



Academic achievement of student-athletes : semester of competition vs semester of non-competition
by Brian Lewis Evans

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

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Abstract:

The problem of the study was to determine if there were differences in student-athlete's grade point averages for their semester of competition compared to the semester of non-competition. Student-athletes from football, volleyball, women's soccer, baseball, and softball were sampled from each Big Twelve Conference member institution. Mean grade point averages from the semester of competition and semester of non-competition during the 1997-1998 academic year were compared, as well as the mean number of credit hours completed during each semester. The independent variables of gender, race, sport, and class standing were utilized in testing. Methods of analysis included independent t tests, analysis of variance, and regression analysis. Results show only one significant differences in mean grade point average change between semester of competition and noncompetition. Women's soccer experienced a significant difference in mean GPA change, having a greater mean GPA during the semester of non-competition. Several significant differences were found among the variables examining mean credits completed. Overall, male, female, White, Black, freshman, sophomore, junior, volleyball, and baseball student-athletes experienced a significant difference in mean change in credits completed from semester of competition to semester of non-competition. There was a significant, positive relationship between the number of credits completed and grade point average.

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SEMESTER OF COMPETITION VS SEMESTER
OF NON-COMPETITION

by

Brian Lewis Evans

A thesis submitted in partial fulfillment
of the requirements for the degree

of

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MONTANA STATE UNIVERSITY-BOZEMAN
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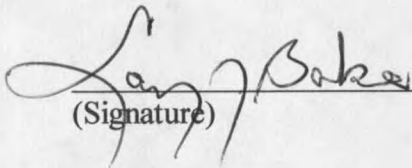
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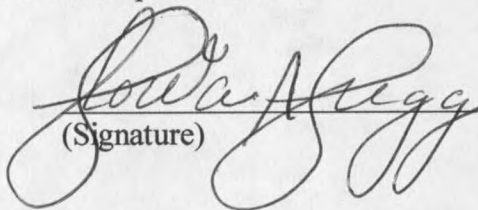
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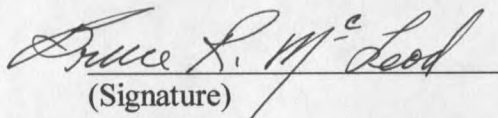
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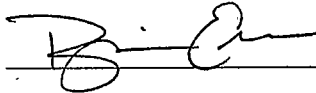

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Abstract

The problem of the study was to determine if there were differences in student-athlete's grade point averages for their semester of competition compared to the semester of non-competition. Student-athletes from football, volleyball, women's soccer, baseball, and softball were sampled from each Big Twelve Conference member institution. Mean grade point averages from the semester of competition and semester of non-competition during the 1997-1998 academic year were compared, as well as the mean number of credit hours completed during each semester. The independent variables of gender, race, sport, and class standing were utilized in testing. Methods of analysis included independent *t* tests, analysis of variance, and regression analysis. Results show only one significant differences in mean grade point average change between semester of competition and non-competition. Women's soccer experienced a significant difference in mean GPA change, having a greater mean GPA during the semester of non-competition. Several significant differences were found among the variables examining mean credits completed. Overall, male, female, White, Black, freshman, sophomore, junior, volleyball, and baseball student-athletes experienced a significant difference in mean change in credits completed from semester of competition to semester of non-competition. There was a significant, positive relationship between the number of credits completed and grade point average.

CHAPTER I

INTRODUCTION

Intercollegiate Athletics in the Academic Domain

Since the mid-1800's, intercollegiate athletics has been a growing and continually changing segment of American higher education. As intercollegiate athletics evolved and changed, there has been a growing concern for how athletics affect student-athletes' academic development. Early researchers questioned the influence of athletic participation on intercollegiate athletes' academic endeavors. "There are those who are skeptical of the athletic picture fitting into the educational frame," wrote Davis and Cooper in 1934 (p. 68). "It is even held that no corner of the athletic design 'squares,' at present, within the rectangular frame of the educational institution" (p. 68).

Before the turn of the twentieth century, scholars began to look at the athletic fit in the academic domain. In an 1898 study of competitive athletics and scholarship, Phillips researched this question: If there is a difference between athletes and non-athletes academically, is it due to "...competitive athletics immediately or remotely, or to the natural mental powers, or disposition of athletes?" (1908, p. 547). Phillips concluded that athletics did have a negative affect on academic performance. Nearly a century later, other studies echoed these findings. Adler and Adler (1985) discovered that most studies of college athletes have found a negative relationship between athletic participation and

academic performance. "These studies conclude that athletes are unprepared for and uninterested in academics" (p. 241).

Evolution of Athletics

Since the inception of intercollegiate athletics in 1852, a precarious relationship between academics and athletics has been a driving force affecting the growth of intercollegiate sports (Messner & Groisser, 1981, p. 258). Messner and Groisser outlined four periods in which the governance and relationship between academics and athletics has evolved. Early in the first period, which spanned the years 1852 to 1905, intercollegiate athletics was controlled largely by the students. Later, faculty and students wrestled with control because the students lacked the ability and willingness to continue being in charge (Newman & Miller, 1994). "These early internal regulatory efforts were not consistently effective because of the philosophical differences between students and faculty regarding various program elements" (p. 3).

The second period began by what is often considered the single most important event in intercollegiate athletics – the football controversy of 1905 (Lewis, 1975). Concerned about the violence and injuries occurring in football, the Intercollegiate Athletic Association of the United States (IAAUS) and the Intercollegiate Football Rules Committee (IFRC) clashed over the spirit and nature of football. "In 1905, life was peaceful in America, except for college football. Protection was inadequate, tackles were nasty, and athletes did not leave the field unless they were carried off on a stretcher" (Ottersdorf, 1999, p. 28). This violence, which accounted for 45 deaths between 1900 and 1905, prompted President Theodore Roosevelt to tell the presidents of Yale, Harvard,

and Princeton to fix football or it would be abolished (Ottersdorf, 1999). Thus the National Collegiate Athletic Association, basically a restructured IAAUS, was established in 1910.

The third period, from 1921 to about 1950, was characterized by "...greater faculty regulations and greater acceptance of intercollegiate athletic activities as an integral part of the program of higher education" (Messner & Groisser, p. 258). Despite great strides to integrate athletics into higher education, athletics remained in relative obscurity in this domain throughout this period (Newman & Miller, 1994).

The current period, 1951 to present, has been marked by concern over both control and the direction intercollegiate athletes has and is taking in higher education. Early in this period the Ivy League schools (Brown, Columbia, Cornell, Dartmouth, Harvard, Pennsylvania, Princeton, and Yale,) formed an athletic conference to maintain a strict academic philosophy regarding intercollegiate athletics. This philosophy intended, in part, to prevent any undue stress on academic pursuits brought about by athletic participation. In 1980, however, Yale President Bartlett Giamatti expressed concern over the growing imbalance of athletics and academics; an imbalance contrary to the original Ivy League philosophy. He questioned whether students at the Ivy League institutions were suffering academically at the expense of their athletic participation (Messner & Groisser, 1981). The Ivy League's philosophical concept was reinforced in the 1990s with the emergence of presidential control of intercollegiate athletics. The primary focus of this control was, according to Newman & Miller, "...directed at legislative measures

designed to promote the concept of academic integrity in intercollegiate athletic programs" (1994, p. 10).

The growth and evolvement of intercollegiate athletics and its integration into higher education has weathered substantial criticism. The NCAA was criticized by Harold Savage in the 1929 Carnegie Foundation Report, stating that educational concerns were taking a backseat to financial and commercial concerns. In 1974 the American Council on Education reported, among other criticisms, the questionable relationship between athletic programs and academic programs. The Black Coaches Association, in response to a 1983 move to help increase academic success of student-athletes, claimed that the initial eligibility standards (Proposition 48) set by the NCAA were discriminatory against Black student-athletes. In his comparative study of Propositions 48 and 16, Zangari (1995) noted that in 1986 (the year Prop 48 went into effect) 51 percent of Black males and 60 percent of Black females scored lower than the required SAT minimum combined score of 700. All student-athletes entering college in the fall of 1986 and * thereafter were required to achieve the SAT 700 or an ACT composite score of 15.

Measures of Academic Preparedness

Despite and in response to criticism, the NCAA has taken action to ensure the academic preparedness and integrity of its member institutions' student-athletes. In 1983 the NCAA adopted Proposition 48, mandating that high school students achieve a minimum grade point average in a set number of core academic courses, as well as a minimum standardized (ACT/SAT) test score in order to compete in intercollegiate athletics as freshman. The struggle for many student-athletes to do well in the classroom,

supposedly because of inadequate academic preparation and subsequent low graduation rates, facilitated this proposal's passage. Proposition 48 has not been without its detractors. The minimum standardized test scores were targeted as being arbitrarily chosen with no research based data as a basis. In his study of student-athletes who were eligible and non-eligible under Proposition 48, Judge (1992) asserts that "...meeting or not meeting the requirements of Bylaw 14.3 (Proposition 48) does not appear to cause or contribute to the attrition rate of student-athletes" (p. 40). Rather, the student-athlete support system that provides tutoring, structured study time, and study skills classes was the primary factor in the retention of student-athletes.

Jokes about student-athletes' class schedules being filled with underwater basket weaving, pottery, and physical education activity courses are a thing of the past. In addition to revising initial eligibility standards via Proposition 16, the NCAA passed in 1992 the 25/50/75 percent rule, requiring that student-athletes complete a certain percentage of coursework satisfying progress towards a designated program of study by the beginning of the 3rd, 4th, and 5th academic years, respectively (NCAA Manual, 1997). For example, a student-athlete pursuing a degree program that requires 128 credit hours to graduate must have completed 32 *applicable* credit hours toward that program by the beginning of his or her 5th semester; 64 at the beginning of the 7th semester; and 96 at the beginning of the 9th semester. If they do not meet the required percentage, they cannot be certified eligible by the institution or conference as eligible to compete in intercollegiate athletics. This limits student-athletes from taking non-applicable, or elective ("basket weaving") courses and keeps them on track towards graduation. In response to stricter

satisfactory progress rules imposed for academic eligibility, coupled with the time constraints during the season of competition to access university support services, the NCAA passed legislation requiring all Division I institutions to make academic counseling and tutor services available to student-athletes. Athletic student support programs grew from fewer than two-dozen in 1982 to nearly 500 in 1997 (Stroock, 1997).

The "Student-Athlete"

Walter Byers, the NCAA Executive Director from 1951 to 1987, coined the term "student-athlete" in 1953. This phrase has since become widely recognized on college campuses and within society, and implies dual and separate roles of being both a student and an athlete. As the term implies, these individuals attend college for two main reasons: to make progress towards a college degree and to participate in intercollegiate athletics.

Student-athletes face the same developmental issues as non-athletes, they struggle with the usual tasks of developing and reinforcing personal competencies, establishing identities, accepting and owning personal beliefs and values, nurturing interpersonal and intimate relationships, and forming a degree program and career goals. According to Parham (1993), student-athletes face special challenges beyond those of non-athletes. "Student-athletes... are socialized from an early age in an environment that presents a set of challenges and demands that are in addition to and vastly different from the challenges and demands that their non-student-athlete peers have had to face" (p. 412). The most obvious challenge is that of balancing athletic requirements with academic

responsibilities. The student-athlete must balance involvement in academic and athletic pursuits successfully enough to satisfy both faculty and coaches.

Semester of Competition/Non-Competition

For many student-athletes, sport participation occurs primarily during one semester of a two-semester academic year. During the semester of competition student-athletes' time is devoted to academic involvement (attending classes, study hall, group and tutor sessions; conducting library research, meeting with faculty) and their sport (practice, conditioning, weight training, meetings, studying play books, training room time, and competition). During this semester, however, less time is devoted to developing and strengthening academic competencies. "The stress of balancing the academic and athletic activities seems to be particularly acute when the athlete is 'in season,' when from sun up to sundown the student-athlete is involved in some way with the various academic demands as well as with the demands of athletics." (Parham, p. 412).

Because of the increased athletic commitment, there is evidence that most student-athletes will take fewer credits during this semester than during the semester of non-competition (Bryant & Clifton, 1990; Gurney & Stuart, 1987). During the semester of non-competition the student-athlete's time is not as structured or consumed by their sport, although some sport-related activities occur. If the negative relationship between athletic participation and academic performance that Adler and Adler (1985) purport does indeed exist, then what assumptions, if any, could one make regarding academic motivation and achievement during the semester that student-athletes are not consumed

by athletics? If athletic participation for many student-athletes occurs primarily during one semester, it would seem logical that academic achievement would improve in the semester of non-competition. Kiger and Lorentzen (1986), however, found that academic performance was *positively* correlated to the intensity, commitment, and involvement in the sport. This finding indicates that student-athletes perform better academically in the semester of competition.

Previous studies (Adler & Adler, 1985; Bryant & Clifton, 1990; Kiger & Lorentzen, 1986; Parham, 1993) clearly indicate a contradiction among scholars over the consequences of athletic participation on academic performance. Adler and Adler generalize an overall negative relationship between athletics and academics, while Parham points out that less time is devoted to academic competencies during the semester of competition. Bryant and Clifton concluded that their student-athletes performed better in-season, while Kiger & Lorentzen's study indicated academic performance was positively correlated with involvement in sport. These contradictory findings required a more comprehensive study of academic performance of student-athletes.

Statement of the Problem

The problem of the study was to determine if there were differences in student-athletes' grade point averages for their semester of competition compared to the semester of non-competition. It was not the intent of this study to be comparative of Big 12 Conference member institutions. Variables included in this study were gender, race,

sport, and class standing. Credits completed in each semester by student-athletes were also considered.

Contribution to Educational Theory,
Product, or Practice

The purpose of this study was to gain a better understanding of how student-athletes perform academically when their time is structured by the activity of their sport (semester of competition) and when it is less controlled by their sport (semester of non-competition). These data provide the most comprehensive results to date of student-athlete academic achievement during the semester of competition vs the semester of non-competition. Judge (1992) indicated that student-athlete support services are the primary factor for retaining student-athletes. This study provides details of student-athlete achievement patterns between the two semesters for student services to program for optimal achievement and retention. Since athletic academic services is a relatively new entity among most institutions (Stroock, 1997), this study fills a vital gap in understanding how programming affects student-athlete academic achievement.

Each Division I institution must complete an Institutional Self-Study for NCAA Certification. Section 3.3.1.4 of the Self Study - Academic Support, states:

Adequate academic support services shall be available for student-athletes. Student-athletes shall be encouraged and assisted in reaching attainable academic goals of their own choosing. When it is determined that individual student-athletes have special academic needs, these needs shall be addressed. The support services shall be approved and reviewed periodically by academic authorities outside the department of intercollegiate athletics (Texas A&M University Athletic Department, 1999).

Results of this study will greatly aid in "determining that individual student-athletes have special academic needs", and provide reviewers the hard data to adequately assess a program's academic integrity in this regard.

Overall, this study provides the information to help athletic academic services develop more effective academic assistance programs/interventions which could prove to be the difference between eligibility/ineligibility and retention/attrition. Results of this study provide a statistically based answer to the question, rather than relying on empirically based assumptions of professionals in the field. This study also provides a foundation for seeking the answers as to why differences exist.

Few studies have examined this particular aspect of student-athlete academic achievement. In a study of academic achievement of student-athletes at Trenton State College, Bryant and Clifton noted that they "...were unable to locate a study comparing athlete's in-season grades with their out-of-season grades" (1990, p. 3). Other studies of student-athlete academic achievement mention this comparison (Phillips, 1908; Davis & Cooper, 1934; Parham, 1993; Maloney & McCormick, 1993), while not being the primary focus of their research. One study noted the number of specific studies on student-athletes and their educational attainment as being 'meager' (Purdy, Eitzen & Hufnagel, 1982), and several (Brede & Camp, 1987; Kiger & Lorentzen, 1986 Mayo, 1986; Petrie, 1993; Pascarella & Smart, 1991) have called for more research in this field.

While few researchers have specifically studied academic achievement in-season versus out-of-season, those who have conducted such research, typically limited subjects to student-athletes from only one particular institution. Getz (1976) conducted research

specifically comparing semesters of competition and non-competition, but did so with only male student-athletes at a small Division III college. The scarcity of studies comparing achievement between the semesters of competition and non-competition of student-athletes, and the lack of a more expansive sample than subjects from a single institution, demonstrated the need for a broader study .

Personal discussions with athletic academic services professionals across the country indicated a strong interest in the results of this study (C. Anzelmo, June 20, 1997; B. Bradley, June 21, 1997; R. Caldwell, June 13, 1998; P. Gautt, April 17, 1998; T. Lakin, February 13, 1998; C. Troester, October 13, 1998; S. Kinoshita, May 14, 1999; M. Nelson, June 12, 1999; S. Vigil, June 12, 1999; K. Riffie, June 13, 1999; P. Hughes, June 13, 1999; K. Barger, June 13, 1999; E. Brey, June 13, 1999; E. Hardt-Arnold, June 14, 1999; K. Glanville, June 14, 1999). Subsequently, these discussions have resulted in a split opinion about which semester student-athletes actually have better academic achievement.

Definition of Terms

Academic Achievement/ Performance - Grade point average based on a 4.0 scale.

Academic Year - A school year consisting of two separate terms that typically begins in late August or early September and ends in May.

Athletic Participation - Practicing and competing in at least one of the institutions intercollegiate sports.

Big 12 Conference - Athletic conference comprised of the following institutions: Texas Tech University; Texas A&M University; University of Texas; Baylor University;

Oklahoma State University; University of Oklahoma; Kansas State University; University of Kansas; University of Nebraska; University of Missouri; Iowa State University; and University of Colorado.

Change - The difference in grade point average between semester of competition and semester of non-competition.

Grade Point Average -- With quality points assigned as A=4.00; B=3.00; C=2.00; D=1.00; and F=0.00; the quotient obtained by dividing quality points by number of credit hours.

Non-Revenue Sport -- All intercollegiate sports other than men's basketball and football.

Official Competition - Competition that records official win-loss records, which determines post-season championship participation.

Revenue Sport -- Men's basketball and football, as recognized by the NCAA.

Semester of Competition - The semester in which all of a particular sport's official competition occurs.

Semester of Non-Competition - The semester in which none of a particular sport's official competition occurs.

Student-Athlete - An individual who is enrolled for a minimum of 12 credit hours at a four-year institution of higher education and participates in at least one of the intercollegiate sports sponsored by the institution.

Questions Answered

1. Is there a grade point average change between student-athletes from semester of competition to semester of non-competition?
2. Is there a grade point average change among males from semester of competition to semester of non-competition?
3. Is there a grade point average change among females from semester of competition to semester of non-competition?
4. Is there a grade point average change among White student-athletes from semester of competition to semester of non-competition?
5. Is there a grade point average change among Black student-athletes from semester of competition to semester of non-competition?
6. Is there a grade point average change among freshman, sophomore, junior, and senior student-athletes?
7. Is there a grade point average change among student-athletes in sports of volleyball, football, women's soccer, baseball, and softball?
8. Using the variables in questions 1-7, is there a difference in the number of credits completed between the semester of competition and semester of non-competition?
9. Does a relationship exist between change in credits completed and change in grade point average?

Review of Relevant Research

This study considers academic achievement of student-athletes during one academic year with regard to selected demographic variables. This section will summarize findings according to the following variables: Gender; Race; Sport; and Class Standing.

Gender

Intercollegiate athletics has, traditionally, been dominated by males. Twenty-five years ago it would have been difficult to compare academic achievement of male and female student-athletes simply because there were far fewer females participating in athletics. The inception of Title IX of the Education Amendment Act in 1972 gave rise to women's intercollegiate athletic participation and has brought the genders closer, at least quantitatively. Women and men, in this context, are more evenly represented now than ever before. They each have dual roles of student and athlete, and must devote time and energy to both.

Although role emphasis research was not the intent of this study, the importance placed on each role (academics and athletics) affects the outcome of achievement. Student-athletes have, at a minimum, these two primary role obligations, which often conflict. "If he (she) conforms fully or adequately in one direction, fulfillment will be difficult in another..." (Goode, 1960, p. 485).

In 1985 Adler and Adler published a qualitative "systematic participant-observation study" (p. 241) examining the relationship between athletic participation and

academic performance among male student-athletes in a major college basketball program. A similar study was conducted with women's volleyball and basketball players by Meyer (1990) in a direct comparison to the Adler and Adler study. Meyer's intent was to identify gender-related differences/similarities between the two studies.

The majority of student-athletes in both studies entered college with high academic aspirations and optimism to earn a degree. By the end of the freshman year a split developed between the genders. Male student-athletes in the Adler and Adler study, having often been placed in freshman classes with athlete-sympathetic faculty, incorrectly perceived that academics would not be a major concern. They soon began to realize that coursework was difficult and their academic idealism turned to cynicism. They also realized basketball consumed most of their time, leaving less time to study and socialize. "They progressively detached themselves from caring about or identifying themselves with (academics)" (p. 248).

In contrast, the females in the Meyer study exhibited a positive relationship between athletics and academics. The discipline of athletics encouraged them to focus on academics, which paralleled Kiger and Lorentzen's (1986) positive correlation of the two roles and the assertion that female athletes typically are more involved in their sport than male athletes. The Meyer study participants budgeted their time and were disciplined in studying. In contrast the males in the Adler and Adler study, when given free time, preferred to catch up on missed socializing. Another distinction between the two studies showed that the female participants had more class choices available to them, enjoyed classes more, and were interested in obtaining knowledge that they could use after

college. Conversely, the male participants were more often enrolled in courses not of their choosing, were uninterested in the content, and found no merit in the knowledge gained.

Furthermore, a recent national study of men's and women's basketball programs support the conclusions in Adler and Adler and Meyer (Allen, 1997). "While the coaches and teammates of Division I men generally demonstrated negative academic attitudes and behaviors, the coaches and teammates of Division I women appeared to create extremely positive academic environments within their teams" (p. 186). Although these studies provide qualitative observations why male and female student-athletes (primarily basketball) do or do not perform well academically, they do not quantitatively assess the differences between the genders.

A 1986 study of Division I student-athletes by Mayo compared independent variables of gender, race, scholarship status, and revenue/non-revenue sports to academic performance. The first hypothesis tested was the comparison of academic performance between male and female athletes. Female student-athletes achieve a statistically significant higher grade point average (2.88) than their male counterparts, in comparison with both male non-revenue (2.43) and revenue (2.09) student-athletes. Similarly, Purdy, et al. (1982) in a 10-year study of student-athletes at Colorado State University reported that "women scored significantly higher than men on nearly all measures of educational achievements..." (p. 442).

Gender research of academic performance and athletic participation is inconsistent and the manner in which findings are reported has been much the same.

Bryant and Clifton (1990) studied season of competition vs. season of non-competition grade point averages among football, women's soccer, and softball student-athletes at Trenton State College, but did not compare male vs. female academic achievement. Rather, they concluded that both genders performed better during in-season than out-of-season. Kanter and Lewis (1991) studied student-athletes in six intercollegiate sports (three male, three female) from 11 participating California community colleges. The authors found that female student-athletes earned a better overall grade point average than males -- 2.63 to 2.45, but did not test for statistical significance. Kiger and Lorentzen (1986) did not find a significant, direct relationship between academic performance and gender among student-athletes in their study of academic achievement among university athletes. They concluded, however, that white female non-revenue student-athletes perform better academically than other student-athletes at the university.

Perhaps most revealing in the comparison of academic achievement by genders is an NCAA survey of 42 Division I institutions where "female basketball players achieved a 2.64 grade point average, and other female scholarship athletes averaged a 2.67 in college. Their male counterparts earned a 2.44 grade point average in college" (cited in Foltz, 1992, p. 9).

Race

The comparison of Black and White student-athlete academic achievement is ubiquitous in the literature, with little variation of results. A tenor exists in the literature that Black student-athletes enter college less prepared academically than do White student-athletes, and do not perform as well as their White counterparts (Kanter & Lewis,

1991; Kiger & Lorentzen, 1986; Purdy, et al., 1982; Young & Sowa, 1992). Mayo points out that there is a specific problem area within the academic population in regards to athletics, and that is the Black male student-athletes representing football and basketball (1986).

One possible explanation is that participation in sports, and becoming a professional athlete (football or basketball), is a means for upward mobility for many Black athletes (Purdy, et al., 1982).. Therefore academics are not emphasized. Many Black student-athletes come to the university less prepared and are most likely in college because of involvement in sport (Purdy, et al.).

In a comprehensive study of 42 NCAA Division I institutions encompassing 2,818 student-athletes, Lang and Rossi (1991) measured academic performance by indexing college GPA, history of academic probation, and number of classes missed in both the season of competition and non-competition. Student-athletes were then placed into one of three groups: those who perform well academically; those who perform at a moderate level; and those who perform poorly. This unique study, although different from most in the method of determining academic performance, is consistent with prior research findings. "For males especially, being Black (versus White) and competing in intercollegiate football or basketball... significantly increases the likelihood of being in the low academic performance group and decreases the likelihood of being in the high academic group" (p. 17). The GPA corresponding with each group in association with the other indexing variables was a 2.5 or higher for the high performance group; 2.0 or

less for the low performance group; and between a 2.0 and 2.5 for the moderate performance group.

The missing link in most studies is the Black female student-athlete. Little is known of this group other than they comprised nearly 16% of all female student-athletes attending Division I institutions in 1992-'93 and participated primarily in basketball and cross country/track & field (Siegel, 1996). Whereas much has been studied and reported about the Black male student-athlete and his White counterpart, less attention has been paid to the female student-athlete, especially the Black female.

Sport

Within intercollegiate athletics the terms 'revenue' and 'non-revenue' are fairly commonplace. Football and men's basketball are the only two sports recognized by the NCAA as revenue sports, with all the rest categorized as non-revenue. Within the literature most studies make direct comparisons between these two groups rather than between individual sports (Camp & Epps, 1986; Gurney & Stuart, 1987; Davis & Berger, 1973; Brede & Camp, 1987; Mayo, 1986). This study examined the achievement of individuals within each sport.

The dominant outcome in previous studies showed that student-athletes who participate in revenue sports, as a group, do not achieve nearly as well academically as student-athletes in non-revenue sports. In her study of student-athlete academic achievement at Ohio State University, Mayo (1986) found that female student-athletes outpaced males in both non-revenue and revenue sports with an average GPA of 2.87 to 2.47 and 2.25, respectively (1986). Moreover, during the season of competition, the male

revenue GPA dropped considerably (2.09) while the female GPA increased slightly (2.88) and the male non-revenue GPA dropped only slightly (2.43). Lang and Rossi (1991), with their unique academic achievement classification, determined that male student-athletes in revenue sports were consistently more likely to be in the low academic group classification and less likely to be in the high academic group classification. Interestingly, Kiger and Lorentzen (1986) indicated that while revenue sport participants enter college with a pattern of poor academic achievement, this pattern does not continue once in college. They did find, however, that academic performance was influenced by type of sport participation.

In a direct comparison of 12 sports at Colorado State University, Purdy, et al. (1982) found that the revenue sports of football and men's basketball had the lowest mean grade point averages of all sports with a 2.30 and 2.49, respectively. Women's volleyball had the highest mean GPA with a 2.95, followed by softball (2.73), and baseball (2.52).

In a study of Clemson University athletes and non-athletes, Maloney and McCormick (1993) examined the role athletic participation played on academic performance. According to their findings men's basketball and football have the lowest mean grade point averages, 1.93 and 2.11 respectively, of the 14 teams studied. As was the case in the Colorado State University study, women's volleyball had the highest mean GPA with a 2.88, and Baseball had a mean grade point average of 2.31. Maloney and McCormick also revealed that participants in football and men's basketball achieve one-

tenth of a grade point worse each semester than non-revenue sport student-athletes, and that academic achievement in these two sports is worse during the season of competition.

Maloney and McCormick (1993) concluded that participating in sports reduces academic success, but is not homogeneous across sports and only significantly affects the revenue sports. This conclusion is the common assessment throughout the literature.

"The exploitation of athletes in the big-money sports extends into the classroom, and limitations on spring practice in football and the shortening of basketball season would, in our estimation, improve the academic achievement of the participants in these sports." (p. 570). In his study of student-athletes at Division III Heidelberg College, Getz (1976) compared academic achievement during the semester of competition to the semester of non-competition. Significant differences were found in football, wrestling, baseball, track, tennis, and golf. No differences were found of cross country and women's soccer.

Class

A great deal of attention has been given in the literature to the graduation rates of student-athletes since the NCAA tightened initial eligibility standards for freshman. Likewise, many studies focused on freshman student-athletes and their predicted or actual academic achievement in college (Head, Walker, & Lindsey, 1989; Roberts-Wilber, Wilber, & Morris, 1987; Gurney & Stuart, 1987). However, a dearth of information exists in the literature regarding the academic achievement of student-athletes throughout all class levels.

Students enter college with varied academic preparedness, but many do not seem to have an accurate realization of the difference between high school and college coursework. The difficulty in adjusting to rigors of college academics, the demand of college athletics, and college life in general, may affect this group's academic performance. In their comparative study of softball, football, and women's soccer grades, Bryant and Clifton (1990) found, however, the opposite. Freshman perform better in the fall, or transitional, semester (2.37) than they did in the spring semester (2.28). The senior class level also had a lower mean GPA from fall to spring, while sophomores and juniors improved their mean grade point averages. In comparing GPA by semester of competition/non-competition, freshman had the second highest mean GPA (2.41) of all class levels during the semester of competition. However, this changed for the semester of non-competition when freshman recorded the lowest mean GPA (2.24) of all class levels. This is possibly attributed to the freshman status which, of all class levels, experience the least amount of sport performance and the related pressures.

Seniors recorded the largest semester-to-semester change, having the second lowest mean GPA during the semester of competition yet the highest mean GPA (2.75) in the semester of non-competition. Sophomores had virtually no change, and juniors, having the lowest mean GPA of all class levels during the semester of competition (2.37), with a slight improvement during the semester of non-competition. None of the changes were statistically significant. Getz's 1976 study of the class levels revealed that only the junior class earned a better GPA during the semester of competition, while freshman, sophomores, and seniors performed better during the semester of non-competition.

Purdy, et al. (1982) found that as a student-athlete's years of sport participation increased, so did the mean GPA. Although these researchers did not classify students as freshman, sophomores, etc., they found that student-athletes with one year of participation had a mean end-of-year cumulative GPA of 2.48; two years a 2.55; three years a 2.67; and four years or more a 2.78. Purdy, et al. conducted their study over a 10-year period and included 2,000 student-athletes.

CHAPTER II

METHODOLOGY

Theoretical/Conceptual Framework

The conceptual framework of this design is based in part on the Student Involvement Theory of Alexander Astin (1984). This theory posits that the most precious resource is student time, and that outside activities (i.e. athletics) reduce the time and energy students put toward educational attainment. Goal achievement, such as being academically successful, directly correlates with the time and effort devoted to the activities that produce desired outcomes. Astin places this devotion of time, or involvement, on a continuum. Each individual student-athlete exhibits different degrees of involvement and motivation towards different activities (academics, athletics) at different times (season of competition/non-competition). Involvement is also marked by quantitative and qualitative considerations. Depending on the time and energy demands of athletic activities, a student-athlete's academic achievement during a given semester depends on the quantity and quality of time and motivation to academic work. This study will not address but recognizes that motivation issues are important in student-athlete academic achievement.

Population Description and Sampling Procedure

The participants in this study were student-athletes who were on the 1997-'98 official team roster in the sports of football, volleyball, softball, baseball, and women's soccer at NCAA Big 12 Conference institutions – all Division I-A. The institutions that make up the Big 12 Conference are: Texas Tech University, Texas A&M University, University of Texas, Baylor University, Oklahoma State University, University of Oklahoma, Kansas State University, University of Kansas, University of Nebraska, University of Missouri, Iowa State University, and University of Colorado.

Football was selected because it has no overlap into the semester of non-competition and because of its prominence in college athletics. Volleyball was selected because it is the companion sport to football for women and conducts its official competition in the fall. Baseball and softball were selected because they are companion sports and they conduct their official competition in the spring. Women's soccer was selected to help offset the large male sampling caused by the inclusion of football, and because their official competition is conducted in the fall. Each sport conducts its entire official competition within one semester, or at least prior to the next semester beginning.

Of the sports considered, volleyball and football are considered "Head Count" sports – those that must provide a full athletic scholarship up to the maximum number of student-athletes that can receive such aid. Therefore, volleyball has 12 full scholarship student-athletes with an average of approximately 15 participants on each Big 12 member roster. Football has 85 full scholarship student-athletes, with an average of 123

participants on each Big 12 member roster. Those not on scholarship are considered "walk-on" student-athletes.

Baseball, softball, and women's soccer are considered "Equivalency" sports. These sports can divide scholarships among their student-athletes, but cannot exceed the set equivalency number for each sport. For these sports, baseball is allotted 11.7 scholarships, with an average Big 12 member roster size of 37; softball is allotted 12 scholarships, with an average Big 12 member roster size of 20; women's soccer is allotted 12 scholarships, with an average Big 12 member roster size of 22.

Since the population is composed of subgroups (sports), stratified random sampling procedures were employed. This population consists of a total 2,604 student-athletes. Nine of the 12 institutions within the Big 12 Conference returned surveys, leaving a total of 1,953 student-athletes from the population available to be randomly sampled. Given average roster sizes, football comprises 56% of the population; baseball 17%; women's soccer 10%; softball 9%; and volleyball 7%. Given these roster sizes, it was necessary to deviate slightly from sampling each subgroup in the same proportion as it existed in the population. For example, if a sample were selected for each sport based on the proportion within the population, the sample would consist of only 1 volleyball student-athlete; 2 softball student-athletes; 2 women's soccer student-athletes; and 6 baseball student-athletes from each roster. Conversely, there would be a sample of 68 football student-athletes from each roster. To have greater sampling parity within the population, and specifically for each subgroup of the population, as well as reducing the overwhelming number of football samples, a sample of 20% of the roster size for each

sport was used. This resulted in sampling approximately 390 student-athletes of the entire population, and provided more accurate estimates from each non-football subgroup (sport), yet still provided substantial estimates for football.

Random samples were drawn from official team rosters, for each sport, at each institution. Data samples were collected on the individuals whose names corresponded with the randomly selected numbers.

Sources of Evidence and Authority

Hypotheses Tested

1. Ho: The student-athlete mean GPA for semester of competition equals the student-athlete mean GPA for semester of non-competition.
2. Ho: The male student-athlete mean GPA for semester of competition equals the male student-athlete mean GPA for semester of non-competition.
3. Ho: The female student-athlete mean GPA for semester of competition equals the female student-athlete mean GPA for semester of non-competition.
4. Ho: The White student-athlete mean GPA for semester of competition equals the White student-athlete mean GPA for semester of non-competition.
5. Ho: The Black student-athlete mean GPA for semester of competition equals the Black student-athlete mean GPA for semester of non-competition.
6. Ho: The freshman student-athlete mean GPA for semester of competition equals the freshman student-athlete mean GPA for semester of non-competition.

7. Ho: The sophomore student-athlete mean GPA for semester of competition equals the sophomore student-athlete mean GPA for semester of non-competition.
8. Ho: The junior student-athlete mean GPA for semester of competition equals the junior student-athlete mean GPA for semester of non-competition.
9. Ho: The senior student-athlete mean GPA for semester of competition equals the senior student-athlete mean GPA for semester of non-competition.
10. Ho: The football student-athlete mean GPA for semester of competition equals the football student-athlete mean GPA for semester of non-competition.
11. Ho: The volleyball student-athlete mean GPA for semester of competition equals the volleyball student-athlete mean GPA for semester of non-competition.
12. Ho: The baseball student-athlete mean GPA for semester of competition equals the baseball student-athlete mean GPA for semester of non-competition.
13. Ho: The softball student-athlete mean GPA for semester of competition equals the softball student-athlete mean GPA for semester of non-competition.
14. Ho: The women's soccer student-athlete mean GPA for semester of competition equals the women's soccer student-athlete mean GPA for semester of non-competition.

The following hypotheses for interaction were tested. GPA change was computed by subtracting the GPA earned during the semester of competition from the GPA earned during the semester of non-competition.

15. Ho: Gender and race do not interact with GPA change.
16. Ho: Gender and class standing do not interact with GPA change.

17. Ho: Race and class standing do not interact with GPA change.
18. Ho: Race and sport do not interact with GPA change.
19. Ho: Class standing and sport do not interact with GPA change.
20. Ho: Gender, race, and class standing do not interact with GPA change.
21. Ho: Race, sport, and class standing do not interact with GPA change.

If the interaction null hypotheses were retained the following main effects hypotheses were tested:

22. Ho: The mean GPA change of female student-athletes equals the mean GPA change of male student-athletes.
23. Ho: The mean GPA change of Black student-athletes equals the mean GPA change of White student-athletes
24. Ho: The mean GPA change of freshman student-athletes equals the mean GPA change of sophomore student-athletes equals the mean GPA change of junior student-athletes equals the mean GPA change of senior student-athletes.
25. Ho: The mean GPA change of football student-athletes equals the mean GPA change of volleyball student-athletes equals the mean GPA change of baseball student-athletes equals the mean GPA change of softball student-athletes equals the mean GPA change of women's soccer student-athletes.

Hypotheses 1-14 and 15-21 were tested by replacing the dependent variable "GPA" and "GPA change", respectively, with the dependent variable "credits completed", as were 22-25, if necessary.

26. Ho: No correlation exists between the change in credits completed and change in GPA of student-athletes.

All hypotheses were tested using alpha .05. This level of alpha was chosen because of its broad use in statistical analysis. A more stringent alpha (.01) could make finding significance very difficult; and a less stringent alpha (.10) could produce more significant findings, either of which could lead to misleading results.

Explanation of Investigative Categories

The following variables were considered in this study:

Gender - males on the football and baseball teams; females on the volleyball, softball, and women's soccer teams of surveyed institutions;

Race - White and Black student-athletes that participate on the football, volleyball, baseball, softball, and women's soccer teams of surveyed institutions. Due to small numbers, other racial groups were not considered.

Sport - student-athletes who compete in football, volleyball, baseball, softball, and women's soccer.

Class Standing - student-athletes are distinguished by their status of freshman, sophomore, junior, and senior based on the number of semesters they have completed at the end of the spring semester of the 1997-'98 academic year;

1-2 = freshman

3-4 = sophomore

5-6 = junior

7 or more = senior

Semester of Competition - the semester that each respective sport begins and concludes all of its *official* competition against other collegiate teams;

Semester of Non-Competition - the semester that each respective sport does not conduct any official competition against other collegiate teams;

Credits Completed - the number of credit hours completed per semester.

Controls

To eliminate possible contamination the following were omitted:

- Sophomore, junior, or seniors who took a remedial/developmental course during either semester that the study encompasses.
- Student-athletes who participated in both a fall and winter/spring sport.
- Student-athletes who repeated a course during the spring semester that he/she originally took during the 1997 fall semester.
- Student-athletes that were not certified as eligible for the 1997-'98 academic year.
- Racial groups other than Black or White.

The internal validity threat of maturation was considered due to student-athletes' possible improvement from fall semester to spring semester, and from year to year. This is likely to occur between the first and second semester of the freshman year, as freshman tend to become familiar with the academic expectations and time commitments of college during their first, or fall semester. This maturation could result in better performance during the second, or spring semester. This internal threat was in part accounted for by the testing of all class standings separately.

Method of Data Collection

The instrument was sent to the Directors of Student-Athlete Support Services at each Big 12 Conference member institution. Directors were asked to provide the following data on each selected student-athlete:

- Race (Black/White/Other)
- Semester GPA for fall 1997 (to two decimal points, i.e. 3.42)
- Number of credit hours completed (as opposed to earned) during the fall 1997 semester (includes remedial).
- Semester GPA for spring 1998.
- Number of credit hours completed (as opposed to earned) during the spring 1998 semester (includes remedial).
- Had the student-athlete repeated a fall course during the spring semester (Yes/No).
- Had the student-athlete taken a remedial course during either semester (Yes/No).
- Had the student-athlete participated in more than one sport during 1997-'98 (Yes/No).
- Was the student-athlete certified as eligible for both semesters (Yes/No).
- How many full-time collegiate semesters the student-athlete has completed at all colleges.

The information requested above is demographic data and student record data. Grade point average is a measurement of academic achievement based on a 4.0 scale and computed by dividing total (quality) points by number of credits taken.

This is the sole criterion to report college academic achievement of Big 12 Conference member institutions. This five-letter grading system with corresponding

values is used in 95 percent of colleges and universities in the U.S. (Ohmer, Pollio, & Eison, 1986). Because grade point average is the sole achievement criterion for the subjects in the sample, this instrument holds content validity because there are no other possible/necessary measures of academic achievement. The construct validity of the instrument is assumed valid, as the calculation of grade point average has previously been established, time-tested, and universally used.

Similarly, the grade point averages reported on the instrument were considered reliable (0.00 to 4.00). According to Ohmer, et al. (1986) "The letter symbols and the metric are interpreted as absolutes - that is, they tend to have the same meaning in both individual and institutional usage" (p. 22). Grading and subsequent grade point averages could vary from institution to institution because of a variety of influences (e.g. faculty grading standards). However, student-athletes at institution X are not being compared to student-athletes at institution Y. The grade point average of a student-athlete is being compared only to his/her own grade point average of the designated two semesters within the same institution, under the same institutional influences. This provides consistency between the two scores on the same instrument from student-athlete 1 to student-athlete j.

Analytical Techniques and Research Design

Statistics used for data analysis included Dependent *t* tests, Regression Analysis, and Analysis of Variance. Dependent *t* tests were utilized for Hypotheses 1-14 and 27-40. Normal distribution and equal variance were assumed. Analysis of variance tests for interaction were employed in hypotheses 15-21 and 41-47. If no interactions were found, the hypotheses for main effects, 22, 23, 24, 25, 48, 49, 50 and 51

were tested by an analysis of variance. The observations were assumed to be independent, randomly sampled, and normally distributed. If tests for main effects are warranted for the main effects hypothesis, and if significant differences were found among the means, the Tukey multiple comparison test was utilized. Regression Analysis (Pearson product moment correlation) was used for Hypothesis 26.

Delimitations/Limitations

1. The study was delimited to student-athletes only at Big 12 Conference institutions.
2. The study was delimited to student-athletes from the sports of football, volleyball, women's soccer, softball, and baseball.
3. The study was delimited to student-athletes that are White (Caucasian) and Black (African-American).
4. The study was delimited to freshman and those student-athletes that do not take remedial/developmental coursework either semester of their sophomore, junior, or senior years.
5. The study was delimited to student-athletes that do not repeat a course during the second semester that was taken in the first semester.
6. The study was delimited to student-athlete grade point averages only from the 1997-'98 academic year.
7. The study was limited in that the data were collected and reported by individuals other than the researcher.
8. The study was limited to the variability among courses/instructors in assigning grades.

CHAPTER III

RESULTS

The purpose of this study was to gain a better understanding of the academic achievement of student-athletes over two semesters through exploring and describing the effects of selected variables. During one semester, each student-athlete was in his or her semester of competition; during the other semester they were in their semester of no official competition. This chapter presents the results of the data analysis.

Characteristics of the Subjects

Only student-athletes from the sports that have an official season of competition entirely within one semester were selected for this survey. Instruments of data collection sent to each Big 12 Conference member institution's Director of Student-Athletes Support Services contained a total of 525 randomly selected subjects based on roster sizes. Nine of the 12 institutions returned the instrument, providing data on 381 subjects. From this N of 381, 87 subjects were eliminated from the study because of control factors. By sport, 55 were eliminated from football, 21 from baseball, 5 each from women's soccer and softball, and one from volleyball, yielding an N of 294.

In adhering to the control factors cited in this study, a total of 70 student-athletes were eliminated: 14 student-athletes were eliminated for repeating a course during the spring 1998 semester which they had originally taken in the fall 1997 semester; 15 for

taking remedial coursework beyond their freshman year; 18 were of a race other than Black or White; 21 for not meeting athletic eligibility; and two for participating in more than one sport.

An additional 17 subjects were eliminated for other factors including: graduation at the end of the fall 1997 semester (1); completing the fall 1997 semester, but not returning for the spring 1998 semester (6); and no available grade point average for at least one of the semesters (10). Eliminated subjects were not replaced due to the difficulty in obtaining data on additional subjects from Big 12 member institutions.

Of the remaining N of 294, 168 were football subjects (57%); 46 Baseball (15.6%); 26 Softball (8.8%); 28 Women's Soccer (9.5%); and 26 Volleyball (8.8%). Of the N of 294, 214 (72.7%) were male and 80 (27.2%) were female. Seventy-four subjects were Black (25.1%) while 220 were White (74.8%). There were 74 freshman; 81 sophomores; 77 juniors; and 62 seniors in the study. These data were collected from one academic year, 1997-1998, and did not indicate any trends over time.

Data Analysis

The problem of this study was to determine if a difference existed in grade point average for student-athletes in their semester of competition compared to their semester of non-competition. The difference in credit hours completed per semester by student-athletes was also analyzed. Grade point average change was computed by subtracting the mean GPA for semester of non-competition from the mean GPA for the semester of competition. All tests are 2-tailed, with a minus sign on the mean value indicating a statistically greater mean GPA for the semester of non-competition. The same procedure

was utilized for computing the change in mean credits completed. An alpha level of .05 was used for all statistical tests. This commonly used level provides sufficient power for correctly rejecting the tested hypotheses and safeguarding against Type I errors.

The first hypothesis tested change in all student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.1092. There was not sufficient evidence to conclude that the student-athlete mean GPA for the semester of competition differs from the student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 1).

Table 1. Change in GPA Among Student-Athletes.

Variable	N	DF	gpadiff	Std Err	Std Dev	Pr > t
			Mean			
gpadiff	294	293	-0.064	0.0395	0.6778	0.1092

Hypothesis two tested change in male student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.1542. There was not sufficient evidence to conclude that male student-athlete mean GPA for the semester of competition differs from the male student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 2).

Hypothesis three tested change in female student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of

0.6077. There was not sufficient evidence to conclude that female student-athlete mean GPA for the semester of competition differs from the female student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 2).

Table 2. Change in GPA Among Genders.

gender	gpadiff	Standard Error	H0:LSMEAN=0	H0:LSMean1
	MEAN		Pr > t	LSMean2 Pr > t
Female	-0.04457211	0.08673550	0.6077	0.6514
Male	-0.08805828	0.06164227	0.1542	

Hypothesis four tested change in White student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0526. There was not sufficient evidence to conclude that White student-athlete mean GPA for the semester of competition differs from the White student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 3).

Hypothesis five tested change in Black student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.7087. There was not sufficient evidence to conclude that Black student-athlete mean GPA for the semester of competition differs from the Black student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 3).

Table 3. Change in GPA Among Races.

ethnic	gpadiff MEAN	Standard Error	H0:LSMEAN=0 Pr > t	H0:LSMean1= SMean2 Pr > t
Black	-0.03516840	0.09404790	0.7087	0.5189
White	-0.09746198	0.05007924	0.0526	

Hypothesis six tested change in freshman student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.9921. There was not sufficient evidence to conclude that the freshman student-athlete mean GPA for the semester of competition differs from the freshman student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 4).

Hypothesis seven tested change in sophomore student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.4810. There was not sufficient evidence to conclude that the sophomore student-athlete mean GPA for the semester of competition differs from the sophomore student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 4).

Hypothesis eight tested change in junior student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.1588. There was not sufficient evidence to conclude that the junior student-athlete mean GPA for the semester of competition differs from the junior student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 4).

Hypothesis nine tested change in the senior student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.4205. There was not sufficient evidence to conclude that the senior student-athlete mean GPA for the semester of competition differs from the senior student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 4).

Table 4. Change in GPA Among Class Standings.

year	gpadiff MEAN	Standard Error	Pr > t
Freshman	0.00087585	0.08804217	0.9921
Sophomore	-0.05954601	0.08438263	0.4810
Junior	-0.12756774	0.09029946	0.1588
Senior	-0.07902287	0.09795306	0.4205

Hypothesis 10 tested change in the football student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.7633. There was not sufficient evidence to conclude that the football student-athlete mean GPA for the semester of competition differs from the football student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 5).

Hypothesis 11 tested change in the volleyball student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.9648. There was not sufficient evidence to conclude that the volleyball student-athlete mean GPA for

the semester of competition differs from the volleyball student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 5).

Hypothesis twelve tested change in the baseball student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.1358. There was not sufficient evidence to conclude that the baseball student-athlete mean GPA for the semester of competition differs from the baseball student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 5).

Hypothesis 13 tested change in the softball student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.2690. There was not sufficient evidence to conclude that the softball student-athlete mean GPA for the semester of competition differs from the softball student-athlete mean GPA for the semester of non-competition, and the null hypothesis was retained (Table 5).

Hypothesis 14 tested change in the women's soccer student-athlete's mean GPA between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0311. There is sufficient evidence to conclude that the women's soccer student-athlete mean GPA for the semester of competition differs from the women's soccer student-athlete mean GPA for the semester of non-competition, and the null hypothesis was rejected (Table 5).

Table 5. Change in GPA Among Sports.

sport	gender	Gpdiff MEAN	Standard Error	Pr > t
Volleyball	F	0.00619473	0.14026822	0.9648
Softball	F	0.15383121	0.13888218	0.2690
Soccer	F	-0.29374226	0.13561341	0.0311
Baseball	M	-0.15994265	0.10693513	0.1358
Football	M	-0.01617391	0.05365597	0.7633

Hypothesis 15 tested if the combination of race and gender interact on GPA change. The interaction was not statistically significant, $F(1, 290) = 1.26$, $p 0.2631 > .05$.

Hypothesis 16 tested if the combination of class standing and gender interact on GPA change. The interaction was not statistically significant, $F(3, 286) = 1.13$, $p 0.3376 > .05$.

Hypothesis 17 tested if the combination of race and class standing interact on GPA change. The interaction was not statistically significant, $F(3, 286) = 0.80$, $p 0.4928 > .05$.

Hypothesis 18 tested if the combination of race and sport interact on GPA change. The interaction was not statistically significant, $F(4, 284) = 0.66$, $p 0.6192 > .05$.

Hypothesis 19 tested if the combination of class standing and sport interact on GPA change. The interaction was not statistically significant, $F(12, 274) = 1.13$, $p 0.3389 > .05$.

Hypothesis 20 tested if the combination of gender, race, and class standing interact on GPA change. The interaction was not statistically significant, $F(9, 279) = 0.93$, $p 0.4950 > .05$.

Hypothesis 21 tested if the combination of race, sport, and class standing interact on GPA. The interaction was not statistically significant, $F(23, 262) = 0.95, p 0.5280 > .05$.

Since no significant interactions were found, the main effects hypotheses were tested. Since the independent variables of race, gender, sport, and class standing were used in multiple two factor designs, the main effects tests for each independent variable were analyzed more than once. The discussion of the tests for main effects provide an overview of those tests.

Hypothesis 22 tested if the mean GPA change of female student-athletes equaled the mean GPA change of male student-athletes. There was not sufficient evidence in any of the main effects tests to indicate the female student-athlete mean GPA differs significantly from the male student-athlete mean GPA and the null hypothesis was retained. A post-hoc analysis was not warranted.

Hypothesis 23 tested if the mean GPA change of Black student-athletes equaled the mean GPA change of White student-athletes. There was not sufficient evidence in any of the main effects tests to indicate the Black student-athlete mean GPA differs significantly from the White student-athlete mean GPA and the null hypothesis was retained. A post-hoc analysis was not warranted.

Hypothesis 24 tested if the mean GPA change among freshman, sophomores, juniors, and seniors equaled the mean GPA change of student-athletes from each of the other three class standings. There was not sufficient evidence in any of the main effects tests to conclude that the mean GPA change of any one class standing of student-athletes

differs significantly from the mean GPA change of any other class standing of student-athletes. A post-hoc analysis was not warranted.

Hypothesis 25 tested if the mean GPA change among football, volleyball, softball, women's soccer, and baseball equaled the mean GPA change of student-athletes from each of the other four sports. There was not sufficient evidence in any of the main effects tests to conclude that the mean GPA change of any one sport of student-athletes differs significantly from the mean GPA change of any other sport of student-athletes. A post-hoc analysis was not warranted.

Hypothesis 26 tested if a relationship existed between the change in number of credits completed and the change in GPA of student-athletes. Regression Analysis was utilized to test this hypothesis. The test produced a Pearson Correlation Coefficient of 0.4513, indicating a positive correlation between credits completed change and GPA change. The test produced a p-value of 0.0001. There is sufficient evidence to indicate that a significant relationship exists between change in credits completed and change in GPA. The null hypothesis was rejected.

Hypothesis 27 tested change in all student-athlete's mean number of credits completed between their semester of competition and their semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0001. There was sufficient evidence to conclude that the student-athlete mean number of credits completed for the semester of competition differs from the student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 6).

Table 6. Change in Credits Completed Among Student-Athletes.

Variable	N	DF	creddiff	Std Err	Std Dev	Pr > t
			Mean			
creddiff	294	293	-0.697	0.1677	2.8751	<.0001

Hypothesis 28 tested change in the male student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0018. There was sufficient evidence to conclude that the male student-athlete mean number of credits completed for the semester of competition differs from the male student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 7).

Hypothesis 29 tested change in the female student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0180. There was sufficient evidence to conclude that the female student-athlete mean number of credits completed for the semester of competition differs from the female student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 7).

Table 7. Change in Credits Completed Among Genders.

gender	creddiff	Standard Error	H0:LSMEAN=0	H0:LSMean1
	MEAN		Pr > t	LSMean2
Female	-0.88030683	0.36982397	0.0180	0.9014
Male	-0.82949181	0.26283115	0.0018	

Hypothesis 30 tested change in the White student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.0001. There was sufficient evidence to conclude that the White student-athlete mean number of credits completed for the semester of competition differs from the White student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 8).

Hypothesis 31 tested change in the Black student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.0326. There was sufficient evidence to conclude that the Black student-athlete mean number of credits completed for the semester of competition differs from the Black student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 8).

Table 8. Change in Credits Completed Among Races.

race	crediff MEAN	Standard Error	H0:LSMEAN=0 Pr > t	H0:LSMean1 LSMean2 Pr > t
Black	-0.86114685	0.40100268	0.0326	0.9758
White	-0.84865179	0.21352852	<.0001	

Hypothesis 32 tested change in the freshman student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent t test was utilized to test this hypothesis. The test produced a p-value of 0.0203. There was sufficient evidence to conclude that the freshman student-

athlete mean number of credits completed for the semester of competition differs from the freshman student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 9).

Hypothesis 33 tested change in the sophomore student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0269. There was sufficient evidence to conclude that the sophomore student-athlete mean number of credits completed for the semester of competition differs from the sophomore student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 9).

Hypothesis 34 tested change in the junior student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0018. There was sufficient evidence to conclude that the junior student-athlete mean number of credits completed for the semester of competition differs from the junior student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 9).

Hypothesis 35 tested change in the senior student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.2084. There was not sufficient evidence to conclude that the senior student-athlete mean number of credits completed for the semester of competition differs from

the senior student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was retained (Table 9).

Table 9. Change in Credits Completed Among Class Standings.

year	creddiff MEAN	Standard Error	Pr > t
Freshman	-0.87616219	0.37539539	0.0203
Sophomore	-0.80046914	0.35979177	0.0269
Junior	-1.21642723	0.38502005	0.0018
Senior	-0.52653873	0.41765358	0.2084

Hypothesis 36 tested change in the football student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0518. There was not sufficient evidence to conclude that the football student-athlete mean number of credits completed for the semester of competition differs from the football student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was retained (Table 10).

Hypothesis 37 tested change in the volleyball student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0391. There was sufficient evidence to conclude that the volleyball student-athlete mean number of credits completed for the semester of competition differs from the volleyball student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 10).

Hypothesis 38 tested change in the baseball student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.0083. There was sufficient evidence to conclude that the baseball student-athlete mean number of credits completed for the semester of competition differs from the baseball student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was rejected (Table 10).

Hypothesis 39 tested change in the softball student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.3927. There was not sufficient evidence to conclude that the softball student-athlete mean number of credits completed for the semester of competition differs from the softball student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was retained (Table 10).

Hypothesis 40 tested change in the women's soccer student-athlete's mean number of credits completed between the semester of competition and the semester of non-competition. A dependent *t* test was utilized to test this hypothesis. The test produced a p-value of 0.1231. There was not sufficient evidence to conclude that the women's soccer student-athlete mean number of credits completed for the semester of competition differs from the women's soccer student-athlete mean number of credits completed for the semester of non-competition, and the null hypothesis was retained (Table 10).

Table 10. Change in Credits Completed Among Sports.

sport	gender	crediff MEAN	Standard Error	Pr > t
Volleyball	F	-1.23975449	0.59807749	0.0391
Softball	F	-0.50692198	0.59216770	0.3927
Soccer	F	-0.89424404	0.57823026	0.1231
Baseball	M	-1.21224122	0.45595142	0.0083
Football	M	-0.44674239	0.22877903	0.0518

Hypothesis 41 tested if the combination of race and gender interact on credits completed change. Analysis of Variance was used to test this hypothesis. The interaction was not statistically significant, $F(1, 290) = 0.28$, $p 0.5999 > .05$.

Hypothesis 42 tested if the combination of class standing and gender interact on credits completed change. The interaction was not statistically significant, $F(3, 286) = 0.29$, $p 0.8329 > .05$.

Hypothesis 43 tested if the combination of race and class standing interact on credits completed change. The interaction was not statistically significant, $F(3, 286) = 0.39$, $p 0.7609 > .05$.

Hypothesis 44 tested if the combination of race and sport interact on credits completed change. The interaction was not statistically significant, $F(4, 284) = 0.18$, $p 0.9468 > .05$.

Hypothesis 45 tested if the combination of class standing and sport interact on credits completed change. The interaction was not statistically significant, $F(12, 274) = 0.91$, $p 0.5405 > .05$.

Hypothesis 46 tested if the combination of gender, race, and class standing interact on credits completed change. The interaction was not statistically significant, $F(9, 279) = 0.45$, $p 0.9075 > .05$.

Hypothesis 47 tested if the combination of race, sport, and class standing interact on credits completed change. The interaction was not statistically significant, $F(23, 262) = 0.69$, $p 0.8563 > .05$.

Since no significance was found among interactions, the main effects hypotheses were tested. Since the independent variables of race, gender, sport, and class standing were used in multiple two factor designs, the main effects tests for each independent variable were analyzed more than once. The discussion of the tests for main effects provide an overview of those tests.

Hypothesis 48 tested if the mean credits completed change of female student-athletes equaled the mean credits completed change of male student-athletes. There was not sufficient evidence in any of the main effects tests to indicate the female student-athlete mean credits completed change differs significantly from the male student-athlete mean credits completed change and the null hypothesis is retained. A post-hoc analysis was not warranted.

Hypothesis 49 tested if the mean credits completed change of Black student-athletes equaled the mean credits completed change of White student-athletes. There was not sufficient evidence in any of the main effects tests to indicate the Black student-athlete mean credits completed change differs significantly from the White student-athlete credits completed change and the null hypothesis is retained. A post-hoc analysis was not warranted.

Hypothesis 50 tested if the mean credits completed change among freshman, sophomores, juniors, and seniors equaled the mean credits completed change of student-

athletes from each of the other three class standings. There was not sufficient evidence in any of the main effects tests to indicate that the mean GPA change of any one class standing of student-athletes differs significantly from the mean GPA change of any other class standing of student-athletes. A post-hoc analysis was not warranted.

Hypothesis 51 tested if the mean credits completed change among football, volleyball, softball, women's soccer, and baseball equaled the mean credits completed change of student-athletes from each of the other four sports. There was not sufficient evidence in any of the main effects tests to conclude that the mean credits completed change of any one sport of student-athletes differs from the mean credits completed change of any other sport of student-athletes. A post-hoc analysis was not warranted.

CHAPTER IV

SUMMARY

In their 1985 study, Adler and Adler found that there was a negative relationship between athletic participation and academic performance, whereas Bryant and Clifton in their 1990 study found better performance during the student-athlete's in-season, or a positive correlation between academic achievement and athletic participation. This study examined the academic achievement of Big 12 Conference student-athletes from five sports. The intent of the study was to clarify and provide more explicit answers to questions involving student-athlete academic achievement as it relates to athletic participation. Overall, this study did not find any evidence to suggest that student-athletes perform better academically during their semester of non-competition than they do during their semester of competition.

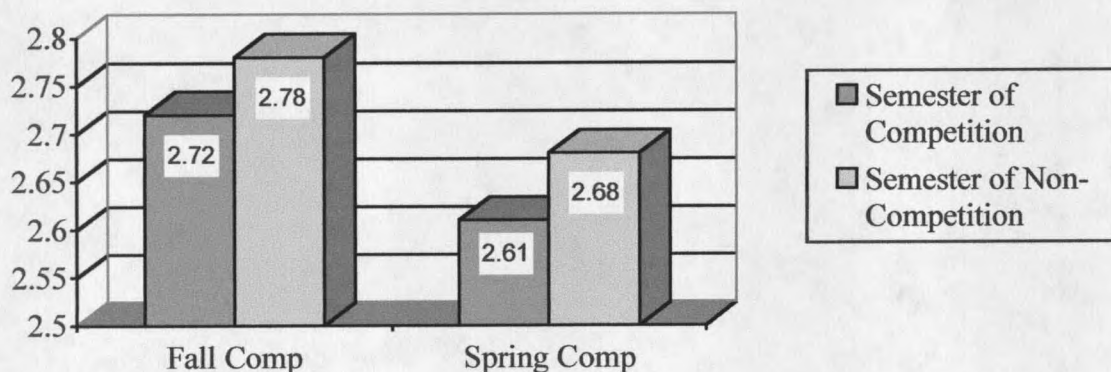
Additional Findings

A more detailed overview of mean GPA and mean credits completed is summarized here. The means are given for each independent variable based on the specific semesters in which they competed and did not compete.

Mean Grade Point Averages

Previous studies offer differing conclusions regarding the performance of academic achievement as it relates to athletic participation. This study reveals that most student-athlete mean grade point averages increase during the semester of non-competition, however none improve significantly save the subgroup women's soccer. Overall, student-athletes who competed during the fall semester had a semester of competition mean GPA of 2.72 ($SD = 0.73$), compared to their spring, or semester of non-competition mean GPA of 2.78 ($SD = 0.71$). Student-athletes who competed during the spring semester had a semester of competition mean GPA of 2.61 ($SD = 0.78$), compared to their fall, or semester of non-competition mean GPA of 2.68 ($SD = 0.72$) (Figure 1).

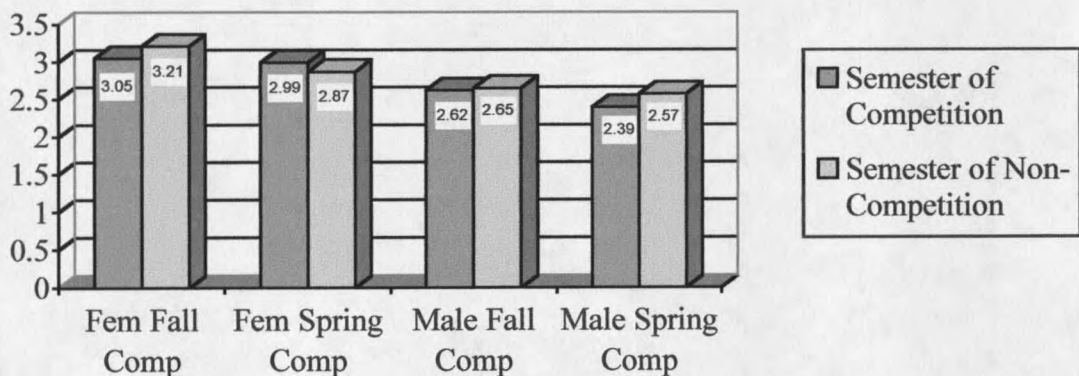
Figure 1. All student-athlete mean GPA comparison: those who competed in the fall; those who competed in the spring.



Female student-athletes who competed in the fall had a semester of competition mean GPA of 3.05 ($SD = 0.75$) and a spring, or semester of non-competition mean GPA of 3.21 ($SD = 0.57$), compared to their male counterparts mean GPA of 2.62 ($SD = 0.69$)

and 2.65 ($SD = 0.70$), respectively (Figure 2). Females who competed in the spring had a semester of competition mean GPA of 2.99 ($SD = 0.68$) and a fall, or semester of non-competition mean GPA of 2.87 ($SD = 0.66$) compared to their male counterparts of 2.39 ($SD = 0.75$) and 2.57 ($SD = 0.73$), respectively (Figure 2). This study supports previous studies (Mayo, 1986; Kanter & Lewis, 1991; Kiger & Lorentzen, 1986) finding that female student-athletes outperform their male counterparts academically.

Figure 2. Female and male mean GPA comparison: those who competed in the fall; those who competed in the spring.



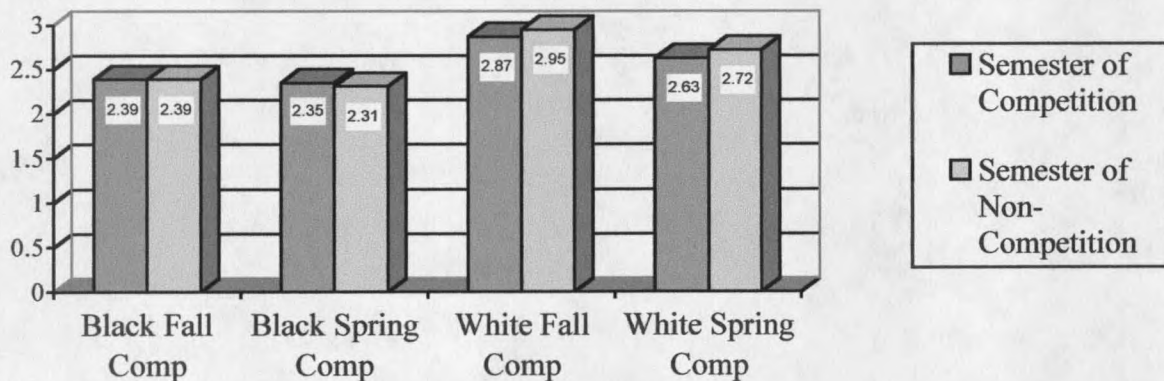
This study also supports previous study findings (Kanter & Lewis, 1991; Kiger & Lorentzen, 1986; Purdy, et al., 1982; Young & Sowa, 1992; Mayo, 1986) that White student-athletes outperform their Black counterparts academically. Black student-athletes who competed in the fall were very consistent academically. They had a semester of competition mean GPA of 2.39 ($SD = 0.63$) and an identical spring, or semester of non-competition mean GPA of 2.39 ($SD = 0.60$). Black student-athletes who competed in the spring had a semester of competition mean GPA of 2.35 ($SD = 0.33$)

compared to a fall, or semester of non-competition mean GPA of 2.31 ($SD = 0.64$)

(Figure 3).

White student-athletes who competed in the fall had a semester of competition mean GPA of 2.87 ($SD = 0.72$) and a spring, or semester of non-competition mean GPA of 2.95 ($SD = 0.69$). White student-athletes who competed during the spring had a semester of competition mean GPA of 2.63 ($SD = 0.81$) and a fall, or semester of non-competition mean GPA of 2.72 ($SD = 0.72$) (Figure 3).

Figure 3. Black and White mean GPA comparison: those who competed in the fall; those who competed in the spring.

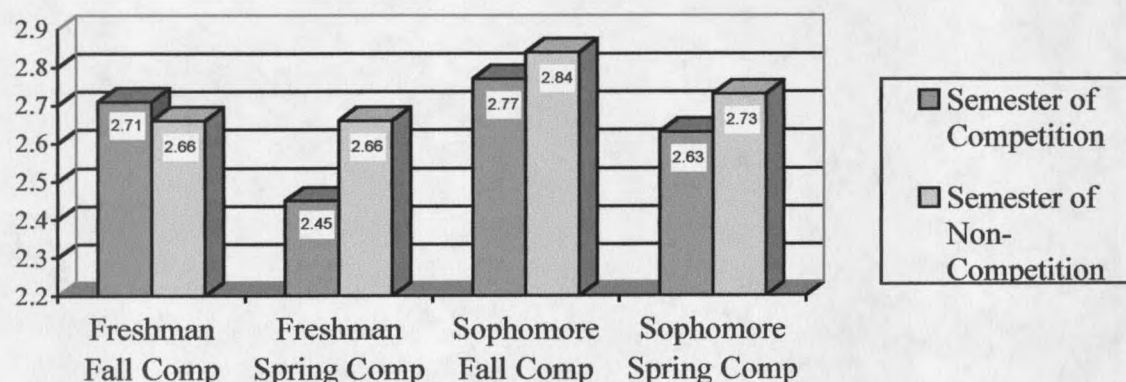


Freshman student-athletes who competed in the fall had a semester of competition mean GPA of 2.71 ($SD = 0.78$), but dropped to a 2.66 ($SD = 0.83$) during the spring, or semester of non-competition. Freshman who competed in the spring had a semester of competition mean GPA of 2.45 ($SD = 0.90$) compared to a 2.66 ($SD = 0.83$) during the fall, or semester of non-competition (Figure 4). This parallels the findings of Bryant and Clifton (1990), who found that freshman did better during their first, or fall semester.

Sophomore student-athletes increased their mean GPA from the semester of competition

to the semester of non-competition. Sophomores who competed in the fall experienced a mean GPA of 2.77 ($SD = 0.66$) for semester of competition, and a 2.84 ($SD = 0.67$) for the spring, or semester of non-competition. Those that competed in the spring had a mean GPA of 2.63 ($SD = 0.72$) for the semester of competition and 2.73 ($SD = 0.69$) during the fall, or semester of non-competition (Figure 4).

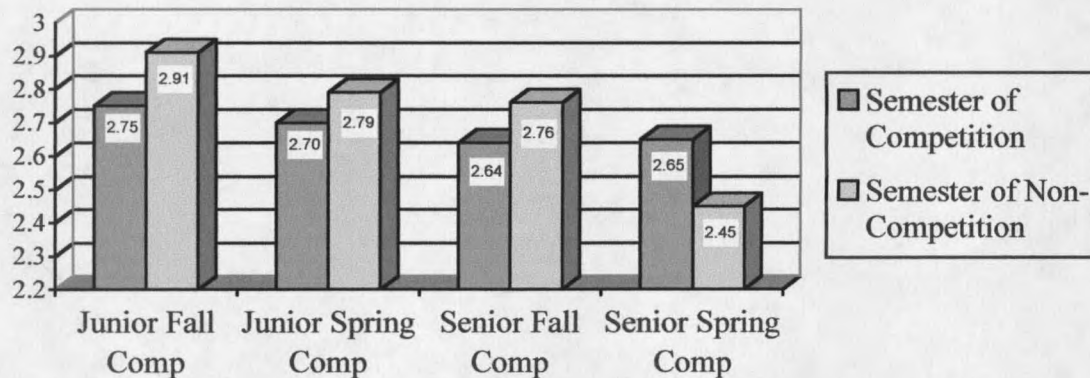
Figure 4. Freshman and sophomore mean GPA comparison: those who competed in the fall; those who competed in the spring.



Junior student-athletes followed this trend with a 2.75 ($SD = 0.74$) mean GPA for the semester of competition for fall competitors, and a 2.91 ($SD = 0.76$) mean GPA for their spring, or semester of non-competition. Juniors who competed in the spring had a 2.70 ($SD = 0.86$) mean GPA for that semester, and a 2.79 ($SD = 0.73$) for the fall, or semester of non-competition (Figure 5). Seniors who competed in fall continued the sophomore/junior trend of improving during the semester of non-competition. For fall competitors, seniors experienced a mean GPA of 2.64 ($SD = 0.75$) for their semester of competition, followed by a 2.76 ($SD = 0.75$) for the spring, or semester of non-competition. Seniors who competed in the spring, however, had a mean GPA of 2.65

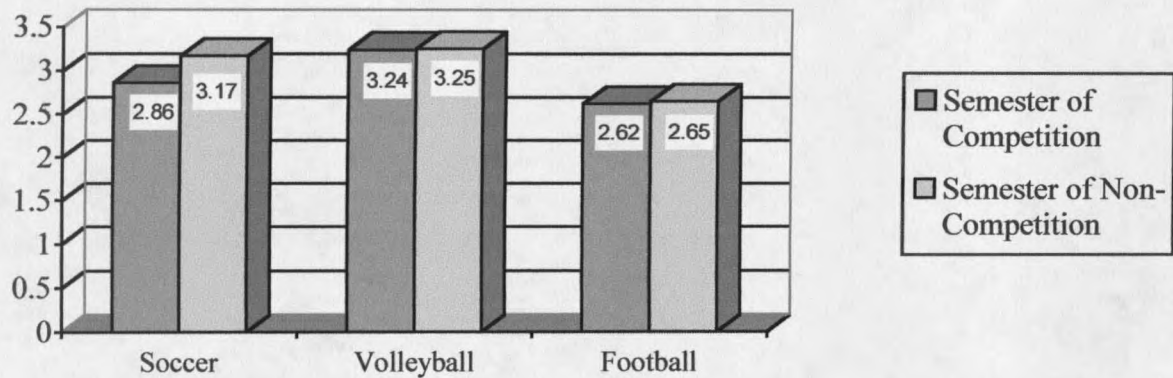
($\underline{SD} = 0.50$) during their semester of competition, which was an increase from a 2.45 ($\underline{SD} = 0.56$) during the preceding fall, or semester of non-competition (Figure 5).

Figure 5. Junior and senior mean GPA comparison: those who competed in the fall; those who competed in the spring.



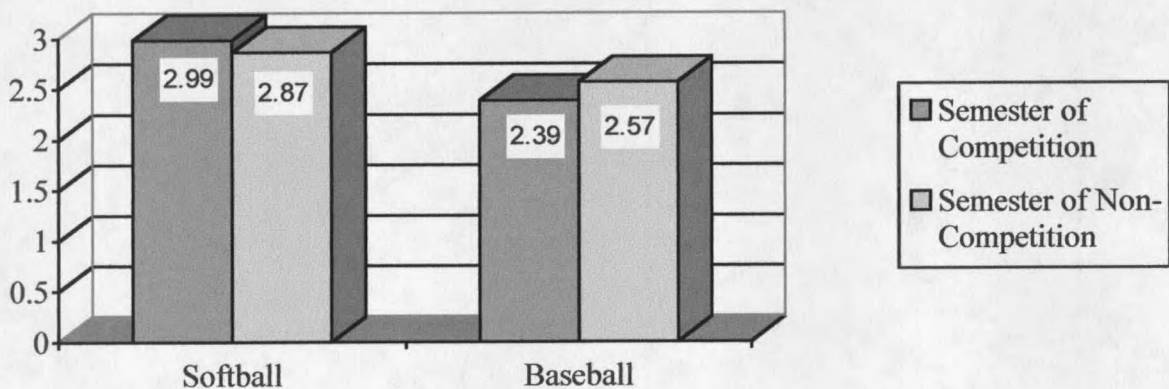
As previously stated, most studies compare revenue and non-revenue sports rather than individual sports (Camp & Epps, 1986; Gurney & Stuart, 1987; Davis & Berger, 1973; Brede & Camp, 1987; Mayo, 1986). In this study only one sport, women's soccer, experienced a significant change in mean GPA between semesters. Women's soccer student-athletes had a mean GPA of 2.86 ($\underline{SD} = 0.75$) during their semester of competition, and a 3.17 ($\underline{SD} = 0.61$) during their semester of non-competition (Figure 6). Volleyball student-athletes performed the best for both semesters. These student-athletes had a semester of competition mean GPA of 3.24 ($\underline{SD} = 0.70$) followed by a slight increase in their semester of non-competition mean GPA of 3.25 ($\underline{SD} = 0.53$) (Figure 6). Football, the other fall-competition sport studied, had a semester of competition mean GPA of 2.62 ($\underline{SD} = 0.69$) compared to their semester of non-competition mean GPA of 2.65 ($\underline{SD} = 0.70$) (Figure 6).

Figure 6. Fall sport's mean GPA comparison.



Softball, a spring competition sport, was the only sport with a better mean GPA during the semester of competition. These student-athletes had a semester of competition mean GPA of 2.99 ($SD = 0.68$) and a semester of non-competition mean GPA of 2.87 ($SD = 0.66$) (Figure 7). Baseball, also a spring sport, had a semester of competition mean GPA of 2.39 ($SD = 0.75$) and a semester of non-competition GPA of 2.57 ($SD = 0.73$) (Figure 7).

Figure 7. Spring sport's mean GPA comparison.

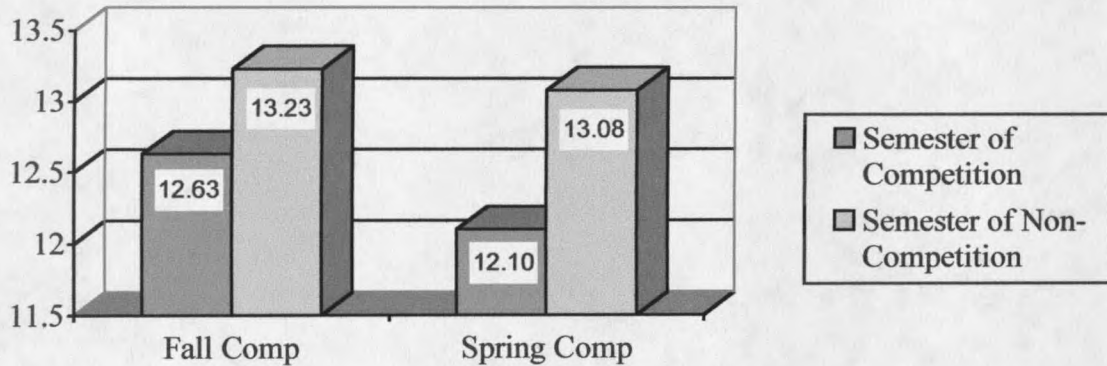


These findings correspond with other studies (Lang & Rossi, 1991; Mayo, 1986; Maloney & McCormick, 1993) supporting findings that women's teams perform better overall academically than do men's teams regardless of the semester. This study echoed the findings of two studies that investigated individual sports (Purdy, et al., 1982; Maloney and McCormick, 1993) in that volleyball had the highest mean GPA of all other sports studied.

Mean Credits Completed

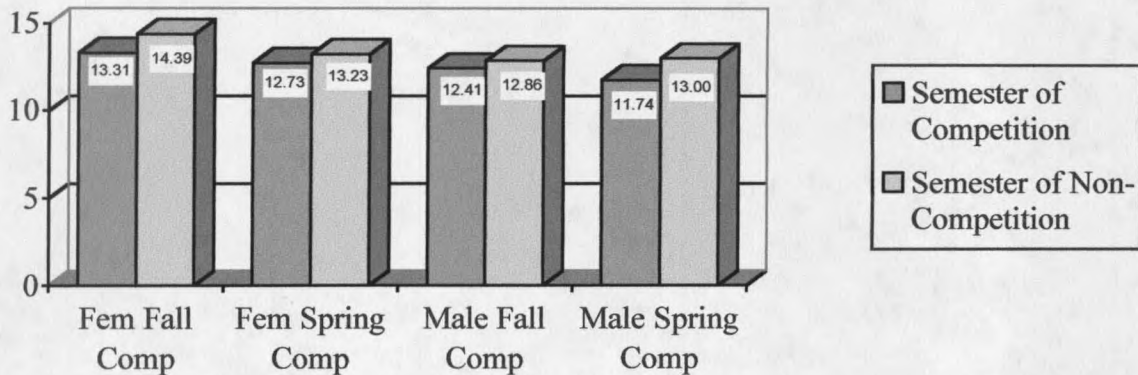
Although there is no evidence to indicate a significant GPA change between semesters among student-athletes, other than for women's soccer, the results indicate significant differences in credits completed between semesters by student athletes as a whole and by various subgroups of athletes. Overall, all subgroups except seniors whose season of competition occurred in the spring experienced an increase in the average number of credits taken during their semester of non-competition compared to their semester of competition. Of these differences, the male, female, White, Black, freshman, sophomore, junior, volleyball, and baseball subgroups were significant. As a group, student-athletes who competed in the fall completed a mean of 12.63 (SD = 2.27) credit hours during that semester, but completed a mean of 13.23 (SD = 2.65) credit hours during the spring, or semester of non-competition. Student-athletes who competed in the spring completed a mean of 12.10 (SD = 2.35) credit hours during their semester of competition, while completing a mean of 13.08 (SD = 1.87) credit hours during the previous fall, or semester of non-competition. (Figure 8).

Figure 8. All student-athlete mean credits completed comparison: those who competed in the fall; those who competed in the spring.



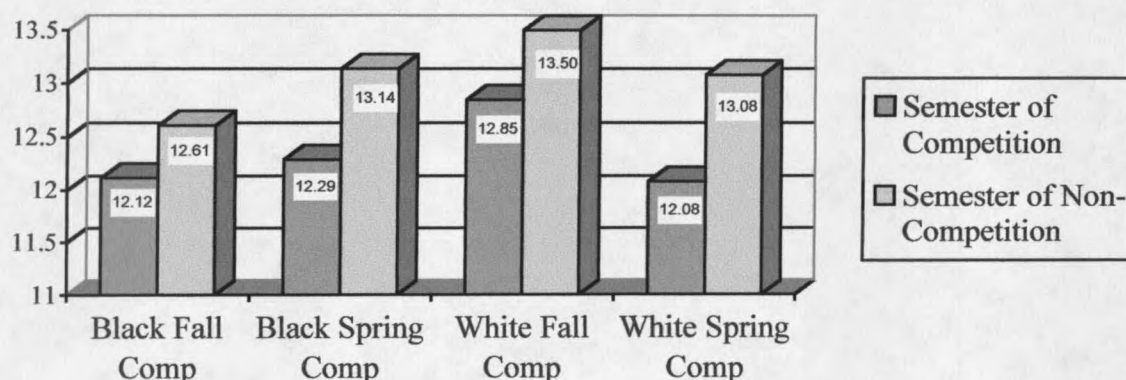
Female student-athletes who competed in the fall (volleyball and women's soccer) completed a mean of 13.31 ($SD = 1.87$) credit hours in their semester of competition, while completing a mean of 14.39 ($SD = 2.06$) during the spring, or semester of non-competition (Figure 9, 13). Those that competed in the spring (softball) completed a mean of 12.73 ($SD = 1.46$) credit hours in their semester of competition, while completing a mean of 13.23 ($SD = 1.56$) credit hours during the previous fall, or semester of non-competition (Figure 9, 14). Male student-athletes who competed in the fall (football) completed a mean of 12.41 ($SD = 2.35$) credit hours in their semester of competition, while completing a mean of 12.86 ($SD = 2.72$) during the spring, or semester of non-competition (Figure 9, 13). Those who competed in the spring (baseball) completed a mean of 11.74 ($SD = 2.68$) credit hours in their semester of competition, while completing a mean of 13.00 credit ($SD = 2.03$) hours during the previous fall, or semester of non-competition (Figure 9, 14).

Figure 9. Female and male mean credits completed comparison: those who competed in the fall; those who competed in the spring.



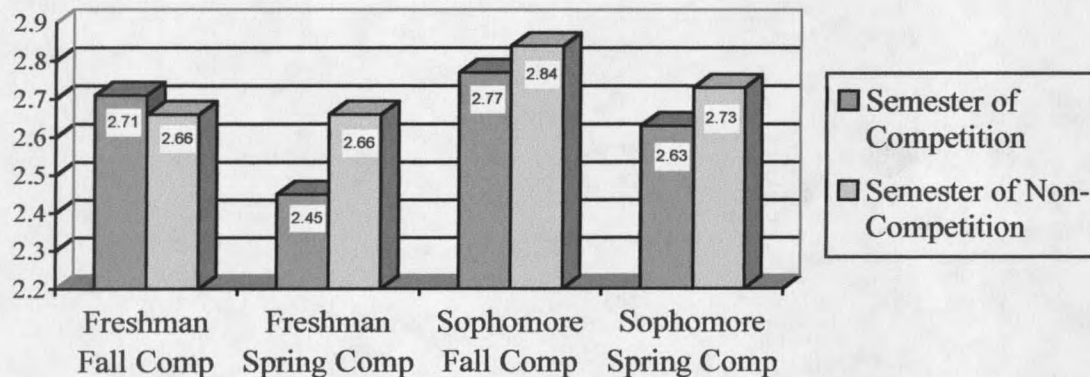
Black student-athletes who competed in the fall completed a mean of 12.12 ($SD = 2.55$) credit hours in their semester of competition, while completing a mean of 12.61 ($SD = 2.94$) during the spring, or semester of non-competition. Black student-athletes who competed in the spring completed a mean of 12.29 ($SD = 1.89$) credit hours in their semester of competition, while completing a mean of 13.14 ($SD = 2.41$) credit hours during the previous fall, or semester of non-competition (Figure 10). White student-athletes who competed in the fall completed a mean of 12.85 ($SD = 2.11$) credit hours in their semester of competition, while completing a mean of 13.50 ($SD = 2.48$) during the spring, or semester of non-competition. White student-athletes who competed in the spring completed a mean of 12.08 ($SD = 2.41$) credit hours in their semester of competition, while completing a mean of 13.08 ($SD = 1.82$) credit hours during the previous fall, or semester of non-competition (Figure 10).

Figure 10. Black and White mean credits completed comparison: those who competed in the fall; those who competed in the spring.



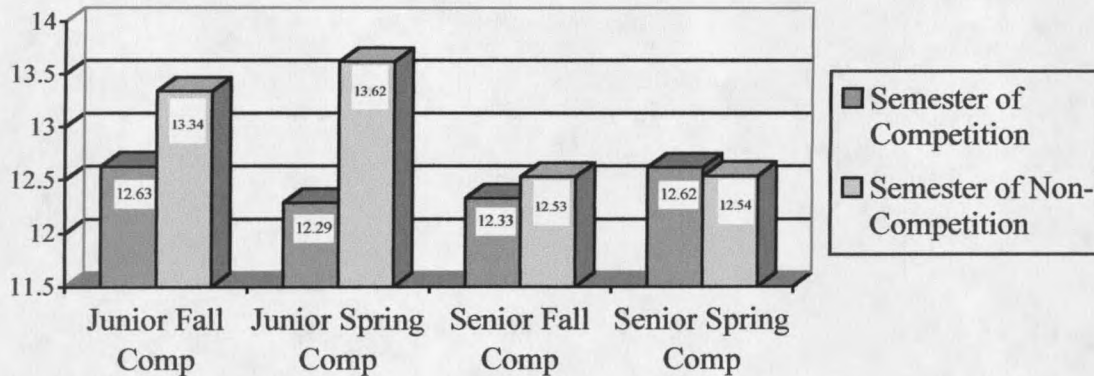
Freshman student-athletes who competed in the fall completed a mean of 12.84 ($SD = 2.27$) credit hours in their semester of competition, while completing a mean of 13.28 ($SD = 2.32$) during the spring, or semester of non-competition. Those who competed in the spring completed a mean of 11.20 ($SD = 2.44$) credit hours in their semester of competition, while completing a mean of 13.10 ($SD = 2.17$) credit hours during the previous fall, or semester of non-competition. Sophomore student-athletes who competed in the fall completed a mean of 12.66 ($SD = 2.03$) credit hours in their semester of competition, while completing a mean of 13.59 ($SD = 2.36$) during the spring, or semester of non-competition. Those who competed in the spring completed a mean of 12.50 ($SD = 1.79$) credit hours in their semester of competition, while completing a mean of 12.83 ($SD = 1.47$) credit hours during the previous fall, or semester of non-competition.

Figure 11. Freshman and sophomore mean credits completed comparison: those who competed in the fall; those who competed in the spring.



Junior student-athletes who competed in the fall completed a mean of 12.63 ($SD = 2.36$) credit hours in their semester of competition, while completing a mean of 13.34 ($SD = 2.37$) during the spring, or semester of non-competition. Those who competed in the spring completed a mean of 12.29 ($SD = 2.80$) credit hours in their semester of competition, while completing a mean of 13.62 ($SD = 1.94$) credit hours during the previous fall, or semester of non-competition (Figure 12). Senior student-athletes who competed during the fall completed a mean of 12.33 ($SD = 2.51$) credit hours during that semester, while completing a mean of 12.53 ($SD = 3.58$) credit hours during their spring, or semester of non-competition. Seniors who competed in the spring completed a mean of 12.62 ($SD = 1.94$) credit hours during their semester of competition, and 12.54 ($SD = 1.71$) mean credit hours in the fall, or their semester of non-competition (Figure 12).

Figure 12. Junior and senior mean credits completed comparison: those who competed in the fall; those who competed in the spring.



Women's soccer student-athletes also competed during the fall, completing a mean of 13.18 ($SD = 1.79$) during that semester, and a mean of 14.04 ($SD = 2.03$) during the spring, or semester of non-competition (Figure 13). Volleyball student-athletes, who competed in the fall, completed a mean of 13.46 credit hours in their semester of competition, while completing a mean of 14.77 during the spring, or semester of non-competition (Figure 13). These results support the findings of Bryant and Clifton (1990) and Gurney and Stuart (1987) that student-athletes, on the whole, will take fewer credits during their semester of competition.

Figure 13. Fall sport mean credits completed comparison.

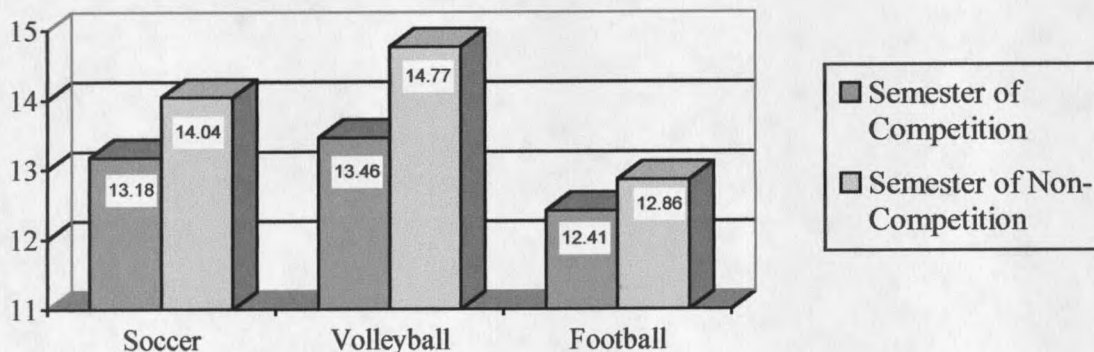
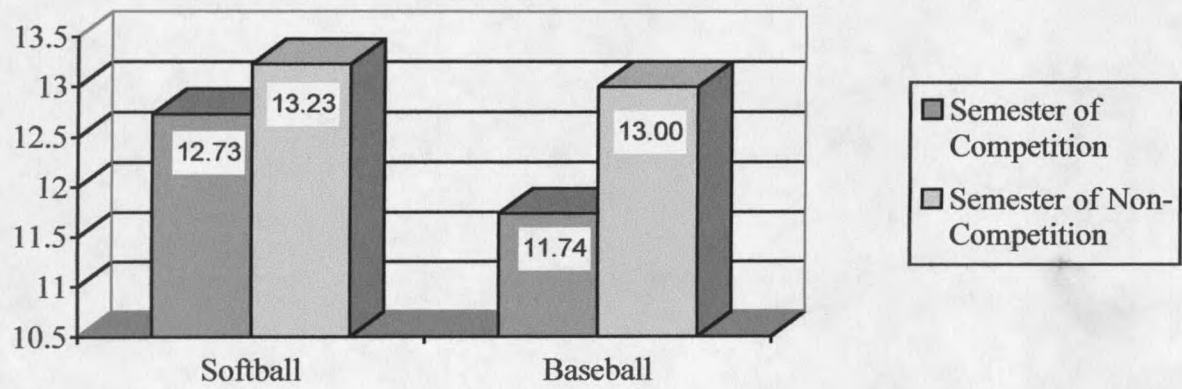


Figure 14. Spring sport's mean credits completed comparison.



CHAPTER V

CONCLUSIONS/RECOMMENDATIONS

Conclusions

This study provides the most comprehensive snapshot of Division I student-athlete academic achievement, comparing the semester of competition with the semester of non-competition, to date. The results of this study show a slight overall increase in GPA during the semester of non-competition. However, these results do not find that athletic participation has a negative effect on student-athletes' academic achievement, or to imply that race, gender, sport, or class standing are significant factors. The study does indicate significant differences in change between credits completed the semester of competition and semester of non-competition for several variables.

Minimal GPA Change between the semester of competition and non-competition is not entirely surprising. Two factors that could account for the relative consistency of grades are *academic loading* and *academic motivation*. It is common practice for student-athletes to increase their credit hour load during their semester of non-competition; and schedule more difficult courses from their degree program during these semesters. This "academic loading" often causes greater academic strain on the student-athlete, yet, often results in improvement, although negligible, in GPA over the semester of competition.

Academic motivation also plays a significant role in achievement. Whereas most student-athletes are highly motivated to succeed athletically, many lack motivation in the classroom, particularly the student-athletes competing in more highly visible sports. It is not uncommon for a student-athlete to admit they are at the institution to "play ball".

Athletic culture instills in the athlete, particularly those in high profile sports, that athletics take priority over academics. The NCAA mandates that the student-athlete is to maintain no less than a 2.0 grade point average and pass a minimum 24 hours per academic year in order to remain eligible to play. In this culture the message to the student-athlete is to maintain the minimum requirements. Many student-athletes lack the motivation to exceed the minimum requirements regardless of whether the semester is one of competition or non-competition. Eligibility to "play ball" takes precedent over academics. For many student-athletes academic motivation, regardless of the semester, is simply minimal at best and will result in minimal GPA Change.

Academic and athletic achievement of student-athletes can take a social theory perspective, viewed in a more rational-cognitive manner. According to Weiner's attribution theory, "...those individuals who are motivated to achieve success attribute failure to insufficient effort, and success to ability and effort" (cited in Simons, Van Rheenan, and Covington, 1999, p. 152). In their 1999 study, Simons, et al. identified four motivational types: Success Oriented; Overstrivers; Failure Avoiders; and Failure Acceptors. Failure Avoiders are defined as those individuals who score low on their motivation in approaching academic success, have low self worth because of a history of academic failure, and avoid shame of low ability by limiting their expended effort. More

male student-athletes, revenue sport student-athletes, Black student-athletes, and student-athletes overall fell into this motivational type than any of the other three types.

Simons, et al. reinforces the conclusions of Adler and Adler (1985) and the student-athlete emphasis on athletics and not on academics. Most student-athletes have achieved success athletically and are motivated to continue that success. They may not have achieved academic success, and therefore, become a "Failure Avoider" and subsequently lack motivation to achieve academically. Being a "Failure Avoider" results in a minimal effort toward academics, and negates improvement of GPA from the semester of competition to the semester of non-competition. Many student-athletes simply are putting forth the minimal effort required to maintain eligibility, regardless of the number of credit hours taken or difficulty of courses.

Academic loading is certainly a contributing factor to the increased number of credit hours completed during the semester of non-competition, and the significance by many subgroups in credits completed change. Student-athletes are required by the NCAA to pass an average of 24 credit hours per year. It is not uncommon for student-athletes to complete less than 12 credit hours in a given semester, especially during their semester of competition, when their time is more devoted to athletics. Likewise, academic motivation tends to be less during this semester. Therefore, student-athletes will enroll in more credit hours during their semester of non-competition to keep pace with NCAA requirements. Overall, significant changes were found in credits completed for males, females, White, Black, freshman, sophomore, junior, volleyball, and baseball student-athletes - all increases during the semester of non-competition.

Recommendations

Based on the results and observations of this study, recommendations, both general and specific, are necessary to help student-athletes and academic service professionals understand student-athlete academic achievement patterns and motivation to achieve.

All students enter college with an academic preparation that is judged by a cumulative grade point average and a standardized test score. Many students enter college adequately prepared academically, while others are marginal at best. The NCAA has twice implemented a minimum GPA and minimum standardized test scores as criteria for student-athletes to be eligible for intercollegiate competition as freshman. However, these criteria are currently being challenged. The elimination of these standards altogether has become a frightening reality, as a U.S. Third Circuit Court judge recently ruled that the NCAA must stop using its freshman eligibility standards because of an unjust impact on Black student-athletes. The NCAA has been granted a stay of that ruling.

The elimination of initial eligibility standards represents the wrong direction to take regarding academic preparation to be initially eligible to participate in intercollegiate sports. Currently, standards are set so that student-athletes who do not meet minimum criteria must prove themselves academically. The NCAA outlines three groups, qualifiers, partial qualifiers, and non-qualifiers, that determine, based on the combination of number of high school core courses completed, core course grade point average, and standardized test score, if the student-athlete can play as a freshman. A *qualifier* meets

the minimum standards and can receive athletic aid, practice, and compete. A *partial qualifier* does not meet the requirements for a qualifier and has a core curriculum GPA and corresponding ACT or SAT test score below that of a qualifier. They cannot play for one academic year, but can practice and accept athletic aid. A *non-qualifier* does not meet the requirements of a qualifier, nor has the core curriculum GPA and corresponding ACT or SAT test score to meet partial qualifier status. They cannot receive athletic aid, practice, or compete for one academic year.

A general recommendation includes not weakening standards in order to participate in intercollegiate athletics, but rather strengthen them. To do so, non-bias standardized tests need to be developed, validated, and implemented to avoid discord between the opposition and proponents of initial eligibility standards. Until such a non-bias test can be developed and validated, it is incumbent upon teachers, coaches, and parents to move away from the "dumbing-down" dialogue so many take towards Black and Hispanic students. "When young black athletes hear their coaches pleading to give them a lower academic standard, they absorb the message that they are not as smart as the white kids", writes Cynthia Tucker (1999). "...coaches contribute to the notion that young black men cannot succeed academically. They...imply that young black athletes cannot be expected to compete in college" (Tucker, 1999).

Some of the responsibility for academic preparedness rests with the quality of education at the high school level. Too many students simply do not enter college well enough prepared to undertake the rigors of college coursework. Compounded by the

increased time and physical demands of intercollegiate athletics, student-athletes face an exceptionally difficult time finding academic motivation.

The theoretical construct underlying this study was Alexander Astin's Student Involvement Theory. The time and motivation devoted to a given activity, academics and athletics, can be placed on a continuum, and the outcome correlated with the placement of each on the continuum. The increase in academic achievement during the semester of non-competition, although not significant, is likely affected by the placement of academics on the continuum in each respective semester. That is to say, when student-athletes are in their season of competition, academic achievement is placed lower on the continuum, and athletics takes a higher position. During the semester of non-competition, the time devoted to athletic activities is lower on the continuum, and, consequently, academics moves higher. The significant increase in the number of credit hours completed during the semester of non-competition is likely due to this shift on the continuum. A detailed study correlating academic achievement and time/motivation to athletics, academics, and other activities by student-athletes is recommended.

Judge (1992) asserted that the success or failure of student-athletes was not due to their meeting or not meeting initial eligibility standards set by the NCAA, but rather the support they received in tutoring, structured study time, and study skills classes.

Academic support services specific to student-athletes began in 1981 when the University of Kentucky created a department of athletic academic services. Nineteen years later, most Division I institution, to some degree, has personnel that offer academic services to student-athletes. Although this is cause for concern that student-athletes are segregated

even more from the general student body, this entity has evolved into a necessary service provider to this population, as Judge points out. However, more than tutoring, structured study time, and study skills are needed in working with student-athletes to improve their academic progress. This study provides insight into an achievement pattern that professionals can use to better serve student-athletes. Athletic academic service units are encouraged to take a more proactive approach to this end. Three issues recommended suggest that professionals address attention to student-athlete's academic motivation, academic goals, and academic placement on the student involvement theory continuum. The level of motivation needs to be addressed and discussed early, as soon as the student-athlete's arrival on campus. Once level of motivation is determined, academic goals for each semester, competition and non-competition, need to be set. These goals should be realistic, challenging, and attainable. Then, a collaborative effort on the part of the student-athlete and professional should develop and implement strategies to accomplish these goals. Achievement strategies could (and should) include those items Judge advised - tutoring, study skills, and structured study time. Setting goals and achievement strategies will allow the student-athlete how to determine the time required to achieve their academic goals. Placing this information on a continuum will provide a physical reminder to the student-athlete. It is also recommended that the academic professional have the student-athlete complete this process for the athletic component: determine motivation, set goals, devise achievement strategies, and place time devoted on the continuum.

Although addressing these academic issues is recommended for all student-athletes, in reality all of them do not need it. This process is recommended for all freshman, transfer students, and others that would be considered academically at-risk. Based on the results of this study, which parallel results of previous studies, the higher profile sport student-athletes especially need to attend to these issues. These sports (football and baseball) have the majority of at-risk student-athletes that do not succeed, academically, as those students in lower profile sports. The results of this study support the statement of Kiger and Lorentzen (1986) that academic performance is subject to the influence of type of sport participation. Likewise, Maloney and McCormick (1993) concluded that participating in sports reduces academic success, but is not homogeneous across all sports; rather it significantly affects only those in the revenue sports. Maloney and McCormick recommended that limiting spring practice for football and shortening the basketball season would improve academic achievement. This study supports limiting football practice, and recommends the elimination of one week during the spring. However, this week could be moved to August, when the student-athlete is not in regular semester classes.

The results of this study indicate baseball student-athletes do very poorly during their season. Big 12 conference baseball teams schedule in excess of 70 games during the spring. A reduction in the number of games scheduled during the season is recommended so that travel and missed classes could be minimized.

The main concern seems to revolve around the achievement and motivation of the higher profile sport student-athletes. In this study baseball and football had lower grade

point averages in both semesters than did volleyball, women's soccer, and softball. For football and baseball, the emphasis needs to be placed back on the 'student' in student-athlete. Too much concern is placed on athletic performance and winning, and not enough on the development of the individual. Unfortunately, the athletic culture and society dictate too much of this concern. Society rewards the best from these three sports with multi-million dollar contracts, and these student-athletes see that monetary carrot as their motivator as early as junior high school. Our communities put pressure on the institution's president, athletic director, and coaches to provide winning high profile sports teams - but at what cost? The cost of an uneducated and underdeveloped individual dependent upon society because he or she didn't make it to the next level results.

The NCAA and NFL are making strides towards personal development through their respective Life Skills programs. Unfortunately the football and baseball coaches have more influence on the student-athlete than academic service professionals, faculty, or other students. To get high-profile sport coaches to help put the 'student' back in student-athlete, the NCAA and NFL need to collaborate to provide a comprehensive educational program for coaches and athletic directors focusing on developing character and integrity in their student-athletes. Until coaches in these high profile sports show their student-athletes that their personal development is important to them, it won't be important to the student-athlete.

Future studies on student-athlete academic achievement are recommended. One such study would be a replication of this study, utilizing the test statistic analysis of

covariance. The variable of credits completed would serve as the covariate. Another replicate study could include other independent variables, such as ACT/SAT test scores, core high school grade point average, major area of study, etc. A study of academic achievement between semester of competition and non-competition comparing Division I, II, and III institutions is also recommended. Other recommended studies include academic achievement with correlation to academic and athletic motivation. This is especially recommended for the high profile sports of football, men's basketball, and baseball. Whenever possible, such studies should be longitudinal and comprehensive by using a national sample across sports.

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APPENDIX
DATA COLLECTION MATERIALS

December 16, 1998

Dear Jon,

Enclosed are the data collection instruments for the sports of football; volleyball; baseball; softball; and women's soccer for the University of Texas. Please provide the requested information from the 1997-'98 academic year for each student-athlete who corresponds alphabetically with the roster number indicated in the left hand column.

Please do not list names or social security numbers, as this is an anonymous, non-identifying instrument.

- Under the **GPA Information** heading, please indicate semester GPA, not cumulative;
- Under the **Credit Hours Completed** heading, indicate all hours completed regardless of grade achieved; Indicate the number of full-time semesters the student-athlete has been in college (junior college and 4-year college/university) at the end of the spring 1998 semester;
- Under the **Eligibility** heading, this refers to Big XII and NCAA initial eligibility and satisfactory progress eligibility for participation. You should indicate NO for freshmen partial qualifiers.

As you know, this information will be used in completing my research and doctoral dissertation. The results from the statistical analysis will provide the field of academic services with the most accurate quantitative snapshot of student-athlete academic achievement, with regard to semester of competition/non-competition, to date. Your aid in supplying this information is greatly appreciated.

Please complete and return the instruments in the envelope provided by **Monday, February 8.**

If you have any questions while you're completing these forms, please do not hesitate to call or e-mail me with them.

Sincerely,

Brian Evans
(806) 742-0150
bevans@ttu.edu

Volleyball

[illegible]

* B=Black; W=White; O=Other

MONTANA STATE UNIVERSITY - BOZEMAN



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