The Effects of Participation in Athletics on Academic Performance among High School Sophomores and Juniors

A Dissertation

Presented to

The Faculty of the School of Education

Liberty University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

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June 2008

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Abstract

Athletics and academic performance has been studied at length over the years in the literature. Despite the mostly university level research conducted, no consensus has been reached regarding the impact of athletic participation on academic performance at the high school level. As a result, the relationship between the in season and out of season school academic performance of high school sophomores and juniors in one high school was investigated in this study. It was determined that there was a significant relationship that existed between academic performance, measured by GPA, and athletic participation. Through an analysis of 249 high school sophomore and junior boys and girls, it was found that athletic participation had a positive impact on academic performance and that impact may be attributable to the difference between male in season and out of season performance.

ACKNOWLEDGEMENTS

I wish to thank all of those who have supported my efforts in the accomplishment of this study:

- My advisor, Dr. Clarence Holland, who provided encouragement, assistance and advice during my work.
- My committee members, Dr. Vance Pickard and Dr. Ellen Black, who shared insights, experience and vision which kept me focused throughout the study.
- All of the members of the Rose Tree Media School District who cooperated generously with my many requests during the study. May the fruits of this labor be of some benefit to all regardless of which path they have chosen.
- Dr. Denise Kerr, Dr. Richard Gregg, Mr. Joseph DiAntonio, and Mr. Thomas Durant who provided invaluable documents, information and assistance.
- My parents who have supported my efforts over the years by giving unselfishly of their prayers, time, finances, and instilling within me a love for learning.
- Mr. and Mrs. Philip Ewaka who inspired me in my efforts by telling me to see this document through, their assistance with Carli and Jacob, their prayers, time, and financial help.

My daughter and son, Carli and Jacob were always close by and on my mind. I am grateful for their patience when they needed me to be there for them in there time of growing.

My deepest love and gratitude belong to my wife Susan without whom this endeavor would not have been possible. For all of her support during this entire process, for her assistance in the preparation of this document, I am ever so grateful.

Table of Contents

List of Tables

Chapter One

Introduction to the Study

Sports have become a major business and attraction for the American public. The print, radio, television, internet, and cinema media have contributed to the explosive popularity of both professional and collegiate sports. Billions of dollars are spent on the proliferating professional and collegiate sports industry. It is not surprising, therefore, that the popularity of professional and collegiate sports has been reflected in the sports programs of American high schools.

The pressure to win and the allure of financial gain have always been a part of the professional ranks, as well as the collegiate sports scene. Intercollegiate athletics are a big business and a lucrative source of revenue for many universities. It is not unusual to find that coaches in our major universities make a great deal more income than tenured academic professors. The pressure to win is felt by most college coaches and athletic directors. It is therefore not surprising that a conflict has developed between the academic and athletic communities on many of the nation's college campuses.

Similarly, it is possible that athletic communities in high schools have developed a negative reputation with respect to academic performance. While a number of researchers studied athletic participation and academic performance in college (Ferris & Finster, 2004; Gaston-Gayles, 2005), few studies addressed the relationship between academics and athletic participation at the high school level. Similarly, these studies have

focused on the comparison of non-athletes to athletes; with respect to a variety of dependent variables Yiannakis and Melnick (2001).

The effect of participation on athletics, with respect to its direct effect on the participants themselves, has not been investigated in the literature. Taras (2005) conducted a review of studies on younger students and the effect that physical activity had on school performance (Taras). The research review conducted by the author demonstrated that there may be some short-term improvements due to physical activity, specifically with respect to concentration, but there is no well substantiated long-term improvement of academic achievement as a result of more vigorous physical activity (Taras). The author also noted that the relationship between physical activity in students and academic outcomes requires further elucidation. In order to add to the literature on high school student achievement with respect to athletic performance, the academic performance of athletes in season and out of season will be investigated by this study.

The background of the study, statement of the problem, purpose of the study, research questions, hypotheses, and a brief review of the methodology to be undertaken for this study are presented in this chapter. Chapter two will consist of a complete review of the current research concerning student athletes and academics, the positive impact of sports participation on non-cognitive aspects of achievement in adolescents, and case studies of athletics and academics in high school. The methodology designed and utilized for the research study will be expounded upon in chapter three with findings reported in chapter four. Finally, a discussion of the results will conclude the study.

Background of the Study

This section of the study will include a brief review of the literature in order to frame the background of the study. Studies of both university level and high school level athletic participation were considered in order to give a broad review of the relevant literature in terms of the impact that athletic participation has been found to have on academic performance and other positive, as well as negative, indicators.

University presidents and college coaches have battled over the academic requirements necessary to receive athletic scholarships, eligibility requirements, and even the advising of student athletes (Zani, 1991). "America somehow took this belief in the ennobling nature of sports and transformed it into a quasi-religion" (Cramer, 1986, p. k1). The adult community has internalized this fascination with sports and passed it on to the students of America (Sage, 1978). The logical progression of this obsession with sport continued from high schools to colleges, and then to professionals. The concern that arose at the high school level is whether or not athletics have become a more compelling force than academics in American schools (McGrath, 1984). Across the nation, critics (Jenkins, Walker, Woodson, & White, 1984; Pipho, 1988; & McGrath, 1984) have questioned the overemphasis placed on athletics in our high schools.

The last decade has seen a backlash of the academic community against the decline of our students' academic performances, as delineated in studies such as the National Commission on Excellence in Education's A Nation at Risk (1983). Articles such as Grade Standards for Participation in Interscholastic Sports: Teacher's Views (1987), and School Athletes Hit the Books-or Else (1985), indicated that increased academic eligibility standards would improve the academic success of American

students. In the early 1990's a movement developed with a goal to reemphasize the "student" aspect of high-school student-athletes. Lapchick (1989, p. 19) stated that, "The climate is strong for increased minimum academic standards… Higher academic standards… continue to receive attention at the state level. Public opinion and common sense reinforce one another in support of these movements."

A number of states and cities across the nation have implemented a variety of policies in order to ensure a satisfactory academic performance by their student-athletes. The argument that these authors have is if athletes were forced to have higher grades in order to play sports, that there could be an overall improvement in the quality of all students' academic work.

Sports appear to be an attractive aspect of the high school experience to many students (Fisher, Juszczak, & Friedman, 1996). Fisher et al. conducted an investigation on the positive and negative correlates of sports participation on inner-city high school students. An anonymous survey was distributed to 838 participants, where 45% were male and 55% were female (Fisher et al). Of the 838 students who were interviewed, the authors found that all of them participated in sports in some way. The most common sports were basketball, volleyball, baseball, and weight lifting (Fisher et al.). The participants were found to have most commonly reported that enjoyment, recreation, and competition were reasons for participation. The authors found a significant percentage of students regarded sports as more important than school. Thirty-five percent of youths fell into that category (Fisher et al.). The importance ranking of sports over school was also consistent with the next finding of the study.

Fisher et al. (1996) found that many of the children believed that they would be extremely likely to receive an athletic scholarship (Fisher et al.). Specifically, 52% of males and 20% of females reported that they would most likely receive such a scholarship (Fisher et al.). This belief in the ability to receive significant benefits from sports, and thus ranking them higher than school, was a troubling finding from the study. The overall review of the authors indicated that most of the participants engaged in sports, but that a significant percentage of them had unrealistic expectations for their futures (Fisher et al.). Finally, no association was found between sports involvement and academic performance (Fisher et al.).

Yiannakis and Melnick (2001) conducted a study that purported positive benefits attributable to the participation in high school sports, as opposed to the findings in youths of Fisher et al. (1996) (Yiannakis & Melnick, 2001). The authors executed a longitudinal investigation from a nationally representative sample of 10^{th} graders in order to assess the net effect of athletic participation on student outcomes after a number of factors were controlled for. Specifically, the controls included student background and 8^{th}-grade measures of the dependent variable of the study (Yiannakis & Melnick). The analysis that the authors conducted was reported in their study.

They found that there were positive effects of sport participation on grades, self-concept, locus of control, and educational aspirations in addition to a negative effect on discipline problems (Yiannakis & Melnick, 2005). Further, the study indicated that athletic participation was not distributed equally across gender or socioeconomic groups (Yiannakis & Melnick). Specifically, the authors noted that there were certain groups that were more likely to participate in high school competitive sports. Those groups included:

(a) males; (b) students from higher socioeconomic levels; (c) students attending private and smaller schools; and (d) students with previous experience in school and private sport teams (Yiannakis & Melnick).

Additionally, Broh (2002) used the National Educational Longitudinal Study to test the effect that participation in extracurricular activities such as athletics had on high school achievement. The author noted that the literature that was reviewed for the study indicated a mixed set of results and that the study that was conducted by the author would help add to the literature. The author analyzed the data and reported that participation in athletics resulted in an increased development and a higher degree of academic achievement among students.

In addition to the work of the above authors, Jordan (1999) investigated the relationship between the topical variables here, specifically with respect to African American high school athletes. The author used a nationally representative sample in order to examine three central questions: (a) the effects of sports participation on various school engagement and student self-evaluative variables, controlling for background characteristics such as socioeconomic status and gender; (b) the potential differential effects of sports participation for African American students; and (c) the degree to which sports participation affected African American students' academic achievement (Jordan, 1999). The author found that sports participation improved the school engagement and academic self-confidence of all student athletes. Further, Jordan (1999) revealed that a positive intervening relationship existed between sports participation and academic achievement. While race was not a central theme of this study, the findings of the Jordan

(1999) investigation shed further light on the different approaches authors have taken to research the relationship.

Further, one study that was conducted found a positive relationship between participation in extracurricular activities, including sports, and a reduced probability of dropping out of high school (McNeal, 1995). The author examined the associations of behavioral attributes of students and their propensity to drop out. Interestingly, the author found that, while participation in athletics and fine arts significantly reduced the likelihood of a student dropping out, participation in academic or vocational clubs was found to have no effect (McNeal). Those effects were reported to have persisted even after typical dropout controls were implemented in the models (McNeal).

Another paper researched a similar concept as that addressed by this study: pre-season and post-season athletic participation's effects on academic performance (Din, 2005). The author, however, limited the study to rural high schools. The investigation reviewed the data from 225 students from four rural high school districts (Din). The author compared the pre-season grades in a number of subjects with their post-season grades in the same courses. It was found that there were no significant differences between the pre-season and post-season grades of students who participated in sports (Din). While Din (2005) addressed a similar issue, this study will utilize a different sample and restrict the study to sophomore and junior high school students in one specific school. The statement of the problem will now be presented.

Statement of the Problem

The central issue that drives this study is the relationship between academic performance and athletic participation. The background section of this chapter revealed

that there are a number of different conclusions drawn from various studies regarding the impact that athletics has been reported to have on academic performance. Fisher (1996) and Din (2005) found no significant impact of athletics on academic performance, while Yiannakis and Melnick (2001), Broh (2002), and Jordan (1999) were able to determine that there was a significant positive impact on student achievement. Each study took a different methodological approach and differed with respect to the subjects studied. The problem facing this study, and the one that will be investigated, is that there are no major studies that concentrate on sophomores and juniors with respect to the impact that their participation in athletics has on their academic performance. The purpose of the study will now be discussed.

Purpose of the Study

The purpose of this study is to determine the effects of participation in athletics on academic performance among high school sophomores and juniors. The discussion of the literature revealed that there is no clear consensus regarding the effect that athletic participation has on academic performance. Further, previous research has identified other problems that have been traced back to athletic performance. One such problem was that the impact of athletics on academics was actually tied to a low graduation rate at a number of American high schools (Ethier, 1997; Naughton, 1996; Peoples, 1996).

These concerns, inflated by highly exposed cases of athletes who left their schools nearly illiterate, have led to an increase in the NCAA level athletic eligibility standards. These standards set minimum SAT/ACT scores and high school grade point averages in a number of core courses. The rationale for these eligibility standards is the belief that standardized tests and high school grade point averages are reliable predictors of

academic success. While these cognitive variables have been shown to be significant predictors of college grades, the SAT has also been criticized as racially and culturally biased. The purpose of the study is to attempt to link the impact of athletics on academic performance to the grade levels during which college application becomes an important part of the student's life. The study will examine this through the analysis of the following research questions.

Research Questions

In order to provide guidance to the goals of the study, two research questions were specified. The questions that guide the study are as follows:

Research Question 1: Are there any effects of participation in athletics on academic performance among high school sophomores and juniors?

Research Question 2: Are there any differences in those effects between the types of sports students participate in?

Answering these research questions increased the understanding of the relationship between academic performance and athletic participation. Additionally, the cross sectional examination of the type of sport engaged in and the academic performance of the participant allowed this study to provide further information to the literature.

The research questions of the study were structured in order to provide a straightforward assessment of the relationship between academic performance and athletic participation. The methodology that was utilized to answer the research questions will now be presented.

Hypotheses

To determine statistical probability within a quantitative study, null and alternative hypotheses that correspond with the research questions and objectives of the study were needed. The null and alternative hypotheses of this study were determined to be the following:

H01: There will be no difference in grade point average (GPA) of students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO2: There will be no difference in grade point average (GPA) of female students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

H03: There will be no difference in grade point average (GPA) of male students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO4: There will be no significant difference in grade point average (GPA) of students participating in the following sports: girls' field hockey, girls' cross country, girls' soccer, girls' tennis, girls' volleyball, girls' indoor track, girls' swimming, girls' basketball, boys' football, boys' cross country, boys' soccer, boys' golf, boys' indoor track, boys' basketball, boys' swimming, and boys' wrestling.

Methodology

In order to address the above research questions, a quantitative investigation into the difference in GPA was conducted between in season and out of season sophomores and juniors in a given high school. Subjects of this study included 149 sophomore and

junior high school boys and 100 sophomore and junior high school girls. The guidance counselor and athletic director in a local school district provided the grade point averages, class schedules, and sports participation of sophomores and juniors in their high school. Once that information was collected in a password-protected Microsoft Excel spreadsheet, the data were organized and cleaned. Since the data were simply reported GPA averages, there was no chance for researcher imposed bias. Further, the sensitivity of the data was taken into account and the researcher performed all necessary measures to protect any possibility of personal identifiers in that data from distribution. Specifically, and as noted above, once the data were gathered, the spreadsheet that contained them was password protected.

The grade point averages were delivered by the guidance counselor directly to the author. The data were obtained from school records by the guidance counselor, anonymously, off of a database. Specifically, information regarding grade, gender, and sport were delivered. The password protection was utilized in case there were personal identifiers that were accidentally transmitted from the guidance counselor.

The quantitative methodology chosen for the investigation, given the three variables in the study, was an analysis of variance. Specifically, both *t*-tests and ANOVA were used in order to investigate the independent and dependent variables. In this study, participating in school-sponsored sport activities was treated as the independent variable, and the participants' GPAs were treated as the dependent variable. The significance of the study will now be presented.

Significance of the Study

As noted previously, there have been a number of research methods undertaken in order to uncover the relationship between athletics and academics. The university level has received far more attention than the high school level. However, those studies gave some indication about the pervasiveness of a number of problems that relate to this study. Academically successful student athletes appeared to be able to respond to the increased demands and transfer the qualities of hard work, discipline, and perseverance traits necessary for successful athletic performance to their academic lives.

For these students, academics and athletics complemented and reinforced one another. In fact, some student athletes actually did better academically when their sport was in season, and reported that the time and energy demanded by athletics provided the incentive to become more focused and efficient. Improved brain attributes associated with regular physical activity consist of increased cerebral blood flow, changes in hormone levels, enhanced nutrient intake, and greater arousal (Shephard, 1997). Research has suggested that a well-developed academic identity, which is reflected in strong academic self-worth, plays a critical role in academic success. A stable belief in the ability to compete academically at the university and a strong academic identity fuel the driving motivation needed to attain academic excellence. Success breeds success just as failure breeds failure. It is the intention of this study to assess the relationship discussed above at the high school level and determine whether there is evidence that the relationship remains positive for high school sophomores and juniors.

The athletic-academic relationship in the university setting has historically been problematic. It is unclear whether that relationship is similarly problematic at the high

school level. One such problem has been the assumption that sports are anti-intellectual. Because the "dumb jock" stereotype remains prevalent, student athletes were often not seen as serious students at both the high school and collegiate levels (Beezley, 1985, Edwards, 1984). Consequently faculty may have lowered academic expectations of them.

This stereotype, combined with the intrinsic and extrinsic gratification they receive for their athletic participation, makes it easier for many student athletes to prioritize athletics above academics. In their ethnographic study of a Division I basketball team, Adler and Adler (1991) employed role theory to describe these recruited student athletes' relative commitment to athletics and academics. Over the course of their collegiate experience, many student athletes tended to immerse themselves almost entirely in their athletic role (role engulfment) while simultaneously detaching themselves (role abandonment) from their academic commitments. High school students have not been sufficiently researched in this regard and this study was constructed in order to add to the literature with respect to the effect athletic participation has on academic performance.

When individuals are expected to fill multiple roles, they can experience role strain in which commitment to one role detracts from the commitment to another (Goode, 1960). Student athletes experience role strain because of the competing time and energy demands of the athletic and academic roles. This formulation assumes that there is a finite amount of time and energy. Marks (1977), on the other hand, argued that time and energy are subjectively experienced and are elastic. They can be expanded or contracted depending upon the degree of commitment to a given role. Individuals can therefore

make time and energy for multiple roles if they are committed to each of them. Thus, athletic and academic roles need not be in conflict.

A study of the effect of athletics on academics of high school students was important for several reasons. First, the study examined the factors involved that affect the academic performance of the student athletes. Studies have shown that time and energy are both required for good performance in sports and in studies. There must be proper time management that helps to manage the studies and extra activities as well. The analysis has helped to add to the literature and refine the concepts. Further, the investigation into the relationship between in season and out of season academic performance among athletes will provide a guide for further research in this area in order to continue to contribute to the literature beyond what was directly assessed in this study. The key terms used throughout the study will now be defined and discussed as they have been used previously in the literature.

Definitions

In order to provide a consistent framework for analyzing the topic, the key terms used throughout the study will be defined.

Athletic Participation: There are a number of ways that the literature has chosen to define the concept of athletic participation. Some studies have mentioned that there were various methods used in the past including participation in physical education, sports teams, in and out of school, and recess or lunchtime activities (Din, 2005; Ethier, 1997). Instead, for the purposes of this investigation, athletic participation will be limited to the engagement with school sponsored sports teams. This definition has been used by a number of studies (Knox, 2007; Carp, 2007).

Academic Performance: Similar to athletic participation, though to a larger degree, academic performance has been defined in a wide variety of ways in the literature (Beem, 2006; Wilkins et al., 2003). Academic performance can be measured by ACT scores, SAT scores, SAT II scores, qualitative assessments of teachers' reports on students, and grades. For the purposes of this study, the most appropriate methodology was a quantitative one that can be utilized in statistical tests. That immediately eliminated qualitative assessments. Further, the measurement had to be available during the entire academic year in order to assess in season and out of season performance with respect to the measurement. That requirement eliminated all other measures except for GPA. Therefore, that method was chosen for this study. The remainder of the chapter will present a brief summary of the study.

Summary

This chapter contained an introduction to the issues surrounding the impact that athletic participation has on academic performance, among other indicators of student success. The ambiguity in the research regarding that issue was presented and the problem statement was outlined. The purpose of the study, to investigate student grades during and after the sports season, was conveyed, in addition to the statistical methodology and data collection method that was used to answer the research questions. Definitions were given for key terms of the study and the limitations were discussed.

Overall, this chapter provided an introduction to the study. Chapter Two will present the review of the relevant literature. Chapter Three will delve further into the methodology and research design that was undertaken to answer the research questions.

Chapter Four will present the results of the study and the final chapter will conclude the study with a discussion of the results, with respect to the relevant literature on the topic.

Chapter Two

Review of Literature

Introduction

Athletics have come to play a major role in the life of high schools and universities across the U.S. today (Griffith, 2004; Hamilton, 2005; Knox, 2007; Mock, 2003; Tublitz, 2007). For several generations, athletics and education have been identified with each other, with the result that sports culture has become embedded within academic culture on many levels. Traditionally, participation in sports was said to make boys into men and help them appreciate teamwork, duty, sacrifice and dedication. Sports built character, and engendered the values of good sportsmanship in young men. As a result of this tradition, a number of researchers have argued that "organized sports can play a beneficial role in the development of children into educated and well-rounded students" (Griffith, 2004, p. 1). One routinely hears, from podiums and in official school statements, that "high school athletics can have a profound influence on our youth, our schools, and our communities" (Griffith, p. 2). The promotion of sports as a path toward maturity was supported by studies that have found that "participation in extracurricular activities….affect academic performance, attachment to school and social development" among high school students (NHSAW, 2001, p. 9). Participation in sports and related physical education activities "provide opportunities for students to learn the values of teamwork…and the opportunity to apply academic skills in other arenas as part of a well-rounded education" (NHSAW, p. 9).

As a result of studies and beliefs like these, high school sports have become a pervasive and powerful presence in most major high school life. In the context of the era of accountability and standardized testing, however, a new scrutiny has been brought to high school sports. Griffith (2004) argued that "there is remarkably little research on the interplay of sports and academic achievement" (p. 1). In other words, research continues to struggle to empirically prove what has been a basic tenet of the rhetoric surrounding sports for years, that participation in sports improves such non-cognitive areas of personal growth as self-motivation and thus may (or may not) have a positive impact on academics as well.

Contributing to the difficulties in examining the interplay between sports and academics at the high school level is the fact that high school sports continue to be professionalized, with pressure bearing downward from a culture of sports that includes intercollegiate and professional sports. For many, participation in high school sports places a young man or woman into a pipeline that leads directly to playing sports in college and even becoming a professional athlete. While this ideology has justified many of the excesses in high school sports today, empirical research paints a different picture. For example, the NCAA recently undertook a study to determine how many high school athletes go on to compete at the collegiate level, and even the professional level. The numbers resulting from the study were described as "sobering" (Knox, 2007, p. 1), in the sense that they counteract the prevailing rhetoric. In the area of high school football, for example, in the 2004 high school season 983,000 students played football (Knox, 2007). Only 56,000 of these high school football players went on to play football at the collegiate level. Moreover, "just 0.9%" of high school football players ever ended up

playing professional football (Knox, p. 1). The same low percentages of ultimate participation of high school athletes in professional sports, often presumed to be the rationale for intense involvement in high school sports, exist in other sports, with .03% of basketball players, .05% of men's baseball and .08% of men's soccer players at the high school level ever making it into professional sports (Knox, 2007). These findings mean two things. First, most high school athletes, if they participate or are being pushed to participate by parents who believe in an easy transition to a lucrative professional sports career, are participating in sports for the wrong reasons. Second, high school athletes laboring under the increased pressure caused by this professionalization inevitably forego academics in order to participate at this level.

As a result of the professionalization of high school sports, many educators at the high school and collegiate level are feeling "increasing tension between our educational mission and the powerhouse of….sports" (Mock, 2003, p. 1). Many educators also worry that "the demands of major collegiate athletics loom so large for some students that they have a disproportionate, unhealthy impact on their lives" (Mock, p. 1). The professionalization of sports has also begun to cost some schools more to run the sports program than these programs return on investment, monetarily. That is, while many schools argue in favor of sports because they bring much revenue to the school, in truth, many schools spend more on sports than they take in, a cost overrun that sometimes cuts into other activities. Indeed, the NCAA "recently reported that the shortfall across 970 NCAA schools exceeds $1 billion annually" (Mock, p. 2).

As a result of the professionalization of sports, those sports defined as "big money" sports have begun to produce athletes whose lives are disproportionately focused

on sports. In one study of NCAA athletes, it was found that for most sports, which do not take up so much of a student's time and do not make a lot of money for the school, the graduation rate of these student-athletes is more or less the same as the graduation rate for the whole study body, that is, "58% versus 60%" (Mock, p. 2). In the big money sports of football and basketball, however, the graduation rates of student athletes are "embarrassing" (Mock, p. 2). Basketball players graduate fewer than regular students at two thirds of all NCAA division one schools, while "36 institutions graduated (football) players at rates lower than those for their male students who were not athletes" (Mock, p. 2). Finally, even though most Division 1 NCAA schools have created academic support programs for their student athletes, "some championship-caliber teams had zero graduation rates in multiple (recent) years" (Mock, p. 2). Indeed, another study found that, overall, "two-thirds of male athletes in all sports have grade-point averages that place them in the bottom third of their class" (Mock, p. 2). Nor is the problem limited solely to men, as female athletes also have recorded much poorer academic records than non-athlete students (Mock, 2003).

The professionalization of sports at the collegiate levels has produced other abuses at that level. For example, as collegiate sports continue "inching ever closer to a professional model" (Tublitz, 2007, p. 1), there has been a "marked increase in inappropriate behavior at all levels" (Tublitz, p. 1). With regard to circumventing academic requirements for student athletes, such misbehavior includes cases where admission offices have admitted ineligible students into college because they are athletes and faculty have run fake courses for athletes to gain merely formal grading requirements (Tublitz). While it may be that the era of the "dumb jock, the must-win-at-all-costs coach,

and the uncaring professor," (Tublitz, p. 1) is over, too many student athletes are being forced by undue pressure from sports to choose between athletics and academics.

In a recent case, a number of star student athletes at a California university had to choose between competing in a track and field event and participating in their own graduation ceremonies. Many of the athletes chose to attend their graduation, mainly on the grounds that it is a once-only event and that they wanted to share this moment with parents and friends (Carr, 2005). Nonetheless, the administration of the university recommended that the student-athletes compete at the meet, and miss graduation. The fact that the school would put student-athletes in the position of having to make such a choice indicates how wrong-headed current policy has become vis-à-vis the relationships between sports and academics.

A new problem that has developed with regard to the professionalization of athletics at the collegiate and high school levels is when students are tempted by the promise of a quick payday to leave high school or college early, to pursue their athletic careers. The NCAA has recently made it easier for athletes to opt out of college, by not counting their departure as a mark against a school when calculating the annual academic progress rates of all student athletes (On Campus, 2005). This new ruling removes from consideration the issue that, if a student leaves early, his doing so would hurt the overall academic record report of the institution's student athletes. While the ruling states that the athlete's departure will only be "written off" if the student leaves with an acceptable APR, this sort of accommodation to the facts of professional life is typical of how the NCAA "supervises" student-athlete academics.

Indeed, schools where student-athletes score at the low end of APRs get a warning the first year and some restrictions on recruiting and playing time in the second year. Only in the third year do penalties begin to really hurt (including loss of eligibility for postseason play) (On Campus, 2005). In general, colleges must maintain an academic progress rate of 925 per year, and show growth in subsequent years, in order to avoid penalties (Hamilton, 2005). Nonetheless, a practice of transferring from school to school to avoid penalties has emerged, and "there will be waivers and exceptions for schools that come close to the cut score but don't actually make it" (Hamilton, p. 2). Waivers are also issues for small schools and for schools in economically disadvantaged areas. A common practice for high school athletes who have been accepted at colleges is now to attend "spring training camps," as if they were already in college, during the second semester of their senior year (Chicago, 2000, p. 11). Most of the coaches on the collegiate level see no downside to this practice, in that such a practice helps acclimate high school players to the pressures of college sports early (Chicago, 2000). These players do, however, essentially leave high school early in order to concentrate solely on their sporting future.

In general, then, the professionalization of sports at the collegiate and high school levels has created a culture where athletics and academics appear to be working at cross-purposes. In order to repair this negative trend, efforts must be made to "re-integrate athletics into the values, goals and mission of our institutions" (Tublitz, 2007, p. 1). In order to do this, sports must "be in alignment with the academic mission" of the school. Moreover, sports must "complement rather than supplant the goals of education and personal growth" (Tublitz, p. 1). The COIA report, Framing the Future: Reforming Intercollegiate Sports, suggested several reforms which could greatly alleviate the current

stress between athletics and academics. First, the student-athlete advisement and support structure must be re-structured to focus on authentic academic experience "and not just to maintain their athletic eligibility" (Tublitz, p. 2). This entails taking advising away from the athletic department and returning advising to the academic departments and their advising structures. The advisors themselves should belong to the academic departments and not be hires of the athletic department. Finally, "academic advising of athletes should be overseen and regularly reviewed by the campus academic advising structure or the office of the chief academic officer" (Tublitz, p. 2).

More relevant to high school student-athletes, the eligibility requirements of collegiate sports must, Mock (2003) argued, be toughened up. At present, "a college-bound athlete is now required to complete only 13 academic core courses in high school and can be eligible for NCAA participation with as little as two years each of math and science" (Mock, p. 2). If, once in college, a high school student performing at this level continues to maintain this level of performance in academics, he would not graduate. As a result, the number of core courses required of student-athletes should be increased so that student-athletes actually have a chance of graduating. Finally, a trend which has impaired student-athletes who wish to focus on their academics is "spiraling practice requirements." Some teams now have "voluntary" practices at off hours and during off-season, in effect making student-athletes into full-time athletes. At present, "the current pattern of activities significantly limits their ability to participate fully in the academic programs of the university" (Mock, p. 3).

The question, then, regarding whether or not participation in athletics may actually help student-athletes perform better academically, may be mired in the realities

of the new pressures and tensions created between athletics and academics by the climate of professionalization of sports in schools. As a result, this study will examine the status quo in high school sports with regard to unfair or imbalanced practices in sports, as related to academics. It will then review case studies in which some balance between athletics and academics has been restored. Addressing the research question more directly, the review will then examine case studies which indicate that participation in athletics can result in non-cognitive personality traits that translate into improved achievement in academics among students. Finally, the question of whether or not actual participation in sports or physical education at the high school level can contribute to improved grades as well will be addressed, with case studies demonstrating that such a link may indeed be viable.

Student Athletes and Academics

The primary conceptual problem facing student-athletes is whether or not sports, as an activity, has a positive impact on other endeavors in life, including academics (Baucom & Lantz, 2000; Clark, 2002; Coleman, 2006). At present, researchers have looked for both indirect and direct connections. Indirect connections consist of ways in which sports improve various non-cognitive aspects of an athlete's personality—self-esteem, motivation—and how that improvement in turn leads to better academic achievement. Direct connections consist of ways in which competition in sports helps student-athletes actually perform better in such similarly competitive events as academic tests and courses. In both cases, the problem remains how to build a construct that allows one to envision how impact is felt across the supposed gap between mind and body.

One of the first researchers to explore this question was James Coleman, who characterized adolescent culture as distinct from adult culture, and focused on "cars, dates, sports, popular music, and other matter….unrelated to school" (Coleman, 2006, p. 1). Most of all, adolescent culture is characterized by "little interest in education" (Coleman, p. 1). Coleman's (2006) claim that adolescents pay little attention to scholastic achievement was suggested to him by answers to a questionnaire. He asked students, "if you could be remembered here at school for one of the three things below, which one would you want it to be: brilliant student, star athlete or most popular?" (Coleman, p. 2). Forty percent of boys responded that they would want to be remembered as a star athlete, with less than 30% wanting to be remembered as a brilliant student. When probing why this should be so at a school, Coleman posited that an institution as a whole makes demands upon members, and that in institutional contexts the group holds down all students to a "level which can be maintained by all" (Coleman, p. 3). If anyone is a "curve-buster," then classmates ridicule or exclude him or her in order to return the curve to a normative level. Thus, "in a high school, the norms act to hold down the achievements of those who are above average, so that the school's demands will be a level easily maintained by the majority" (Coleman, p. 3). As a result of this, "grades are almost completely relative, in effect ranking students relative to others in their class" (Coleman, p. 3). In studies, Coleman found that while there is a collective response against curve-raisers, "there is no epithet comparable to 'curve-raiser'" in sports, and star athletes do not suffer ostracism. This may be because all are aware of the fact that athletes represent the group and do not in essence compete for themselves as individuals.

Thus, high school culture, as it is, tends to validate sports achievement and limit academic achievement. Coleman's solution to this problem was to provide schools with both interscholastic and intramural competition "in scholastic matters" so that students can come to see academic achievement as comparably representative of the group, as in sports achievement. He provided an example of a small high school, too small to mount a sports team, compensating for its size by successfully competing in statewide music competitions. As a result, "it is a thing of pride to be a trombone soloist in this school, and the leading boys in the school are also leading musicians—not, as in many schools, scornful of such an unmanly activity" (Coleman, 2006, p. 5). Thus, the response to the current imbalance between sports and academics in high school is to instrument the "shift in the competitive structure of high schools" that changes the norms of the school, so that academics are valued and even encouraged (Coleman, p. 5). In this way, "change the competitive structure of the high school and we can change them from places of athletic to academic prowess" (Coleman, p. 5). In sum, Coleman's answer to whether or not sports achievement influences academic achievement is simple: achievement is what counts, and the competitive structure of the school alone accounts for which type of achievement—sports or academics—is valued. If the competitive structure of the high school is balanced, sports and academic achievement are likely to intermix; if imbalanced, sports achievement may come at the expense of academic achievement.

Another study explored a similar issue related to the structure of thinking in high schools: prejudice against athletes. The study took place in a college context, but with the professionalization of sports it undoubtedly has spread to high school as well. Prejudice against student-athletes and stereotypes like the aforementioned "dumb jock" are the

results of “the perceived incompatibility between the goals of big-time college athletic programs and the basic values of academic integrity and academic excellence in higher education” (Baucom & Lantz, 2000, p. 265). Thus, it is common for resentful teachers to stereotype all student athletes as “being less intelligent than their nonathlete-student peers and [these teachers] may harbor prejudices based on their perception that student-athletes receive special benefits due to their status on campus” (Baucom & Lantz, p. 265). Studies have affirmed that both faculty and fellow students do in fact harbor such prejudices against student-athletes.

Other studies have shown that prejudice against athletes also occurs in Division III schools known for their academic prowess (Baucom & Lantz, 2000), even when student-athletes at these schools are more representative of the student body as a whole. Baucom & Lantz’s study to determine the presence of faculty prejudice against student-athletes found that such prejudice does exist, but that it is often based on faculty misconceptions regarding the nature of the scholarship a student-athlete is on, and whether or not his or her presence at the school is perceived to compromise the academic status of the school as a whole. The result of this finding is that faculty prejudice reinforces the perceived gap between athletics and academics and, once athletes enter the classroom, reinforces the gap, contributing to the negative reception of athletes in the classroom. Faculty prejudice is thus one more aspect of the overall competitive structure of a school, in this case contributing to the poor performance of student athletes in the classroom (Baucom & Lantz).

As a result of the inheritance of such overly binary competitive structures in schools, much research has worked to redefine the student-athlete as a kind of special

needs student, for whom programs of support and assistance must be created, in the manner of programs for special education (Clark, 2002). The new construct of the student-athlete sees in him or her both the student AND the athlete, rather than focusing solely on the latter. Thus, student-athletes are not just athletes but "a unique population of young adults who lead stressful lives influenced by the unique demands of their lifestyles" (Clark, p. 1). As a result, "such unique demands require special services to assist them to respond appropriately and become well-adjusted, successful adults" (Clark, p. 1). The support programs consist of "holistic programs that address psychosocial issues in academics and athletics" and provide help to student-athletes in all areas of their lives as students (Clark, p. 1). Thus, a student-athlete is viewed as "an individual with changing needs and skills, rather than exclusively as an athletic participant" (Clark, p. 1).

Specifically, student-athletes are offered life skill development programs. Formerly, many perceived that, because they were on scholarships, student-athletes had all their needs met at school. Studies have shown that not only was this not true, but that the perception that it was caused schools to allow student-athletes to fall through the cracks (Clark, 2002). In fact, studies have shown that the environment that the student-athlete enters into is often "exploitative, developmentally damaging, socially alienating, and generally non-supportive" (Clark, p. 4).

The demands of sports also mean that student-athletes are generally "more vulnerable to developmental crises and psychological distress problems than non-athletes" (Clark, 2002, p. 4). This means that, counter-intuitively, student-athletes need more assistance in working through the competing demands placed upon them than non-athlete students. On the collegiate level, the CHAMPS Life Skills program was designed

to address the developmental needs of student-athletes. The program helps athletes think about life after sports (again, only very few athletes, even on the collegiate level, turn professional), and assists them in contributing more fully to their academic communities (Clark, 2002). A number of studies have also found that most student-athletes who are negatively characterized by fellow students and even faculty as "dumb jocks" in fact suffer from learning disabilities, and CHAMPS makes sure that educators trained in helping young adults with learning disabilities assist these students in the classroom (Clark).

The SAA approach helps these students with planning, monitoring their progress, and turning all work in on time. This assistance entails constantly monitoring student-athletes so that they maintain their rate of progress, and thus their eligibility for participating in sports (Clark, 2002). Report cards are closely monitored, and, should a problem emerge, meetings called to develop new strategies for improving grades. Self-reports are also used to help students keep on track and to "reinforce the expectation that they will assume increasing responsibility for their education, an expectation that is a cornerstone of developmental advising" (Clark, p. 6).

In sum, the overall rationale of such support systems of newly-defined student-athletes is that "effective education cannot be delivered for student-athletes…in the absence of critical supports that address their unique needs" (Clark, p. 6). The growth of these programs, though they lag behind in helping student-athletes with learning disabilities, is an indication that colleges are at least compensating for, or attempting to redress, imbalances in the competitive structure of schooling by providing an advisory structure that supports student-athletes and their special needs. In the context of this new

paradigm, it appears much more likely that research will answer the question: to what extent does participation in sports contribute to academic achievement among student-athletes? At present, two streams of research seek an answer to this question. One area of research examines how participation in athletics produces non-cognitive advantages that may translate into higher academic achievement. A second area of research explores how athletic participation leads directly to academic achievement in some populations of student-athletes.

The Positive Impact of Sports Participation on Non-cognitive Aspects of Achievement in Adolescents

Students and Physical Activity

The exploration of the important issue, whether or not sports participation among high school students contributes to non-cognitive attributes that support academic achievement, begins with physical activity (Fahlman & Hall, et al., 2006; Sailis & Conway, et al., 2004; Sollerhed & Albertson, et al., 2003; Wilkins & Graham, et al., 2003). A number of studies have determined that, at present, adolescent students today are not physically active enough. This situation is believed to contribute to increased rates of adolescent obesity, and may have other negative effects as well. In one study, it was found that, even in their unstructured time, “fewer than 2% of girls and 6% of boys” were physically active during any given school day (Sailis & Conway, et al., 2004, p. 615). These numbers were even lower where the school structure provided little infrastructure to allow for physical activity.

High schools need to develop a more ecological model of student behavior in order to build a physical environment that will contribute to, instead of inhibit, routine physical activity during a school day (Sailis & Conway, et al., 2004). The climate of accountability that has emerged since the passage of No Child Left Behind appears to have further eroded focus on the whole, including the physical student. As schools work to become more "successful" according to test-score standards, many of them have cut back on such courses as arts and physical education (Wilkins & Graham, et al., 2003, p. 721). With the back-to-basics movement, many schools have cut back on such non-core subjects. Moreover, teachers are "reverting to direct instruction, drill and 'teaching to the test'" in classrooms around the country (Wilkins & Graham, et al., p. 721). In this context, a number of educators argue that spending more time on core subjects and drilling for the test will lead to better test scores. However, Wilkins & Graham, et al. (2003) compared the test scores of schools with the amount of time they allocated to non-core subjects such as physical education, and found that "the relationship between time in (core) areas and achievement was, for the most part, statistically null" (p. 731). There was also some indication that schools that maintained at least one hour of physical education per day did better on tests—an indirect finding that some attention to the whole student may in fact contribute to improved academic outcomes.

In general, most researchers support maintaining levels of physical education in schools because it contributes to the health of the student, generally defined in physical terms alone. Studies have shown that high blood pressure is more common in students aged 8 to 17 today than ten years ago, and that "much of the increase was linked to increases in the children's weight" (Child Health, 2004, p. 3). High blood pressure in

children also means that they will be much more likely to suffer from stroke or heart attack when older (Child Health, 2004).

These same children also present more often with adult-type diabetes, an additional problem that can have negative consequences in adulthood. In order to reduce this trend, researchers argue for maintaining current levels of physical education instruction in school, or even increasing it. Research has verified that physical education time in school contributes significantly to children's health. One study followed 10,000 children from kindergarten through first grade and found that "for kindergarten girls who were overweight or at-risk for overweight, adding one hour of physical education per week when they went into first grade decreased their 'body mass index'" even though this effect was not seen for boys (Child Health, 2004, p. 3). Thus, expanding physical education in schools may be an effective intervention against current negative trends in children's health.

Other studies have found that there are differences in the levels of access to physical education, based on ethnicity and gender (Fahlman & Hall, et al., 2006). In a study of white, African-American and Hispanic girls, aged 16, it was found that 29% of white girls, 57% of African-American girls, and 72% of Hispanic girls had "aerobic fitness levels that classified them as 'poor'" (Fahlman & Hall, et al., p. 14). This reflects the fact that "physical activity and fitness levels have declined in the past decade" (Fahlman & Hall, et al., p. 14).

Such findings are problematic in that a number of other studies found that physical activity contributes to several non-cognitive strengths in young adults (Sollerhed & Ejlertsson, et al., 2003). Physical activity not only improves health in childhood and

later in adulthood, it also "is important from a behavioral perspective" (Sollerhed & Ejlertsson, et al., p. 334). Studies also showed that young people are much more likely to engage in physical activity if it is enjoyable, and thus intrinsically motivating. In turn, physical activity can influence such constructs as the concept of Sense of Coherence, or "a personal orientation that expressed the way the individual responds to stress in life" (Sollerhed & Ejlertsson, et al., p. 335). SOC includes manageability, or how the person finds ways to cope; comprehensibility, or if the demands are clear; and meaningfulness, or "the motivational component, the way the individual sees life with its purposes and challenges" (Sollerhed & Ejlertsson, et al., p. 335). The study showed that students who liked PE in school and who had positive attitudes and scored high grades in PE also had solid POC (Sollerhed & Ejlertsson, et al., 2003). Thus, "subjective health and feeling comfortable in school can be seen as a natural prediction for high levels of SOC" (Sollerhed & Ejlertsson, et al., p. 340).

Students and Athletic Competition

From physical education, it is but a short leap to participation in athletic competition (Dawkins, 2005; Ferris & Finster, 2003; Jacobs & Lanza, et al., 2002; Parish & Williams, 2007; Quaiser-Pohl & Lehrmann, 2002; Wann & Polk, 2007; Wild & Flischer, et al., 2007). As noted above, physical activity and positive attitudes about participating in physical education classes in schools have been associated with positive development of such non-cognitive constructs as SOC. By contrast, physical inactivity in adolescence "has been shown to be associated with a less healthy lifestyle, worse educational progression, and poor self-perceived health" (Sollerhed & Ejlertsson, et al., 2003, p. 341). When it comes to sports, many more studies have found evidence of its

positive impact on non-cognitive factors in adolescents. In the Role of Sports in Youth Development study by the Carnegie Corporation in 1996, it was found that sport "produces multiple benefits" for young people, including "confidence in one's physical abilities, an appreciation of personal health and fitness, and strong social bonds with individuals and institutions" (NHSAW, 2001, p. 3). In a study in a Minnesota high school 91% of all students said that "students who participate in school activities (including sports) tend to be school leaders and role models" (NHSAW, p. 3).

After school programs including sports have long been known to counteract the tendency for adolescents to engage in high-risk behaviors such as alcohol and drug use, and even criminal behavior (NHSAW, 2001). Students who engage in no extracurricular activities such as sports are "57% more likely to have dropped out of school by the time they would have been seniors" (NHSAW, p. 3), and are "27% more likely to have been arrested than those who spend one to four hours per week in extracurricular activities" (NHSAW, p. 3). Almost all high school principals (over 95%) believe that extracurricular activities teach valuable lessons to students and promote citizenship behavior (NHSAW, 2001). When the American College Testing Service examined yardsticks that could be used to predict student success in life, defined as being satisfied with oneself, it found that participation in school activities such as sports rather than high grades was the best indicator (NHSAW). In a study conducted by the Alberta Schools Athletic Association it was found that student-athletes are "less likely to smoke" and "are less likely to report drinking more than once a week in comparison to non-athletic students" (NHSAW, p. 9). The results of the study were interpreted to mean that "students who participate in school-based sport programs are good school citizens and may be even better school citizens

than their non-sport peers" (NHSAW, p. 9). Another study found that sports at the high school levels "introduce young people to skills such as teamwork, self-discipline, sportsmanship, leadership and socialization" (NHSAW, p. 10). Still another study found that, in addition to having better GPAs than non-athletes, student-athletes also had fewer discipline referrals and a much lower dropout rate than non-athletic students (NHSAW).

Theoretically, these studies perceive sports participation to be a "protective factor" against social ills. Dawkins (2006) examined the association between participation in school-based sports and substance abuse. The author found that for both Black and White students, participation in athletics was positively associated with "reduction in cigarette and marijuana use," while sports served as a protective factor against alcohol abuse only for Black girls (Dawkins, 2006, p. 1). This finding supports the literature, based on Trulson's classic study of 1986, which found that boys exposed to highly-regimented sports-based treatment programs, as opposed to merely basketball or football participation, were correlated to reductions in risky behavior (Dawkins, 2006). Trulson's study did not present sports as a "cure" for deviant behavior, but found that sports combined with "explicit teaching of antideviance" (Dawkins, p. 2) could reduce deviance. Dawkins' study confirmed that, as sports fill up a students' time and motivate them toward healthy goals, use of tobacco and marijuana decline among student-athletes. Thus, sports are a "potentially important protective activity" for young adults (Dawkins, p. 7).

All of these studies indicated that student-athletes, through participation in sports, become better citizens of schools, behave better, and are more likely to stay in school. Athletes also engage in less high-risk adolescent behavior than non-athletes. However,

most of these studies, from a behavioral point of view, concentrated on symptoms not causal constructs. In order to be convincing, studies must look at how participation in sports contributes to positive belief systems in young people, and how sports improve young adults' achievement motivation and self-esteem (Jacobs & Lanza, et al., 2002). Research has been conducted in all of these areas. In the area of achievement motivation, it has been found that beliefs of self-competence are critical "mediators of actual achievement in various domains" (Jacobs & Lanza, et al., p. 309). According to attribution and self-efficacy theory, "children perform better and are more motivated to select increasingly challenging tasks when they believe that they have the ability to accomplish a particular task" (Jacobs & Lanza, et al., p. 309). Motivation has been shown to be a critical factor in a young person "maintaining involvement in extracurricular activities, such as sports" (Jacobs & Lanza, et al., p. 309).

According to the expectancy-value theory developed by Eccles, a young person's "competence beliefs, expectations for success and task values to achievement and choice in different domains" all contribute to whether or not the student achieves (Jacobs & Lanza, et al., 2002, p. 309). An important theoretical finding in the context of these studies is that children's competence beliefs decline when they enter middle and then high school, and that most students experience some level of a decline in "perceptions of academic self-competence" as they enter junior high school (Jacobs & Lantz, et al., p. 510). Moreover, different competence beliefs are found in different subject areas, with adolescents maintaining positive beliefs about their abilities in English, but losing a sense of competence in math. In the area of sports, the role of competence beliefs has been studied less. In studies conducted thus far, "conflicting results have been reported"

(Jacobs & Lanza, et al., p. 510). Some studies show that adolescents, in general, begin to have lower competence beliefs with regard to physical abilities, even though other studies find that positive competence beliefs are maintained by carefully choosing sports areas where they perceive themselves as competent. The fact that sports offer many more options for a young person to find a good fit than academics suggests a source of continued, positive self-perceptions in sports (Jacob & Lanza, et al., 2002). Boys also showed much more positive expectations of success in sports than girls. Indeed, in most studies, "gender differences in participation in sports and other discretionary leisure activities continue to be reported" (Jacobs & Lanza, et al., p. 511).

Competence beliefs in sports remain consistently gender-differentiated through high school. While this finding suggests a selection process in sports that is negative with regard to the physical health of all, others also find a secondary negative outcome of sports participation. As children get older and enter into high school, they become much more aware of where they fall in the "pecking order" of the school, both academically and in sports. This is because "children most into situations in which there are larger pools of potential competitors and the number of 'slots' on sports teams or in advanced placement classes is limited" (Jacobs & Lanza, et al., 2002, p. 522). This is especially true in sports as "sport activities become more selective and comparative, and fewer children are selected to be on competitive teams" (Jacobs & Lanza, et al., p. 522). Thus, as Jacobs & Lanza, et al. described, "the child who was the best basketball player in his or her elementary school may feel less skilled after playing with others on the basketball team in middle school, and, after sitting on the bench some of the time in middle school, may decide not to try out in high school" (p. 522). Thus, while some studies continue to

argue that participation in sports contributes to self-competence beliefs and improves one's motivation, there is also evidence that sports in schools are enmeshed in structural and organizational realities that may contribute to declining self-competence and motivational beliefs as a young adult enters high school.

The mixed results in motivation studies have led some researchers to examine the question of why so many student-athletes leave sports in high school, and, conversely, what motivates them to stay committed to sports (Parish & Williams, 2007). William Glasser developed the "needs wheel" to determine what motivates high school athletes. According to the wheel, high school student-athletes are motivated to achieve in sports either because they need "power, worth and recognition," want to have fun, or sports gives them a sense of freedom from other constraints in their lives (Parish & Williams, p. 37). Also, sports continue to motivate some students because being on a team provides them with a sense of belonging, while others simply use sports to provide perks or peak experiences that counteract a fear of not being able to survive in life outside of sports (Parish & Williams, 2007). This and other studies continue the stream of research which shows sports as a buffer zone against other ills in adolescent life.

Looking more carefully into non-cognitive qualities, one of the major areas where differences between males and females have been found is in spatial abilities (Quaiser-Pohl & Lehrmann, 2002). Spatial abilities have often been taken as a basic reason why boys choose such areas of study as mathematics, and girls move into English and humanities. In their study, Quaiser-Pohl & Lehrmann (2002) found "self-ratings of spatial abilities in everyday life….revealed significant gender differences favoring males" (p. 256). As a result, "males and females differed in their experiences with technical and

arts-and-needlework activities" (Quaiser-Pohl & Lehrmann, p. 256). By and large, sports have often been found to be another area where male spatial ability self-beliefs improve outcomes. Nonetheless, Quaiser-Pohl & Lehrmann (2002), in analyzing the results of their study, found that they were "consistent with gender schema theories and social cognitive theories of gender development" (p. 257). As a result, they concluded that the results achieved "can be interpreted as reflecting the influence of socio-culturally shaped gender role stereotypes regarding mathematics, technical skills and tasks measuring spatial abilities as male domains" and that whether or not a person believes a task conforms to their sense of gender impacts how the person performs on the task. Thus, attitudes negatively affect performance more than innate spatial or physical abilities.

A major area of research involves the effort to prove that participation in sports improves the self-esteem of young adults. For a generation, findings have indicated that when an adolescent fails to conform to group norms, he or she may develop self-rejecting ideas that lead to a loss of motivation and self-esteem. This "increases the likelihood that they will turn instead to delinquent peers and adopt risk behaviors that are valued and considered to be appropriate within these deviant groups" (Wild & Flischer, et al., 2004, p. 1454). Over time, more careful examination of this linkage of low self-esteem and risk behavior has developed demographic differentials. Thus, girls with low self-esteem are more likely to smoke, drink and have eating disorder problems, while low self-esteem in African-American girls is correlated with teenage pregnancy (Wild & Flischer, et al., 2007). Sports factors enter into this discussion insofar as low self-esteem, in general, is correlated with low self-esteem when participating in athletics. Indeed, in their study, Wild & Flischer, et al., (2007) found that when boys had low self-esteem with regard to

their sports abilities, they were much more likely to be at risk of being bullied in school—suggesting a spiral of negative consequences for self-esteem, with sports squarely in the middle. The extent to which global low self-esteem has been associated with risky sexual behavior and even suicide, high self-esteem as an athlete, and participation in sports, the extent to which these factors counteract global low self-esteem, can be said to indirectly contribute to the non-cognitive construct of self-esteem.

Approaching this issue from another perspective, Gaston-Gayles (2005) examined the predictability of non-cognitive variables for student-athletes with regard to grades. Studies have shown that for student-athletes, several non-cognitive variables, including "individual and community support, and a positive self-concept" better predicted academic performance than SAT scores did (p. 1). Among African-American students, only "goal setting, understanding racism and community service (were) significant predictors of academic performance" (Gaston-Gayles, p. 1). Other studies have found that, apart from SAT scores, "motivation, time-management skills, creativity, and other late-developing qualities," as well as other non-cognitive variables, predict academic performance. Among others looking at what are also termed nontraditional measures of academic success among student-athletes, Tracey and Sedlacek introduced the Non-cognitive Questionnaire, measuring seven variables.

In another study, Ferris & Finster, et al. (2003) used an expectancy value theoretical framework to measure the degree to which motivation was maintained in student athletes, finding that athletic motivation carried over into academic motivation. The study also found that female athletes "have less difficulty balancing academic and athletic tasks" because "female athletes are more willing and able than other groups of

athletes to transfer the skills that they use to be successful in the athletic domain, such as effort and time on task, to the academic domain" (Ferris & Finster, et al., p. 11). Ferris & Finster, et al. also conjectured that the greater likelihood of women transferring athletic skills to the academic arena may be linked to the fact that "there are fewer opportunities for females to play at the professional level" (p. 11). This conjecture was based on another finding that male athletes were more motivated in sports because of the possibility of professional level participation (though abovementioned studies characterize this as a fantasy). In any case, these findings present the possibility that a bridge based on motivation levels can be created between sports and academics and the researchers recommend that academic support programs for athletes focus in especially on "helping student athletes, particularly those deemed academically at risk, recognize and use transferable skills from the athletic domain to the academic domain" (Ferris & Finster, et al., p. 16).

Finally, a number of studies approached the issue of the non-cognitive benefits of participating in sports based on the fact that athletes often compete on teams and develop stronger group cohesion as a result (Wann & Polk, 2007). This literature derived from psychology, where the benefit of "membership in various groups including religious organizations" was believed to be one of the "core variables that best predict happiness and satisfaction with life" (Wann & Polk, p. 251). In the field of sports psychology, researchers have outlined in numerous studies over the past 20 years that a fan that identifies with a team accrues a number of psychological benefits from such an association (Wann & Polk). These persons experience "lower levels of loneliness and alienation, and higher levels of collective self-esteem, personal self-esteem, frequency of

experiencing positive emotions, extroversion, conscientiousness and social life satisfaction" (Wann & Polk, p. 251).

Such Team Identification, as it is called, can lead to temporary and enduring benefits, with the latter leading to trait levels of social well-being (Turman, 2003). This stream of research envisions sporting culture as a place where all involved gain a number of psychological benefits, primarily contributing to social well-being. In other studies of the impact of team cohesion on the psychological outcomes of participants, the type of sport and the character of the coach or leader are also variables. Teams can be coactive, requiring little interaction between team members, or interactive, requiring a lot of interaction. The degree of team cohesion required of a sport appears to impact the psychological benefits of sport participation (Murray, 1999).

Turman (2005) described the psychological benefits of sport in the context of an evolution of game culture, defined as when the sport was organized by participants, to sport culture, where "participants' activities are structured by organizations made up of coaches, parents and administrators" (Turman, p. 116). The primary concern of his study was that more and more young people are dropping out of sports as they move from game to sport culture. This suggested that the administrative structure surrounding sports has made it too competitive, and there was too much emphasis on winning (Turman, 2003). Coaches, moreover, were blamed for using messages that evoke regret among athletes, making them feel bad about not winning (Turman, 2005). As such, the study identified a message strategy used by coaches which, while motivating in the short term, ultimately tended to undermine student participation in sports (Turman, 2005). Overall, coaches used either prosocial feedback, or provided less supportive feedback. In a study of a team

whose success caused it to play more, the frequency of competition caused the coach's prosocial messages to shift to antisocial messages. Moreover, less experienced coaches tended to rely on antisocial messages. Often coaches ridiculed or embarrassed players, thus reducing team cohesion. Other coaches showed favoritism to some players over others, also reducing team cohesion. In using explicit accountability regret messages, coaches began to focus on the idea that minor alterations accounted for team failure, while social significance regret messages involved the coach trying to express the social significance of a game. Near the end of the season, coaches began to make use of future regret messages, which draw attention "to the long-term implication of successful or unsuccessful performance by the team" (Turman, p. 131).

Overall, the study found that too many coaches use regret messages focused on athletic performance alone, a practice which leads athletes to "believe that the primary goal of competing and taking part in sport is to win" (Turman, p. 135). This focus on winning alone may short-circuit the beneficial, non-cognitive aspects of sport, such as "personal satisfaction, relationship building, and the value of physical activity" aspects of sport (Turman, p. 133). In the long run, the way coaches talk to players may end up causing athletes to leave the sport. Finally, rather than impose their own narrative on the events of the team's success, coaches must find a way to allow team members to contribute to the depiction of the team's record. This "could allow athletes to establish more positive reflections on their athletic performance and allow them to be more committed to continuing their sports participation" (Turman, p. 135).

The above study again belonged to a stream of research which found in the current practice of sports in school a betrayal of the original principles of sportsmanship.

It demonstrated that when coaches focus on winning alone they end up short-circuiting the development of many of the non-cognitive benefits that keep athletes in sports and improve other areas of their life, including academics. Another such construct under study is fear of failure, which has been "associated with problems in achievement, mental health and physical health" (Conroy, 2003, p. 756). Fear of failure could come to control the behavior of such persons by causing them to avoid failure situations and retreat from social life. In Conroy's (2003) study he related fear of failure to the "representational models" persons develop in their psyche as a result of early interaction with others, as spelled out by attachment theory. Differences in how babies were raised created "the internalization of different beliefs and expectations concerning the availability and responsiveness of their caregivers" (Conroy, p. 760). Among the various forms of internalization, introjections involved persons treating themselves as they have been treated by others. In environments where love and approval were lacking, children grew up fearing failure. Parents of high FF children in high school were critical and demanded high levels of performance (Conroy, 2003). If children learned that failures led to either "punishment or withdrawal of affection and approval," this could lead to the "development of shame," an essential aspect of FF (Conroy, p. 763). Coupled with the above study of coaches using regret messages, this study found that the sporting culture could harbor many critical and punitive elements which lead to fear of failure and withdrawal from sports (Conroy, 2003).

With regard to girls, participation in sports often involves wider issues concerning body image (James, 2000). For example, "swimming is a healthy, relaxing form of physical activity that girls should feel free to participate in without constraint" (James, p.

262). Nonetheless, one study found that at the age of puberty more and more girls stop swimming, more out of concern for their body image when swimming, than with regard to the sport itself. This development was supported by the fact that more young people began to "drop out of sport" as they entered high school for various reasons usually related to non-cognitive weaknesses. For women in general, and girls in particular, participation in sport is on the decline. This is undoubtedly related to statistics that show that 66% of adolescent girls thought they were overweight, even though "only 21% had body mass in excess of their recommended level" (James, p. 263). At public swimming pools, this self-consciousness was exacerbated by the fact that women did not feel that they were in control of the public space. This is primarily due to the fact that public spaces are generally designed to favor men's views of how to present themselves in public. In one study of girls who liked swimming but did not use public pools, "29% of the girls surveyed said that they would use them more if boys were not around" (James, p. 204). Adding to the difficulties is that pools are also social places, which means that girls present themselves to others in a way which involves an effort to create an impression on an audience, as conceptualized by Goffman's theory of "presentation of self" in the 1950s (James, p. 265). If, as part of this presentation, one developed the capacity to keep one's composure in a possibly embarrassing moment, one could be able to survive such presentation. If, however, one succumbed to embarrassment, this could inhibit one's level of participation. It all depends, according to research, on how one negotiates the situation. In a study of girls in Australia at public pools, only a small percentage of girls felt good about their bodies and "did not experience any constraints to their participation" (James, p. 269). Those who were less sure of themselves felt

constrained by the knowledge that others (especially boys) were watching them. As a result, girls developed a number of coping mechanisms: achievers remained oblivious to constraints, while rationalizers talked down the constraints. Compromisers found a way to cope, while spectators and avoiders decided to avoid participation in sport. While, overall, this study focused on how different types of girls respond to the constraints of sport in a male-dominated society, it also presented another case study in the stream of research that characterizes aspects of current practices in sport which actually drive students out of athletics, or at the very least short-circuit the non-cognitive gains said by many to result from participating in sport. The fact that so much of sporting culture today is counterproductive in terms of developing non-cognitive traits of strength is a point of serious concern in the literature. Indeed, Mathews & Bennell, et al.'s (2006) study of dancers and gymnasts found that those most motivated and committed to the sport are most susceptible to succumbing to eating and other disorders. The theme thus sounds again: participation in sport is good, but in today's professionalized sporting world much that is good in sport is being compromised.

In addition to the literature on non-cognitive benefits of sport, applied to other aspects of life or not, there is also a growing anecdotal literature on what might be termed cheating, suggesting that the pressures of professionalization are shredding the time-honored goal of sport to instill good sportsmanship into all participants. While a hint of this difficulty has already been seen where coaches instill unnecessary regret into athletes who lose games, what does one say about coaches who are "consistently fielding ineligible athletes" (Beem, 2006, p. 1) at the high school level? Or what about coaches who go to teachers and ask them to change students' grades or attendance records? In the

context of the professionalization trend, some high school athletes are forced to travel long distances to "hyped-up tournaments with their frenzied parents sporting team colors and yelling encouragement or barbs from the bleachers" (Beem, p. 2). Many live in communities where even community leaders try to usurp the role of educators in promoting high school sports as a local commodity. This often involves the construction of large sports facilities, even at the high school level. As a result, many communities lose sight of what high school is all about. As one superintendent found out in a Texas school district, "you can do most anything, but if you mess with football, you're gone" (Beem, p. 5). All of these current trends tend to undermine the traditional values of sports, and may interfere with the transference of the non-cognitive benefits of sports. For some reformers, it is enough to ensure that the non-cognitive benefits of sports as they might indirectly apply to improved academics is enough. For others, it is necessary to return to the idea that school is about academics, and to reestablish the emphasis on scholastic endeavors. In order for sports to thrive in a reformed environment, it is necessary to prove in a much more direct way that participation in sports at the high school level not only serves as a protective device against adolescent ills, or develops non-cognitive strengths in students, but also actually helps students do better academically.

High School Sports and the Direct Impact on Academic Achievement

A number of studies over the years have gone beyond finding only non-cognitive advantages of participation in sports, and argued that there is a direct correlation between participation in high school sports and student's academic success (Aries & McCarthy, et

al., 2004; Comeaux, 2002; Ferris & Finster, et al., 2004; Olszewski-Rublius, 2004; Rishe, 2001). While in the context of the "us-versus-them" character of the current climate of athletics versus academics such a finding would appear to be counterintuitive, a strong literature has developed in support of the claim. In a study at Hardiness Research in 1991 it was found that "by a 2-to-1 ratio boys who participate in sports do better in school, do not drop out and have a better chance to get through college" (NHSAW, 2001, p. 21). For girls, the ratio is three to one. A study by the Women's Sport Foundation in 1989 also found that "high school athletic participation has a positive educational and social impact on many minority and female students" (NHSAW, p. 4). The USDOE also issued a report indicating that the "dumb jock" stereotype is actually a myth, and that student-athlete boys drop out less than non-athletic boys (NHSAW, 2001, p. 4). In a study of high schools in Colorado it was found that those which had success on the playing field also experienced success in standardized tests (NHSAW, 2001). A study in School Counselor magazine of 123 soccer students found that "activity participation…may enhance academic performance" (NHSAW, p. 5). A study called Extracurricular Participation and Student Engagement from 1995 "revealed that during the first semester of their senior year, participants reported better attendance than their non-participating classmates" (NHSAW, p. 6). Moreover, "students who participated were three times as likely to perform in the top quartile on a composite math and reading assessment compared with non-participants" (NHSAW, p. 5). A 1990 study in North Carolina found "a strong correlation between participation in athletes and positives such as improved grades and increased attendance rates" (NHSAW, p. 7).

A number of empirical studies exist that attempt to predict whether or not student-athletes will be successful in school (Comeaux, 2002, p. 1). Some studies look at demographic factors influencing success, others environmental factors. Most of the studies are done on the collegiate level. Comeaux (2002) found that when student-athletes receive a lot of input from advisers and when they study in a supportive environment, their academic achievement will be high. He recommends "a wide range of forms of faculty communication and mentoring that are responsive to the needs of male student-athletes of different abilities" (Comeaux, p. 9). Mentoring of student-athletes by faculty has also been found to be helpful.

One approach to solidifying the link between athletics and academic achievement involves looking at both as part of the development of the talent of a student. In this way, the literature finds that supportive experiences can serve as a catalyst to make the connection. According to Czikszentmihalyi, what it takes to assist in the development of a student-athlete is to make sure that the class is immediately enjoyable to him or her, and develop in them long-term goals (Olszewski-Kublius, 2004). The basis of this approach to the student-athlete is the study of "eminent individuals" (Olszewski-Kublius, p. 107). This research finds that outside-of-school or extracurricular activities "play a more pivotal role in talent development than school-based programs" (Olszewski-Kublius, p. 107). Participation in extracurricular activities is also said to increase the parent's social capital and therefore their ability in "obtaining appropriate educational resources and additional opportunities for their children" (Olszewski-Kublius, p. 107). Most importantly, however, research shows that children participate in extracurricular activities because these activities present them with a level of challenge not found in classrooms.

They often make friends and become more connected at school too, as a result of participation. Others report that during extracurricular activities, including sports, they also "learn time management and other skills" which enhance their abilities with regard to academics (Olszewski-Kublius, p. 108). Overall, then, the conclusion of this literature is that students gain much from participation in sports, which cumulatively and positively impacts academics. However, in the study of gifted students, while it was found that their giftedness is apparently buoyed by participation in extracurricular activities, as they were "more likely to be involved in a variety of high school extracurricular activities compared to students with lower test scores" (Olszewski-Kublius, p. 109). However, this did not include "athletics, cheerleading and vocational activities" (Olzsewski-Kublius, p. 109). The kind of extracurricular activity that gifted children appear to participate in are related to their hobbies, and most often involving writing, drawing and mathematics (Olzsewski-Kublius, 2004). Other qualifications of these findings with regard to gifted students is that all adolescent participation in sports declines in high school, with girls in particular moving in "academic clubs and activities" (Olzsewski-Kublius, p. 109). These changes in participation levels are also true for gifted students. One twist however relates to the motivation of gifted students to be noticed for their work and receive awards for academic accomplishments. It is conjectured that gifted students may seek out recognition because they are "vulnerable to peer pressure due to their superior abilities" (Olszewski-Kublius, p. 110). This motivation may be even more pronounced in "schools where an anti-intellectual atmosphere is prevalent" (Olszewski-Kublius, p. 110). (This latter finding provides the rationale for an additional argument in how sports lead to stronger academics, but in a negative way). A more positive, but equally circuitous route

to prove that sports improves academics is provided by those researchers who note that sports serves as a marketing tool to attract better students to a school, including students with higher test scores (Rishe, 2001). In this stream of research, athletics is linked to graduation rates, and found to be beneficial to the overall graduation rate of the school. But this is because a strong sports program creates a high level of prestige which in turn attracts a higher caliber of student, academically speaking, to the institution. Moreover, "higher levels of academic success create a larger disparity between student-athlete and undergraduate graduation rates" at the college level (Rishe, p. 7). How sports contributes to this is relative however, as "although athletes have higher graduation rates than all other undergraduates for the entire sample, pressures to succeed athletically compromise their relative academic standing compared to other students" (Rishe, p. 7). This kind of indirect argument suggests a linkage between sports and academics, but acknowledges that the level of achievement, measured by graduation rate alone, is relative to the level of academic achievement of the non-athletic student body.

Most studies seeking to find a direct connection between participation in sports and academics are faced with the problem of time and demand. Studies have shown that "the time demands of athletic programs force student-athletes to sacrifice attention to academics, making it difficult for them to devote time to study or earn good grades" (Aries & McCarthy, et al., 2004, p. 528). This problem is exacerbated if the student was granted some form of scholarship that overlooked his or her "less impressive academic records" or if they play in one of the high-profile money sports like basketball or football (Aries & McCarthy, et al., p. 528). Studies on the college level have also shown that as student-athletes move through college, the gap between their level of academic

achievement and that of the non-athletic student increases (Aries & McCarthy, et al., 2004). Still other studies have found that student-athletes also underachieve outside the classroom, with indexes showing slower rates of personal growth, and that student-athletes remains less open to diversity and have low levels of self-understanding (Aries & McCarthy, et al., 2004). Along this line of research, the fact that athletes often "form a separate subculture" has been found to contribute to the downward spiral of achievement in many life skill areas among student-athletes (Aries & McCarthy, et al., p. 578). Not only does this subculture isolate student-athletes from non-athletic peers, but it encourages negative, insulated behavior such as binge drinking (Aries & McCarthy, et al., 2004). In a study of high-commitment athletes in a Division III college level Aries & McCarthy, et al. (2004) found that these student-athletes, as a result of their lifestyle on campus, "had lower verbal SAT scores, to a lesser degree lower math SAT scores, and lower self-assessments of their academic skills" (p. 596). These athletes also reported that their isolation contributed to poor academic performance, as they experienced problems such as "being taken seriously by professors (Aires & McCarthy, et al., p. 590)." While these results would seem to negate the argument that participation in athletics helps improve academics, Aries & McCarthy, et al. (2004) do point out that this deficit vanishes when student-athlete academic performance is compared, not to the whole non-athletic student body, but to students with comparable demographic profiles and SAT scores upon entering college. When such pre-college differences were taken into consideration, researchers found "no differences between the academic achievement of intercollegiate athletes and non-athletes" (Aries & McCarthy, et al., p. 597). Other studies

find that high-commitment student athletes also spend enough time in other extracurricular activities to counteract the purported isolation of the sports subculture.

Along the same lines of research, based on the study of overall school graduation rates, Ferris & Finster, et al. (2004) attempt to rebut the argument that the graduation rate statistic mandated by the federal government with regard to Division I athletes does not take into account the demographics or the pre-existing academic standards of the particular schools. Nor has there been a careful consideration of the various ways in which student-athlete credentials are "compressed" to fit the needs of a school, and how schools are willing to trade-off the athletic and academic dimensions of an admitted athlete in order to give him or her a well-rounded education. Moreover, variations in academic qualifications among some schools means that many student-athletes are denied entrance into schools where they would have been admitted had they applied only as a student (Ferris & Finster, et al., 2006, p).

Case Studies of Athletics and Academics in High School

As the problem of relating athletics and academics at the college level becomes more serious, this concern has trickled down to the high school level as well (Din, 2005; Ryska, 2003; Ryska & Vestal, 2004; Zwart, 2007). A number of studies have been conducted "to determine whether participating in sport activities had any impact on students' academic achievement" at the high school level (Din, 2005, p. 1). Din's (2005) study acknowledges that at present the literature reveals mixed results on this question and that the issue of the benefits of sports on academics remains "a topic of controversy" (p. 1). Much of the problem can be explained by the fact that literature is of an "uneven quality (that) provides no evidence to afford a clear understanding of the nature of the

issue" (Din, p. 1). In the research, one study looked at whether or not girls' participation in sports leads to higher test scores. The study found that only girls with "higher SES levels and higher levels of involvement were predictive of higher ACT scores" (Din, p. 2). Another study looked at the effect of sports participation on the "educational expectations" of high school girls, and found "a positive relationship between…. extracurricular participation and educational expectations" (Din, p. 2). As mentioned previously, much of the literature that seeks to find a link between sports and academics does so by building indirect bridges built up of non-cognitive strengths such as motivation. Still other studies find a strong link between sports and academics, but of a circumstantial kind. That is, one study found that high school boys did better in school, but only because participating in sports made them want to go to college, and they therefore became more predisposed to meet certain academic requirements for doing do (Din, 2005). This so-called positive effect of sports on academics appears to be especially beneficial for African-American student-athletes who might otherwise have dropped out of high school. In a study of eighth grade African-American boys it was found that "sport participation for these students was positively related to their aspirations to enroll in college preparatory programs in high school, to have definite plans to complete high school and enter college" (Din, p. 2). Another study of Hispanic girls found that those "who participated in sports were found to be more likely to score well on achievement tests, to stay in high schools and continue their education than their non-athletic peers" (Din, p. 2). However, in general, and perhaps because there are less collegiate opportunities for high school female athletes, this kind of positive impact of sports on academics is less documented among females (Din, 2005). At present, Din (2005)

appears to split hairs by calling the above positive effect a "psycho-educational aspect" of influence, that is, part non-cognitive and part cognitive (p. 2).

However, one study in 1996 did find that in the case of a specific high school course program "which used sports to enhance academic achievement" the data did reveal that "the program students outperformed those in the control group on all of the applicable measures, including GPA and academic eligibility for extracurricular activities" (Din, 2005, p. 2). This finding suggests that when sports are used as part of a targeted initiative to improve academics, they do improve academic standing.

Ryska (2003) pursues the issue of the influence of sports on academics in a slightly more subtle manner. He is concerned with "the hypothesized relationships between adolescents' sports involvement and how they think and act within the scholastic setting" (Ryska, 2003, p. 156). "How they think and act" appears to consist of the constructs of "educational aspirations, academic self-esteem, and school-related achievement" (p. 156), all constructs that can perhaps be classified as "psycho-educational" as they exist half-way between non-cognitive and cognitive constructs. Moreover, Ryska (2003) seeks to get at these constructs by exploring the relationship between how the athletes are involved in sports and how this translates into how they participate in academics. He therefore describes "the multivariate relationship between relevant sport involvement variables and scholastic competence perceptions among a sample of high school student-athletes" (Ryska, p. p. 156). In order to dig down into the proposed constructs, Ryska (2003) makes use of the construct regarding task-oriented versus ego-oriented students. These two types of students approach their work in different ways. While the task-oriented student "defines success in terms of self-reference

criteria including task mastery, fulfillment of one's potential and skill improvement" an ego-oriented student "develops success perceptions according to norm-referenced standards such as outperforming others and demonstrating superior ability with little effort" (Ryska, p. 156). Related to sports, task-oriented athletes "typically demonstrate greater levels of persistence, commitment, and perceived competence" (Ryska, p. 157). As a result, they are relatively uninfluenced by a loss of confidence. By contrast, ego-oriented individuals with low confidence levels "are significantly less likely to demonstrate positive achievement-related attitudes" (Ryska, p. 158). All of this ties together when the student-athlete moves into the academic realm. If he or she retains a strong self-perception as a competent athlete and continues to identify with their athletic role this may enhance their self-confidence even in academics. If, however, their self-identity as an athlete is too exclusive, that may be "linked to negative academic-related outcomes" (Ryska, p. 157). According, then, to Self-Determination Theory, if the student-athlete has internalized and integrated the self-confidence provided to him by athletics into his sense of self, that can transfer over to academics. The internalization can either be externally regulated, that is, motivated by reward or punishment, or introjected, or developed through "a self-imposed control of behavior through internalized pressure" (Ryska, p. 157). The importance of Ryska's (2003) study therefore is that it shows that "how a student-athlete participates in high school sport is related to his or her scholastic competence in a manner consistent with the goal perspective and self-determination theories" (p. 164). If the sport participation is too exclusive, and ego-oriented, this leads to lower scholastic outcomes; if, however, a student-athlete is task-oriented and is able to generalize the confidence sports gives him or her, scholastic success can follow sports.

Socialization is another factor which may or may not alter the way in which sports translates into academics. Socialization refers to "the perceptions, attitudes and behaviors which are acquired as a result of participation in organized sports" (Ryska, 2003, p. 165). Formerly, the sport socialization process impacted girls negatively, because being a girl and being an athlete were not associated with each other. However, changes in the "patterns of sport socialization" among girls have resulted in more positive outcomes for female student-athletes (Ryska, p. 165). As a result, more girls are reporting that participation in sports made them feel "more positive about their bodies and perceived themselves as being more popular and easy to like" (Ryska, p. 163). While these results refer primarily to non-cognitive benefits, Ryska (2003) concludes that how sports is conducted at a high school can have a major impact on whether or not sports contributes to academic achievement. If the "psychosocial climate" of sport at a school serves to improve athletes' "task motivation, athletic identity and personal autonomy" then this will lead to a positive relationship between sports and academics (Ryska, p. 166). Thus, coaches must take care to focus on task mastery, to give athletes some personal control over their training, and "encourage the development of self-identity among student-athletes based on a balanced set of information sources" (Ryska, p. 166).

In addition to studying high school athletes, Ryska & Vestal (2004) have also examined whether or not college-level athletes are able to translate sports participation into better grades. They argued that most of the literature on this issue has been equivocal and uncertain because, more often than not, "any academic advantage demonstrated by student-athletes represents a precursor to, rather than a result of, sport participation" (Ryska & Vestal, p. 102). Moreover, inconclusive results also stem from "attempting to

explain this complex relationship on the basis of sport participation per se" (Ryska & Vestal, p. 102). In lieu of finding a direct link, therefore, he sought a bridge built on "goal-oriented behavior" to connect sports and academics. Using achievement goal theory, Ryska & Vestal (2004) referred to research that has "identified various cognitive and behavioral correlates of motivational goal orientations among students including perceived causes of success and failure, self-perceptions of ability, and the use of strategies that facilitate goal-directed behavior (Ryska & Vestal, p. 102)." Thus, "the extent to which students focus on either learning new skills and improving upon previous performance or demonstrating their ability in a socially comparative manner can have a significant impact on the quality of their involvement in, and commitment to, the academic environment" (Ryska & Vestal, p. 102). Building on the above study, they again found that task-oriented as opposed to ego-oriented athletes, because they "define personal competence in terms of self-referenced standards of performance such as task mastery" (Ryska & Vestal, p. 102), performed better in sports, and are better able to transfer their level of competence into academics. Ego-oriented athletes and students, studies in both sports psychology and educational research have found, become "prone to task avoidance, reduced effort, heightened anxiety, concentration disruption and withdrawal from the activity in the face of failure" (Ryska & Vestal, p. 103) if they perceive a decline in ability.

The importance of the task-oriented versus ego-oriented construct with regard to transferring athletic to academic skills is twofold. First, studies showed that learning and study strategies such a monitoring oneself, and engaging in goal-directed behavior, leads to better academic achievement. Thus, students who are able to monitor their progress

vis-à-vis a learning goal, as they work academically, do better. Additionally, "strategic approaches to schoolwork appear to be related to the type of goal perspective adopted by students" (Ryska & Vestal, 2004, p. 104). That is, "students who are largely task-oriented in class are more likely than their ego-oriented peers to engage in self-instruction, programmatic learning techniques, and higher-order information processing" (Ryska & Vestal, p. 104). The clinching fact to Ryska and Vestal's confabulation of theory to find a bridge across athletics and academics is that "several theorists have contended that motivational goal orientations generalize across achievement contexts and remain relatively consistent whether demonstrated in school or sport" (Ryska & Vestal, p. 104). Thus, task-oriented athletes will be task-oriented students as well. Duda & Nicholls (1992), as quoted by Ryska & Vestal (2004), found strong evidence for the "generality of motivational goal perspectives across the domain of sport and academics among high school students" (Ryska & vestal, p. 104). Thus, "the criteria used by adolescents to measure personal success tend to remain consistent across the contexts of academics and competitive sport" (Ryska & Vestal, p. 104). In their study, Ryska & Vestal (2004) did indeed find that student-athletes who "identified with high task goals and low ego goals" made "greater use of academic strategies including information processing, time management, self-testing and concentration skills" and thus exhibited greater success as academics, when compared to their low-task, high-ego counterparts (p. 105). Overall, they term the tendency of task-oriented student-athletes to be able to transfer skills to academics a "priming effect" which allows them to "approach academic tasks in a strategic manner" (Ryska & Vestal, p. 113). The findings also found that, while males more readily transfer their approach to sport over to academics, females have an extra

step of coming to appreciate that how they approach sport can have a positive impact on how they strategize in academic matters. As a result of this discovered differential, "further research could use a sport socialization paradigm to determine the personal significance that male and female athletes attach to their perceived level of competitive sport experience and its impact on the pursuit of other achievement activities" (Ryska & Vestal, p. 113). In sum, Ryska & Vestal (2004) conflate non-cognitive and cognitive measures to outline the structure of a convincing bridge by which some student-athletes are able to transfer their competitive achievement level in sport over to academics.

The anecdotal literature continues to establish regulations (Ostro, 2005; Hook, 2005) or determine the kind of effect which sports has on academics (Zwart, 2007), and a number of schools have begun to create programs like the Double Club (Cogill & Parr, 2006) in order to assist athletes in better balancing their lives between sport and academics. Also, Gardner's multiple intelligence theory certainly presents educational theorists with a tool by which athletic prowess could be measured as one of the seven types of multiple intelligence, presumably either the spatial or the bodily-kinesthetic types, and the problem of transfer solved by ignoring it (Nolen, 2003). But Ryska & Vestal (2004) convincingly demonstrated that what makes a good athlete also makes a good student, and that what is needed is not programs built on a false mind-body split, but a clear understanding of the desirable construct which creates a so-called "priming effect" for improved academic performance in athletes.

Conclusion

This literature review has examined the issue of whether or not participation in sports can lead to improved academic outcomes for high school students (Din, 2005;

Ryska, 2003; Ryska & Vestal, 2004; Zwart, 2007). On the anecdotal level, many studies and reports indicated that highly counterintuitive nature of this proposition. Not only is school culture on both the high school and college level embroiled in a debate over the primacy of athletics over academics, but a number of studies have documented how poorly student-athletes have done academically. Moreover, the pressures created by the professionalization of sports at the collegiate and high school levels has not only de-moralized the traditional values of sports culture, and all of the values-oriented benefits sports are said to give a person, but has lead to numerous abuses which further undermine the viability of the "student-athlete" construct.

In the context of this highly negative environment, a number of researchers continued to argue that participation in sports can help some students achieve more academically. Most of these arguments have been based on what are termed the non-cognitive benefits of sports, not only that it builds character, but more importantly that sports, if not demoralized by win-only pressure, can build self-esteem, confidence and motivation which can and do transfer over into academic affairs (Comeaux, 2002; Ferris & Finster, et al., 2004; Olszewski & Rublius, 2004; Rishe, 2001). Moreover, the motivation to participate in sports on a higher level (for high school students, the motivation to move on to college or even professional sports), while deemed a pipe-dream by some researchers, nonetheless has been found to keep many students in school, especially African-American men. In most cases, if these student-athletes did not have their eye on college sports participation, they might have dropped out of high school. In this indirect manner, then, sports does lead to improved (if still substandard) levels of academic achievement. A number of other indirect impacts of sports on overall school

graduation rates and the graduation rates of demographic subgroups of students are also marshaled in the literature to support the idea that sports supports academic success.

But the crux of the question remains, does participation in sports lead to better academic achievement on a strictly cognitive level? Many studies have found that sports participation is correlated with higher academic achievement. Reports that seek to determine if participation in sports actually makes participants smarter and thus better able to achieve academically are few however. Only Ryska (2003) and Ryska & Vestal (2004) presented a mixed construct (in the sense of mixing non-cognitive and cognitive strengths) to explain how participation in sports can actually sharpen a student's abilities when it comes to academics. If an athlete is task- and goal-oriented then he or she is much more likely to transfer their sense of confidence and motivation into any other life context, including academics, and, more pointedly, more likely to make use of studying and learning strategies that are proven to improve academic performance. By this bridge, then, task-oriented athletic behavior translates into using strategies to improve academics, and actually does improve academic outcomes. This construct, combining motivation and intelligence, offered a strong positive link between a certain kind of participation in sport and high academic achievement among high school students.

Chapter Three

Methodology

The purpose of this quasi-experimental study was to determine whether participating in school-sponsored sporting activities have an impact on the academic performance of high school sophomores and juniors. In order to determine whether participating in sporting events have an impact on the student's academic performance, the researcher collected existing data during the sport season period, where the participants' immediate grade point average (GPA) was calculated. These were then compared with their immediate postseason GPA to see whether there was a significant difference between the scores received during and after participating in sporting activities.

In this study, participating in school-sponsored sport activities was treated as the independent variable, and the participants' GPAs were treated as the dependent variable. With the available data, the comparisons were conducted via paired t-tests and analysis of variance (ANOVA).

The remainder of this chapter, therefore, presents the research methods and theoretical framework that was used in order to determine whether there was a difference between the GPA scores of students that participate in school-sponsored sporting activities and the scores of students who do not. This includes a description of the research design that was used in the study, the research questions and hypotheses that

were be addressed, the target population of this study, and the statistical analysis that was implemented in order to address the objectives of this study.

Theoretical Framework

The research design chosen for this study was quasi-experimental for a variety of reasons. Quasi-experimental design allows the researcher the ability to assess the impact a chosen independent variable has on a dependent variable (Cozby, 2001). Since the research involved determining whether sports participation affects academic grade point averages of high school sophomores and juniors, quasi-experimental design was appropriate for this study. The participation of high school sophomore and junior students in sports activities was held constant as the independent variable to determine its affect on grade point average (dependent variable).

The independent variables were comprised of several different sporting activities the students participated in. These sporting activities included for females: field hockey, cross country, soccer, tennis, volleyball, basketball, indoor track and swimming; and for males: football, cross country, soccer, golf, indoor track, basketball, swimming and wrestling. The dependent variable of this study was comprised of several different scores that are received from the student's language arts, math, science, and history grades. These grades were combined together to give the overall GPA score for the student. This was calculated for grades during the sporting season as well as after the sporting season has been completed.

First, a paired t-test was implemented to determine whether participating in any one of the sports listed above had an impact on the GPA scores of the students. By implementing a paired t-test in the study the researcher was able to determine whether

there was a significant difference in the GPA scores taken during the sporting season with those taken after the sporting season is over. Subsequently, an ANOVA was conducted to determine whether the differences in GPA scores were impacted by the different sports listed above. In other words, the ANOVA was implemented to assess whether there is a difference between sports included in this study.

Appropriateness of Design

A quantitative research design was appropriate for this study since the researcher was determining whether there was a difference between GPA scores (dependent variable) of students that participate in sporting activities (independent variable). The only way the researcher would be able to determine whether an independent variable had an impact on a dependent variable was to use a quantitative research design that allows one to compare the results numerically and quantitatively (Cozby, 2001).

The paired t-test was appropriate for this study since this involves comparing measurements that were taken from the same individual (Moore & McCabe, 2006). By using the paired t-test the researcher was able to determine whether there was a statistically significant change in the GPA scores of students after participating in sporting events.

Similarly, in order to determine whether the type of sport had a significant impact on the difference in GPA scores, an ANOVA was implemented in this study. The ANOVA was appropriate since its aim was to assess the relationships between a continuous dependent variable and categorical independent variables (Moore & McCabe, 2006). This was done in order to see if the change in GPAs changed across the different sports in the study.

Research Questions

To address the objectives of the study, two research questions were posed by the researcher. These research questions were the following:

R1: Are there any effects of participation in athletics on academic performance among high school sophomores and juniors?

R2: Are there any differences in academic grade point averages between the types of sports students participate in?

Hypotheses

To determine statistical probability within a quantitative study, null and alternative hypotheses that correspond with the research questions and objectives of the study were needed.. The null and alternative hypotheses of this study were determined to be the following:

H01: There will be no difference in grade point average (GPA) of students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO2: There will be no difference in grade point average (GPA) of female students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

H03: There will be no difference in grade point average (GPA) of male students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO4: There will be no significant difference in grade point average (GPA) of students participating in the following sports: girls' field hockey, girls' cross country,

girls' soccer, girls' tennis, girls' volleyball, girls' indoor track, girls' swimming, girls' basketball, boys' football, boys' cross country, boys' soccer, boys' golf, boys' indoor track, boys' basketball, boys' swimming, and boys' wrestling.

Population and Sampling

The target population for this study included all high school sophomore and junior students that participate in school-sponsored sporting events. The target population consisted of students that vary by race or ethnicity and gender. The sample that was taken for this target population was taken from a high school in southeastern Pennsylvania. The characteristic makeup of the school consisted of a total of 1321 students, of which 53% are male students. The majority of these students were in the regular curriculum of the high school (76.38%), while 5.68% were in the academically gifted program. The remaining 17.94% of the students were in the special education program (16.43%), while the remaining 1.51% are in the Vo-Tech program. The ethnic breakdown of the school consisted primarily of White/Non-Hispanic students (88.72%), which were followed by Black/African American/Non-Hispanic students (6.66%). The remaining populous of the school consisted of Native American/American Indian or Alaskan Native, Asian or Pacific Islander and Hispanic or Latino.

A convenience sampling method was used for this study where the grades of students that participated in school-sponsored events were obtained. This information was obtained from the Athletic Director at the high school where all of the sophomores and juniors who participate in exclusively a fall or winter sport were collected. The convenience sampling method was used in this study since it easily allowed the

researcher to gather the information required for this study as well as being able to gather more observations.

When calculating the sample size for the study there were several factors that were taken into consideration. These factors included the power of the study, the effect size of the study and the level of significance. The power of the study is a measurement of the probability of rejecting a false null hypothesis (Keuhl, 2000). Usually the minimum power of a study that would be necessary to correctly reject a false null hypothesis would be 0.80 (Keuhl, 2000). The next factor is the size of the effect, which is a measurement of the strength or magnitude of the relationship between the independent and dependent variables in the analysis (Cohen, 1988). The last factor is the level of significance. This is almost always set at the 0.05 level of significance. Since the main analysis that is being conducted is a paired t-test, the minimum number of participants required for the study would be 34. This is based on a two-sided test that has a power of 0.80, an effect size of 0.50 and a level of significance of 0.05.

In order for the student to be eligible for this study he or she had to meet the following criteria:

- Attend school at a specific high school located in southeastern Pennsylvania.
- Had participated in one of the sporting activities that are listed above.
- Be at least a sophomore or junior in the high school (grades 10 and 11).

Instrument

The participants' immediate grade point averages were compared with their immediate postseason grade point averages. The researcher had no influence on what grades each student received, and merely collected related school records for analyses.

This included obtaining their grades in the following subjects: language arts, math, science, and history grades. The grades received in each class were then converted to GPAs by giving the student a score that was based on the following: A+ = 4.0, A= 3.66, A-= 3.33, etc.

Data Collection

The researcher worked with a guidance counselor and athletic director in a local school district. The information that was gathered by the researcher included grades of the students, gender of the student, class level the student is in, class schedules, and sports participation of sophomores and juniors in high school, which includes the type of sport they participate in. Once that information was put together in the form of a spreadsheet, the researcher narrowed down the data to the samples needed for the study. This included de-limiting students that do not meet the eligibility criteria of the study.

Data Analysis

In order to process and organize the data, a database was created using a computer database software program (i.e., SPSS). For each student used in the sample, a subject number was provided. Grade point averages during the sport season and after the sport season were entered into the database during the data-coding phase of the study. Along with the GPA, the difference in the two scores, the sum of the difference in scores, and the mean of the differences were calculated. This information was used in a paired t-test.

This was accomplished by taking the difference between the scores for each one of the students in the study so that an overall measure of the difference between GPA scores is obtained (Moore & McCabe, 2006). In other words, the differences between each GPA score for each one of the students were extracted and used in a paired t-test to

determine their significance. This was because each one of the GPA scores was collected from the same student during school-sponsored sporting activities and after school-sponsored activities have been completed. Once the differences between the GPA scores were calculated the standard deviation for the differences are calculated. This would then allow the researcher to compare the results by using the following equation:

$$t - stat = \frac{\bar{D}}{SE(\bar{D})}$$

Where $\bar{D}$ is the mean of the differences obtained from each one of the students and $SE(\bar{D})$ is the standard error of the differences which is equal to $s_i/\sqrt{n}$ where this is just the standard deviation of the differences divided by the square root of the total number of students in the study (Moore & McCabe, 2006). If the test statistic is significant then the researcher would be able to conclude that there is a statistically significant difference between the GPA scores during and after participation in sporting activities.

The ANOVA procedure was then implemented in order to determine whether there was a significant difference between the GPA scores for the different sports in which the student participated. The ANOVA was appropriate for this since it allowed the researcher to observe how much of the variation in the difference in GPA scores is explained by the different sports in which the students participated (Moore & McCabe, 2006). In other words, it examined whether or not the independent variable in the model significantly contributes to the variation in the difference of GPA scores. If it is found that there is a significant relationship between the variables then the test statistic will exceed a critical value based on the results presented in the ANOVA table.

The test statistic that was used to assess the relationship is the F-statistic which comes from the F-distribution. If the test statistic was found to be greater than a critical F-value on k - 1 and n – p – 1 degrees of freedom (where k is the number of categories for the independent variable, p is the number of parameters that are estimated in the model and n is the total number of observations), then it could be concluded that the independent variable had a significant impact on the difference in GPA scores (Moore & McCabe, 2006).

Significance of the Study

A study of the effects of participation in athletics on academic performance among high school sophomores and juniors was important. The study examined the factors involved that affect the academic performance of the student athletes. Studies showed that time and energy were both required for the good performance in sports and in studies, too. There must be proper time management that helps to manage the studies and extra activities as well.

Summary

The research methods and design of the study were discussed and presented in this chapter. Based on the objectives of the study, it was determined that a quasi-experimental design was appropriate for one to examine the differences in GPA scores. The sample for this study was collected from a high school located in Pennsylvania where data on the students' participation in school-sponsored activities and other characteristics were obtained. To address the research questions and hypotheses of this study, a paired t-test as well as ANOVA were implemented to assess the relationships and the differences between the GPA scores during and after participating in sporting

activities. The following chapter, Chapter Four, now presents the results and finding of this study.

Chapter Four

Research Findings

Results

The purpose of this chapter will be to go through the results of the statistical analyses implemented in order to address the following hypotheses:

H01: There will be no difference in grade point average (GPA) of students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO2: There will be no difference in grade point average (GPA) of female students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

H03: There will be no difference in grade point average (GPA) of male students while participating in school sponsored sporting activities verses GPA during the time they are not participating in a school sponsored sporting activity.

HO4: There will be no significant difference in grade point average (GPA) of students participating in the following sports: girls' field hockey, girls' cross country, girls' soccer, girls' tennis, girls' volleyball, girls' indoor track, girls' swimming, girls' basketball, boys' football, boys' cross country, boys' soccer, boys' golf, boys' indoor track, boys' basketball, boys' swimming, and boys' wrestling.

To determine whether participating in school-sponsored sporting events had a significant impact on GPA scores for the students that participated, a paired t-test was used. Also included in the analysis was an examination of whether the type of sport the student participated in had an impact on the difference in GPA scores. To address this question an ANOVA was implemented where the difference in GPA scores was the dependent variable and the type of sport the student participated in was the independent variable.

This chapter is thus divided into three sections. The first section presents the descriptive statistics for each one of the variables in the study. This includes frequency distributions for the grade, gender and type of sport participated in, where the frequency and percent of occurrences are presented. Similarly, summary statistics which include the mean and standard deviation of the GPA scores will presented in the descriptive statistics section.

The second section of this chapter then presents the results of the paired t-test for the difference in GPA scores during and after participating in school-sponsored sporting events. This analysis will include paired t-test results for the combined dataset as well as paired t-test scores for male and female students.

The third section then presents the results of the ANOVA conducted to determine whether there was a difference in the sports played by the students in regards to the difference in GPA scores. Results will first be presented for the combined dataset (male and female together) and then results for each gender separately will be presented. This is done since female and male students participated in some different sporting activities throughout the school year (i.e. field hockey for females and football for males).

Descriptive Statistics

Presented in Table 1 are the characteristics of each one of the students in the study. Based on these results it was found that over half of the students that participated in sporting events were male students (59.8%). Each grade level of sophomores and juniors were equally represented in this study with 50.2% of the students being in the 10th grade while the remaining 49.8% were in the 11th grade. It was found that the sport that had the highest frequency of participants was football (21.3%), which is a male sport. This is then followed by field hockey (13.3%), which is primarily a female sport.

Table 1.

Descriptive Statistics for the Gender, Grade and Sport Type of Students in the Study.

		Frequency	Percent
Gender	Female	100	40.2
	Male	149	59.8
Grade	10	125	50.2
	11	124	49.8
Sport	Boys swimming	11	4.4
	Boys basketball	8	3.2
	Boys cross country	15	6.0
	Boys soccer	29	11.6
	Cross Country	6	2.4
	Field Hockey	33	13.3
	Football	53	21.3

	Frequency	Percent
Girls basketball	4	1.6
Girls indoor track	7	2.8
Girls soccer	15	6.0
Girls swimming	14	5.6
Girls tennis	8	3.2
Girls volley ball	13	5.2
Male golf	8	3.2
Male Indoor track	7	2.8
Male wrestling	18	7.2

Summary statistics for the GPA scores are presented in Table 2. It was found that the GPA score during the sporting season was higher on average than the GPA score after the sporting season was finished. This is because the average GPA score during the sporting season was equal to 2.87 (SD = .69) whereas the average GPA after the sporting season has finished was equal to 2.82 (SD = .74).

Table 2.

Summary Statistics for GPA Scores During and After Sporting Season.

	N	Min	Max	M	SD
GPA After Sporting Season	249	.24	4.00	2.82	.74
GPA During Sporting Season	249	.52	4.00	2.87	.69

The GPA scores during and after the sporting season were then broken down by gender to examine the changes in GPA scores (Table 3). It was found that female students that participated in sporting events actually had a higher GPA score after the sporting season was finished (M = 3.13, SD = .53) compared to during the sporting season (M = 3.10, SD = .57). Alternatively, male students were found to have a higher GPA score during the sporting season (M = 2.71, SD = .72) compared to after the sporting season was finished (M = 2.62, SD = .78).

Table 3.

Summary Statistics for GPA Scores by Gender.

Sex		GPA After Sporting Season	GPA During Sporting Season
Female	M	3.13	3.10
	SD	.53	.57
Male	M	2.62	2.71
	SD	.78	.72

Paired T-Test Results

H01: There is no difference between the post-grade point average and the current grade point average for students that participate in school-sponsored sporting activities.

The first sets of results that are presented are for the overall difference in GPA scores for male and female students combined. These results are presented in Table 4, where it was found that there was a significant difference between the GPA scores during and after participating in school-sponsored sporting events ($t(248) = 1.98$, $p < .05$). This

indicates that, overall, participating in school-sponsored sporting events does increase the GPA scores for the students. In fact, it was determined from the model that on average students would score .04 units higher on average on their GPA scores during the sporting season compared to after the sporting season has finished.

Table 4.

Results for Paired t-test Between GPA Scores During and After Sporting Season.

Difference	Difference	SD	SE	t	df	p
GPA During Sporting Season - GPA After Sporting Season	.04	.35	.02	1.98	248	.049

The next set of results presented is for the differences in GPA scores for female students (Table 5). It was found that there was not a statistically significant difference between the GPA scores during the sporting season and after the sporting season was finished for female students ($t(99) = -1.06$, $p > .05$). This indicated that a female student participating in a school-sponsored sporting activity did not have an impact on their GPA scores.

Table 5.

Results for Paired t-test Between GPA Scores During and After Sporting Season for Female Students.

Difference	Difference	SD	SE	t	df	p
GPA During Sporting Season – GPA After Sporting Season	-.03	.30	.03	-1.06	99	.292

The results for paired t-test for the male students are presented in Table 6. It was found that there was a significant difference between the GPA scores during and after participating in school-sponsored sporting events for male students [$t(148) = 3.12$, $p < .05$]. This indicates that for male students that participate in school-sponsored sporting activities, they will have an increase in their GPA scores compared to after the sporting season is complete. In fact, it was determined from the model that on average male students would score .10 units higher on their GPA scores during the sporting season compared to after the sporting season has finished.

Table 6.

Results for Paired t-test Between GPA Scores During and After Sporting Season for Male Students.

Difference	Difference	SD	SE	t	df	p
GPA During Sporting Season – GPA After Sporting Season	.10	.37	.03	3.12	148	.002

Analysis of Variance Results

H02: There is no difference between the different sports in terms of a difference in grade point average scores.

In order to address the above hypothesis three analyses were implemented. These included an ANOVA for the complete dataset, where male and female students are combined, an ANOVA for only the female students and then an ANOVA for only the male students in the study. The initial findings presented are for the complete dataset of male and female students combined. These results are presented in Table 7, where it was found that overall the type of sport the students participated in had a significant impact on

the difference in GPA scores ($F(15,233) = 2.29$, $p < .05$). This meant that different sports contribute to the variation between the differences in GPA scores. This indicated that there was a significant difference between at least one of the sports in the model. For this reason, the differences in GPA scores for each sport are presented in Table 8.

Table 7.

ANOVA Results for the Complete Dataset of Female and Male Students.

Source	SS	df	MS	F	Sig.	η2
Sport	3.974	15	.265	2.288	.005	.128
Error	26.980	233	.116			
Total	31.443	249				

R Squared = .128 (Adjusted R Squared = .072)

Table 8.

Mean Difference in GPA Scores from During to After Sporting Season (GPA During Sporting Season – GPA After Sporting Season is Finished).

Type of Sport Played	M	SD
Boys swimming	.0045	.22805
Boys basketball	-.2050	.29646
Boys cross country	.2527	.33225
Boys soccer	.0041	.30638
Cross Country	-.0117	.15829
Field Hockey	-.0048	.31893

Football	.2125	.43125
Girls basketball	-.2825	.49419
Girls indoor track	.0100	.28408
Girls soccer	-.0327	.32753
Girls swimming	-.0771	.27215
Girls tennis	-.0188	.29734
Girls volley ball	-.0169	.31468
Male Indoor track	-.0914	.32820
Male golf	.1900	.38800
Male Wrestling	-.0106	.29014
Total	.0443	.35329

Because the ANOVA showed a significant difference between sports, an analysis needed to be completed to see what specific groups were different from one another. In order to determine which sports were significantly different from one another, a post-hoc analysis was implemented using the least significant differences (LSD) comparison Table 9 lists the relationships between individual sports as they relate to changes in GPA. Students participating in boys' basketball, according to this study, had lower improvements in GPA than did students participating in boys cross-country, football, and golf. Boys participating in cross-country on the other hand had greater academic increases than did boys participating in soccer, hockey, basketball, soccer, swimming, volleyball, indoor track, and wrestling. The academic gains of male soccer players were

less than that of male football players. Only the sports that were found to be significantly different from one another are presented in Table 9.

Based on the results presented in Table 8, it was found that there were a total of 22 significant differences between the sports in the study. If a difference was found to be negative, this would indicate that on average the sport listed in column "Sport (J)" would have a higher difference in GPA score when compared to the sport in column "Sport (I)". Conversely, if the difference between GPA scores was positive, this would mean that the sport in column "Sport (I)" would have a higher change in GPA scores from during the sporting season to after the sporting season when compared to the sport type in column "Sport (J)".

Table 9.

Multiple Comparisons Between Sports Using Least Significant Difference.

Sport (I)	Sport (J)	Difference	SE	p
Boys Basketball	Boys Cross Country	-.4577	.14898	.002
	Football	-.4175	.12907	.001
	Male golf	-.3950	.17014	.021
Boys Cross Country	Boys Soccer	.2485	.10822	.023
	Field Hockey	.2575	.10596	.016
	Girls Basketball	.5352	.19149	.006
	Girls Soccer	.2853	.12425	.023
	Girls Swimming	.3298	.12645	.010
	Girls Volleyball	.2696	.12894	.038
	Male Indoor Track	.3441	.15576	.028

Sport (I)	Sport (J)	Difference	SE	p
	Male Wrestling	.2632	.11896	.028
Boys Soccer	Football	-.2083	.07860	.009
Field Hockey	Football	-.2173	.07546	.004
Football	Girls Basketball	.4950	.17645	.005
	Girls soccer	.2451	.09952	.015
	Girls swimming	.2896	.10225	.005
	Girls volley ball	.2294	.10532	.030
	Male Indoor track	.3039	.13685	.027
	male wrestling	.2230	.09283	.017
Girls Basketball	Male golf	-.4725	.20838	.024
	Male Indoor track	-.1911	.21328	.371
	male wrestling	-.2719	.18810	.150

It was found that for students that participated in boys' basketball when compared to students that participate in boys cross country, there would be a .46 unit difference in GPA scores. Students that participate in boys basketball would have on average a GPA score that would be .46 units lower than students that participate in boys cross country (i.e. the boys basketball GPA scores would decrease after the sporting season was complete whereas the boys cross country score would increase after the sporting season was complete).

For the purpose of further analysis, male student athletes were selected independent for other participants. The results, presented in Table 10, found that the type of sport the male student athlete participated in had a significant effect on differences in

GPA scores [F(7,141) = 2.97, p < .05]. This could indicate that different sports contribute significantly to the variation between the differences in GPA scores.

Table 10.

ANOVA Results for the Complete Dataset of Female and Male Students.

Source	SS	df	MS	F	Sig.	η2
Sport	2.669	7	.381	2.969	.006	.128
Error	18.111	141	.128			
Total	22.147	149				

R Squared = .128 (Adjusted R Squared = .085)

In the final set of findings, female student athletes were selected independent for other participants. The results, presented in Table 11, found that the type of sport the female student athlete participated in did not have a significant effect on differences in GPA scores [F(7,92) = .48, p > .05]. This could indicate that different sports do not contribute significantly to the variation between the differences in GPA scores.

Table 11

ANOVA Results for the Complete Dataset of Female and Male Students.

Source	SS	df	MS	F	Sig.	η2
Sport	.323	7	.046	.479	.848	.035
Error	8.869	92	.096			
Total	9.296	100				

R Squared = .035 (Adjusted R Squared = -.038)

Summary

For the paired t-test analyses it was found that overall there was a significant difference in the GPA scores during and after the sporting season was complete. In fact, it was found that the GPA scores decrease after the sporting season has been completed. This provides evidence that participating in sporting activities do have an impact on the GPA scores for students. Upon further analysis, the paired t-test was conducted for each gender individually since it was found in the descriptive statistics that each gender changed in different ways. For the male students it was found that there was a significant difference in GPA scores during and after the sporting season where a significant decrease in the GPA would occur after the sporting season was complete. On the other hand, there was not a significant difference for female students in terms of a change in GPA scores. This indicated that although overall there was a significant difference in the GPA scores, this overall difference could be attributed to the significant change in male scores compared to female scores.

As for the ANOVA results, it was found that, overall, the type of sport the student participated in had a significant impact on the difference in GPA scores. In fact, depending on the type of sport the individual participated in there would be a significant change in GPA scores. Once again, these were assessed by looking at the male and female students individually. Similar to what was found for the paired t-test, the sports the male students participated in had a significant impact on the change in GPA scores whereas the sports the female students participated in did not. This once again provided evidence that the significance in the overall model could be attributed to the change in the

male GPA scores since certain sports were found to have a greater change in GPA scores after the end of the sporting season.

Chapter Five

Summary and Discussion

This chapter will be divided into a number of sections. The first section will discuss the findings and conclusions of the study with respect to the results presented in Chapter Four in context of the relevant literature and the goals of the study. The second section will present the conclusions with respect to the research questions. The third section will discuss limitations of the study and the final section will provide a guide for further research.

Relevant Literature and Study Findings

This section will discuss the findings and results as outlined in Chapter Four and compare those results with the previous literature. The primary findings will be discussed as they relate to the difference in GPA scores across participation in athletics, sex, and the type of athletic activity. Conclusions will then be drawn in the next section and the research questions answered in the order in which they were posited.

The study set out to analyze the difference in GPA scores with respect to athletic participation in addition to the difference in GPA scores with respect to participation in various sports. With respect to the difference in GPA scores in terms of athletic participation, the literature reported mixed results. The logic for both sides of the debate is supported by the literature. Those two sides of the debate will be discussed with respect to the findings of this study.

Aries et al. (2004) reported that athletes struggle with the time demands of completing requirements for school and academic performance with those of their chosen endeavor. Specifically, the authors found that the pressure to perform on the field caused student athletes to perform below their abilities in the classroom (Aries et al., 2004). Further, Aries et al. (2004) reported that there was an increase in the underperformance gap for college athletes as those students advanced through their academic careers.

The literature review found further evidence of the time demands that athletics impose on participating athletes. For instance, athletes at a California university were forced to choose between attending their own graduation ceremonies and participating in their chosen athletic endeavor. Some athletes chose to attend their graduation. Others, however, did not choose to share the once-in-a-lifetime event with their friends and family (Carr, 2005). Instead, the university recommended, overall, that the athletes compete in their sport instead of attending their own graduation.

Mock (2003) also studied college athletes and their performance in the academic arena. The author found that the time required to participate in athletics could potentially have a disproportional, unhealthy impact on the lives of those students (Mock, 2003). In terms of specifics, it was found that over 60% of the GPA scores of male athletes ranked in the bottom third of their class (Mock). The author found a similar result for women.

This study, which was conducted through the use of a paired *t*-test approach, found evidence that contradicts that of Mock (2003) and Aries et al. (2004) with respect to the application of their concepts to high school athletes. The findings from Chapter Four indicated that there was a significant positive difference in the GPA scores of

participants during the sporting season compared with those same students during the off-season. These findings are more in line with studies like that of the NHSAW (2001).

The NHSAW (2001) found that participation in sports results in boys performing better than their non-athletic counterparts by a ratio of 2:1. Similarly, the study indicated that female athletes performed better than their non-athletic counterparts by a ratio of 3:1 (NSHAW, 2001). Additionally, the study stated that participation in athletics resulted in a reduced probability of dropping out of school and an increased probability of finishing college (NHSAW).

In terms of the findings related to sex and academic performance with respect to athletic participation, this study examined the difference between males and females. Specifically, the findings of this study indicate that there was a positive significant relationship with respect to an increased GPA during the sporting season for male athletes while there was no significant relationship found for female athletes. This was interesting given the NHSAW (2001) finding that females who participated in sports performed better at a larger ratio with respect to their non-athletic counterparts than males.

Further, Din (2005) indicated that the benefits of participation in sports applied to both males and females. The author studied high school student-athletes with respect to their academic performance and drop out rates (Din, 2005). The author found that high school boys performed better in school due to the fact that participating in athletics increased their desire to attend college (Din). Further, the author indicated that the positive aspects of this relationship pertained significantly to African-American boys since they were found to be more at risk of dropping out of school prematurely (Din).

Din (2005) also studied girls and the impact that participation in sports had on their performance. The findings of Din (2005) with respect to girls mimicked those of their male counterparts. Specifically, the author indicated that girls who participated in sports were increasingly likely to produce higher scores on their achievement tests than those girls who did not participate in athletics (Din, 2005). As noted previously, the findings of this study were not found to agree with the second part of Din's (2005) study. The entire significant relationship between GPA and participation in sports for this study can be linked to the relatively large difference in male performance instead of female performance. There was no significant relationship found between female GPA by season.

The possible reasoning for these findings can be seen through a number of pass through effects. First, satisfaction with life may be related to academic performance. Wann and Polk (2007) reported that membership within a group, like that of an athletic team, provided group cohesion which was found to be an indicator of satisfaction with life. Other important aspects of the psychological benefits that could pass through to achievement in academics include the reduced levels of alienation, increased self esteem, increased likelihood of experiencing positive emotions, and conscientiousness (Wann & Polk).

Those positive emotions can also be linked to physiological aspects that are related to the participation in athletics. Specifically, Shepard (1997) found that regular physical activity resulted in improved brain function due to cerebral blood flow, enhanced nutrition, and altered hormone levels. These results were found to be far more prevalent in athletes than those who did not undergo regular physical activity.

Further, it was suggested that there exists a noncognitive relationship between academic performance and spatial abilities (Quaiser-Pohl & Lehrmann, 2002). Those who have advanced spatial abilities were also somewhat more likely to be tied to males within a given population and have been used to explain the differences between males and females with respect to mathematic ability (Quaiser-Pohl & Lehrmann). The findings of this study with respect to GPA and sex appear to coincide with the above assertion.

Additionally, Dawkins (2006) found that there was a negative relationship between participation in school based sports and marijuana use. It has been conclusively determined that persistent marijuana use can lead to reduced brain function and a lower academic performance. Therefore, at least some part of the positive relationship could possibly be traced to a lower use rate for drugs like marijuana. However, this would not explain the relatively higher use of marijuana among males compared to females. It would coincide with the possibility that during the athletic season, use of recreational drugs falls farther for males, or has further to fall for males, than it does for females and thus academic performance could have been increased as a result of that decrease in drug use. In addition to investigating the effect of athletic participation, this study also sought to add to the literature in terms of producing an analysis of GPA with respect to the specific sport in which the athlete participated.

Overall, it was found that there were significant differences in mean GPA scores across various sports. The findings in Chapter Four indicated that there were 22 significant differences among the various sports assessed in this study. In other words, there was evidence provided in this study, in addition to that discussed in the literature above that the specific sport in which a student athlete participated could provide

statistically significant differences with respect to GPA compared to other sports. The paired student results were analyzed through a least significant differences methodology. Based on the analysis, it appears to be the case that the students who participated in boys cross country and football experienced significant declines in their GPA scores post-season when compared to other students in other sports. These findings coincide with the overall evidence that males experienced statistically significant declines in GPA scores post-season whereas females did not, overall, experience such declines. The next section will answer the research questions given the information provided in this section and the analysis conducted in Chapter Four.

Conclusions

There were two research questions that were proposed in this study. They are presented below with the answers to those questions respectively.

1. Are there any effects of participation in athletics on academic performance among high school sophomores and juniors?

Based on the above discussion and the statistical analysis conducted in Chapter Four, it was determined that enough evidence was presented to reject the null hypothesis of no significant difference. The findings of this study indicate that there was a statistically significant difference present in the seasonal performance of sophomores and juniors with respect to their GPA scores. The discussion of the literature with respect to those findings indicated that there were a number of possible explanations for those findings.

The explanations include self image, motivation to graduate to play college sports, and physiological aspects of participation in sports. In terms of self image, the

perception of ability among athletes was a proposed driver for the increase in academic results moving from in season to off season academic performance. It was certainly interesting that the entire difference was attributable to the difference in male GPA, which is discussed later in this section.

In addition to the self image and perception of ability aspects, another possible explanation for the increase in academic performance during the sports season could revolve around a drive to complete high school in order to attend college and possibly play sports in that arena. There was some evidence found to support this claim in addition to some that showed the overall results are mixed. Specifically, it was reported in the results section that boys' basketball players experienced a significant reduction in GPA when switching to the off-season whereas boys' cross country had no such difference. Given that basketball is one of the sports in which the perception of the ability to join the professional ranks is greatest, it would follow that there could be an increased attention to studies during the season for that sport. Other data, like those specifically relating to football appear to provide a counterpoint. If that were the case, then it would also be expected that football players' GPA scores would follow the same pattern since football can also lead to dreams of professional achievement.

In addition to the self image and dedication to the sport aspect of the increased academic performance during seasonal performance, there could also be a physiological aspect of improved brain function during periods of regular physical activity. This proposed explanation is difficult to defend in light of the data. It would have to be the case that this increase in improved brain function during periods of regular physical activity only occurred with respect to very specific activities and only occurred in a select

sample of the overall population. For instance, it would be difficult to believe, similar to above, that boys' basketball players' brains responded so differently than those of boys' football players. Why would football players' brains be any less susceptible to the increase in function due to an increase in physical activity than basketball players' brains? Even more interesting is why should males' brains be affected on average very differently than females' brains? As will be discussed, the significant difference in seasonal academic performance between the genders also provides evidence that the physiological aspect, if true, would have to meet very specific rather than general population criteria.

The findings of this study also indicated that there were significant differences between males and females with respect to GPA. The author was surprised to see that the girls' grade point averages were higher in general than the boys. Even though the girls' grade point averages were higher, athletic activity did not show a positive effect on academic performance. This additional finding provides evidence that support aspects of the literature for males in terms of increased academic performance. However, the findings for females did not provide such statistical evidence. It is also interesting to note that in all of the studies reviewed in the literature, a given finding for males coincided with that for females. This study, however, found that the entire positive statistically significant relationship between athletic participation and GPA scores is attributable to the difference in male academic performance.

This study adds to the literature by providing further evidence in support of theories that assert that athletics have a positive impact on academic performance for boys. The results for girls were inconclusive in that not enough evidence was found to

reject the null hypothesis of no significant difference in academic performance in terms of GPA scores.

2. Are there any significant differences in GPA between the different types of sports that students participate in?

In addition to investigating the overall significant difference in GPA scores in terms of athletic participation, the relationship among academic performance and type of athletic sport was also researched for this study. The findings for this research question were also positive. Specifically, there were 22 significant differences found between the academic performances of athletes in some sports when compared with others.

Table 9 lists the relationships between individual sports as they relate to changes in GPA. Students participating in boys' basketball, according to this study, had lower improvements in GPA than did students participating in boys cross-country, football, and golf. Boys participating in cross-country on the other hand had greater academic increases than did boys participating in soccer, hockey, basketball, soccer, swimming, volleyball, indoor track, and wrestling. The academic gains of male soccer players were less than that of male football players.

These comparisons only represented comparisons between boys. As would be expected according to the findings of question one, that boys experienced significant academic differences while girls did not, when individual male sports were compared with individual female sports and there were significant comparisons, the academic gains of boys were greater than that of the girls.

This study adds to the literature by providing an initial investigation into the variation in GPA score differences among various high school athletic endeavors. The next section will discuss the limitations of this study.

Limitations

The findings from this study were limited by a number of factors. First, the participants in the overall study came from one specific high school in southern Pennsylvania. As a result, the applicability of the study may be limited to schools with similar demographics. Further, the study was limited to sophomores and juniors in that given school who had participated in one of the pre-determined athletic activities. These limitations were necessary in order to produce a manageable sample.

In terms of analytic limitations, this study sought to add to the literature by comparing an individual student's GPA during and after the athletic season for that student's particular sport. As a result, the population effects are not readily obtainable from the samples. This limitation was purposeful in its construction, however, since studies have been previously conducted on the population effects of academic performance by athletics. The next section will conclude the study with a guide to future research.

Guide for Further Research

Overall, this study found that there was a significant relationship between the academic performance of athletes during their sport season when compared to the time that they were not participating in school-based sports in their sophomore and junior years. While that information adds to the literature, future studies could be conducted in order to improve upon that finding. First, there could be a more longitudinal approach to

the data. Future studies could investigate whether the effects found in this study were stable over time or whether they varied from one year to the next. Additionally, a broader base of schools could be used for the analysis in order to increase the applicability of the study overall. The response to the second research question could be investigated more thoroughly with respect to various sports. The stability of those effect sizes could be analyzed in addition to their applicability across different samples of schools. In addition, further research could address the relationship between athletics and academic performance in different age settings. They could, for example, focus on these relationships among elementary school students and college athletes. Along the same lines, researchers could study the relationship between athletics and job productivity. In this way, the findings of this study could be used to further add to the literature.

The findings of this study yielded new and important questions concerning athletes, motivation, and achievement. Academic motivation, disciplinary issues, coaches' dedication and influence on academics are other possible factors on grade point averages. Further, this study was conducted at only one institution. In order to increase the validity of the scale and generalizability of the findings, the study needs to be replicated at other high schools across the country. It would also be worthy to expand the study to include NCAA Divisions to measure differences across institutional type.

Future research should also explore distinct social environments to determine the different meanings that extracurricular activities hold among males and females who attend schools with various social and demographic characteristics. It would also be interesting to see if race has anything to do with why some specific sports' grade point averages were lower than others.

Implications

This purpose of this study was to determine the effect of participation in athletics on academic performance among high school sophomores and juniors. The relevant literature could not provide consensus as to whether athletics significantly harm and help academic performance. In addition, the relevant literature has addressed other significant effects of athletic performance, most notably on high school graduation rates (Ethier, 1997; Naughton, 1996; Peoples, 1996). This study, by focusing on academic performance according to different sport seasons, addresses this relationship. In addition it looks at academic performance as a result of the type of sport.

The implications of this study are vast. The pressure and importance of both athletic performance and academic performance are undeniably high. As high school students compete for college admission, they have to find additional ways to distinguish themselves. Both academic performance and athletic performance are critical to the admissions process. This study believes that its findings may have an effect on decisions to participate in athletics. For any of the reasons presented in the literature, including perceptions of self image and ability, a drive to finish high school, and improved brain functioning, students may decide to participate in athletics. Along the same lines, students may choose to participate in the sports where the largest gains in GPA existed. This not only affects college implications but also the makeup of sports demographics in general.

Another possible implication of this study has to do with the finding that male academic performance is significantly affected by athletic activity while there is no significant relationship between female academic performance and athletic activity.

Similar to the previous implication, this finding also has the potential to change gender ratios in athletics.

A third significant implication of these findings relates to the negative perceptions of student-athletes. According to Baucom & Lantz (2000), there seems to exist a perceived incompatibility between academic integrity or academic excellence and the goals of college athletic programs. There are, as a result, common prejudices regarding athletes. The notion that athletics actually enhance academic performance runs counter to the idea that athletics and academics are not aligned. Athletics instead enhance academics.

The negative views attributed to the participation in sports with respect to academic performance should be revisited. It might prove interesting to those who currently hold the belief that there is a negative correlation between academic performance and athletic participation in high schools. More specifically, some of the views of the specific sports should be revisited according to the findings above. Finally, administrations within schools could investigate policies to take into account the findings of this study.

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