12-2015

Athletic Participation and Gender on ACT Achievement for Private School Students in the Southeast

Cade A. Smith
Harding University

ATHLETIC PARTICIPATION AND GENDER ON ACT ACHIEVEMENT FOR PRIVATE SCHOOL STUDENTS IN THE SOUTHEAST

by

Cade A. Smith

Dissertation

Submitted to the Faculty of

Harding University

Cannon-Clary College of Education

in Partial Fulfillment of the Requirements for

the Degree of

Doctor of Education

in

Educational Leadership P-20

December 2015

ATHLETIC PARTICIPATION AND GENDER ON ACT ACHIEVEMENT FOR PRIVATE SCHOOL STUDENTS IN THE SOUTHEAST

by

Cade A. Smith

Dissertation

Bruce Bryant Dissertation Advisor	October 19, 2015 Date
Clara Carnell Dissertation Reader	October 19, 2015 Date
Michael Brooks Dissertation Reader	10.19.15 Date
Donny Lee Dean of the Cannon-Clary College of Education	October 19, 2015 Date
 Assistant Provost for Graduate Programs	Oct. 19, 2015 Date

ACKNOWLEDGMENTS

Many people contributed to the completion of this dissertation. I want to thank Dr. Bruce Bryant for his support and continual advice throughout this project. I also want to thank the other members of my committee, Drs. Brooks and Carroll, for their time in reading the document and providing helpful feedback to help complete this project. I also credit the entire College of Education at Harding University for their willingness to go far beyond their duties in helping students meet their goals.

I have had many mentors and friends who have encouraged me along the way and helped me to continue to pursue my goals. I appreciate Dr. Carter Lambert for taking a special interest in me and encouraging me to pursue educational administration. I also credit Dr. Brad Gist for being such an encourager and friend through the process. Thanks also to Chad Tappe, a great coworker and a better friend who continuously encourages me in everything I do.

I also thank Dr. E. J. Brophy and Keith Giboney for allowing me to continue my degree in Arkansas while pursuing a new job in Alabama. Their willingness to allow me to miss certain work requirements as I completed my coursework is greatly appreciated.

I am well aware that I would not be doing what I am doing without my family. I thank my parents and sisters for their unwavering confidence in me and their encouragement in everything I have done and will continue to do.

Finally, and most importantly, I thank God and give Him all of the glory for anything I have done and will continue to do. He is to be praised for all that I have in my life including the people I have already acknowledged. I hope that I can be true to Romans 12:2 as I strive to determine what God's will is in my life. My prayer is that I will not conform, but rather be transformed by the continual renewing of my mind.

ABSTRACT

by
Cade A. Smith
Harding University
December 2015

Title: Athletic Participation and Gender on ACT Achievement for Private School Students in the Southeast (Under the direction of Dr. Bruce Bryant)

The purpose of this dissertation was to add to the limited available research concerning the effect that athletic participation has on academic achievement in private schools. For each hypothesis, the independent variables were athletic participation and gender. For the first hypothesis, the dependent variable was academic achievement as measured by the ACT Composite score. For Hypotheses 2-5, the dependent variables were academic achievement as measured by the ACT Reading, Mathematics, English, and Science Reasoning subtests, respectively. Through a review of the literature, the history of interscholastic athletics was examined and the positive and negative effects of athletic participation on academic achievement as well as the impact of both gender and private education on ACT scores were identified.

This causal comparative study was conducted in three states from the Southern region of the United States in seven different private Christian schools, each accredited by the same agency. The researcher randomly chose students by gender and athletic participation.

A 2 x 2 factorial ANOVA was used to analyze the data collected for each of the five hypotheses. The results of this study showed no significant interaction effects between gender and athletic participation for the five hypotheses. Additionally, the main effects for gender and athletics were not significant in any of the five hypotheses, although athletes showed a higher mean score in each hypothesis.

The majority of the studies reviewed revealed different findings compared to this study's results. Each of these studies revealed a significant difference in academic achievement between athletes and non-athletes. In addition, all of the studies reviewed involved students from public schools. This study provides valuable information to the limited research available on the effects of athletic participation on academic achievement in private schools.

TABLE OF CONTENTS

LIST OF TABLES x

CHAPTER I—INTRODUCTION 1

Statement of the Problem 3

Background 3

Hypotheses 8

Description of Terms 9

Significance 10

Process to Accomplish 11

CHAPTER II—REVIEW OF RELATED LITERATURE 15

History of Interscholastic Athletics 15

Positive Effects of Athletic Participation on Academic Achievement 17

Negative Effects of Athletic Participation on Academic Achievement 23

Differences in Academic Achievement by Gender 31

Differences in ACT by Gender 38

Impact of Private Education on Academic Achievement 39

Conclusion 41

CHAPTER III—METHODOLOGY 42

Research Design 43

Sample 43

Instrumentation....44
Data Collection Procedures....45
Analytical Methods....46
Limitations....47
CHAPTER IV—RESULTS....49
Demographics....49
Hypothesis 1....50
Hypothesis 2....52
Hypothesis 3....54
Hypothesis 4....56
Hypothesis 5....58
CHAPTER V—DISCUSSION....61
Conclusions....61
Implications....65
Recommendations....71
REFERENCES....77
APPENDIX....84

LIST OF TABLES

1. Participating Schools' Grades 10-12 Enrollment and Annual Tuition 50
2. Descriptive Statistics from ACT Composite Scores by Gender of Athletes versus Non-Athletes 51
3. Factorial ANOVA Results from ACT Composite Scores 51
4. Descriptive Statistics from ACT Reading Scores by Gender of Athletes versus Non-Athletes 53
5. Factorial ANOVA Results from ACT Reading Scores 53
6. Descriptive Statistics from ACT Mathematics Scores by Gender of Athletes versus Non-Athletes 55
7. Factorial ANOVA Results from ACT Mathematics Scores 55
8. Descriptive Statistics from ACT English Scores by Gender of Athletes versus Non-Athletes 57
9. Factorial ANOVA Results from ACT English Scores 57
10. Descriptive Statistics from ACT Science Reasoning Scores by Gender of Athletes versus Non-Athletes 59
11. Factorial ANOVA Results from ACT Science Reasoning Scores 59

CHAPTER I

INTRODUCTION

Organized athletics have existed in the United States since the 1800s, and they have been a major part of the high school experience for many students. Over the past 40 years, the number of students who play interscholastic sports has changed drastically, largely in part to Title IX of the Education Reformation Act of 1972 that prohibited discrimination based on sex (Compton & Compton, 2010). Since the inception of Title IX, schools have been required to have equal opportunities for both males and females to participate in athletics. Before 1972, the opportunities for females to participate in interscholastic or intercollegiate athletics were limited. This situation has changed drastically since 1972. According to the National Federation of State High School Associations (n.d.), more than 7.5 million high school students participate in interscholastic athletics each year. The emphasis placed on athletics is ever increasing at both the high school and collegiate levels. Some public universities spend as much as six times as much per athlete as they do per non-athlete even though few of these schools are generating more money than is being spent ("Division I Schools," 2013). The recruiting process is competitive. As more and more student athletes are trying to continue their athletic career at the college level, the percentage of high school athletes that participate at the college level remains low. According to one source, only 7.6% of high school males, and 8.0% of high school females will participate in collegiate athletics

(Scholarshipstats.com, 2013). Out of every 10,000 high school basketball players, two will play in the National Basketball Association or Women's National Basketball Association (Georgia Career Information Center, 2006).

While athletes are training to become better at their sport, their work ethic seems to carry over to the classroom. Silliker and Quirk (1997) noted that both male and female athletes tend to perform better academically during their season than when they are out of season. They pointed out that participation in athletics and other extracurricular activities does not negatively affect their overall academic performance. Knifsend and Graham (2012) noted that there is a curvilinear relationship between the amount of extracurricular activities, such as athletics, and a sense of belonging and overall academic achievement for the student. They maintained that moderate involvement in these activities leads to greater degrees of students' feeling of belonging to the school, and thus, it helps them to maximize their overall academic achievement. They concluded that too much or too little participation in extracurricular activities could hinder their sense of belonging in the school and their academic achievement. Although it is possible to graduate high school without meeting a certain GPA, it is not unlikely that one will continue to participate in athletics without meeting certain academic requirements. Most states have some form of academic eligibility requirements (Lumpkin & Favor, 2012). Athletes must meet these requirements as well as certain attendance requirements. Athletes tend to have better attendance, better grades, and fewer disciplinary problems compared to non-athletes (Lumpkin & Favor, 2012).

Statement of the Problem

The purposes of this study were five-fold. First, the purpose of this study was to determine the effects by gender of participants in athletics versus non-participants in athletics on academic performance measured by composite scores on the ACT for high school students in National Christian School Association (NCSA) member schools in the Southeastern United States. Second, the purpose of this study was to determine the effects by gender of participants in athletics versus non-participants in athletics on academic performance measured by ACT Reading scores for high school students in NCSA member schools in the Southeastern United States. Third, the purpose of this study was to determine the effects by gender of participants in athletics versus non-participants in athletics on academic performance measured by ACT mathematics scores for high school students in NCSA member schools in the Southeastern United States. Fourth, the purpose of this study was to determine the effects by gender of participants in athletics versus non-participants in athletics on academic performance measured by ACT English scores for high school students in NCSA member schools in the Southeastern United States. Fifth, the purpose of this study was to determine the effects by gender of participants in athletics versus non-participants in athletics on academic performance measured by ACT Science reasoning scores for high school students in NCSA member schools in the Southeastern United States.

Background

Research literature seemed to be more focused on the academic achievement of athletes at the college level than at the high school level. In several studies the researchers examined noted that participation in athletics had a positive impact upon the academic

achievement of the student athletes (Broh, 2002; Feldman & Matjasko, 2005; Lumpkin & Favor, 2012; McCarthy, 2000). In other studies, the researchers noted that students who participate in athletics perform at a lower level academically than students who do not participate in athletics (Pascarella et al., 1999; Schneider & Klotz, 2000). The researcher reviewed studies on both sides of the issue.

The Positive Impact of Athletics on Academic Achievement

Participation in athletics has a positive impact on academic achievement. Jonker, Elferink-Gemser, and Visscher (2009) indicated that athletics had a positive impact on students' abilities to perform academically. Their study included 400 talented athletes as defined by the Netherlands Olympic Committee. Of the study's participants, 200 of the athletes attended secondary schools in 1992-1993 and 200 attended secondary schools in 2006-2007. Of the total, 235 of the athletes played team sports and 135 played individual sports. The athletes were tested using a pre-determined instrument that measures academic achievement based on their age level of education. Results showed that there was no significant difference between the 1992-1993 group and the 2006-2007 group. The researchers observed that this indicated stability in their research. Their results showed that the athletes, on average, maintained a more difficult class schedule compared to the national average. The researchers concluded that participation in athletics complemented academics and that athletic participation enhanced academic achievement.

Couch, Lewis-Adler, and Burton (2011) provided positive results for participation in athletics and the impact that it can have on academic achievement. They studied the winning percentages of high school football teams in Alabama and the relationship it had with academic achievement, school funding, school size, and teachers' levels of

education. Results indicated that there are many factors that can be attributed to successful academic achievement such as smaller school size and higher education level of the teachers. There was no relationship between winning percentages in football and standardized test scores in smaller schools. However, in the larger districts, there was a positive relationship to winning percentage in football and standardized test scores. They concluded that there was no evidence that a strong athletic program had a negative impact on the academic achievement of its athletes.

The Negative Impact of Athletics on Academic Achievement

Some researchers reported that participation in athletics can have a negative impact on academic achievement. Aries, McCarthy, Salovey, and Banaji (2004) studied athletes at the college level and found that they had lower academic credentials entering college and that their achievement in college was also below their non-athlete counterparts. One limitation to the study, however, was that the students' incoming abilities were not taken into account or controlled. McMillen (1991) studied the negative impact that sports have had on the overall academic landscape from high schools to colleges. This study emphasized the shorter amount of class time that students already have in comparison with rival countries that focus much less on athletics and much more on academics and preparing their students for the jobs of the future. McMillen indicated that the United States spends more time in the school day on sports and recreation than countries around the world. He concluded that the only way the United States can make up the ground it has lost over the years is to do a better job of preparing students for success in the high school and college level and that a much lower emphasis must be placed on athletics.

Beem's (2006) study focused on superintendents of schools and their role in maintaining a proper balance and hierarchy of priorities within their districts. In this study, one superintendent that took over a school, after investigation, had allowed 32 different teams and squads in 11 of the 14 district schools to compete with ineligible players. The superintendent decided to follow the guidelines of the state athletic association, and he chose to have those teams forfeit over 100 contests due to the playing of ineligible players. Additionally, fines in excess of $15,000 were paid and over $26,000 returned that had been gained during playoff games. He chose to fire two athletic directors and to fine others, as well as principals and coaches. Other superintendents in this study changed school schedules and extracurricular schedules around so that the focus was brought back on academics. One superintendent reorganized the district and removed interscholastic sports from the junior high schools after moving the ninth grade up to high schools. This decision was based on improving the academic achievement of the students and a belief that a lesser emphasis on athletics would aid in this attempt. Beem added that the superintendent eventually lost his job because the school board sided with the community and thought a stronger emphasis on interscholastic sports should be brought back to the middle schools.

The Impact of Gender on Academic Achievement of Athletes and Non-athletes

Lumpkin and Favor (2012) studied the academic performance of more than 130,000 high school students in 9th through 12th grades in the state of Kansas. In this study, they compared the performance of athletes versus non-athletes by gender based on GPAs, graduation rates, ACT scores, and state assessments. When looking at athletes versus non-athletes, their results indicated that athletes performed significantly better on

the ACT Mathematics and Science Reasoning subtests than non-athletes; non-athletes performed significantly better on the Reading subtest than the athletes did. When comparing athletes versus non-athletes by gender, the male non-athletes performed significantly better on the ACT English and Reading subtests, as well as the Composite score, than the male athletes did. Female athletes performed significantly better on the English, Mathematics, and Science Reasoning subtests, as well as the Composite score, when compared to female non-athletes. Athletes had a graduation rate of 97.6% compared with non-athletes at 88.1%. Of the male athletes, 74% had GPAs of 3.0 or above compared to only 64% for non-athletes, and 43% of male athletes had GPAs of 3.5 or above compared with 34% of non-athletes. Of the female athletes, 87% had GPAs of 3.0 or above compared to only 75% of non-athletes, and 62% of female athletes had a GPA of 3.5 or greater compared with 44% of non-athletes.

The Impact of Private Education on Academic Achievement

Ward and Clark (1991), in their attempt to reexamine a previous data set, found that private schooling does have a positive effect on academic achievement based on the *High School and Beyond* data set, which had been collected by the National Center for Educational Statistics. This data set included statistical analysis of over 58,000 students in 10th and 12th grades from public and private schools in the United States. Although the initial report indicated that there was no significant difference in academic achievement among students from public and private schools, a reexamination indicated that students from private schools show significantly greater scores in areas such as mathematics, reading, and vocabulary compared to students who attend public schools.

According to the Council for American Private Education (2011), 90% of private school students who took the 2010 National Assessment of Educational Progress in geography scored at or above the basic level compared with only 73% of public school students. In the National Assessment of Educational Progress history assessment, 87% of private school students scored at or above the basic level compared with only 68% of students from public schools.

Hypotheses

The initial review of the literature suggested that participation in athletics does have a positive effect on student achievement. Although evidence specifically related to high school athletics and the impact on academic achievement by gender was limited, this researcher generated the following null hypotheses:

1. No significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by Composite scores on the ACT.
2. No significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by ACT Reading scores.
3. No significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by ACT Mathematics scores.

4. No significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students that do not participate in athletics on academic performance measured by ACT English scores.
5. No significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by ACT Science Reasoning scores.

Description of Terms

Academic achievement. For this study**,** standardized test scores on the ACT including subtest scores for English, Mathematics, Reading, and Science Reasoning, as well as the ACT Composite score measured academic achievement.

Participation in athletics. For this study, participation in athletics was defined as students who participate in any of the following interscholastic sports for at least one complete season: baseball, basketball, bowling, cross-country, football, golf, soccer, softball, spirit, swimming, tennis, track, volleyball, or wrestling. These are the only sports recognized by the National Federation of State High School Associations (n.d.), the governing body of high school athletics in the United States.

National Christian School Association (NCSA) member school. An NCSA member school is accredited by an accrediting organization for private Christian schools in the United States that are affiliated with churches of Christ (NCSA, n.d.)

Significance

Research Gaps

A significant amount of literature focused on the relationship between athletic participation and academic achievement of college athletes. Some research was on the link at the high school level, but most focused on public schools. There are many types of private schools in the United States. While there is a relatively small amount of literature that pertains to athletics and academic achievement in private schools, there is even less research on private Christian schools that are affiliated with churches of Christ. While there is a large amount of literature concerning academic achievement in public schools, much of this literature does not include gender as a variable. In addition, most of the literature related to this topic does not include ACT scores as the dependent variable.

Possible Implications for Practice

There are those who think that both public schools and college preparatory schools should increase the focus on academics and decrease focus on extracurricular activities such as athletic participation. Bessler (2013) argued that colleges are sending the wrong idea to high school students by giving athletic scholarships to good athletes even if they are subpar students. Some even stated that schools should cut athletics altogether (Sanford, 2012). Premont Independent School District in Texas closed down its athletics program in 2012 in an attempt to strengthen the academic programs in some of its failing schools (Smith, 2012). Conn (2012) admitted that the school systems in America have a problem, and the possible reasons for these difficulties include teacher training and high stakes testing. However, Conn concluded that one of the real reasons

for the problems was the increase in athletic participation in high schools, which reduced available resources for academics.

In light of the struggle between emphasizing athletics over academics or academics over athletics, it would seem that school boards making budget decisions regarding athletics would be interested to know how athletes perform academically versus non-athletes. Groups interested in seeing athletic participation remain a vital part of the overall high school experience would want to potentially use this data to defend the participation in athletics of high school students, assuming the athletes performed as well as, if not better than, those who do not participate in athletics. Those in favor of reducing the importance placed on athletics and increasing the importance of academics would likewise use these data to defend their case, assuming those not involved in athletics performed better compared to those involved with athletics.

Process to Accomplish

Design

A causal comparative strategy was used in this study. The first hypothesis was a 2 x 2 factorial between-groups design, and the independent variables were participation in athletics (participation versus non-participation) and gender (male versus female). The dependent variable was overall academic achievement measured by the composite score of the ACT. The last four hypotheses were 2 x 2 factorial between-groups designs. The independent variables for Hypotheses 2-5 were participation in athletics (participation versus non-participation) and gender (male versus female). The dependent variables for Hypotheses 2-5 were reading achievement measured by the ACT Reading subtest, mathematics achievement measured by the ACT Mathematics subtest, English

achievement measured by the ACT English subtest, and science achievement measured by the ACT Science Reasoning subtest, respectively.

Sample

The study used 10th-12th grade students in seven private high schools in the Southeastern United States. Three of the schools were in Arkansas, two were in Alabama, and two were in Tennessee. The seven schools were chosen based on their similar values and student demographics. The teachers, on average, had the same years of experience. Of the participants in the schools, approximately 50% were male and 50% were female. With the seven schools combined, approximately 85% of the students were White, 9% were Black, 5% were Hispanic, and less than 1% were Asian.

In the seven schools, there were 1,092 students eligible to take part in the study. Of these 1,092 students, 160 of them were selected by stratified random sampling to participate in the study. Students were assigned to groups based on their gender and athletic participation. The first group consisted of 40 male students who participated in athletics and had taken the ACT. The second group consisted of 40 female students who participated in athletics and had taken the ACT. The third group consisted of 40 male students who did not participate in athletics and had taken the ACT. The fourth group consisted of 40 female students who did not participate in athletics and had taken the ACT.

Instrumentation

Test scores from the ACT were used for this study. The ACT is a national college entrance exam with four subject areas. All 4-year colleges in the United States for admission purposes recognize the ACT. Scores range from 1-36 on each subtest, and the

average score across all subtests is the Composite score (ACT, 2007). The Reading subtest contains 40 multiple-choice questions that must be completed in a 35-minute time limit. This subtest requires the test-taker to read several passages and then answer both direct questions and questions in which the answer is implied. The Mathematics subtest contains 60 multiple-choice questions that must be completed in a 60-minute time limit. It covers various topics from algebra, trigonometry, and geometry. The test is designed to cover topics that students should have studied before the 12th grade. The English subtest contains 75 multiple-choice questions that must be completed in a 45-minute time limit. It covers various topics including punctuation, grammar and usage, sentence structure, strategy, organization, and style. The Science Reasoning subtest contains 40 multiple-choice questions that must be completed in a 35-minute time limit. This subtest evaluates a test taker's ability to use certain skills that are required in the natural sciences such as analysis, evaluation, interpretation, and problem solving. Scores gathered from the cooperating schools for all participants included: Composite score and subtest scores from the Reading, Mathematics, English, and Science Reasoning exams. Statistics from a 2006 study of more than 2000 examinees produced a scale score reliability coefficient for each subtest as well as the Composite score. The mean reliability coefficient for the Composite test score was .96. The mean reliability coefficients for the Reading, Mathematics, English, and Science subtests were .85, .91, .91, and .80, respectively (ACT, 2007).

Data Analysis

To address the first hypothesis, a 2 x 2 factorial analysis of variance (ANOVA) was conducted using participation in athletics and gender as the independent variables

and overall achievement measured by the composite score of the ACT as the dependent variable. To address the second hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and Reading achievement measured by the Reading subtest of the ACT as the dependent variable. To address the third hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and mathematics achievement measured by the Mathematics subtest of the ACT as the dependent variable. To address the fourth hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and English achievement measured by the English subtest of the ACT as the dependent variable. To address the fifth hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and science achievement measured by the Science Reasoning subtest of the ACT as the dependent variable.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

In order to understand the role of athletics in education and academic achievement, it was important to properly review the literature. This chapter of the study includes a detailed history of interscholastic athletics at the secondary and college levels, as well as a presentation of the literature on the positive and negative viewpoints and implications of athletic participation related to academic accomplishment.

History of Interscholastic Athletics

Secondary Level

Since high school athletics began in the late 19th century, they have become the largest organized sports program in the United States (Pruter, 2013). According to the National Federation of State High School Associations (n.d.), more than 7.5 million high school students participate in interscholastic athletics each year representing nearly 30,000 secondary schools across the country. While athletic participation is currently an integral part of most school systems and is overseen by administrators and coaches, it was not always this way. Initially, sports were reserved for outside clubs, and any measure of competition that was to be interscholastic was student initiated, often with the help of such clubs (Pruter, 2013). In the early years of the 20th century, physical education became a part of the high school curriculum, and thus, the administration of high school athletics was taken over by the schools. The National Federation of State

High School Associations (n.d.) was established as a governing agency of high school athletics and activities in 1920 and now has more than 17,000 member schools all across the United States.

Until the 1970s, most of the participants were male students, but over the past 40 years, the amount of female students who also play interscholastic sports has changed drastically. The reason for this change is due largely to the passage of Title IX of the Education Reformation Act of 1972 that prohibits discrimination on the basis of sex (Compton & Compton, 2010). Since the inception of Title IX, schools have been required to have equal opportunities for both males and females to participate in athletics. Before 1972, the opportunities for females to participate in interscholastic or intercollegiate athletics were very limited. Today, there are millions of males and females participating in interscholastic athletics across the country in various sports (National Federation of State High School Associations, n.d.).

Higher Education

Prior to the 1850s, interscholastic athletics did not exist in higher education. Students did participate in intramural activities as part of their physical education, but there were not organized interscholastic contests until 1852 when the Yale and Harvard crew regatta teams competed against one another marking the first collegiate, interscholastic contest in the United States (Bates et al., 2003). By 1900, interscholastic competitions were taking place in other sports such as baseball, football, track and field, tennis, ice hockey, and gymnastics. Most universities with athletic teams were located in the Northeast, and schools such as Harvard and Yale were instrumental in leading the movement into college athletics, as it is known today. By the early 1900s, schools were

expanding their athletic facilities and forming conferences, and the process swept across the nation all the way to the west coast.

College athletics has also been used as a political platform to break down racial and sexual discrimination. In 1966, the NCAA Basketball Championship was won by Texas Western, featuring a starting five made up of African-Americans who defeated the all-White University of Kentucky, thus marking a dramatic shift in the roles that African-Americans would play in intercollegiate athletics. In 1972, Title IX was passed, and colleges were required to provide equal opportunities for females, as well (Bates et al., 2003). As of 2014, there are over 420,000 student-athletes participating in an NCAA sanctioned sport representing over 1,000 member institutions (NCAA, 2014).

Positive Effects of Athletic Participation on Academic Achievement

Secondary Level

Proponents believe that participation in athletics has a positive impact on academic achievement. Lumpkin and Favor (2012) studied the academic performance of more than 130,000 high school students in 9th through 12th grades in the state of Kansas. Their study compared the performance of athletes versus non-athletes by gender based on GPAs, graduation rates, ACT scores, and state assessments. When looking at athletes versus non-athletes, their results indicated that athletes performed significantly better on the ACT Mathematics subtest and the Science Reasoning subtest than non-athletes, and non-athletes performed significantly better on the Reading subtest compared to the athletes. Athletes had a graduation rate of 97.6% compared to non-athletes at 88.1%. Both male and female athletes had higher GPAs compared to non-athletes. Lumpkin and Achen (2014) replicated the 2012 study of Lumpkin and Favor and found that a

significantly lower number of athletes drop out of high school for both males and females, and thus, the graduation rates for athletes were significantly higher than that of non-athletes. In a study conducted on Kansas standardized test data, athletes significantly outperformed non-athletes in the following 2011 and 2012 assessments of 11th grade students: mathematics (2011), reading (2011), science (2011), mathematics (2012), reading (2012), and science (2012). This research provided even more evidence that athletes outperformed non-athletes in standardized assessments.

Broh's (2002) findings were consistent with that of Lumpkin and Favor (2012) and Lumpkin and Achen (2014). Broh conducted a longitudinal study using the data from the National Center for Education and a stratified cluster sample of nearly 25,000 eighth graders from both public and private schools in the United States for a survey that also included follow-up surveys in the 10th and 12th grades, as well. The study also included standardized tests in mathematics, science, reading, and history. He found that participation in interscholastic athletics did have a positive effect on student achievement. Although some people might attribute these findings to the idea that higher achieving students are selected for sports, Broh (2002) found a significant difference even after these background characteristics were taken into account. Athletic participants showed significantly better achievement in the areas of both mathematics and English. In addition to a positive effect on actual test scores, Broh also found that participation in athletics helped to develop social skills, teamwork, work ethic, and played a role in bridging socioeconomic gaps between different groups.

The social skills and teamwork that Broh (2002) found as a by-product of athletic participation is also critical for success on the field, and it can have a tremendous impact

on the school as a whole. Couch et al. (2011) provided positive results for participation in athletics and the impact that participation can have on academic achievement. They studied the winning percentages of high school football teams in Alabama and the relationship these percentages had with academic achievement, school funding, school size, and teachers' levels of education. Results indicated that many factors attribute to successful academic achievement such as smaller school size and higher education level of the teachers. Couch et al. found no relationship between winning percentages in football and standardized test scores in the two smallest school classifications. However, in the two largest classifications, a positive relationship to winning percentage in football and standardized test scores was found. They concluded that there was no evidence that a winning athletic program had a negative impact on the academic achievement of its athletes. The impact of athletic participation goes beyond the actual test scores; it can have a life-long impact on students' lives and on the communities in which they live.

Evidence indicating that athletes outperform non-athletes in academics is not unique only to the United States. The same results have been found to be true in other parts of the world and with elite athletes. Jonker et al. (2009) suggested that athletics had a positive impact on students' abilities to perform academically. Their study included 400 talented athletes as defined by the Netherlands Olympic Committee. Of the study's participants, 200 of the athletes attended secondary schools in 1992-1993, and 200 attended secondary schools in 2006-2007. Of the total, 235 of the athletes played team sports, and 135 played individual sports. The athletes were tested using a pre-determined instrument that measured academic achievement based on their age level of education. Results showed no significant differences between the two groups. The researchers

observed that this indicated stability in their research. Their results showed that the athletes, on average, maintained a more difficult class schedule compared to the national average. The researchers concluded that participation in athletics could complement academics, and they believed it was likely that athletic participation enhanced academic achievement. Like these researchers, McCarthy (2000) also found that athletes outperformed non-athletes academically.

McCarthy (2000) studied nearly 20,000 high school students in Colorado. His research found that students who participated in athletics had significantly higher GPAs compared to those who did not participate. The athletes also showed significantly less absenteeism compared to non-athletes. The average GPA of the population was a 2.71. Students who participated in student activities, such as athletics, had a mean GPA of 3.09, and non-participants had a mean GPA of 2.43. McCarthy also studied the differences by ethnicity using Native Americans, Asian/Pacific Islander, Black/Non-Hispanic, Hispanic, and White/Non-Hispanic and found that for each ethnic group, students who participated in athletics had at least a 0.5 higher GPA than non-participants. Whether the athletes were elite and playing at an Olympic level or participating as high school students did not change the fact that athletes significantly outperformed non-athletes in the area of academics.

While the benefits of athletic participation on academic achievement are reported in the research, Knifsend and Graham (2012) noted that there was a curvilinear relationship between the amount of extracurricular activities, such as athletics, and a sense of belonging for the student. They maintained that moderate involvement in these activities leads to greater degrees of students' feeling of belonging to the school, and

thus, it helps them to maximize their overall academic achievement. They concluded that too much or too little participation in extracurricular activities could hinder their sense of belonging to the school and their academic achievement.

Higher Education

Academic participation can also have positive effects on academic achievement in higher education. In 1990, the Oklahoma State Regents for Higher Education mandated a comparative study that examined the graduation rates of athletes versus non-athletes from all institutions of higher education in Oklahoma that had scholarship athletes. In the Oklahoma State Regents for Higher Education (1992) study, more than 15,000 students were examined. They found that, overall in comprehensive and 4-year universities combined, student-athletes had a slightly higher graduation rate than non-athletes, but the difference was not significant. However, for students who began at 2-year colleges and 4-year universities, student-athletes showed a significantly higher graduation rate compared to non-athletes.

The reason for higher academic achievement for athletes compared to non-athletes could be that of motivation. Anderson (2010) found that student-athletes possessed greater motivation for academic achievement compared to non-athletes. Although athletes varied in their levels of motivation and their sense of belonging to their schools, nearly all of the athletes placed high importance on learning their classwork and performing well. The athletes having a stronger sense of school belonging performed better academically and had a higher motivation score, on average, compared to students who did not feel a strong sense of belonging. These students also felt more support from their professors and peers and were more likely to participate in school activities.

Regarding sports that generate revenue, such as football and men's basketball, their scores were lower on average than non-revenue generating athletics. Non-revenue sport athletes were more likely involved on campus, and their motivation for academic success was found to be much higher than revenue sport athletes. For basketball and football players, their identity was defined by being an athlete rather than a student, and thus, their sense of belonging and involvement were lower than athletes whose identity was more similar to the rest of the student body (Anderson, 2010). A negative cognitive effect due to the origin of their identity was present in the revenue sport male athletes. Pascarella et al. (1999) found that, especially for females, little evidence existed that playing college sports had a negative cognitive effect on them. Their cognitive development was similar to non-athletes. For male athletes from non-revenue sports, they found no significant differences in cognitive development between them and non-athletes.

While it is true that many of these athletes wish to play athletics in college to further their athletic careers, there is also evidence in the research literature that participating in athletics is a means of paying for an education and earning a degree (Creasy, 2006; Reynolds, Fisher, & Cavil, 2012). Although many of these student-athletes are thrust into high profile situations, the majority of these student-athletes are in school, training for careers that are not in athletics. The majority of these students receive scholarships due to their athletic ability that allows them to go to college at a discount. Many athletes, especially those in NCAA Division I, receive full scholarships that pay for their entire tuition and fees over their 4-year career. Participation in athletics has allowed many of them to receive a quality education without going into debt and to jump-start their careers and financial futures at a faster rate than what would have been possible if

they were to pay for their college. While it is true that there are certain situations that student-athletes are only at the school to play sports until they are eligible to turn professional (Reynolds et al., 2012; Stuart, 2012), this seems to be the exception rather than the rule.

Negative Effects of Athletic Participation on Academic Achievement

Secondary Level

Opponents believe that participation in athletics can have a negative impact on academic achievement. In their research of more than 139,000 students in Kansas, Lumpkin and Favor (2012) found many positive effects of athletic participation, but there were some negative effects as well. Most athletes had higher GPAs compared to non-athletes, but 22% of African-American non-athletes had a self-reported GPA of over 3.5 compared to 20% of athletes. Of students with an unknown ethnicity, 46% had a GPA of over 3.5 compared to only 37% of the athletes. For ACT scores, the researchers found that non-athletes had a significantly higher mean score on the Reading subtest. Male non-athletes had a significantly higher English score than male athletes. White non-athletes scored significantly higher on the English and Reading subtests. Lumpkin and Achen (2014) found that male non-athletes outperformed male athletes significantly at the .01 level on the English, Reading, and Science Reasoning subtests of the ACT. In addition, in their study that contained data from more than 20,000 students, non-athletes significantly outperformed athletes in the English and Reading subtests of the ACT at the .01 level.

High school athletics is unique to the United States. Most countries organize athletics by outside agencies. In America, however, athletics take up a major part of the school day in many cases. McMillen (1991), in his research, studied the potential

negative impact that athletics has had on the overall academic landscape from high schools to colleges. His study emphasized the shorter amount of class time that students already have in comparison with rival countries that focus much less on athletics and much more on academics and preparing their students for the jobs of the future. McMillen indicated in his study that the United States spends more time in the school day for sports and recreation than countries around the world. McMillen concluded that the only way the United States can make up the ground it has lost over the years is to do a better job of preparing students for success in the high school and college level and that a much lower emphasis must be placed on athletics.

Beem's (2006) study focused on superintendents of schools and their role in maintaining a proper balance and hierarchy of priorities within their districts. Her research studied one superintendent that took over a school that, after investigation, had allowed 32 different teams and squads in 11 of the 14 district schools to compete with ineligible players. The superintendent decided to follow the guidelines of the state athletic association and chose to have those teams forfeit over 100 contests due to the playing of ineligible players. Additionally, the superintendent paid fines in excess of $15,000 and returned over $26,000 gained from playoff games; two athletic directors were also fired and financial fines were imposed on others, including principals and coaches. Other superintendents in this study changed school schedules and extracurricular schedules to put the focus back on academics. One superintendent reorganized the district and removed interscholastic sports from the junior high schools after moving the ninth grade up to high schools. He based his decision on improving the academic achievement of the students, and he believed that a lesser emphasis on athletics

would aid in this attempt. He eventually lost his job because the school board sided with the community and thought a stronger emphasis on interscholastic sports should be brought back to the middle schools.

While the research of Knifsend and Graham (2012) noted a positive relationship between athletics and a sense of belonging and overall academic achievement for the student, they maintained that moderate involvement in these activities led to a greater degree of students' feeling of belonging to the school, and thus, it helped them to maximize their overall academic achievement. However, they concluded that too much participation in extracurricular activities could hinder the athletes' sense of belonging in the school and their academic achievement. These researchers agreed that there is too much emphasis on athletics for various reasons, such as the time spent in the day instead of on academics and the students' overall sense of belonging in the school being negative due to too much involvement with athletics.

While there is much evidence that showed a significant difference in academic achievement between athletes and non-athletes, the reason for that difference is still unclear. Broh (2002) looked to further study the effects of athletic participation on academic achievement. He found many studies that had this particular focus, but he noticed that many of these studies failed to control for certain background characteristics. Shurluf (2011) echoed Broh and found that, while most of the research that has been conducted related to athletic participation or extra-curricular activity participation on academic achievement does indicate a positive relationship, there is no clarity as to whether there is any causal relationship at all. Shurluf believed that methodology

limitations had resulted in the apparent positive relationship between athletic participation and academic achievement.

Other researchers have shared Shurluf's (2011) belief. Broh (2002), in his research, attempted to find whether athletic participation had a positive impact on academic achievement or if higher achieving students were more likely to participate in athletics. He found that, while there is a significant effect of athletics on academic achievement, it could be more attributed to character building that can directly lead to an increase in academic achievement. Broh believed there are other ways and activities that can be used to get the same result such as other extracurricular activities. While Broh's research does not fully constitute as a negative effect of athletic participation, it does provide an alternative perspective on the impact that athletics can have on a student's achievement. Schneider and Klotz's (2000) research seems to align with Broh's idea that other activities can also have a positive impact on academic achievement and possibly, even a greater impact. In his longitudinal study, Broh examined more than 300 students as they progressed from Grade 5 through 9 and studied athletes, athletes who were also musicians, and students who did not participate in either activity. He found that as fifth and sixth graders, the students' standardized test scores showed no significance from one group to another. For Grades 7, 8, and 9, musicians scored significantly higher in mathematics and language than athletes but not higher than the non-participants. He also found that once students reached the ninth grade, the musicians' test scores began to stabilize, and the athletes and the non-participants began to show a declining trend in their test scores. They concluded that music alone could not be an indicator of higher test scores, but it is possible that the type of students that participate in music has more to do

with the positive relationship than any other factor. The same can be said for the non-participants, meaning that those who choose not to participate in anything are more likely to be under-achieving students. The beliefs of these researchers leave questions about the real reason for the differences found between athletes and non-athletes in their academic achievement.

Higher Education

Student-athletes at the college level also show differences in achievement, and some of these differences are significant and negative. Aries et al. (2004) studied athletes at the college level and found that they had lower academic credentials entering college, and their achievement in college was below their non-athlete counterparts although it was insignificant based on their incoming abilities. Creasy (2006) found that most collegiate athletes were able to maintain a well-rounded social life as high school students, but once they got to college, the increasing amount of time that they were spending on athletics caused them to have less time for a well-rounded experience. Athletics became their identity, so they closed themselves to opportunities in which they otherwise might have shown interest.

In her research, Anderson (2010) studied 143 college student-athletes at a large public university to determine if there was a correlation between students' sense of school belonging and academic motivation for student-athletes. Students were categorized into four motivational profiles: high mastery, moderate motivation, high approach, and high motivation. There was a significant difference in a sense of school belonging across the four profiles. Moderately motivated students had a lower sense of school belonging. The major finding in the study was a significant difference between

revenue sport and non-revenue sport athletes. Revenue sport athletes showed a significantly lower sense of belonging as well as significantly lower GPAs. The Oklahoma State Regents for Higher Education (1992) found that, in the state of Oklahoma, student-athletes had a graduation rate of about 41% compared to the entire student body that had a graduation rate of 47%. Although some ethnic groups showed no difference, White and Native American student-athletes graduated at a significantly lower rate than non-athletes within their ethnic groups. The report also indicated that 8 of the 10 public 4-year universities in Oklahoma showed a decline in graduation rates of student-athletes over the 2-year study.

The evidence has been consistent over time. Pascarella et al. (1999) studied more than 2,700 participants who were part of the National Study of Student Learning, a longitudinal study used to study the cognitive development of college students. These 2,700 participants were in either their second or third year of college. Both male and female athletes and non-athletes were included. Results of the study showed that, for most males, there was no significant difference between the athletes and non-athletes in their second-year science reasoning and writing skills. However, athletes from revenue sports did score significantly lower compared to non-athletes. Their study of the third year reading and critical thinking assessment was consistent with the second-year results. Non-revenue sport athletes showed no significant difference from the non-athletes, but revenue sport athletes performed significantly lower than non-athletes. Revenue sport athletes had significantly lower skills in reading, writing, and critical thinking and science reasoning. Foltz's (1992) research is consistent with Pascarella et al. (1999). He studied 256 student-athletes at a public university in Kansas and found that student-athletes in

non-revenue-producing sports had significantly higher academic achievement compared to revenue-producing sport athletes.

The idea that revenue-producing sport athletes have been outperformed in the classroom by non-revenue-producing sport athletes has also been supported in the research literature (Reynolds et al., 2012; Sander, 2009; Stuart, 2012). There has also been a distinct difference in the academic achievement of White male athletes and Black male athletes (Reynolds et al., 2012; Stuart, 2012). Stuart (2012) noted that, of NCAA Division I basketball teams that qualified for the NCAA tournament in 2011, the overall graduation rate was 67%. White players had a graduation rate of 88% compared to 60% of African-American players. African-American males have a history of lower academic credentials (Reynolds et al., 2012). In 1984, with Proposition 48, the NCAA mandated certain academic standards for participating in college athletics. Student-athletes must have a minimum GPA and a minimum standardized test score (ACT or SAT) to qualify. Reynolds et al. (2012) noted that some school administrators from historically Black colleges and universities argued that these standards would be detrimental to African-American students.

Other variables such as socioeconomic status and family structure have an impact on the academic performance of these athletes. African-Americans have a lower percentage of family members who have college degrees and, on average, a lower socioeconomic status, which can have a negative impact on a student's academic achievement. African-American students are also more likely to be living with a single parent. All of these factors contribute to the academic achievement of the student-athlete. The researchers found that African-American female athletes were more likely than

African-American male athletes to attend college and be successful. The reason for their success was their purpose for being in college. Females attend college to get a degree, and many male athletes attend college with aspirations of playing professional sports. Their focus on academics and graduation was not prevalent. The pressure on academic institutions is increasing to fix this problem (Sander, 2009). While there are some variables that cannot be controlled, there are certain standards that are being set in all NCAA institutions to raise achievement scores of athletes.

Since 2004, the NCAA (2014) has mandated that teams meet a certain standard in order to retain eligibility for postseason play and the allotted number of scholarships. Teams must meet a certain score on the Academic Progress Rate, which is a measure of eligibility, retention rates, and graduation rates of all players on NCAA Division I teams. The Academic Progress Rate goal is 60%, meaning that 60% of student-athletes graduate within 6 years. While most teams meet this goal, still more than 600 athletic teams (roughly 10%) failed to meet the Academic Progress Rate in 2009. Of the teams that failed to meet the standard, nearly half were from baseball, men's basketball, and football. Only 25% of the failing teams were from female sports. Of 18 teams that received a public warning from the NCAA, 11 were from historically black colleges and universities, and 8 of these schools received penalties. Almost every school that is among the historically black colleges and universities had at least one team that failed to meet the mark, and many had as many as 10-13 teams fail (Sander, 2009). Even though the standards have been raised, there is a consistent achievement gap among these schools that has yet to be addressed, and thus, many teams still fail to meet that standard.

Differences in Academic Achievement by Gender

Primary Level

Although differences between genders exist at the secondary and higher education levels, it is in the primary and middle school levels where the differences begin to become evident. The literature indicated that there are gender differences in academic achievement at every level of education beginning in the primary school. Dagli and Jones (2012) studied gender differences in mathematics achievement of over 15,000 kindergarten students during the 1998-1999 school year as part of a longitudinal study that tracked these students through the eighth grade. Students were given a pretest, and both males and females had the same mean. Both genders showed progress during the school year, but male students scored almost a full point higher in the posttest than did the females. Various factors could have contributed to these scores including socioeconomic status, age, and ethnicity. In this study, male students were more likely to have a delayed start time for kindergarten than females. Females were more likely than males to be enrolled in kindergarten on time or even early. All of these differences between the genders were statistically significant at the .001 level. For students who were enrolled early, the female students scored higher on the pretest, but the scores were equivalent to each other by the end of the school year. Females with delayed enrollment scored significantly better than females who enrolled early or on time, and males who began on time scored higher compared to both the early enrolled and delayed students.

Some gender differences are not evident at the primary level. In science, evidence suggests that there is no significant difference by gender for academic achievement at the primary level. Bursal (2013) studied science achievement scores for students as part of a

longitudinal study that tracked their progress from the fourth through the eighth grade. Female fourth-grade students did show a slightly higher science score than males (73.3 versus 71.9), but the difference was not found to be significant.

Other subjects show gender differences early in the primary level. Croxford (1999) examined kindergarten and first-grade students and found that there were no significant differences in their literacy and mathematics abilities upon entering kindergarten. When the same students entered the first grade, the female students had increased significantly greater than the males in literacy, and the males showed a significant increase in mathematics when compared to the females. Poole-Hayes and Dione (1996) also examined kindergarten and first-grade students in spelling and found that, for most developmental operations in spelling, there was no difference in the development by gender. However, in the use of the three consonant blends, females performed significantly better than males. For high ability groups, females were significantly better at the use and meaning of -ed and –ing words than were the males. There was, however, no significant difference in the other ability groups. In these studies, no consistent differences existed across all subjects at the primary level.

Middle Level

As these students progress from the primary through the end of the middle level, more differences become evident. Bursal (2013) tracked science scores for students as they progressed from the fourth through the eighth grade. Males and females began with similar mean scores (71.9 versus 73.3) as fourth graders, but the scores of both genders tended to decrease over time. There was a significant difference in the science scores of the same students as eighth graders; the males' scores had decreased to 63.2, and the

females had only decreased to 69.0. Various factors could be associated with this difference. Bursal noted that, for fourth and fifth graders where the difference was the smallest, the topics discussed and taught in the science classroom were things the students knew about and were everyday topics. As the students moved into Grades 6 through 8, topics that are more abstract were introduced, and according to the data, female students were more capable of understanding this type of information compared to the males.

The differences are not only in typical school subjects, but also in technology literacy. Ritzhaupt, Liu, Dawson, and Barron (2013) examined nearly 6,000 middle school students in Florida to assess their technology literacy skills on the National Educational Technology Standards for Students assessment. Females outperformed males in every area of the assessment at the .001 level of significance with an effect size of 0.034. Spires, Lee, Turner, and Johnson's (2008) findings were consistent in the area of technology. They found, in their survey of more than 4,000 middle school students, that female students spend a significantly greater time at home using the computer for school related purposes than males; however, the difference yielded a low effect size.

Secondary Level

Lumpkin and Favor (2012) found that, when comparing athletes versus non-athletes by gender, the male non-athletes performed significantly better on the ACT on the English subtest, the Reading subtest, and the Composite score than the male athletes. In contrast, the female athletes performed significantly better on the English subtest, Mathematics subtest, Science Reasoning subtest, and Composite score than the female non-athletes. For both genders, athletes showed a higher percentage with GPAs over 3.0,

and the same was true of GPAs over 3.5. Lumpkin and Achen (2014), in their replicative study of the initial 2012 study by Lumpkin and Favor, found that male non-athletes significantly outperformed male athletes on the English, Reading, and Science Reasoning subtests of the ACT. Female athletes performed significantly better compared to female non-athletes on the Mathematics and Science Reasoning subtests. In a comparison by gender, female athletes performed significantly better compared to male athletes on the English and Reading subtests, and male athletes outperformed the female athletes significantly on the Mathematics and Science Reasoning subtests. McCarthy (2000), in a study of more than 19,000 high school students in Colorado, compared mean GPAs as well as absenteeism by gender and extracurricular activity participation. Overall, he found that females had a mean GPA of 2.85 compared to males who had a mean GPA of 2.58, which was significant at the .001 level. In particular, female participants had a mean GPA of 3.22 compared to males at 2.97, and non-participating females had a mean GPA of 2.59, and male non-participants had a mean GPA of 2.33. The differences between participation by gender were significant at the .001 level. There was also a significant difference in absenteeism between participants and non-participants for both females and males. Non-participants missed school twice as much as participants, and this was also significant at the .001 level.

Higher Education

Although the purpose of this study was to examine secondary students, the ramifications could have an impact on higher education as well. The same differences that exist in secondary education also exist in colleges and universities. Kiger and Lorentzen (1987) examined gender differences of student-athletes in academic

performance at a major NCAA Division I university. Female athletes had a mean GPA of 2.64 compared to males who had a mean GPA of 2.37, and male athletes were twice as likely to be on academic probation. Males who played a revenue sport performed significantly lower academically than male athletes from other sports, but no significant difference existed between sports on academic performance for female athletes. Additionally, minority male athletes performed significantly lower academically than other male athletes, but race did not have an effect on female athletes and their academic performance. The research of Foltz (1992) was consistent with that of Kiger and Lorentzen. He studied college athletes at a small public university in Kansas and found that female athletes significantly outperformed male athletes academically. He also found that males who played revenue sports performed lower than other male athletes did, but the type of sport had no effect on academic achievement for female athletes.

Pascarella et al. (1999) found similar results. In their study of second and third year students in the National Study of Student Learning, they found that male athletes from revenue sports had significantly lower writing skills, reading comprehension skills, and critical thinking skills compared to male athletes from other sports. These findings were significant. The type of sport had no effect on the academic performance of female athletes. The Oklahoma State Regents for Higher Education (1992), in their study of Oklahoma universities, determined that 36.7% of male students graduated within 6 years of enrollment compared to 42.3% of female students. For athletes of all sports, 35.8% of males graduated, and 49.2% of females graduated. Graduation rates varied from sport to sport for both male and female athletes. For basketball, both males and females had a graduation rate of 47.1%, both of which were higher compared to the average student.

Only 28.8% of baseball players graduated within 6 years, and 34.1% of football players graduated. Of the softball players, 60% graduated, and 100% of tennis and volleyball players graduated within 6 years of enrollment.

The literature indicated that male and female student-athletes identify themselves differently during the college experience. Reynolds et al. (2012) found that male student-athletes are more likely to identify themselves first as athletes and then as students, but female student-athletes tend to see themselves as students first and college athletics as a means for funding an education. Suitor and Carter (1999) studied over 1,700 college students from different regions of the United States to examine regional differences between college students in their perceptions of their personal identity. They found that males and females listed the same five personal characteristics as being the most important to them: intelligence, sports participation, appearance, sociability, and popularity with the opposite gender. The order of importance, however, was much different. Sports participation was important to 87% of boys but only 52% of girls. Of the girls, 55 % listed intelligence as being extremely important compared to 45% of boys. Physical appearance was important to 52% of girls compared to only 34% of boys. Of the girls, 49% listed sociability compared to 41% of boys. All of these differences were found to be significant at the .001 level. The only trait that was not significant was popularity with the opposite gender, both measured at 32%. Although the numbers varied slightly when gender differences were examined by region (North and South), the same differences were found to be significant at the .001 level.

Other researchers suggest that there are differences in the types of programs that males and females choose as well as differences in performance based on course types

(Kupczynski, Brown, Holland, & Uriegas, 2014; Lorz, Schindler, & Walter, 2011; Severiens & Dam, 2012). Severiens and Dam (2012) noted that there are more females than males in higher education, and they are typically more successful academically, a trend that was supported by Foltz (1992), Kiger and Lorenten (1987), Pascarella et al. (1999), Reynolds et al. (2012), and Suitor and Carter (1999). One gender or the other has dominated some fields of study such as nursing and elementary education for females or engineering for males. While gender-dominated programs do exist, Severiens and Dam (2012) found that females were more likely to complete a male-dominated program than males were to complete a female-dominated program.

There are various reasons that one gender or the other dominates some programs. Lorz et al. (2011), in a study of German institutions of higher education, found that there were significantly more females in secondary schools than males, and they outperformed them significantly in academics as well. However, the number of females who enroll in higher education in Germany is significantly less than males. The researchers concluded that gender gaps existed because of cultural perceptions about what roles males and females should play. Females were perceived typically as keepers of the home, and males worked and provided for families. The researchers believed that this cultural perception was partially responsible for the gender gaps in institutions of higher learning in Germany.

There are also gender differences in academic performance by gender on different types of courses such as online courses. Kupczynski et al. (2014) studied 959 education majors who were enrolled in online courses in a public university in Texas. They found that, for students who are moderate to high achieving, there was no difference in online

course scores for males and females. However, for low-achieving students, meaning students with a 2.0 GPA, male students performed significantly lower than females. The researchers concluded that female students were more likely to seek help from peers and teachers based on their personality when compared to males.

Differences in ACT by Gender

Lumpkin and Favor (2012), in their study of high school students in Kansas, found female athletes scored significantly higher than male athletes did on the ACT English and Reading subtests. Male athletes scored significantly higher on the Mathematics and Science Reasoning subtests than female athletes. Both male and female athletes performed better compared to their non-athlete counterparts. Male athletes performed significantly better in English, Reading, and the Composite than male non-athletes. Female athletes performed better in English, Mathematics, Science Reasoning, and the Composite than female non-athletes. Lumpkin and Achen (2014) replicated Lumpkin and Favor's 2012 study and found that male non-athletes scored significantly higher compared to male athletes in the English, Reading, and Science Reasoning subtests. Female athletes scored significantly higher than female non-athletes did on the Science Reasoning and Mathematics subtests. In a comparison of male and female athletes, female athletes scored higher than male athletes on the English and Reading subtests, and male athletes scored higher than female athletes on the Mathematics and Science Reasoning subtests.

In its yearly profile report of each state and its overall ACT performance, ACT (2012) reported the average test scores by subtest and gender for all 50 states including Alabama, Arkansas, and Tennessee. In Alabama, the male student average on the ACT

Composite score was 20.5, and females had an average Composite score of 20.1. In Arkansas, the male student average on the ACT Composite score was 20.4 compared to the female student average on the ACT Composite score of 20.3. In Tennessee, the male student average on the ACT average Composite score was 19.5, and the female student average Composite score was 19.8. From state to state in the Southeastern United States, the ACT scores of both males and females are similar.

Impact of Private Education on Academic Achievement

Proponents of private education have varying reasons for wanting their children to receive a different education, but many of them believe that private schools provide a better academic environment and thus, higher academic achievement. According to the Council for American Private Education (2011), 90% of private school students who took the 2010 National Assessment of Educational Progress in geography scored at or above the basic level compared to only 73% of public school students. In the National Assessment of Educational Progress history assessment, 87% of private school students scored at or above the basic level compared to only 68% of students from public schools. Researchers have found that both the type of student and the type of faculty lead to the achievement of these private school students. Sikkink (2012) surveyed school administrators from private schools across the country and found that the overwhelming majority of the administrators reported that their students were typically trustworthy, hardworking, and extremely focused on being successful academically to gain admittance into elite universities around the nation. Administrators felt like their schools were tight knit communities, especially Catholic schools that had a rich history of family involvement in the school.

Other factors that contributed to the school climate that school administrators felt were important included the support from the faculty in upholding the mission and the rules of the school. The majority of faculty members were willing to meet with students outside of the school day to help them be successful. Initially, it was concluded that private education had a negative effect on the overall academic achievement of high school students as they transitioned to college. However, Ward and Clark (1991), in their attempt to reexamine a previous data set, found that private schooling has a positive effect on academic achievement based on the *High School and Beyond* data set that had been collected by the National Center for Educational Statistics. This data set included statistical analysis of over 58,000 students in 10th and 12th grades from public and private schools in the United States. Although the initial report indicated that there was no significant difference in academic achievement among students from public and private schools, a reexamination indicated that students from private schools showed significantly greater scores in areas such as mathematics, reading, and vocabulary compared to students who attend public schools. The school climate and culture, along with many private schools' mission of academic excellence, has also led to standardized test scores that are above the national average. Smith (1993) found ACT scores of Catholic high school students to be strong indicators of GPA. Students in his study had a mean GPA of 2.66 and a mean ACT Composite score of 20.12. There was a significant Pearson-moment correlation between GPA and ACT at the .01 level. A positive linear relationship was found to exist indicating that, on average, the higher a student's GPA, the higher the ACT score. This relationship seems to indicate that the instruction received as part of the curriculum directly affects the students' ability to perform on the ACT.

Conclusion

There is substantial evidence that participation in athletics can have a positive effect on the academic achievement of both male and female students in terms of both ACT and GPA. There is also evidence that students from private schools perform better academically, as a whole and by gender, compared to students who attend public schools. The researchers also suggest that male and female students perform differently in terms of ACT and other academic measures such as GPA. However, there is little evidence to support the idea that male and female athletes from private schools perform differently on the ACT than their non-athlete counterparts. This study attempted to provide the necessary evidence to answer the question of whether the data in private schools supports previously found data in public schools in states like Kansas (Lumpkin & Achen, 2014; Lumpkin & Favor, 2012) and Colorado (McCarthy, 2000).

CHAPTER III

METHODOLOGY

A significant amount of research supports a positive effect of athletic participation on academic achievement for high school students in secondary schools (Knifsend & Graham, 2012; Lumpkin & Achen, 2014; Lumpkin & Favor, 2012; McCarthy, 2000). Student athletes demonstrate a higher GPA, ACT scores, attendance, and an overall better sense of belonging. While there is also evidence that suggests that participation in athletics can have a negative effect on athletic participation (Broh, 2012; McMillen, 1991; Shurluf, 2011), the overwhelming majority of the evidence focuses on the positive effects of athletic participation on student athletes from public high schools. Also, much of the research measures the effects by athletic participation, but not gender. The lack of the usage of gender as a variable and the small amount of private school data were primary motivations for the researcher. The primary goals for the researcher were to determine if the trends found in public schools for athletic participation's effect on academic achievement were similar in private schools and to see if the trends were the same or different based on gender.

To address the goals of the study, the researcher developed a quantitative research strategy. This chapter discusses the design of the research, the sample used in the study, the instrumentation, the data collection procedures, the analytical methods used, and the limitations of the study are also discussed.

Research Design

A causal-comparative strategy was used in this study. The first hypothesis was a 2 x 2 factorial ANOVA, and the independent variables were participation in athletics (participation versus non-participation) and gender (male versus female). The dependent variable was overall academic achievement measured by the composite score of the ACT. The last four hypotheses were 2 x 2 factorial ANOVA designs. The independent variables for Hypotheses 2-5 were participation (participation versus non-participation) in athletics and gender (male versus female). The dependent variables for Hypotheses 2-5 were reading achievement measured by the ACT Reading subtest, mathematics achievement measured by the ACT Mathematics subtest, English achievement measured by the ACT English subtest, and science achievement measured by the ACT Science Reasoning subtest, respectively. This causal-comparative method was chosen because the test scores already existed; all of the data were preexisting (Leech, Barrett, & Morgan, 2011). According to Leech et al. (2011), a between-groups factorial ANOVA is used because there are two or more independent variables and one dependent variable that is continuous, two or more groups, and participates are measured one time only. Each hypothesis required examination of the interaction effect of the independent variables on the dependent variable, and if no interaction effect was significant, then the main effects were examined.

Sample

The study used achievement data from 11th through 12th grade students in seven private, Christian high schools in the Southeastern region of the United States. The seven schools were chosen based on their similar affiliations and student demographics. The

teachers, on average, had the same years of experience. Of the participants in the schools, approximately 50% were male and 50% were female. With the seven schools combined, approximately 85% of the students were White, 9% were Black, 5% were Hispanic, and less than 1% were Asian.

In the seven schools, 875 students' data were gathered as a part of the study. The students were stratified by athletic participation and then by gender. Of these 875 students, 400 of them were selected by stratified random sampling to participate in the study. Students were assigned to groups based on their gender and athletic participation. The first group consisted of 100 male students who participated in athletics and had taken the ACT. The second group consisted of 100 female students who participated in athletics and had taken the ACT. The third group consisted of 100 male students who did not participate in athletics and had taken the ACT. The fourth group consisted of 100 female students who did not participate in athletics and had taken the ACT. The sample was drawn one time and used for the five hypotheses.

Instrumentation

Test scores from the ACT were used for this study. The ACT is a national college entrance exam with four subject areas. All 4-year colleges in the United States recognize the ACT for admission purposes. Scores range from 1-36 on each subtest, and the average score across all subtests is the composite score (ACT, 2007). The Reading subtest contains 40 multiple-choice questions that must be completed in a 35-minute time limit. This subtest requires the test-taker to read several passages and then answer both direct questions and questions in which the answer is implied. The Mathematics subtest contains 60 multiple-choice questions that must be completed in a 60-minute time limit.

It covers various topics from algebra, trigonometry, and geometry. The test is designed to cover topics that students should have studied before the 12th grade. The English subtest contains 75 multiple-choice questions that must be completed in a 45-minute time limit. It covers various topics including punctuation, grammar and usage, sentence structure, strategy, organization, and style. The Science Reasoning subtest contains 40 multiple-choice questions that must be completed in a 35-minute time limit. This subtest evaluates a test-taker's ability to use certain skills that are required in the natural sciences such as analysis, evaluation, interpretation, and problem solving.

Scores gathered from the cooperating schools for all participants included Composite scores, Reading subtest scores, Mathematics subtest scores, English subtest scores, and Science Reasoning subtest scores. Statistics from a 2006 study of more than 2,000 examinees produced a scale score reliability coefficient for each subtest as well as the Composite score. The mean reliability coefficient for the Composite test score was .96. The mean reliability coefficients for the Reading, Mathematics, English, and Science Reasoning subtests were .85, .91, .91, and .80, respectively (ACT, 2007).

Data Collection Procedures

After approval was obtained from the Institutional Review Board, the researcher contacted participating schools about using their student achievement data for the study. The participating school presidents gave permission for a school official to help with the collection of data and for this official to be the main contact for the school by the researcher. The school officials were sent detailed instructions by the researcher about the data to be collected, and a spreadsheet template was provided for them to input the data. The template provided columns for the students' ID numbers, gender, ACT English

score, ACT Reading score, ACT Mathematics score, ACT Science Reasoning score, ACT Composite score, GPA, and whether the student participated in athletics. Data were collected from September 2014 through January 2015. The school officials numbered the participants to maintain confidentiality for the students. Once the researcher had received all of the data from the participating schools, the data were combined into one data set using Microsoft Excel, transferred, and coded for analysis using SPSS statistical software.

Analytical Methods

Data were entered into the Statistical Package for Social Science software, version 21. Before running statistical tests, data were examined and checked to ensure accuracy and to verify that the assumptions were met for the test of significance (Leech et al., 2011). To test the first hypothesis, a 2 x 2 factorial analysis of variance (ANOVA) was conducted using participation in athletics and gender as the independent variables and overall achievement measured by the composite score of the ACT as the dependent variable. To test the second hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and reading achievement measured by the Reading subtest of the ACT as the dependent variable. To test the third hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and mathematics achievement measured by the Mathematics subtest of the ACT as the dependent variable. To test the fourth hypothesis, a 2 x 2 factorial ANOVA was conducted using participation in athletics and gender as the independent variables and English achievement measured by the English subtest of the ACT as the dependent variable. To test the fifth hypothesis, a 2 x 2 factorial

ANOVA was conducted using participation in athletics and gender as the independent variables and science achievement measured by the Science Reasoning subtest of the ACT as the dependent variable.

A significance level of .05 was used to test the hypotheses (Leech et al., 2011). A Bonferroni correction was used to adjust the probability value because of the increased risk of type I errors that are likely when performing multiple statistical tests (Armstrong, 2014). The Levene's test of equality of error variances was also conducted for each hypothesis. If the interaction effect was significant, the researcher ran simple main effects to determine the nature of the interaction (Leech et al., 2011). For interactions that were not statistically significant, the main effects were examined individually.

Limitations

Various limitations exist in this study. First, the researcher had to use a causal-comparative study because the independent variables could not be manipulated, which meant that the variables were pre-existing. Second, there were a limited number of participants in the study. The study included 875 participants from only seven schools. This is a limited quantity to represent such a large region of the country. Third, there was the possibility of an internal validity threat of testing. No attempt was made to account for the number of times each participant had taken the ACT. Fourth, there was also no attempt to control for the amount or type of preparation the students had prior to the test such as an ACT preparatory course or the use of other study materials. Fifth, there were potential background characteristics that were not taken into account. It was possible that better students participated in athletics in these schools. Broh (2002) removed certain

background characteristics in his study to account for such cases; however, these considerations were not taken into account for this study.

Sixth, most literature examined in this study focused on data from public schools and little from private schools. To compound this limitation, there are many types of private schools in the United States. Although there was a relatively small amount of literature that pertained to athletics and academic achievement in private schools, there was even less research in private Christian schools that are affiliated with churches of Christ. However, the findings of this study are still important and can be extremely useful to school administrators in their efforts to increase student achievement in their respective schools.

CHAPTER IV

RESULTS

In this chapter, data are analyzed, and the results are presented for each of the five hypotheses. The goal for this analysis is to determine if gender or athletic participation, in combination or separately, has an effect on academic performance. The researcher measured academic performance for the five hypotheses by ACT Composite, Reading, Mathematics, English, and Science Reasoning subtest scores, respectively.

Before the analysis, an adjustment needed to be made because of the five statistical tests required. An alpha of .05 was used for all statistical tests. However, Huck (2008) indicated that, when testing hypotheses multiple times, Type I error increases with each additional test. Therefore, the Bonferroni correction was used to account for the Type I error. Therefore, given that five tests were conducted, the adjusted alpha used to reject the null hypothesis was .05/5 or alpha = .01.

Demographics

For this study, seven private Christian schools in the Southeastern region of the United States were used. Table 1 indicates the enrollment for the seven schools for Grades 10-12 as well as the high school tuition.

Table 1

Participating Schools' Grades 10-12 Enrollment and Annual Tuition

Private Schools	Enrollment	Tuition
School 1	184	$6,728
School 2	204	$7,638
School 3	59	$5,325
School 4	114	$6,100
School 5	167	$8,500
School 6	189	$8,050
School 7	175	$12,395

Each school consisted of grade configurations that included Grades K-12. Of the participants, 50% were females, and 50% were males. Each school is a member of the NCSA.

Hypothesis 1

Hypothesis 1 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern region of the United States in which students participate in athletics versus students that do not participate in athletics on academic performance measured by composite scores on the ACT. The population for this sample was normally distributed. No extreme outliers were identified. Levene's test of equality of variances was conducted within ANOVA and indicated that the assumption of variances had not been violated, $F(3, 396) = 0.72$, $p = .539$. Table 2 shows the group means and standard deviations.

Table 2

Descriptive Statistics from ACT Composite Scores by Gender of Athletes versus Non-Athletes

Gender	Athletic Participation	*M*	*SD*	*N*
Male	Athlete	24.13	4.22	100
	Non-Athlete	23.35	4.36	100
	Total	23.74	4.30	200
Female	Athlete	23.92	3.99	100
	Non-Athlete	23.02	4.21	100
	Total	23.47	4.12	200
Total	Athlete	24.03	4.10	200
	Non-Athlete	23.18	4.28	200

To test this hypothesis, a 2 x 2 factorial ANOVA was conducted to evaluate the effects of gender and athletic participation on ACT Composite scores. The results of the ANOVA are displayed in Table 3.

Table 3

Factorial ANOVA Results from ACT Composite Scores

Source	*SS*	*df*	*MS*	*F*	*p*	*ES*
Gender	7.29	1	7.29	0.41	.521	0.001
Athletics	70.56	1	70.56	4.00	.046	0.010
Gender*Athletics	0.36	1	0.36	0.02	.886	0.000
Error	6979.38	396	17.63			

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 396) = 0.02$, $p = .886$, $ES = 0.000$. Given there was no significant interaction between the variables of gender and athletics, the main effect of each variable was examined separately. There was not a statistically significant main effect for gender, $F(1, 396) = 0.41$, $p = .521$, $ES = 0.001$; the ACT Composite scores of males ($M = 23.74$, $SD = 4.30$) were not significantly different from females ($M = 23.47$, $SD = 4.12$). There was also no statistically significant main effect for participation in athletics, $F(1, 396) = 4.00$, $p = .046$, $ES = 0.010$. The ACT Composite scores for athletes ($M = 24.03$, $SD = 4.10$) were not significantly different from those of non-athletes ($M = 23.18$, $SD = 4.28$).

Hypothesis 2

Hypothesis 2 stated that no signi*f*icant differences will exist by gender between high school students in NCSA member schools in the Southeastern region of the United States in which students participate in athletics versus students that do not participate in athletics on academic performance measured by ACT Reading subtest scores. The population for this sample was normally distributed. No extreme outliers were identified. Levene's test of equality of variances was conducted within ANOVA and indicated that the assumption of variances had not been violated, $F(3, 396) = 0.37$, $p = .775$. Table 4 shows the group means and standard deviations.

Table 4

Descriptive Statistics from ACT Reading Scores by Gender of Athletes versus Non-Athletes

Gender	Athletic Participation	*M*	*SD*	*N*
Male	Athlete	24.47	5.43	100
	Non-Athlete	23.69	5.96	100
	Total	24.08	5.70	200
Female	Athlete	24.64	5.18	100
	Non-Athlete	23.75	5.29	100
	Total	24.20	5.24	200
Total	Athlete	24.56	5.29	200
	Non-Athlete	23.72	5.62	200

To test this hypothesis, a 2 x 2 factorial ANOVA was conducted to evaluate the effects of gender and athletic participation on ACT Reading subtest scores. The results of the ANOVA are displayed in Table 5.

Table 5

Factorial ANOVA Results from ACT Reading Scores

Source	*SS*	*df*	*MS*	*F*	*p*	*ES*
Gender	1.32	1	1.32	0.04	.834	0.000
Athletics	69.72	1	69.72	2.33	.128	0.006
Gender*Athletics	0.30	1	0.30	0.01	.920	0.000
Error	11860.09	396	29.95			

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 396) = 0.01$, $p = .920$, $ES = 0.000$. Given there was no significant interaction between the variables of gender and athletics, the main effect of each variable was examined separately. There was not a statistically significant main effect for gender, $F(1, 396) = 0.04$, $p = .834$, $ES = 0.000$; the ACT Reading subtest scores of males ($M = 24.08$, $SD = 5.70$) were not significantly different from females ($M = 24.20$, $SD = 5.24$). There was also no statistically significant main effect for participation in athletics, $F(1, 396) = 2.33$, $p = .128$, $ES = 0.006$. The ACT Reading subtest scores for athletes ($M = 24.56$, $SD = 5.29$) were not significantly different from those of non-athletes ($M = 23.72$, $SD = 5.62$).

Hypothesis 3

Hypothesis 3 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern region of the United States in which students participate in athletics versus students that do not participate in athletics on academic performance measured by ACT Mathematics subtest scores. The population for this sample was normally distributed. No extreme outliers were identified. Levene's test of equality of variances was conducted within ANOVA and indicated that the assumption of variances had not been violated, $F(3, 396) = 0.67$, $p = .576$. Table 6 shows the group means and standard deviations.

Table 6

Descriptive Statistics from ACT Mathematics Scores by Gender of Athletes versus Non-Athletes

Gender	Athletic Participation	*M*	*SD*	*N*
Male	Athlete	23.24	4.24	100
	Non-Athlete	22.32	4.60	100
	Total	22.78	4.44	200
Female	Athlete	22.46	4.33	100
	Non-Athlete	21.58	4.30	100
	Total	22.02	4.33	200
Total	Athlete	22.85	4.29	200
	Non-Athlete	21.95	4.46	200

To test this hypothesis, a 2 x 2 factorial ANOVA was conducted to evaluate the effects of gender and athletic participation on ACT Mathematics subtest scores. The results of the ANOVA are displayed in Table 7.

Table 7

Factorial ANOVA Results from ACT Mathematics Scores

Source	*SS*	*df*	*MS*	*F*	*p*	*ES*
Gender	57.76	1	57.76	3.02	.083	0.008
Athletics	81.00	1	81.00	4.24	.040	0.011
Gender*Athletics	0.04	1	0.04	0.00	.964	0.000
Error	7565.20	396	19.10			

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 396) = 0.00$, $p = .964$, $ES = 0.000$. Given there was no significant interaction between the variables of gender and athletics, the main effect of each variable was examined separately. There was not a statistically significant main effect for gender, $F(1, 396) = 3.02$, $p = .083$, $ES = 0.008$; the ACT Mathematics subtest scores of males ($M = 22.78$, $SD = 4.44$) were not significantly different from females ($M = 22.02$, $SD = 4.33$). There was also no statistically significant main effect for athletics, $F(1, 396) = 4.24$, $p = .040$, $ES = 0.011$. The ACT Mathematics subtest scores for athletes ($M = 22.85$, $SD = 4.29$) were not significantly different from those of non-athletes ($M = 21.95$, $SD = 4.46$).

Hypothesis 4

Hypothesis 4 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern region of the United States in which students participate in athletics versus students that do not participate in athletics on academic performance measured by ACT English scores. The population for this sample was normally distributed. No extreme outliers were identified. Levene's test of equality of variances was conducted within ANOVA and indicated that the assumption of variances had not been violated, $F(3, 396) = 1.07$, $p = .361$. Table 8 shows the group means and standard deviations.

Table 8

Descriptive Statistics from ACT English Scores by Gender of Athletes versus Non-Athletes

Gender	Athletic Participation	*M*	*SD*	*N*
Male	Athlete	24.51	5.05	100
	Non-Athlete	23.96	5.51	100
	Total	24.24	5.28	200
Female	Athlete	25.19	5.35	100
	Non-Athlete	24.06	5.02	100
	Total	24.62	5.21	200
Total	Athlete	24.85	5.20	200
	Non-Athlete	24.01	5.26	200

To test this hypothesis, a 2 x 2 factorial ANOVA was conducted to evaluate the effects of gender and athletic participation on ACT English subtest scores. The results of the ANOVA are displayed in Table 9.

Table 9

Factorial ANOVA Results from ACT English Scores

Source	*SS*	*df*	*MS*	*F*	*p*	*ES*
Gender	15.21	1	15.21	0.56	.457	0.001
Athletics	70.56	1	70.56	2.57	.110	0.006
Gender*Athletics	8.41	1	8.41	0.31	.580	0.001
Error	10861.86	396	27.43			

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 396) = 0.31$, $p = .580$, $ES = 0.001$. Given there was no significant interaction between the variables of gender and athletics, the main effect of each variable was examined separately. There was not a statistically significant main effect for gender, $F(1, 396) = 0.56$, $p = .457$, $ES = 0.001$; the ACT English subtest scores of males ($M = 24.24$, $SD = 5.28$) were not significantly different from females ($M = 24.62$, $SD = 5.21$). There was also no statistically significant main effect for participation in athletics, $F(1, 396) = .2.57$, $p = .110$, $ES = 0.006$. The ACT English subtest scores for athletes ($M = 24.85$, $SD = 5.20$) were not significantly different from those of non-athletes ($M = 24.01$, $SD = 5.26$).

Hypothesis 5

Hypothesis 5 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern region of the United States in which students participate in athletics versus students that do not participate in athletics on academic performance measured by ACT Science Reasoning scores. The population for this sample was normally distributed. A few outliers were identified but not extreme and, therefore, were not deleted from the sample. Levene's test of equality of variances was conducted within ANOVA and indicated that the assumption of variances had not been violated, $F(3, 396) = 1.82$, $p = .141$. Table 10 shows the group means and standard deviations.

Table 10

Descriptive Statistics from ACT Science Reasoning Scores by Gender of Athletes versus Non-Athletes

Gender	Athletic Participation	*M*	*SD*	*N*
Male	Athlete	23.77	4.39	100
	Non-Athlete	22.96	4.60	100
	Total	23.37	4.51	200
Female	Athlete	22.90	3.60	100
	Non-Athlete	22.20	4.15	100
	Total	22.55	3.89	200
Total	Athlete	23.33	4.03	200
	Non-Athlete	22.58	4.39	200

To test this hypothesis, a 2 x 2 factorial ANOVA was conducted to evaluate the effects of gender and athletic participation on ACT Science Reasoning subtest scores. The results of the ANOVA are displayed in Table 11.

Table 11

Factorial ANOVA Results from ACT Science Reasoning Scores

Source	*SS*	*df*	*MS*	*F*	*p*	*ES*
Gender	66.42	1	66.42	3.75	.053	0.009
Athletics	57.00	1	57.00	3.22	.073	0.008
Gender*Athletics	0.30	1	0.30	0.02	.896	0.000
Error	7006.55	396	17.69			

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 396) = 0.22$, $p = .896$, $ES = 0.000$. Given there was no significant interaction between the variables of gender and athletics, the main effect of each variable was examined separately. There was not a statistically significant main effect for gender, $F(1, 396) = 3.75$, $p = .053$, $ES = 0.009$; the ACT Science Reasoning subtest scores of males ($M = 23.37$, $SD = 4.51$) were not significantly different from females ($M = 22.55$, $SD = 3.89$). There was also no statistically significant main effect for participation in athletics, $F(1, 396) = 3.22$, $p = .073$, $ES = 0.008$. The ACT Science Reasoning subtest scores for athletes ($M = 23.33$, $SD = 4.03$) were not significantly different from those of non-athletes ($M = 22.58$, $SD = 4.39$).

CHAPTER V

DISCUSSION

This research was conducted to determine the effects that gender and athletic participation had on academic achievement for high school students from private schools throughout the Southeastern United States. Student ACT scores were collected, and, based on gender and athletic participation, students were placed in one of four categories so that comparisons might be investigated. The four categories included female athletes, female non-athletes, male athletes, and male non-athletes. Insights gained from this research may aid school administrators and teachers in the development of new strategies for increasing academic achievement for all students, as well as provide further insight into the impact that participation in athletics may have on academic achievement.

This chapter presents a summary of the research hypotheses and findings. In addition, the implications of the relationship between gender, athletics, and academic achievement are discussed. Finally, recommendations for possible practice, policies, and future research considerations are addressed.

Conclusions

To address the five hypotheses, five 2 x 2 factorial between-groups ANOVAs were conducted. The independent variables for all five hypotheses were participation in athletics (participation versus non-participation) and gender (male versus female). The dependent variables for the five hypotheses were overall academic achievement measured

by the ACT Composite score, reading achievement measured by the ACT Reading subtest score, mathematics achievement measured by the ACT Mathematics subtest score, English achievement measured by the ACT English subtest score, and science achievement measured by the ACT Science Reasoning subtest score, respectively. The alpha level was adjusted because of the multiple tests. The researcher looked first for a significant interaction effect; if no significant interaction effect was detected, the main effects of the variables were examined.

Hypothesis 1

Hypothesis 1 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by composite scores on the ACT. There was no significant interaction between the variables of gender and athletic participation on the composite ACT scores. Together, gender and athletic participation did not combine to affect how individuals performed on the composite score of the ACT. Based on these results, there was not enough evidence to reject the null hypothesis for the interaction effect. There was no significant difference in either of the main effects of participation or gender. On average, athletes in both groups had higher mean scores compared to the non-athletes, and males regardless of athletic participation had higher mean scores compared to females; however, evidence was not sufficient to reject the null hypothesis for either of the two main effects.

Hypothesis 2

Hypothesis 2 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by reading scores on the ACT. There was no significant interaction between the variables of gender and athletic participation on the reading ACT scores. Together, gender and athletic participation did not combine to affect how individuals scored on the reading subtest of the ACT. Therefore, evidence was not found to reject the null hypothesis for the interaction effect. Next, after analyzing the two main effects, there was no significant difference in either of the main effects to reject the null hypotheses for the main effects. On average, athletes in both groups had higher mean scores compared to the non-athletes, but the difference was not significant. In addition, the means between the males and the females, regardless of their athletic participation, were almost identical. Therefore, the evidence did not exist to reject the null hypothesis for the two main effects.

Hypothesis 3

Hypothesis 3 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by mathematics scores on the ACT. There was no significant interaction between the variables of gender and athletic participation on mathematics ACT scores. Together, gender and athletic participation did not combine to affect how individuals performed on the mathematics subtest of the ACT. Therefore, evidence was

not found to reject the null hypothesis for the interaction effect. Although athletes in both groups had higher mean scores compared to the non-athletes, the difference was not significant. In addition, although males, regardless of athletic participation, had higher mean scores on average compared to females, evidence was not sufficient to reject the null hypothesis for either of the two main effects.

Hypothesis 4

Hypothesis 4 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who participate in athletics versus students who do not participate in athletics on academic performance measured by English scores on the ACT. There was no significant interaction between the variables of gender and athletic participation on the English ACT scores. Together, gender and athletic participation did not combine to affect how individuals performed on the English subtest of the ACT. Therefore, evidence was not found to reject the null hypothesis for the interaction effect. There was no significant difference in the main effect of participation even though athletes in both groups had higher mean scores than did the non-athletes. In analyzing the main effect for gender, results showed that, on average, the females regardless of participation scored higher compared to the males on the English subtest; however, the difference was not significant. Therefore, the evidence did not exist to reject the null hypothesis for either of the two main effects.

Hypothesis 5

Hypothesis 5 stated that no significant differences will exist by gender between high school students in NCSA member schools in the Southeastern United States who

participate in athletics versus students who do not participate in athletics on academic performance measured by science reasoning scores on the ACT. There was no significant interaction between the variables of gender and athletic participation on the science reasoning ACT scores. Together, gender and athletic participation did not combine to affect how individuals performed on the Science Reasoning subtest of the ACT. Therefore, evidence was not found to reject the null hypothesis for the interaction effect. Regarding the main effect of athletic participation, again, the athletes in both groups scored higher, on average, compared to the non-athletes, but the difference was not significant. In analyzing the main effect of gender, males regardless of athletic participation scored higher, on average, compared to females on science reasoning, but the difference was not significant. Therefore, the evidence did not exist to reject the null hypothesis for either of the two main effects.

Implications

To interpret the conclusions, the researcher compared the results of this study with the larger context of the review of related literature. The literature, which was reviewed in Chapter II of this study, showed many statistical differences by athletic participation and gender. This section includes the results of this study along the larger continuum of studies regarding three main areas: athletic participation on academic achievement, gender on academic achievement, and gender combined with athletic participation on academic achievement. In addition, the researcher provides possible reasons for any differences in the results.

First, in the present study, results indicated that athletic participation did not significantly affect academic achievement measured by the ACT subtests for private

school students. This result stood in contrast to the literature. In general, although some of the results were mixed, the research literature showed positive effects of athletic participation on academic achievement. Athletic participation was found to impact positively standardized test achievement in core subject areas such as English, mathematics, and history, as well as GPAs (Broh, 2002; McCarthy, 2000). Lumpkin and Favor (2012), in their study of the academic performance of more than 130,000 high school students in 9th through 12th grades in the state of Kansas, compared the performance of athletes versus non-athletes based on ACT scores. Their results indicated some mixed results. In this study, athletes performed significantly better on the Mathematics subtest and the Science Reasoning subtest compared to non-athletes; however, non-athletes performed significantly better on the Reading subtest compared to the athletes. In a follow-up study using Kansas standardized test data, Lumpkin and Achen (2014) found the same type of results. The researchers found that, although athletes had a significantly higher mean score in most of the ACT subtests, non-athletes had a significantly higher mean score on the Reading subtest. Lumpkin and Achen also found that male non-athletes outperformed male athletes significantly on the English, Reading, and Science Reasoning subtests of the ACT, and White non-athletes scored significantly higher on the English and Reading subtests. Earlier, Jonker et al. (2009) attributed higher scores for athletes to having to take and maintain a more rigorous class schedule, and at the same time, they had to maintain a higher GPA to meet eligibility requirements.

Broh's (2002) findings were consistent with that of Lumpkin and Favor (2012) and Lumpkin and Achen (2014). His longitudinal study from the National Center for

Education study examined nearly 25,000 eight graders from both public and private schools in the United States with follow-up surveys in the 10th and 12th grades. Broh found that participation in interscholastic athletics did have a positive effect on student achievement. Although some of these findings were attributed to the idea that higher achieving students were selected for sports, he found there was a significant difference even after these background characteristics were taken into account. In addition to a positive effect on actual test scores, Broh found that participation in athletics helped to develop social skills, teamwork, work ethic, and participation in athletics also played a role in bridging socioeconomic gaps between different groups. To Broh, the benefits of athletic participation were not limited to academic achievement but went far beyond the classroom.

Second, results in this study indicated that gender did not significantly affect academic achievement measured by the ACT subtests for private school students. However, the research literature indicated that gender did affect academic achievement. Female students tended to understand abstract processes earlier compared to males, and their ability to comprehend certain topics came earlier than males (Bursal, 2013). McCarthy (2000) compared mean GPAs as well as absenteeism by gender and extracurricular activity participation. Overall, he found that females had a mean GPA of 2.85 compared to males who had a mean GPA of 2.58, which was significant at the .001 level. In particular, female participants had a mean GPA of 3.22 compared to males at 2.97, and non-participating females had a mean GPA of 2.59, and male non-participants had a mean GPA of 2.33. Ritzhaupt et al. (2013) found that females outperformed males in every area of the state technology assessment at the .001 level of significance. Spires et

al.'s (2008) findings were consistent in the area of technology. They found that female students spent a significantly greater time at home using the computer for school related purposes compared to males, and there was a correlation between computer usage at home and technology literacy in school subjects. Therefore, unlike the current study, research was consistent in that there were differences in academic achievement by gender.

Third, results in this study indicated that the combined effect of athletic participation and gender did not significantly affect academic achievement measured by the ACT subtests for private school students. In contrast, the literature review showed that the differences in gender also existed among students who participate in extra-curricular activities such as athletics. Lumpkin and Favor (2012) noted that male non-athletes significantly outperformed male athletes in the ACT English subtest, Reading subtest, and Composite scores, and non-athletes outperformed athletes in reading when including both genders. Further, they found that female athletes significantly outperformed female non-athletes in English, Mathematics, Science Reasoning subtest scores, and in the Composite scores. In their replicative study in 2014, Lumpkin and Achen found similar results. Additionally, McCarthy (2000) found that female participants had a mean GPA of 3.22, and male participants had a mean GPA of 2.97. Also, non-participating females had a mean GPA of 2.59, and male non-participants had a mean GPA of 2.33. Overall, the research indicated that athletes perform significantly better compared to non-athletes, and this was true for both males and females.

One of the main reasons that findings in this study did not match findings from the literature review was that most of the research done has been in a public school

setting. Although the research of Broh (2002) included data from private schools, the majority of the research in gender differences in academic achievement of athletes used data from public schools (Lumpkin & Achen, 2014; Lumpkin & Favor, 2012; McCarthy, 2000). In contrast to public education, private schools reserve the right to be more selective in their admissions policies, if they so choose. Private schools are less likely to admit students with special needs due to their more selective admissions policies; whereas, public schools have no selective admissions criteria and must provide various programs for students with special needs to meet their educational needs in fair and appropriate ways. All student scores are typically included in public school data and private school data. However, the inclusion of scores from students with learning disabilities can potentially skew the data when making comparisons between school types.

Although original findings of the *High School and Beyond* data set indicated that there was no difference between the academic achievement of students from public schools and students from private schools, Ward and Clark (1991) found that the original conclusions were inaccurate. In fact, they noted that students from private schools do significantly outperform students from public schools in academic achievement. Although such studies have been used to compare public and private schools, few have been conducted using private school data to determine whether athletic participation affects academic achievement. In the same vein, because private schools have a stricter admission policy compared to no admission policy with public schools, they generally have a greater emphasis on college readiness for all students. Thus, the differences based

on athletic participation and gender would and should be less evident. Also, the schools used in this study all belonged to the same accrediting organization.

Another reason that this study did not yield similar results compared to the literature was that no attempt was made to control for socioeconomic status and ethnicity. The student demographic was similar in the seven private schools used in the sample; however, the sample from the public schools was probably varied by lunch status and race. Further studies are needed to determine if background characteristics interact with athletic participation. The differences that exist between public school and private school findings might be the result of differences in student characteristics. Some studies, such as Broh's (2002) longitudinal study, considered certain background characteristics before drawing conclusions; others did not account for these characteristics. An examination of students from both types of schools who had similar standardized test scores at an early age and had similar socioeconomic status and ethnicity would further help to determine any differences that exist between a public and private school education.

In summary, the results of this study were different from the previous studies that had been conducted using similar variables, and although there were no statistically significant findings in this study, the results still have some possibly strong implications for schools, especially private schools. The results indicated that student athletes in private schools perform more similarly to non-athletes than they do in public schools. Although research indicated that female athletes significantly outperformed female non-athletes in many aspects of the ACT in public schools (Lumpkin & Achen, 2014; Lumpkin & Favor, 2012), the results of this study indicated that this was not the case for private school students. In fact, female athletes in this study scored higher than the

national average in all subtests of the ACT, as well as in the Composite score. The research also indicated that male non-athletes outperformed male athletes in multiple sections of the ACT in public schools; however, the results of this study stood in contrast to these findings. In this study, there was no statistical difference in the performance of male athletes and male non-athletes. In both cases, athletes in this study performed better when compared with their peers in public schools and equally as well as their non-athlete classmates in private schools.

One factor that aided this study was the use of the ACT subtests. Using the ACT as the instrument allowed a direct comparison between the private schools used in the study. Whereas the majority of public schools take common types of standardized assessments, it was not as universal in private schools. Private schools vary greatly in terms of their standardized testing. In addition, while most public schools typically use similar types of curricula and standards, private schools, again, vary greatly in terms of their curricula and standards. Using the ACT allowed the researcher to bridge some of the differences between the two types of schools, as well as the variations within the private schools.

Recommendations

Potential for Practice/Policy

This study was designed to determine if athletic participation by gender had an effect on academic performance for high school students from private Christian schools in the Southeastern United States. The study was limited to seven schools from three states. The findings may have direct implications on practices and policies in NCSA member schools in the South in at least four different ways.

First, the results of the present study support the idea that athletes perform equally as well as non-athletes when it comes to academic achievement. On the one hand, proponents of athletics can use these data to support having athletics as a part of the educational experience in high school because, in this study, athletics did not affect students negatively regarding their ACT performance. On the other hand, opponents of athletics in high schools can also use these results by saying that participation in athletics did not enhance students' ACT performance, even though this idea contradicts what is found predominantly in the research literature. Therefore, both viewpoints can use these results, which determined that athletes and non-athletes perform equally in academics.

Second, administrators can use the results of the present study. While some schools are attempting to cut athletic programs, little evidence exists to support that athletes perform significantly lower on the ACT than non-athletes in private schools; in fact, this study showed no significant differences between the two groups in all subtests of the ACT, regardless of gender. School administrators can use these data when determining the benefits of extra-curricular activities, such as athletics, in their schools. These results are extremely relevant to private school administrators, and future research could lead to new findings that would also be beneficial to public school officials.

Schools spend thousands of dollars on athletic programs for many reasons. Some of those reasons deal with public relations, particularly in the private schools. However, athletics can involve other benefits that include being a part of a team, learning the value of hard work, experiencing the joys of winning, and growing from times of defeat. Athletics also offer the opportunities to develop character, discipline, and friendships.

Many of these benefits cannot be quantified, but parents view these benefits of athletics as advantages and part of a well-rounded education.

Third, parents of future high school students could find these results useful. The literature indicated that there are differences by gender and athletic participation in public school settings. These differences do not appear to exist in the private school realm, and parents could use these data in their decision-making processes for determining the appropriate school setting to meet best the academic needs of their children. Parents continue to strive to do what is best for their children and consider many things when deciding on appropriate school settings. Being a part of a school that offers an athletic program can be beneficial for the student for reasons that go well beyond the court or field.

Fourth, curriculum directors and school counselors can benefit from the results of this study by helping remove certain presuppositions that suggest that one gender outperforms the other in certain academic areas (i.e. males being better at mathematics and science and females being better at English and reading). These data suggest that no statistically significant differences exist in the achievement of males versus females in any academic area measured by the ACT, including the Composite score. These results can be beneficial to school counselors and advisors as they help to prepare students for potential college majors and careers by removing certain stigmas that have perpetuated over time. Although it is true that certain college majors may have a dominant gender in terms of admissions, such as females in nursing and males in engineering, these data suggest that the differences by gender in academic areas do not exist in the private schools sampled. Schools should not limit students based on their gender when helping

them decide on a career path. Ways to remove these presuppositions include the following: hosting job fairs, inviting guest speakers who may be the opposite of the norm such as male nurses or female engineers to speak to students, and taking field trips to college departments and workplaces to expose all students to the endless career possibilities that exist, regardless of gender.

Future Research Considerations

The findings from this study support the idea that athletes perform equally as well as non-athletes when it comes to academic achievement in private schools measured by the subtests of the ACT. Also, gender does not interact with athletic participation positively or negatively, whether male or female. Therefore, the researcher recommends that the following considerations:

(a) A replication of this study including other extra-curricular activities such as drama, music, art, clubs, etc. would be beneficial to help determine if the social benefits of being a part of an athletic team are equivalent to the benefits of being a part of other clubs and activities.

(b) An examination of the academic performance of individual sport athletes compared with team sport athletes would determine if there are any different benefits of team sports or individual sports.

(c) An examination of the academic performance of single sport athletes compared with multiple sport athletes would help determine if there is a point where too much activity can be counter-productive.

(d) An examination of the academic performance of athletes versus non-athletes by gender in private schools using GPA as a variable along with the ACT

scores to determine if there is a correlation between standardized test scores and classroom performance would be useful.

(e) An extension of this research that involves including other types of private schools to determine if any differences exist among private schools such as independent, non-religious schools, *etc*.

(f) A study could include a pretest and a posttest to determine before and after effects of athletic participation and detect differences between private and public schools. A study could also include an examination of admissions policies for various types of private schools and their effect on test scores that could affect the results of the study.

(g) A study could include race/ethnicity as a variable to determine if an interaction effect exists when combined with athletic participation on academic achievement in both public and private schools.

(h) A 5-year longitudinal study could examine public schools and private schools from similar geographic regions to investigate any trends that may exist based on geography as opposed to school type.

(i) A study could include university students as the participants. At this level, college GPAs could be used to measure academic achievement. Also, students with similar ACT scores from private schools versus public schools could be compared to determine how athletic participation affects academic performance.

In the last 40 years, the widespread participation in athletics has made a large impact in the United States. Because of this phenomenon, an examination of the impact

of athletic participation on academic achievement needs to be ongoing. The United States is unique in that it has athletic programs that are associated with schools. This is not the norm when compared with the rest of the world. If the United States continues to be outperformed when comparing standardized test scores to several other countries, many variables will need to be examined to determine why a gap exists. A quick glance at the normal school day for an American student would indicate that the United States spends less time each day in instruction and more time in athletics compared to competing countries. Critics are quick to assume that, if athletics was removed, the scores would improve. This study, along with many others, is important because it indicates that athletic participation does not have a negative impact on academic performance; in fact, literature states that just the opposite is true. Therefore, the removal of athletics might not be the answer.

REFERENCES

ACT. (2007). *Technical manual*. Retrieved from http://www.act.org/aap/

ACT. (2012). *Profile report*. Retrieved from http http://www.act.org/aap/

Anderson, C. M. (2010). *Linking perceptions of school belonging to academic motivation and academic achievement amongst student-athletes: A comparative study between high-revenue student-athletes and non-revenue student-athletes*. (Doctoral dissertation, University of California, Berkley). Retrieved from ERIC database. (ED526513)

Aries, E., McCarthy, D., Salovey, P., & Banaji, M. R. (2004). A comparison of athletes and non-athletes at highly selective colleges: Academic performance and personal development. *Research in Higher Education*, *45*(6), 577–602.

Armstrong, R. A. (2014). When to use the Bonferroni correction. *The Authors Ophthalmic & Physiological Optics*, *34*, 502-508.

Bates, B. J., Thelin, J. R., Edwards, J. R., Stammer, R. E., Madsen, R. M., Paskus, T., & Estler, S. E. (2003). *College athletics*. Retrieved from http://www.encyclopedia.com/doc/1G2-3403200125.html

Beem, K. (2006). Righting the balance in the athletics-academics equation. *School Administrator*, *63*(6), 10.

Bessler, W. (2013). *In the spotlight: Schools should shift focus from athletics to academics.* Retrieved from http://www.pjstar.com/x1293263519

Broh, B. A. (2002). Linking extracurricular programming to academic achievement: Who benefits and why? *Sociology of Education, 75,* 69–95.

Bursal, M. (2013). Longitudinal investigation of elementary students' science academic achievement in 4-8th grades: Grade level and gender differences. *Educational Sciences: Theory and Practice, 1,* 1151-1156.

Compton, N. H., & Compton, J. D. (2010). How Title IX and proportionality population concepts have equalized collegiate women's sports programs with men's sports and allows spillover gains for women in the workplace. *Forum on Public Policy Online,* 2010(2). Retrieved from ERIC database. (EJ903584)

Conn, S. (2012, May 24). In college classrooms, the problem is high school athletics. *The Chronicle of Higher Education, 58,* A1, A26.

Couch, J. F., Lewis-Adler, K., & Burton, P. A. (2011). Successful athletic programs and academic achievement at high school: substitutes or complements. *Global Education Journal, 4,* 48–60.

Council for American Private Education. (2011). Above average scores in geography and U.S. history. *Outlook, 367,* 3.

Creasy, A. C. (2006). *The effects of gender, year in school, plans to play professionally, and identity on student athletes' adoption of goal orientations in academics.* (Doctoral Dissertation, University of Texas). Retrieved from https://www.lib.utexas.edu/etd/d/2006/creasya77813/creasya77813.pdf

Croxford, L. (1999, September). *Inequality in the first year of primary school*. Paper presented at the meeting of the Centre for Educational Sociology, Edinburgh, Scotland. Retrieved from ERIC database. (ED446159)

Dagli, Y. U., & Jones, I. (2012) The effects of on-time, delayed, and early kindergarten enrollment on children's mathematics achievement: Differences by gender, race, and family socio-economic status. *Educational Sciences: Theory and Practice, 1*, 3061-3067.

Division I schools spend more on athletes than education. (2013, July 14). *USA Today*. Retrieved from http://www.usatoday.com/

Feldman, A. F., & Matjasko, J. L. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review and future directions. *Review of Educational Research*, *75*(2), 159–210.

Foltz, R. A. (1992). Academic achievement of student-athletes (Master's thesis, Fort Hays State University, KS). Retrieved from ERIC database. (ED340893)

Georgia Career Information Center. (2006). *From high school to pro –How many will go?* Retrieved from https://bsbproduction.s3.amazonaws.com/portals/5181/docs/from%20high%20school%20to%20pro%20statistics.pdf

Huck, S. W. (2008). *Reading statistics and research.* Boston, MA: Pearson Education.

Jonker, L., Elferink-Gemser, M. T., & Visscher, C. (2009). Talented athletes and academic achievements: A comparison over 14 years. *High Ability Studies*, *20*(1), 55–64.

Kiger, G., & Lorentzen, D. (1987). Gender, academic performance, and university athletes. *Sociological Spectrum*, *7*, 209-222.

Knifsend, C. A., & Graham, S. (2012). Too much of a good thing? How breadth of extracurricular participation relates to school-related affect and academic outcomes during adolescence. *Journal of Youth and Adolescence*, *41*(3), 379–389.

Kupczynski, L., Brown, M., Holland, G., & Uriegas, B. (2014). *The relationship between gender and academic success online*. Unpublished manuscript. Retrieved from ERIC database. (ED379311)

Leech, N. L., Barrett, K. C., & Morgan, G. A. (2011). *IBM SPSS for intermediate statistics*. New York, NY: Routledge.

Lorz, M., Schindler, S., & Walter, J. G. (2011). Gender inequalities in higher education: extent, development and mechanisms of gender differences in enrollment and field of study choice. *Irish Educational Studies*, *30*(2), 179-198.

Lumpkin, A., & Achen, R. M. (2014). *Participation in interscholastic sports: Do the academic performances of athletes and non-athletes differ?* (Doctoral Dissertation, University of Kansas).

Lumpkin, A., & Favor, J. (2012). Comparing the academic performance of high school athletes and non-athletes in Kansas in 2008-2009. *Journal of Sport Administration and Supervision*, *4*(1), 41–62.

McCarthy, K. J. (2000). *The effects of student activity participation, gender, ethnicity, and socioeconomic level on high school student grade point averages and attendance.* Retrieved from ERIC Database. (ED457173)

McMillen, T. (1991). Reversing the imbalance of athletics and academics. *Elementary School Journal*, *91*(5), 489–490.

National Christian School Association. (n.d.). *NCSA history*. Retrieved from http://nationalchristian.org/about.cfm

National Federation of State High School Associations. (n.d.). *2009-2010 athletics participation survey.* Retrieved from http://www.nfhs.org/content.aspx?id=3282

NCAA. (2014) *NCAA college athletic statistics.* Retrieved from http://statisticbrain.com/ncaa-college-athletics-statistics/

Oklahoma State Regents for Higher Education. (1992). *Comparison of graduation rates for scholarship athletes and all students by sport, race, and gender*. Retrieved from ERIC database. (ED349896)

Pascarella, E. T., Truckenmiller, R., Nora, A., Terenzini, P. T., Edison, M., & Hagedorn, L. S. (1999). Cognitive impacts of intercollegiate athletic participation. *The Journal of Higher Education, 70*(1), 1-26.

Poole-Hayes, U., & Dionne, J. P. (1996, April). *Invented spelling: An indicator of differential problem-solving strategies of good spellers and poor spellers at kindergarten and grade one.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY. Retrieved from ERIC database. (ED394128)

Pruter, R. (2013). *The rise of American high school sports and the search for control 1880-1930*. New York, NY: Syracuse University Press.

Reynolds, L., Fisher, D., & Cavil, J. K. (2012). Impact of demographic variables on African-American student-athletes' academic performance. *Educational Foundations, 26,* 93-111. Retrieved from ERIC database. (EJ1000233)

Ritzhaupt, A. D., Liu, F., Dawson, K., & Barron, A. E. (2013). Differences in student information and communication technology literacy based on socio-economic status, ethnicity, and gender: Evidence of a digital divide in Florida schools. *Journal of Research on Technology in Education, 45*(4), 291-307.

Sander, L. (2009, May) After years of scrutiny, hundreds of teams still fail to make the NCAA's grade. *Chronicle of Higher Education, 55*(36), A21.

Sanford, G. (2012). *To strengthen America's public education system, cut school sports.* Retrieved from http://policymic.com/articles/3367/

Schneider, T. W., & Klotz, J. (2000). *The impact of music education and athletic participation on academic achievement*. Proceedings from the annual meeting of the Mid-South Educational Research Association, Bowling Green, KY.

Scholarshipstats.com. (2013). *Chances of a high school athlete playing college sports.* Retrieved from http://www.scholarshipstats.com/varsityodds.html

Severiens, S., & Dam, G. (2012). Leaving college: A gender comparison in male and female-dominated programs. *Resources in Higher Education, 53*(1), 453-470.

Shurluf, B. (2011). Do extra-curricular activities in schools improve educational outcomes? A critical review and meta-analysis of the literature. *International Review of Education, 56*, 591-612. doi:10.1007/s11159-010-9180-x

Silliker, S. A., & Quirk, J. T. (1997). The effect of extracurricular activity participation on the academic performance of male and female high school students. *School Counselor*, *44*(4), 288–293.

Sikkink, D. (2012). Religious school differences in school climate and academic mission: A descriptive overview of school organization and student outcomes. *Journal of School Choice, 6*(1), 20-39.

Smith, M. (2012, January 22). Texas school districts cut out sports to save their future. *The Texas Tribune*. Retrieved from http://www.kens5.com/news/

Smith, M. J. (1993). *The relationship between high school placement test scores, ACT scores, and GPAs for Central Catholic high school students.* Unpublished manuscript. Retrieved from ERIC database. (ED379311)

Spires, H. A., Lee, J. K., Turner, K. A., & Johnson, J. J. (2008). Having our say: Middle grade student perspectives on school, technologies, and academic engagement. *Journal of Research on Technology in Education, 40*(4), 497-515.

Stuart, R. (2012). *Is winning everything?* Retrieved from http:/diverseeducation.com

Suitor, J. J., & Carter, R. S. (1999). Jocks, nerds, babes, and thugs: A research note on regional differences in adolescent gender norms. *Gender Issues*, *17*(3), 87-101. Retrieved from http://link.springer.com/article/10.1007/s12147-999-0005-9

Ward, T. J., Jr., & Clark, H. T., III. (1991). A reexamination of public versus private school achievement: The case for missing data. *Journal of Educational Research*, *84*(3), 153-163.

APPENDIX

IRB APPROVAL

HARDING UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Status of Request for Exemption from IRB Review

(For Board Use Only)

Date: 9/19/14

Proposal Number: 2014-066

Title of Project: Effects of Athletics and Gender on ACT Achievement for High School Students in Arkansas

Principal Investigator(s) and Co-Investigator(s): Cade Smith cade.smith@uah.edu

■ Research exempted from IRB review.

☐ Research requires IRB review.

☐ More information is needed before a determination can be made. (See attachment.)

I have reviewed the proposal referenced above and have rendered the decision noted above. This study has been found to fall under the following exemption(s):

1 ☐ 2 ☐ 3 ☐ 4 ■ 5 ☐ 6 ☐

In the event that, after this exemption is granted, this research proposal is changed, it may require a review by the full IRB. In such case, a ***Request for Amendment to Approved Research*** form must be completed and submitted.

This exemption is granted for one year from the date of this letter. Renewals will need to be reviewed and granted before expiration.

The IRB reserves the right to observe, review and evaluate this study and its procedures during the course of the study.

Rebecca O. Weaver

ChairHarding University Institutional Review Board