face data collection may not commence without prior approval from the Vice President for Researches Office.

PROTOCOL NUMBER: IRB-20-256

PROJECT TITLE: How Participation in Team and Individual Sports Affects Physical Activity Levels of College Students

SCHOOL/PROGRAM: Public Health

RESEARCHER(S): Kellie Jackson, Anna Porter

IRB COMMITTEE ACTION: Exempt

CATEGORY: Exempt

Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

APPROVED STARTING: September 30, 2020

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

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Enrollment Survey" (IPEDS-EF:90-99); IPEDS Spring 2001 through Spring 2019, Fall Enrollment component; and Enrollment in Degree-Granting Institutions Projection Model, 2000 through 2029. (This table was prepared December 2019.)

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