Comparing Division IA Scholarship and Non-Scholarship Student-Athletes: A Discriminant Analysis of Academic Performance

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COMPARING DIVISION IA SCHOLARSHIP AND NON-SCHOLARSHIP STUDENT-ATHLETES: A DISCRIMINANT ANALYSIS OF ACADEMIC PERFORMANCE

by

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ABSTRACT

Comparing Division IA Scholarship and Non-Scholarship Student-Athletes: A Discriminant Analysis of Academic Performance

by

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Many research studies have examined the academic performance and graduation rates of college student-athletes. The limited focus on scholarship student-athletes has overlooked the majority of NCAA student-athletes, those participating in collegiate athletic programs without athletic scholarships. Therefore, this study contributes to a gap in the literature about non-scholarship student-athletes. The following dissertation examined the academic performance, time-to-degree, and demographic and profile characteristics of Division IA scholarship and non-scholarship student-athletes. The theoretical framework for this study was work motivation viewing athletic scholarships as extrinsic rewards. The researcher applied descriptive discriminant analysis utilizing secondary data to compare scholarship and non-scholarship student-athletes across several variables.

Results of this study showed that non-scholarship student-athletes were described by the variables of sport (Women’s Outdoor Track and Field), race (Asian, White), sport type (Individual), and sex (Female). Non-Scholarship student-athletes had higher grade point averages than scholarship student-athletes. The scholarship student-athlete group was described by race (Black), sport (Football, Men’s Basketball, Women’s Basketball),
sport type (Team), and sex (Male). Scholarship student-athletes graduated in fewer semesters than non-scholarship student-athletes did. This finding suggests that academic performance and time-to-degree variables are inversely related based on scholarship status. The results of the study showed significant differences between the scholarship and non-scholarship student-athlete groups based on demographic, academic performance, and time-to-degree variables.
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The support of my family empowered me to pursue a doctoral degree. My parents Harold and Martine instilled in me the importance of higher education, encouraging me to attend the institutions of my choice and to study the subjects that interested me. They have shared my experiences with me, always listening to me...
describe what I am learning and partaking in my excitement. My brother Jeff is a great influence on me. He is a higher education administrator who inspired my passion for this field by initially helping me acquire my first campus job as a tour guide and admissions student worker at The University of Texas at Austin, where he worked while in college. I am very fortunate to have a brother who is an educator because we can discuss topics in higher education and share ideas with each other.

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CHAPTER 1
OVERVIEW

Studies on college student-athletes and their academic performance are abundant, yet little has been written about non-scholarship student-athletes. Even in studies with athletic scholarships as factors, sometimes comparisons are not made on the issue of scholarships and no conclusion is given (e.g., Ervin, Saunders, Gillis & Hogrebe, 1985). The National Collegiate Athletic Association (NCAA) requires institutions to submit academic performance measures on student-athletes. However, these measures do not include non-scholarship student-athletes (LaForge & Hodge, 2011). They also measure “academic progress, not academic performance” (LaForge & Hodge, 2011, p. 228). According to the NCAA (2011b), “Over 126,000 student-athletes receive either a partial or full athletic scholarship” in Divisions I and II out of approximately 400,000 student-athletes in all three divisions (para. 1). Because more NCAA student-athletes do not receive scholarships than those who do, these measures do not consider the academic performance and time-to-degree for non-scholarship student-athletes. One goal of this study is to examine the differences in academic performance between scholarship and non-scholarship student-athletes at Division IA institutions. The following section presents an examination of the relevant literature to reveal three areas to inform the study.

Literature Review

A review of relevant literature examined student academic performance, retention and persistence, and athletic performance. First, the development of athletic scholarships for student-athletes and a historical overview of NCAA academic reform policy provided the background for this study. The review of literature revealed three areas that inform
the study: academic performance, time-to-degree and retention, and demographic and profile characteristics of collegiate student-athletes. These areas were used to compare scholarship and non-scholarship student-athletes.

The Development of Athletic Scholarships

The first intercollegiate athletic event, a crew race between Harvard and Yale, took place in 1852 (Sack & Staurowsky, 1998). These early athletic events in the mid to late 1800s attracted large crowds and public interest. Colleges championed an amateur ideal of the well-rounded student who could study and pursue athletics. At this time, few imagined how college sports would be like today. As the country encountered rapid industrialization, college athletics experienced growth and thus ideologies surrounding professionalism over amateurism emerged. Student-athletes started receiving athletic scholarships as early as the 1880s (Sack & Staurowsky, 1998).

The offer of financial aid for athletic ability angered faculty at higher education institutions because it detracted the educational mission of colleges. College athletics was fast becoming a business unrelated to the university, with athletes entering college without appropriate academic backgrounds (Sack & Staurowsky, 1998). The NCAA formed in 1906 in an attempt to regulate intercollegiate athletics, holding onto the amateurism ideal that students be recruited for athletics within institutions (Blackman, 2008; Sack & Staurwosky, 1998). The NCAA held onto this ideal for half a century until 1956, when athletic scholarships were permitted to save this ideal under the guise that it prevented students, officially dubbed student-athletes, from claiming employment status (Byers, 1995). By 1957, the NCAA allowed colleges to pay tuition, fees, room, and
board to athletes as an incentive to play sports. Once athletic scholarships became acceptable, the NCAA created academic policies for students to qualify for athletics.

**Historical Overview: The Academic Regulation of College Athletes**

The NCAA used the introduction of legal athletic scholarships to regulate student-athletes’ scholarships, behavior, and academics. The NCAA had unsuccessfully tried to implement the Sanity Code in 1948, limiting athletic scholarships to students who demonstrated financial need and met institutional admissions requirements (Byers, 1995). Though this regulation was not well received, it established the NCAA’s power as a regulatory body over college athletics. In 1965, the NCAA enacted its first academic requirement, that students have a 1.6 GPA in high school to prove they can handle college-level work. The standards for students with athletic ability were lower than the general student population.

These low standards encouraged the NCAA to implement the “2.0 rule” in 1973, granting athletic eligibility to student-athletes with a 2.0 high school GPA. Not until 1986 did the governing body execute Proposition 48, requiring the 2.0 and a minimum 700 on the SAT or 15 on the ACT and 11 core high school courses. In three years, this was modified as Proposition 42 where students only meeting one of the criteria could still receive need-based aid but not athletic scholarships to complete (Blackman, 2008). The NCAA increased standards minimally, and they were still below basic requirements for general college applicants.

In 1996, the NCAA introduced Proposition 16, requiring 13 core courses and a sliding scale of GPA to test score. Studies showed that these policies continued to negatively affect Black student-athletes and student-athletes from lower socio-economic
classes (Blackman, 2007; Covell & Barr, 2001). This slow progression and low standards encouraged the Knight Commission on Intercollegiate Athletics to publish a report in 2001 addressing concerns about the commercialization of college sports and the educational purpose of institutions of higher education. The report called for an increase in graduation rates and eligibility standards that complemented college entrance requirements. There needed to be a greater focus on academic over athletic performance.

The report reached a national audience and laid the foundation for more academic policy changes by the NCAA. In 2003, the NCAA developed the Academic Performance Program, creating new metrics and eligibility requirements. From 2004 to 2008, student-athletes would need to have completed 14 core classes completed in high school, and starting in Fall 2008, they must have completed 16. Degree progress standards increased from 25 percent complete entering the third year to 40 percent, 50 percent complete entering the fourth year to 60 percent, and 75 percent complete entering the fourth year to 80 percent (Steinbach, 2004). The new metrics included the Academic Progress Rate, a measure of retention and eligibility by year, and the Graduation Success Rate, a more favorable way of calculating student-athlete graduation compared to the Federal Graduation Rate. However, these metrics only apply to student-athletes receiving athletic scholarships (LaForge & Hodge, 2011). The literature does not clarify why walk-on student-athletes are left out of the metrics calculations, although this omission is disconcerting. The 2003 Academic Performance Program provides the context for the student-athlete population examined in this study.
Comparing of Scholarship and Non-Scholarship Student-Athletes

The previous sections introduced the development of athletic scholarships in the United States and provided a historical overview for the academic regulation of college student-athletes. The next section presents the three areas that inform the study: academic performance, time-to-degree, and demographic and profile characteristics.

**Academic performance.** Student-athletes’ academic performance can be affected simply by their participation in college athletics. Purdy, Eitzen and Hufnagel (1982) implemented a major 10-year study of the academic performance and educational attainment of college student-athletes. The purpose of their study was to assess the degree to which college athletes are disadvantaged educationally by their athletic participation. Identifying a gap in the literature, Purdy et al. (1982) included several variables left out of previous studies, including academic preparation, GPA, and graduation, comparing them in the categories of race, gender, and scholarship status. Purdy et al. (1982) were the first researchers to include scholarship status as a factor in this type of study.

Several important results emerged from this study. Purdy et al. (1982) found that student-athletes were less prepared academically than the general college student population and generally had lower GPAs and graduation rates than general college students as well. Student-athletes receiving athletic scholarships also were less prepared for college and had lower GPAs and graduation rates than non-scholarship student-athletes. The researchers suggested that athletic scholarships made student-athletes receiving them feel obligated as an employee to the institution to focus on athletics over
Two other studies examined the power of athletic scholarships and motivation.

Kingston, Horrocks, and Hanton (2006) studied motivation and scholarship status of student-athletes. They found that student-athletes on athletic scholarships exhibit more extrinsic motivation towards accomplishments. Also, Kingston et al. (2006) determined that athletic scholarships control scholarship student-athletes and their focus, thus weakening intrinsic motivation. Similarly, Medic, Mack, Wilson and Starkes (2007) examined how student-athletes’ motivation is affected by athletic scholarships. They concluded that full athletic scholarships control student-athletes’ behavior and cause feelings of pressure and guilt by receiving scholarships (Medic et al., 2007).

In an interesting study about student-athlete academic performance, Bowen and Levin (2003) compared the academic performance of recruited student-athletes and walk-ons at institutions that do not provide athletic scholarships whatsoever (Division III and Ivy League institutions). Bowen and Levin (2003) found parallels between their study and the previous studies, and the same concepts emerged. Student-athletes recruited for athletic talent felt more pressure to focus on athletics over academics, were less intrinsically motivated in the classroom than their walk-on teammates, and earned much lower grades than walk-on student-athletes even though they appeared to come in with the same academic preparedness. Bowen and Levin (2003) called this underperformance a phenomenon that surrounds the focus on athletic talent, especially since recruited student-athletes in their study performed worse than their teammates even when their sports were not in season. Though this study did not include institutions with athletic scholarships, the results reinforce the divide between recruited and scholarship student-
athletes with non-recruited and non-scholarship student-athletes. Few other studies include scholarship status as a factor when measuring academic performance or graduation rates.

**Time-to-degree.** Time-to-degree is an important factor to compare scholarship and non-scholarship student-athletes. An examination of time-to-degree includes retention because students must persist towards college graduation. Athletic scholarships are a major incentive for student-athletes because they can pay for some or all of students’ tuition, fees, books, housing, and meals. Participating in college athletics is demanding, and rarely are students able to find time to work to cover the rising costs of attendance. Student-athletes’ college costs may be alleviated by partial or full scholarships, sometimes in addition to financial aid.

Several studies examined scholarship status and its influence on student-athlete retention. Kiger and Lorentzen (1986) studied how sport type, race, and gender affected the academic performance and retention of student-athletes. One critical finding was that student-athletes are more likely to letter in sports over the years, and therefore be retained, the more aid they receive (Kiger & Lorentzen, 1986). Athletes may be more extrinsically motivated to stay at their institutions and matriculate because of the scholarship award related to athletic talent they received to attend them. Le Crom, Warren, Clark, Marolla and Gerber (2009) agreed with Kiger and Lorentzen in their study comparing scholarship status and retention rates of student-athletes. They concluded that athletic scholarship support is a significant predictor of retention (Le Crom et al., 2009).
Le Crom et al. (2009) also suggested that student-athletes who receive less scholarship funding (individual sport athletes) may become more intrinsically motivated than those who receive higher levels of scholarship support (team sport athletes) (Le Crom et al., 2009). Gaston-Gayles and Hu (2009) agreed, finding that low profile student-athletes have less athletic aid and are more engaged in academic activities than high profile and scholarship student-athletes. Non-scholarship student-athletes may be more intrinsically motivated to complete college since they are paying for it themselves. These studies examined team type as a factor, one of several background characteristics of student-athletes that influence time-to-degree and academic performance.

**Demographic and profile characteristics.** Student-athletes come from diverse backgrounds. Determining if any of the characteristics of race, sex, team type, and sport type affect academic performance and time-to-degree is important. Student-athletes who receive athletic scholarships cannot be generalized into a specific category or characteristic of students. This section examines these characteristics’ effects on academic performance and time-to-degree as they relate to scholarship status.

**Sport type and team type.** Revenue sports are those that typically generate revenue for the institutions that sponsor them. Revenue sport athletes come to campuses less prepared academically than other athletes (Adelman, 1990; Kiger & Lorentzen, 1986). Purdy et al. (1982) concluded that football players performed the worst academically and had the lowest graduation rates among all athletes. Revenue sport participants have a lower probability of graduating than other athletes and non-athletes (Purdy et al., 1982). Upthegrove, Roscigno, and Charles (1999) examined the academic performance of Division I student-athletes in revenue sports compared to those in non-
Students in revenue sports faced competing academic and athletic pressures than caused them to repeat courses or be placed on academic probation. These students are twice as likely to face these problems because of time management challenges and their intensely competitive environments (Upthegrove et al., 1999). The pressures of receiving athletic scholarships and athletic time demands may cause these students to struggle academically.

Students on non-revenue sport teams and participating in individual sports do not face these difficulties as much as football and men’s basketball student-athletes do. Maloney and McCormick (1993) determined that athletes in non-revenue sports perform nearly identically to the general student body relative to their background characteristics. Football and basketball players perform worse than their peers (Maloney & McCormick, 1993). Other studies showed that individual sport and non-revenue sport athletes exhibit stronger intrinsic motivation toward academics than team sport and revenue sport athletes (Gaston-Gayles & Hu, 2009; Le Crom et al., 2009). Purdy et al. (1982) found that individual sport athletes were more likely to graduate than team sport athletes.

**Race and sex.** Many previous studies on student-athletes have included race and sex as factors. Black student-athletes are one of the most studied groups. Upthegrove et al. (1999) noted the troubling number of Black students participating in revenue sports, where academics often come second. Low income Black student-athletes are the least likely to persist in college (Mendez et al., 2009). Black student-athletes tend to be underprepared for college and have lower scores on educational measures (Purdy et al., 1982). The Journal of Blacks in Higher Education (2004/2005) pointed out that Black student-athletes receiving athletic scholarships perform better academically and have
higher retention rates than Black students as a whole. Kiger and Lorentzen (1986) had race and gender as factors in their study. They concluded that generally White female non-revenue sport participants perform the best academically, whereas Black male revenue sport athletes perform the worst (Kiger & Lorentzen, 1986).

Focusing more specifically on sex, Meyer (1990) explored how female student-athletes experience athletics and academics, and how they evaluate their expectations and college experiences. Through her interviews with scholarship female student-athletes, she learned that women form a support group and bond over the lack of public recognition of women’s sports. Teammates were positive influences on academics and teams created an atmosphere that supported academics and helping each other (Meyer, 1990). With less public interest comes less pressure, so female student-athletes were able to focus on both academics and athletics. Adler and Adler (1985) found quite the opposite among male basketball players in their study to determine if athletic participation enhances or hinders academic performance. These scholarship revenue sport athletes were extrinsically motivated toward basketball. Unlike the females interviewed by Meyer (1990), these male basketball players received reinforcement for their athletic performance, and no one monitored their academic behavior. Female student-athletes appear to be more intrinsically motivated towards academics, and male student-athletes more extrinsically motivated to their athletic demands.

The literature on these three areas of academic performance, time-to-degree, and demographic and profile characteristics has demonstrated differences in motivation based on scholarship status as a factor of comparison. Intrinsic and extrinsic motivation direct
student-athletes toward academic or athletic endeavors. The theoretical framework of work motivation is introduced to inform the study and its results.

**Theoretical Framework**

The concept of motivation in work will be examined as a theoretical framework for this study. Herzberg’s (2008) classic work on motivation in organizational settings contends that individuals can be motivated extrinsically and intrinsically by two work factors: motivation and hygiene factors. The first, motivators, are connected to intrinsic motivation, including “achievement, recognition for achievement, the work itself, responsibility, and growth/advancement” (p. 24). Motivators have a long-term effect on employees. The second, hygiene factors, are connected to extrinsic motivation. These include “company policy/administration, supervision, interpersonal relationships, working conditions, salary, status, and security” (Herzberg, 2008 p. 24). All of the hygiene factors bring temporary satisfaction to the worker. Motivators drive workers to achieve, and hygiene factors motivate employees for a temporary incentive.

This framework allowed the researcher to examine this study through the lens of the hygiene factors in Herzberg’s two-factor theory. For the purpose of this study, athletic scholarships are extrinsic motivators. Therefore, scholarship student-athletes are viewed through the extrinsic lens, and non-scholarship student-athletes are examined as non-extrinsic. Chapter 2 presents a more in-depth description and explanation of this theoretical framework.

**Purpose of the Study**

The purpose of this national study is to compare scholarship and non-scholarship student-athletes’ demographic and profile characteristics (e.g., sex, race, team type, sport
type), academic performance (e.g., cumulative GPA), and time-to-degree (e.g., semesters) examining athletic scholarships as an extrinsic reward at NCAA Division IA football institutions.

**Research Questions**

The study used three research questions to compare scholarship and non-scholarship student-athletes. Each question addresses a theme from the literature. The following questions will guide the study:

1. Are there differences in demographic and profile characteristics (e.g., sex, race, team type, sport type) between scholarship and non-scholarship student-athletes examining athletic scholarships as an extrinsic reward?

2. Examining athletic scholarships as an extrinsic reward, are there differences in academic performance (e.g., cumulative GPA) between scholarship and non-scholarship student-athletes?

3. Are there differences in time-to-degree (e.g., semesters) between scholarship (extrinsic reward recipients) and non-scholarship (non-extrinsic) student-athletes?

**Research Design/Mode of Inquiry**

This study draws from institutional secondary data provided by selected institutions. The statistical method of discriminant analysis was employed to answer the stated research questions. Discriminant analysis is an appropriate technique to compare the two studied groups: scholarship student-athletes and non-scholarship student-athletes. Klecka (1985) reinforced the notion that “discriminant analysis is a statistical technique which allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously” (p. 7). In descriptive
discriminant analysis (DDA), “the basic question of interest pertains to grouping variable effects in the multiple outcome variables or, more specifically, to group separation or group differences with respect to the outcome variables” (Huberty, 1994, p. 30). The groups in this study, scholarship student-athletes and non-scholarship student-athletes, were compared based on the differences of academic performance, time-to-degree measures, and background characteristics of individuals within those two groups.

**Definitions**

The following definitions clarify terms used throughout the study.

- **Division IA football institutions**: Institutions that are Division I members of the NCAA, sponsoring at least sixteen teams that play a minimum number of contests with other Division I members (NCAA, 2011a, para. 2). Institutions offer a combination of head count (full scholarship) and equivalency (scholarships divided into pieces among multiple students) financial aid packages (NCAA, 2011a, para. 3). The 120 colleges and universities in this category are called Football Bowl Subdivision institutions because they play bowl games rather than playoff games to determine a national champion. They also have attendance requirements to maintain this level of status (NCAA, 2011a, para. 5).

- **Non-scholarship student-athlete**: A student-athlete on a institution’s NCAA Division I level sport’s squad list (roster) who does not receive athletic aid, whether recruited (called “preferred walk-on” but rare except in the sport of football) or non-recruited (“walk-on”).

- **Scholarship student-athlete**: A student-athlete recruited by an institution’s NCAA Division I level sport head coach and offered a partial or full scholarship based on
athletic ability. Sports that offer partial scholarship are called equivalency sports, which include Men’s Golf, Women’s Cross Country, Women’s Soccer, Softball, and Women’s Track and Field. Sports that offer full scholarships are called head count sports, which include Football, Men’s Basketball, Women’s Basketball, Women’s Tennis, and Women’s Volleyball (NCAA, 2012).

- **Sport type**: There are two different sport types, team sports and individual sports. Student-athletes who play individual sports compete individually in competitions, even if there is an overall team score calculated. Examples of individual sports are tennis, golf, and wrestling. Student-athletes participating in team sports compete as a group in competition, and performance and scores are not attributed to individuals (Baker, Yardley & Cote, 2003; Chelladurai & Saleh, 1978).

- **Team type**: Division IA athletic teams are classified as revenue (profit-generating) and non-revenue sports. Revenue sports generally include football and men’s basketball, and depending on the institution, baseball and women’s basketball (Adelman, 1990; Ervin et al., 1985). For this study, only football and men’s basketball are considered revenue sports.

**Limitations of the Study**

There are several limitations to the study. The data samples are from select NCAA Division IA football institutions, all of which are large, public universities. Due to the size of the institutional sample, the data is not generalizable to all NCAA Division IA football institutions. However, it may be useful for comparable institutions to those studied. The study only examined 10 specific sports, including three men’s and seven women’s athletic teams. There are many other Division IA sports. Also, this study does
not distinguish between student-athletes receiving partial athletic scholarships and those receiving full athletic scholarships. Lastly, walk-on student-athletes who earn an athletic scholarship in a time between enrollment and graduation are still counted in the non-scholarship student-athlete group in this study.

**Significance of the Study**

The literature revealed a gap in research on the academic performance of Division I student-athletes. Non-scholarship student-athletes make up a significant percentage of the Division I student-athlete population, yet the NCAA only measures academic outcomes and graduation rates of student-athletes receiving athletic scholarship aid. Very few studies have considered non-scholarship student-athletes or have compared their academic performance to scholarship student-athletes. Many studies compare student-athletes to the general student populations on campuses. This study is significant because it addresses this overlooked yet important student population.

**Summary**

The academic performance of college student-athletes has been an important topic for many decades. Not since the groundbreaking study of Purdy et al. (1982) has there been a study comparing scholarship and non-scholarship student-athletes on academic performance, time-to-degree, and background measures. Changes in the NCAA’s academic policies regarding student-athletes’ eligibility created a new context for research in this area. The researcher will utilize secondary data to compare these two groups by conducting descriptive discriminant analysis. This chapter provided an overview of relevant literature and introduced the theoretical framework, purpose, research design and questions, definitions of terms, limitations, and the significance of
the study. The next chapter presents an extensive review of relevant literature and connection to the theoretical framework of the study.
CHAPTER 2
REVIEW OF RELEVANT LITERATURE

Research on college student-athletes’ academic performance has been a compelling topic for decades. Many studies compare student-athletes’ performance to the general student population (e.g., Purdy et al., 1982; Ferris, Finster & McDonald, 2004). Additional research on student-athletes examines such topics as retention and persistence, motivation, and athletic performance. While these studies share important information, few investigate the scholarship status of student-athletes. Even in studies with athletic scholarships as the primary focus, comparisons between student-athletes with scholarships and those without scholarships are rare (e.g., Ervin, Saunders, Gillis & Hogrebe, 1985). While the NCAA requires institutions to submit academic performance measures on student-athletes, these measures do not include non-scholarship student-athletes (Ferris et al., 2004; LaForge & Hodge, 2011). According to the NCAA (2011b), “Over 126,000 student-athletes receive either a partial or full athletic scholarship” in Divisions I and II out of approximately 400,000 student-athletes in all three divisions (para. 1). Division III student-athletes do not receive any athletic scholarships. Because more NCAA student-athletes do not receive scholarships than those who do, these measures do not consider the academic performance and time-to-degree for the majority of NCAA competitors: the non-scholarship student-athletes. Therefore, the purpose of this national study is to compare scholarship and non-scholarship student-athletes’ demographic and profile characteristics (e.g., sex, race, team type, sport type), academic performance (e.g., cumulative GPA), and time-to-degree (e.g., semesters) examining athletic scholarships as an extrinsic reward at NCAA Division IA football institutions.
This chapter presents a review of relevant literature that examines student academic performance, retention and persistence, and athletic performance. The chapter is divided into four sections. The first section outlines the development of athletic scholarships. The second section provides a historical overview of the NCAA’s academic reform policy including the 2003 NCAA academic reform policy, which explains the academic regulation of student-athletes. The third section presents three areas that informs the study and compares scholarship and non-scholarship student-athletes. First is the area that covers previous literature on academic performance examining scholarship student-athletes, and then reviews non-scholarship student-athletes. The second area presents the literature related to time-to-degree and retention that describes scholarship student-athletes and non-scholarship student-athletes. The third area includes the demographic and profile characteristics regarding scholarship and non-scholarship student-athletes. Finally, the fourth section of this chapter presents the theoretical framework for this study.

**The Development of Athletic Scholarships**

College sports developed into a popular addition to undergraduate campus life in the middle to late 1800s. Thelin (2004) explained, “Since the ‘collegiate ideal’ emphasized character and teamwork, varsity sports flourished as a visible, highly valued component of that ideal. From the start, intercollegiate athletics had been a source of intense enjoyment and rivalry among students. Over time, the games also soared as a matter of public interest, in terms of both paying spectators and news coverage. The early crew races between Harvard and Yale were often weeklong events” (p. 177). The first crew race between these teams, America’s first intercollegiate athletic competition,
took place in 1852 (Sack & Staurowsky, 1998). Maintaining an amateur spirit proved to be difficult due to the popularity and interest in such competitions, while the country’s economic landscape changed. Sack and Staurowsky (1998) described, “In the late nineteenth century, the United States experienced rapid industrialization, and the competitive and acquisitive values of the marketplace began to pervade all of America’s social institutions, including college and universities” (p. 11). These new values affected the college sports environment.

The transition of values between the collegiate ideal of amateurism and the prospects for the growth of college athletics began to occur. According to Sack and Staurowsky (1998), “Die-hard advocates of amateurism (including elitist anglophiles as well as some faculty and college presidents) fought against athletic recruiting, athletic scholarships, under-the-table payments, lowered admission standards, and the other trappings of professionalism. Their efforts were futile. By 1905, the year in which the NCAA was created, rampant professionalism had spun out of control” (p. 11). Before this time, no one governing body had any control of intercollegiate athletics. Thelin (2004) offered, “Most attempts by groups of professors to regulate intercollegiate sports were not enduring. The excesses of college sports were not exactly illegal, because there were in fact few rules or governing associations in place” (p. 180). He continued, “Academic leaders showed little commitment to establishing a national organization devoted to regulating the business of college sports” (Thelin, 2004, pp. 210-11).

A major governing concern was the issuing of financial aid to students for athletic ability. Sack and Staurowsky (1998) emphasized, “No approach to subsidizing college athletes has created more sustained controversy than the use of college and university
financial aid to attract talented athletes” (p. 23). In 1898, leaders from the future Ivy League gathered at the Brown Conference to draft a report in “opposition to any form of financial compensation for participation in intercollegiate sport” (Sack & Staurowsky, 1998, p. 27). Yet this report’s implications from a small subset of American higher education institutions did not get adopted by many institutions benefiting from hosting intercollegiate athletics on campus. To confirm these principles, “the 1939 NCAA Convention, for the first time, passed a constitutional amendment providing a section on financial aid. It stipulated that all aid to athletes would be based on financial need, athletic participation could not be a condition of aid, and aid must be channeled to the athlete only through a regular university agency, not by alumni or an outside group” (Smith, 2011, p. 90). The faculty and college presidents were losing control over this area of the campus. According to Sack and Staurowsky (1998), “Few college faculty saw any problem with offering financial aid to academically qualified students of modest means, including those who were fine athletes. However, it did not take long for coaches, with the help of the [admissions] staff, to begin funneling financial aid money to young athletes who possessed little academic interest or ability. Financial aid was also awarded to athletes who were not particularly needy. Awarding athletic scholarships was becoming commonplace as early as the 1880s” (p. 23).

The practice of awarding scholarships for non-scholastic achievement took away the educational purpose of higher education institutions. Student-athletes did not need academic ability to attend college. Sack and Staurowsky (1998) cautioned, “In the late nineteenth century, big-time college sports was evolving into an unrelated business of the university, and athletes were being relegated to the periphery of academic life. Recruited
by different academic standards than those for other students and subsidized primarily for
their [athletic] abilities, college athletes were becoming ‘outsiders’” (p. 24).
Intercollegiate athletic programs did not intend to create a separation on campus between
athletes and other students, but this divide was felt in institutions across the United States.

The changing environment of intercollegiate athletics has caused increasing
interest in the regulation of academic requirements and athletic scholarships. Blackman
(2008) described, “Before the formation of the NCAA in 1906, college and universities
engaged in nefarious activities to gain an edge in [athletic] competition. This prompted
the NCAA, in its original constitution, to espouse the principles of honor, integrity,
amateurism, and good sportsmanship” (p. 230). The organization began with the best
academic intentions. Sack and Staurowsky (1998) noted, “In 1906 the NCAA stood
firmly behind the amateur notion that athletes should be selected from students on
campus rather than be recruited from the outside” (p. 31). Further, Sack (2011) added,
“Few people realize that throughout the first half of the 20th century, the NCAA remained
steadfast in its opposition to athletic scholarships. Not only did such payments violate
amateurism, the NCAA argued, but they might attract athletes with little interest in
getting a college education” (para. 3). The lack of control became a major theme in
presidents struggled in vain with attempts to draft a satisfactory code of conduct for
varsity athletes and athletics administrators” (p. 299). Even at this early stage, colleges
had a desire to field competitive athletic teams for prestige and institutional pride.

This desire challenged college administrators to recruit student-athletes that could
make their athletic teams competitive. Sometimes, this required offering students money
for them to join a university team just as many institutions had done since the late 1800s. Byers (1995) explained, “In 1956 the colleges, acting through the NCAA in the name of ‘amateurism,’ installed their own pay system called the athletics grant-in-aid or athletics ‘scholarship.’ This originally was designed to eliminate the need of booster payments. In the end it proved far more professional than anything the players of the 1940s experienced. For all its noble purpose, the grant-in-aid system didn’t stop the surreptitious, private payments that today still cause the knottiest enforcement problems for collegiate sports” (p. 65). However, institutions began to worry about student-athletes claiming employment status upon receiving grants-in-aid. To avoid the legal implications of this threat, Byers and the NCAA “crafted the term student-athlete, and soon it was embedded in all NCAA rules and interpretations as a mandated substitute for such words as players and athletes. We told college publicists to speak of ‘college teams,’ not football or basketball ‘clubs,’ a word common to the pros” (Byers, 1995, p. 69).

Scholarships for athletic ability became official at the 1956 NCAA Convention, “changing the organization’s constitution to permit schools to pay both the rich and the poor – regardless of need, regardless of academic potential or lack thereof – all ‘commonly accepted educational expenses’ for the undergraduate athlete” (Byers, 1995, p. 72). This official system was a big change from the amateur ideals of the past. Sack and Staurowsky (1998) commented, “Few of the people who attended the NCAA’s first convention in 1906 could have conceived that by 1957, NCAA rules would allow a university to pay the room, board, tuition, and fees of an athlete in order to induce him to participate in sports. In fact, they probably would have been astounded to find that these
payments could be made on behalf of athletes with absolutely no financial need or remarkable athletic ability” (p. 47). After scholarships for athletic prowess became acceptable at institutions of higher education, the NCAA turned again toward creating academic policies for students to qualify to play.

**Historical Overview: The Academic Regulation of College Athletes**

Scholarship regulations provided the foundation for the NCAA to take control over the regulation of student-athletes’ behavior, athletic scholarships, and academics. The organization created a series of academic policies, starting in 1948 with the “Sanity Code,” which failed to take hold of its membership, but “established that central NCAA oversight and enforcement of college athletics was here to stay” (Blackman, 2008, p. 231). The NCAA fell into its role because no other group wanted the responsibility of regulating college sports. Many major institutions did not appreciate an external group interfering with university policies that included special privileges given to student-athletes. Thelin (2004) expressed, “The last-ditch attempt to solve the problem was to give, by default, new regulatory powers to the National Collegiate Athletic Association – a body whose primary purpose had been to help promote national championship games” (p. 299).

The NCAA’s first executive director, Walter Byers, reviewed the history of academic and amateurism policies. He described, “The NCAA’s 1948 Sanity Code included a uniform, national financial aid rule. Under the Sanity Code, a student-athlete could receive tuition and fees if he showed financial need and met the school’s ordinary entrance requirements; this amounted to a merit award for athletic ability” (Byers, 1995, p. 67). According to Sack and Staurowsky (1998), “The Sanity Code was an attempt to
fashion a compromise between two schools of thought: advocates, mostly in the South, of full athletic scholarships, and their opponents such as Yale, Harvard, and Princeton that insisted that athletes be treated no differently than other students” (p. 44). The NCAA’s new oversight power established a series of academic policies for student-athletes that changed over time in response to an uproar by institutions and policy actors.

Beginning with the “1.6 rule” in 1965, the NCAA sought to predict academic success by projecting student-athletes could handle college-level work with a 1.6 high school grade point average (GPA) (Blackman, 2008). Byers (1995) noted that the standards for student-athletes were much lower than for the general student population. He discussed, “The equation implementing the former 1.600 rule had allowed high school grades and test performance to complement each other. Proposition 48 would require freshmen student-athletes to clear both hurdles – high school grade requirement and test minimum. But if unsuccessful the first time, they could repeat the tests. The hurdle was not high; many even considered it embarrassingly low. The College Board, creator of the SAT, indicated that of a group of 1.5 million college-bound students tested in 1982, 85 percent of the men and 80 percent of the women could meet the proposed standard” (p. 297). As a result, the NCAA made several attempts to improve academic standards for college student-athletes.

Blackman (2008) reviewed all of the policy changes, including the 1973 “2.0 rule” granting student-athletes eligibility with at least a high school GPA of 2.0; the 1986 Proposition 48 requiring a minimum 700 on the SAT or 15 on the ACT and 11 core high school courses in addition to the 2.0; the 1989 Proposition 42 that limited students with only one of the previous requirements to “need-based” financial aid and not ‘athletic-
based’ financial aid”; and finally to the 1996 Proposition 16 requiring 13 core courses and a sliding scale of GPA to test score” (pp. 231-3). From these policies surfaced issues regarding minority and lower income students. Covell and Barr (2001) reviewed all of the NCAA’s policy implementations, commenting, “The NCAA could not dodge the repeated criticisms that these newly established guidelines were disproportionately penalizing African Americans” (p. 433). Blackman (2008) revealed, “A study by The National Center for Education Statistics indicated that Prop. 16 significantly reduced opportunities for all student-athletes, particularly African Americans. The study also indicated that student-athletes from lower socio-economic classes suffered disproportionately” (p. 233).

Concerned with the need for improved academic performance, the Knight Foundation Commission on Intercollegiate Athletics (Knight Commission) published a report entitled *A Call to Action: Reconnecting College Sports and Higher Education* in 2001. Addressing concerns with commercialization, the report emphasized, “It is time to make a larger truth evident to those who want bigger programs, more games, more exposure, and more dollars. It is this: Most Americans believe the nation’s colleges and universities are about teaching, learning and research, not about winning and losing. Most pay only passing attention to athletic success or failure” (Knight Foundation Commission on Intercollegiate Athletics, 2001, p. 23). According to the Knight Commission, a greater focus must be placed on academic performance for student-athletes than athletic performance.

The Knight Commission’s report included several recommendations for the future of academic reform. One recommendation focused on the improvement of graduation
rates: “By 2007, teams that do not graduate at least 50 percent of their player should not be eligible for conference championships or for postseason play” (Knight Foundation Commission on Intercollegiate Athletics, 2001, p. 26). Many of the report’s recommendations influenced the direction of the NCAA’s academic reform policy two years later. The Knight Commission’s 2001 report reached a national audience and had a large impact on the momentum leading the NCAA’s 2003 reform policy. The report noted, “Sports as big business is suitable for the marketplace and has proved to be a profitable way to tap into the national psyche. Sports as big business for college and universities, however, is in direct conflict with nearly every value that should matter for higher education” (Knight Foundation Commission on Intercollegiate Athletics, 2001, p. 21). The NCAA’s low academic expectations and requirements of student-athletes did not fit with the admissions standards and rigor of college.

With all of the pressures from outside groups and the nature of the policy environment, the NCAA was poised to make policy changes. Gurney (2011) cautioned, For nearly 50 years, the NCAA has debated its minimum academic requirements for first-year students who hope to compete in big-time college sports. In its various attempts to ensure an acceptable level or precollegiate learning and skill competencies, the NCAA has vacillated between lowering and raising entrance standards, seemingly unable to determine the correct balance. (para. 1).

The environment, and especially the Knight Commission’s report, influenced the NCAA to launch a new reform package in 2003.
The 2003 NCAA Academic Performance Program

The NCAA developed the Academic Performance Program (APP) in 2003. Blackman (2008) announced, “On April 29, 2004, the National Collegiate Athletic Association (NCAA) Board of Directors announced that they had overwhelmingly adopted a ‘landmark’ academic reform package” (p. 227). The NCAA changed some past performance measures mentioned in the history of its academic reform policies. The NCAA also created new performance metrics and rejected the Federal Graduation Rate (Steinbach, 2004). One reason for the design was “to help combat the problem of low graduation rates by student-athletes, specifically football and men’s basketball athletes” (Christy, Seifried & Pastore, 2008, p. 2). To enhance its past policies,

The number of core courses a prospective college athlete must complete in high school has increased from 13 to 14 with a jump to 16 coming in 2008. Meanwhile, current college athletes must adhere to stricter standards in terms of their progress toward a degree. Whereas athletes formerly needed to have 25 percent of their degree credits entering their third year, 50 percent entering their fourth year, and 75 entering their fifth year, now it’s a 40-60-80 progression. (Steinbach, 2004, p. 66)

The two new metrics developed by the NCAA in 2003 are the Graduation Success Rate (GSR) and the Academic Progress Rate (APR). LaForge and Hodge (2011) noted, “The APR and GSR are unique in that they apply only to student athletes receiving financial aid” (p. 217). Non-scholarship student-athletes are completely left out of the academic and graduation measures.
According to LaForge and Hodge (2011), “GSR is an alternate graduation-rate methodology developed by the NCAA that credits institutions for incoming transfers or midyear enrollees who graduate, and does not penalize institutions for student athletes who leave prior to graduation if they are in good academic standing at the time of their departure” (pp. 221-2). The GSR only considers scholarship student-athletes and takes into account students who transfer in and out, whereas the Federal Graduation Rate only considers starting cohorts. The APR metric is much more complex.

LaForge and Hodge (2011) defined APR in detail:

The APR metric is intended to provide more real-time feedback on the progress of student athletes toward graduation….Each semester APR tracks retention and eligibility for each student athlete on athletics financial aid. For each student athlete in the cohort group, one point is earned each semester if the student athlete remains enrolled and on the team (retention point) and one point is earned if he/she is academically eligible to compete (eligibility point). Thus, each student athlete can potentially earn two APR points each semester for the institution by remaining in school and fulfilling the academic requirements necessary to be eligible to participate in intercollegiate athletics. (pp. 222-23)

APR scores are attributed to individual athletic teams at each institution. To better assess the metric, “The APR score for a population of student athletes is simply the proportion of total possible points that was earned, multiplied by 1,000. Thus, a perfect APR score is 1,000…An APR score of 925 has become the NCAA standard for potential institutional penalties that could result in loss of scholarships” (LaForge & Hodge, 2011, p. 223). Connecting the graduation rates, “The NCAA asserts that a score of 925 on the
APR equates to a GSR of 60%” (Blackman, 2008, p. 238). These metrics only measure student-athletes receiving athletic scholarships, so the picture of athletes’ academic success is incomplete.

The NCAA conducted research in developing its 2003 academic reform package, seven years after introducing Proposition 16. The creation of the GSR and APR was based on statistical analyses. According to LaForge and Hodge (2011), “Central to the issue of developing institutional academic policy based upon the NCAA metrics and the federal metric are concerns that [the Federal Graduation Rate] may not provide an accurate measure of student athletes’ academic success” (p. 218). The GSR’s numbers, accounting for transfer students, were more favorable than the Federal Graduation Rate. The NCAA Committee of Academic Performance decided to reject this national benchmark endorsed by the Department of Education.

The fact that the metrics leave out non-scholarship student-athletes is troubling. The literature is unclear as to why these students are ignored by the metrics, but for some reason, decision-makers chose to focus solely on students receiving athletic scholarships. Benford (2007) noted, “Sports reformers must simultaneously appeal to multiple audiences with uncommon interests” (p. 22). There is no doubt that the NCAA faced many challenges, and its academic reform committee members required compromises to implement the Academic Performance Package. This policy provides the context for the student-athlete population examined in this study.

**Comparison of Scholarship and Non-Scholarship Student-Athletes**

The previous section presented an overview of the historical context of student-athlete academic regulation at the college level. The next section presents three areas that
inform the study: academic performance, time-to-degree, and demographic and profile characteristics.

**Academic Performance**

Studies have shown that just participating in college athletics can affect students’ academic performance. Purdy, Eitzen, and Hufnagel (1982) identified a gap in the literature to implement a 10-year study of the academic performance and educational attainment of student-athletes at a Division I athletic institution. The purpose of their study was to assess the degree to which college athletes are disadvantaged educationally by their sports participation. The authors looked at a number of dimensions left out of previous studies, including academic preparation, GPA, and graduation rate, and compared athletes in the categories of race, sex, and scholarship status. These added dimensions and variables distinguished the study from previous research.

Purdy et al. (1982) collected data from 2,091 student-athletes attending Colorado State University, a Division I institution, between 1970 and 1980. The researchers collected data from both the athletic department and the university’s department of admissions and records to examine all of the stated variables. The general student population data was from a study conducted by Colorado State University between 1973 and 1979. These data were then analyzed in two sets: athletes compared to the general student population, and athletes in subcategories, such as gender, sport, and race, compared to each other. For their method, Purdy et al. (1982) compared athletes to the general overall population and then conducted a comparison by gender. Comparisons of athletes by race, by variables including years of participation in sport and amount of athletic scholarship received, and by educational attainment differences by sport were
administered. Results suggested that significant differences existed, but the article does not express what statistical methods were used.

Several results emerged from the Purdy et al. study. The authors noted that athletes were consistently less prepared than the general student population for college and generally had lower grade point averages and graduation rates than the general student population. They concluded optimistically that there was a positive relationship between athletic participation and academic performance. Purdy et al. (1982) were the first researchers to include scholarship status as a factor in this type of study. However, research regarding scholarship status and academic performance focuses primarily on student-athletes receiving athletic scholarships.

Since Purdy et al.’s (1982) study was groundbreaking, their results on scholarship student-athletes were significant. Results showed differences between full-scholarship students and those with little or no athletic scholarship. Purdy et al. (1982) found the scholarship student-athletes were the least prepared academically for college and had lower GPAs and graduation rates than non-scholarship student-athletes. The authors attribute this to full-scholarship athletes’ feeling an obligation as an “employee” of the institution to focus on athletics, and also the strong desire to become a professional athlete is worth pursuing over education. Purdy et al. (1982) also concluded that non-scholarship student-athletes are more prepared for college-level work, have better GPAs, and graduate at a higher rate.

The influence of athletic scholarships on academic motivation was also examined by Kingston, Horrocks, and Hanton (2006). Kingston et al. (2006) aimed to discover whether intrinsic motivation, extrinsic motivation and amotivation can discriminate
between scholarship and non-scholarship athletes at the collegiate level. The researchers sampled 160 student-athletes from different NCAA, NAIA, and NJCAA divisions, including 85 scholarship student-athletes and 75 non-scholarship student-athletes. Participants completed a demographic questionnaire and the Sport Motivation Scale. Kingston et al. (2006) utilized discriminant function analysis to predict groups by these motivation variables. The results indicated that scholarship student-athletes “exhibited significantly higher levels of [extrinsic motivation] and lower levels of intrinsic motivation towards accomplishments and stimulation than non-scholarship athletes” (p. 59). Similar to Purdy et al.’s (1982) conclusions on the power of scholarships, Kingston et al. (2006) discussed that scholarships’ distribution based on athletic talent controls the athletes who receive them, weakening their intrinsic motivation. They concluded that scholarships can negatively affect student motivation (Kingston et al., 2006).

Research by Medic, Mack, Wilson and Starkes (2007) specifically examined how athletes’ motivation is affected by athletic scholarships. In a unique approach, the researchers studied scholarship basketball athletes from the United States, 46 from seven different Division I institutions, and compared them to 70 non-scholarship basketball athletes from four universities in Canada. Medic et al. (2007) manipulated the Sport Motivation Scale by asking participants to imagine reversing their scholarship status (losing or gaining a scholarship). Using repeated measures multivariate ANOVAs for scholarship and non-scholarship students, the authors examined differences in motivation. One important finding is that scholarship athletes worried that losing their scholarships would limit their decision-making abilities, making their main responsibility now to pay for their educational expenses. Just like Kingston et al. (2006) suggested,
Medic et al. (2007) commented that “full athletic scholarships can exert control over scholarship athletes’ behavior, and can also be perceived as potential controllers of non-scholarship athletes’ behavior, rather than the method that can provide incentive for an athlete’s effort and performance” (Medic et al., 2007, pp. 301-2). Medic et al. (2007) continued, “Furthermore, being motivated by extrinsic factors and internal feelings of pressure such as guilt and anxiety was associated with the receipt of a full athletic scholarship, especially among males” (p. 303). Other research has demonstrated that athletes recruited at institutions that give no athletic scholarships show the same weakening academic motivation that scholarship athletes do compared to non-recruited student-athletes.

Bowen and Levin (2003) did find the same concepts in their most recent research study of student-athletes not receiving athletic scholarships. Bowen and Levin (2003) drew parallels between recruited student-athletes outside of Division IA football institutions and scholarship student-athletes. The researchers examined 27,811 students from 33 institutions in Divisions I and III that do not provide athletic scholarships whatsoever, to determine differences in academic performance between recruited and non-recruited student-athletes and causes of academic underperformance. Using logistic regression, the authors discovered, “Given their attachments and priorities, highly recruited athletes, selected largely on the basis of the talents and traits that make them exceptional athletes, may conceivably be more inclined than their classmates simply to ‘get by’ academically; they may be less inclined (or even less able, recognizing the pressures and perhaps even the stress that their athletic commitments place on them) to make the extra effort needed to turn an acceptable performance in class into an
exceptional performance” (Bowen & Levin, 2003, p. 166). These results suggest that recruited student-athletes who do not receive scholarships may still face the same athletic pressures as scholarship student-athletes at Division I institutions, neglecting academic motivation and performance. As previous studies mentioned, students recruited to play sports at these institutions tend to be more extrinsically motivated in athletics.

The researchers focused on institutional admissions allocating limited enrollment slots to student-athletes with lower entrance credentials in comparison with their non-athlete applicant counterparts. Given their high school performance, student-athletes still underperformed based on expectations from their academic background. Bowen and Levin (2003) even determined that recruited student-athletes struggled academically in their off-season. They noted, “Recruited athletes earn far lower grades than what might be expected on the basis of their incoming academic credentials and background characteristics. This striking ‘underperformance’ phenomenon appears to be related directly to the criteria used in recruiting and admitting these athletes – and not to time commitments, differences in race or socioeconomic status, field of study, or the intensity of the athletic experience. Recruited athletes underperform even in seasons or in years when they are not participating in athletics” (p. 328). One of their final conclusions was simply, “Recruited athletes underperform significantly whereas most walk-ons do not” (p. 167). This phenomenon relates to the status of recruitment and in this study, earning athletic scholarships. When students are particularly recruited for athletic talent, academic performance seems to show a negative effect.

The above studies confirmed seemingly obvious viewpoints about athletic scholarships’ effects on academic motivation. However, research results do not always
agree with other studies’ results. Amorose and Horn (2000) replicated a previous study to test intrinsic motivation of student-athletes based on scholarship status and gender. The authors collected demographic information and had students fill out three surveys from a sample of 386 student-athletes from select Division I colleges and universities across the United States. Using multivariate ANOVA, Amorose and Horn (2000) concluded, “Athletic scholarships may serve to enhance athletes’ intrinsic motivation because they convey positive information concerning the athletes’ sport competence” (p. 76). Previous studies did not attribute high levels of intrinsic motivation in scholarship student-athletes.

In the studies on the academic performance of student-athletes, several researchers (Kingston et al., 2006; Medic et al., 2007; Purdy et al., 1982) have shown that non-scholarship student-athletes are more intrinsically motivated academically compared to scholarship student-athletes. Bowen and Levin (2003) found a parallel in institutions that do not give athletic scholarships, finding that students recruited for their athletic talent rather than academic ability underperform academically compared to walk-on student-athletes. Few other studies even include non-scholarship student-athletes as participants or scholarship status as a factor when measuring academic performance or graduation rates of student-athletes.

**Time-to-Degree**

Time-to-degree is a critical component when comparing scholarship and non-scholarship student-athletes. Examining time-to-degree as a factor involves determining if a student-athlete graduated, and if so, how long the student took to complete his or her degree. Retention must be considered as a related factor because students must persist
through college towards graduation. Athletic scholarships are a monetary incentive for student-athletes since they pay for some or all of a student’s tuition and fees, books, housing, and meal plans. As costs of attending college rise, student-athletes are rarely able to find time to work because of the demands of participating in intercollegiate athletics. Therefore, college costs are alleviated by partial or full athletic scholarships, sometimes in addition to institutional and federal financial aid.

Several studies examined scholarship status and its influence on student-athlete retention. In one study, Kiger and Lorentzen (1986) examined how sport type, race, and gender affected academic performance and retention of student-athletes. Data from 519 student-athletes at one institution were analyzed using regression procedures and analysis of variance (ANOVA). In this study, the authors concluded, “The more aid an athlete receives, the more likely he or she will letter in sports over the years” (Kiger & Lorentzen, 1986, p. 161). Lettering in sports is connected to athletic ability and participation.

Le Crom, Warren, Clark, Marolla and Gerber (2009) conducted a study comparing scholarship status and the retention rates of student-athletes. The researchers studied each student-athlete who participated in athletics at eight institutions between 2001 and 2005 as a separate observation for each year. Using complex quantitative analyses combining ANOVA, discriminant function analysis, and binary logistic regression, Le Crom et al. (2009) analyzed data on retention status, scholarship status, gender and sport. They found that “scholarship support…emerged as a significant predictor of retention,” thus confirming the previous finding by Kiger and Lorentzen (Le Crom et al., 2009, p. 18). The researchers also suggested that those who receive less
scholarship funding (individual sport athletes) may become more intrinsically motivated than those who receive higher levels of scholarship support (team sport athletes) (Le Crom et al., 2009). Without the worry of paying for tuition, student-athletes on scholarships tend to stay enrolled and persist towards graduation.

Financial aid can play a role in retaining student-athletes receiving athletic scholarships. Mendez, Mendoza and Archer (2009) focused on student-athletes in the state of Oklahoma to assess the effect of combinations of the three most common types of federal and state financial aid among athletes within the state. The participants included all student-athletes on scholarship from the FAFSA between 2002 and 2006, totaling 4,856. A quantitative analysis utilizing HWF logistic models was employed to examine each possible combination of athletic and financial aid for student-athletes in Oklahoma. Mendez et al. (2009) suggested that student-athlete persistence is significantly influenced by financial aid in addition to athletic scholarships. These researchers determined that for student-athletes, sometimes athletic scholarships alone are not enough. Unfortunately, these studies did not look at retention for student-athletes not receiving any athletic scholarships.

Motivation to participate in academic pursuits affects student retention. Gaston-Gayles and Hu (2009) conducted a study examining factors related to student athletes’ engagement in educationally purposeful activities at Division I universities and its impact on a set of cognitive and affective outcomes. A sample of 410 students were surveyed from 21 Division I institutions. Exploratory factor analysis was employed to validate the scales used and multiple regression analyses were used to test in the research questions. Gaston-Gayles and Hu’s (2009) research supports that participation in academic related
activities is more meaningful for low profile athletes. Non-revenue sports and sports with little media attention have fewer athletic scholarships to offer student-athletes. Depending on the sport, these athletic scholarships may only be partial scholarships or teams only have a limited number of full scholarships to allocate. These results are connected with team type, one of the many demographic and profile characteristics of intercollegiate athletes. The influence of background characteristics on academic performance and time-to-degree will be examined in the following section.

**Demographic and Profile Characteristics**

Student-athletes come from every race, ethnicity, religion, country, and sex. Determining if any of these background characteristics affect student-athletes’ academic performance and time-to-degree is important. From the aforementioned study, Gaston-Gayles and Hu (2009) indicated, “Student background characteristics tend to have limited influence on engagement in educationally purposeful activities…That is, who the students are matters very little in what the students do in college” (p. 329). Most of the other studies reviewed have different conclusions. Receiving a scholarship based on athletic ability cannot be generalized to a specific race, sex, or other characteristic of students. However, generally there is more athletic scholarship money available for students participating team sports over individual sports and revenue sports over non-revenue sports. Kiger and Lorentzen (1986) emphasized, “Minority athletes and revenue sport athletes receive higher proportions of financial assistance compared to other athletes” (p. 162). This section examines the effects of these characteristics on academic performance and time-to-degree as they relate to scholarship status. Most of the research
available on demographic and profile characteristics of scholarship student-athletes focuses on African American students, male revenue sport athletes, and team sports.

**Sport type and team type.** Revenue sports are those that typically generate revenue for the institutions that sponsor them. These sports are generally football and men’s basketball, though at some schools, baseball and women’s basketball generate revenue. Kiger and Lorentzen (1986) found that revenue sport participants come to the university less well prepared academically than other athletes. Adelman (1990) conducted a longitudinal study on student-athletes to contribute responsible information to such policy debates using the data from the National Longitudinal Study of the High School Class of 1972 (NLS 72). From these data he compared six groups of students, including varsity athletes from revenue and team sports and those from non-revenue and individual sports, based on the transcripts for athletic-related course credits. Adelman (1990) noted that some 55.9 percent of the NLS 72 varsity football and basketball players received scholarships during the first two years after high school. After examining these students’ college transcripts for degree progress, he concluded that a student who earns a scholarship is less likely to drop out of college for financial reasons. Adelman (1990) discovered that compared with other groups, varsity football and basketball players enter college with relatively poor high school records and test scores and the highest ratio of vocational to academic subjects in high school. He explained that student-athletes in revenue sports are more likely than individual and non-revenue sport athletes or non-athlete students to receive scholarships.

More recently, Upthegrove, Roscigno, and Charles (1999) examined the academic performance of Division I student-athletes in revenue sports compared to those in non-
revenue sports. Using data from the 1987 through 1988 National Study of Intercollegiate Athletes, the researchers studied 2,921 student-athletes from forty-two randomly selected institutions. Of this group, 1,327 students were from football and men’s basketball teams. Upthegrove et al. (1999) included variables such as parental education, family income, self-reported hours spent on sports and academics, race and high school GPA. Using logistic regression and ordinary least squares, their analyses revealed that students competing in big-time college sports face “conflicting athletic and academic pressures” that cause “short term academic difficulty – that is, having to repeat courses or being placed on academic probation. This consequently affects long-term achievement” (Upthegrove et al., 1999, p. 733). Upthegrove et al. (1999) noted that revenue athletes are about twice as likely to face these problems, in part due to difficulties in managing time and being in intensely competitive environments. Due to the athletic demands and pressure from receiving a scholarship, many student-athletes struggle academically.

In their foundational study, Purdy et al. (1982) learned that football players performed the worst academically and had the lowest graduation rates. The researchers also found evidence that athletes in the male revenue sports of football and basketball have a relatively low probability of receiving an education compared to non-athletes or athletes in the other sports (Purdy et al., 1982). All of these studies confirm that participation in revenue and team sports negatively affects academic performance and graduate rates. As a result, Pascarella et al. (1999) aimed to discover why this may occur.

Pascarella et al. (1999) studied how athletic participation affects cognitive impacts with background characteristics as a factor, controlling for precollege characteristics, institutional context, and students’ college experiences. Their research
question examined if the negative cognitive consequences of intercollegiate athletics the same for all sports or if they were largely confined to athletes in revenue-producing sports such as football and basketball (Pascarella et al., 1999, p. 4). They surveyed 3,331 students from 18 four-year and five two-year institutions using the National Study of Student Learning, a longitudinal investigation. Their results found that football and basketball players had significantly lower writing ability than other student-athletes after the second year of college. On the critical thinking scale, football percentiles were 11% lower than non-revenue student-athletes, and basketball percentiles were 17% lower. The study yielded important results: “Negative cognitive impacts on men of participation in intercollegiate football and basketball are not explainable by the differences between these athletes and other men in their experience of college (i.e., amount studied, credit hours completed, work responsibilities, place of residence, or patterns of course work taken)” (Pascarella et al., 1999, pp. 22-3). This finding is significant because it may relate to the type of students recruited to these sports or the athletic subculture related to them. As a result of this study, there may be an incentive to win games since the sports are in the spotlight, or academic success could be seen as a hindrance to improving athletic abilities.

Maloney and McCormick (1993) conducted a study to determine what extent intercollegiate athletic participation affects academic success. The authors collected undergraduate course grades for all students enrolled at Clemson University between 1985 and 1989, which including 594 athletes. Using structural equation modeling, Maloney and McCormick (1993) determined that “athletes in the nonrevenue sports grade nearly identically to the rest of the student body relative to their background
characteristics. On the other hand, football and basketball men do somewhat worse than their peers” (p. 562). These results are consistently confirmed across many studies.

Several studies (e.g., Gaston-Gayles & Hu, 2009; Le Crom et al., 2009) previously concluded that individual sport and non-revenue sport athletes demonstrate stronger intrinsic academic motivation than do team and revenue sport athletes. Purdy et al. (1982) demonstrated that “athletes involved in individual sports secured better college grades and were more likely to graduate than those who participated in team sports” (p. 444). Individual sports fall into the non-revenue sports category, so the results of studies on team type and sport type may be similar.

**Race and sex.** Many previous studies on student-athletes have included the factors of race and sex. A major group of students studied are African American student-athletes. Purdy et al. (1982) showed in their study that Black athletes had significantly lower scores on the entire range of educational achievement measures. Mendez et al. (2009) emphasized that race/ethnicity is also a significant factor in student-athlete persistence in combination with financial aid formulas. This study suggests that low-income African Americans remain in the worst position than all other ethnic groups in terms of persistence. Interestingly, African American athletes tend to play more in the revenue generating sports. In their study comparing student-athletes’ academic performance in revenue sports to those in non-revenue sports, Upthegrove et al. (1999) concluded, “The concentration of African Americans in sports where the athletic-academic tension is greatest is not only noteworthy, but troubling. Participation in revenue-generating and commercialized programs may have the effect of at least partially
reproducing inequalities that these students bring to college” (p. 734). These inequalities tend to have a negative effect on academic success and achievement.

The Journal of Blacks in Higher Education (2004/2005) had a contrasting view, announcing,

The evidence is clear that Black scholarship athletes actually perform better academically than Black students as a whole…It is likely that the financial aid provided by an athletic scholarship is a critical factor in enabling many Black student athletes to stay in school. Black students who are not on athletic scholarship are far more likely to drop out of college for financial reasons. For Whites, the financial barriers to a higher education are not as formidable. Thus, White students generally are able to stay in school and achieve their diplomas at a rate very similar to White college athletes who receive scholarship aid. (p. 68).

This information is significant because few studies compare scholarship and non-scholarship student-athletes with race as a factor. Connecting multiple characteristics in their study, Kiger and Lorentzen (1986) concluded, “In general, White female nonrevenue sport participants, as a group, have the highest level of university academic performance; Black male revenue sport players perform most poorly as a group” (p. 165). Though females in non-revenue sports can earn athletic scholarships, their characteristics are more typical of non-scholarship student-athletes described in these various research studies.

Meyer (1990) explored gender issues by conducting a study to determine how female student-athletes experience athletics and academics in their daily lives and how they evaluate their expectations and college experiences. She interviewed 23 scholarship
basketball and volleyball players at a Midwestern university. Meyer’s (1990) interviews with female student-athletes revealed that a strong bond among team members is formed because of the “lack of understanding by students of the experience of being a woman athlete may therefore draw women athletes together into their own support group” (p. 52). She found, “Most of the female athletes reported that their teammates were a good influence on them scholastically. The volleyball players in particular were very concerned about academic performance, creating a contagious atmosphere wherein all the players tried to do their best in addition to helping their companions to achieve” (p. 51). Meyer (1990) commented that female student-athletes can focus on both academics and athletics due to the lack of public recognition for women’s sport. Therefore, they are motivated to earn success in the classroom aside from their athletic competitions. Female athletic teams tend to encourage and help members with academic achievement as a positive aspect to the college experience.

In contrast, male scholarship student-athletes on a basketball team experienced quite the opposite in a major study by Adler and Adler (1985). The researchers conducted an ethnographic study for four years on one Midwestern men’s basketball team to determine if athletic participation enhances or hinders academic performance. Because the athletes studied were men on a revenue sport team roster and all of them received athletic scholarships, their motivation centered on their sport and its extrinsic rewards. Academic success in athletic departments is not promoted like athletic achievements are with this group of students. Adler and Adler (1985) explained, “The athletes received greater reinforcement for athletic performance than for academic performance. No one closely monitored their academic behavior, but they were carefully
watched at games, practices, booster functions, and on road trips. The celebrity and social status they derived from the media, boosters, and fans brought them immediate gratification, which the academic realm, with its emphasis on future rewards, could not offer” (p. 245). Based on these studies and the conclusions of Kiger and Lorentzen (1986) that White, female non-revenue athletes perform the best academically, female athletes appear to be more academically driven by intrinsic motivation, and male athletes tend to exhibit extrinsic motivation towards their athletic participation over academics.

The various results from these studies convey that more research is needed to examine demographic and profile characteristics and their effects on student-athletes’ academic performance. By reviewing literature on student-athlete academic performance, time-to-degree, and demographic and profile characteristics using scholarship status as the discriminating factor, differences in motivation based on scholarship status is beginning to emerge. How intercollegiate student-athletes are motivated is important to study because it relates to various issues that may discriminate between scholarship and non-scholarship student-athletes. Intrinsic and extrinsic motivation direct student-athletes’ focus toward academic or athletic pursuits. The theoretical framework, work motivation, is introduced in the next section and will help to inform the study and its results.

**Theoretical Framework**

Division I student-athletes dedicate most of their free time to athletic-related commitments such as community service activities, weight room workouts, sport practice, travel, and mandated study hall requirements. All NCAA student-athletes are required to be enrolled full-time in courses while practicing and competing for their
institutions. As such, student-athletes spend almost all of their time representing the institution balancing academic and athletic pursuits. Student-athletes receiving scholarships have been awarded a financial package based on athletic ability. Herzberg’s research connects extrinsic motivation (hygiene) to salary, and intrinsic motivation (motivators) to factors such as achievement recognition and growth. In this study, the extrinsic factor is the athletic scholarship. This extrinsic benefit is not tied to academic performance but rather to athletic ability and potential. The concept of motivation in work will be examined as a theoretical framework for this study of the potential influence of athletic scholarship money on student-athletes’ academic performance.

Herzberg’s classic work on motivation in organizational settings is the theoretical foundation for this study. Herzberg (2008) contended that individuals can be motivated extrinsically and intrinsically by two work factors: motivators and hygiene factors. He explained that those two motivation factors relate to work satisfaction and dissatisfaction. The first, motivators or growth factors, are connected to intrinsic motivation, including “achievement, recognition for achievement, the work itself, responsibility, and growth/advancement” (p. 24). Herzberg (2008) discussed the power of intrinsic motivation, writing, “The very nature of motivation, as opposed to hygiene factors, is that they have a much longer-term effect on employees’ attitudes. It is possible that the job will have to be enriched again, but this will not occur as frequently as the need for hygiene” (p. 48).

The second work factor is referred to as hygiene or dissatisfaction-avoidance factors that compose extrinsic motivators. These include “company policy/administration, supervision, interpersonal relationships, working conditions,
salary, status, and security” (Herzberg, 2008, p. 24). Regarding extrinsic motivation, Herzberg (1966) expressed, “A hygiene seeker is not merely a victim of circumstances, but is motivated in the direction of temporary satisfaction. It is not that his job offers little opportunity for self-actualization; rather, it is that his needs lie predominantly in another direction, that of satisfying avoidance needs. He is seeking positive happiness via the route of avoidance behavior, and thus his resultant chronic dissatisfaction is an illness of motivation” (p. 81). Herzberg, Mausner, and Snyderman (1993) continued, “Yet good hygiene cannot be an end in itself; it is merely a beginning…an overemphasis on hygiene carries within itself the seeds of trouble. It can lead to greater and greater focus on the extraneous rewards that reside in the context of jobs. Our emphasis should be on the strengthening of motivators” (pp. 131-32). Essentially, hygiene factors motivate employees for a temporary incentive while motivators drive employees to long-term achievement.

Herzberg compared the power of intrinsic motivation (motivators) to extrinsic motivation (hygiene). He explained:

It is clear why the hygiene factors fail to provide for positive satisfactions: they do not possess the characteristics necessary for giving an individual a sense of growth. To feel that one has grown depends on achievement in tasks that have meaning to the individual, and since the hygiene factors do not relate to the task, they are powerless to give such meaning to the individual. Growth is dependent on some achievements, but achievements require a task. The motivators are task factors and thus are necessary for growth; they provide the psychological
stimulation by which the individual can be activated toward his self-realization needs. (Herzberg, 1966, p. 78).

Several researchers have built on Herzberg’s work, including Lawler (1971, 1994), Notz (1975), and Vroom (1995). Discussing achievement motivation, Lawler (1994) explained, “Achievement motivation typically does not operate when people are performing routine or boring tasks where no competition is involved. However, when challenge and competition are involved, achievement motivation can stimulate good performance” (p. 27). In the context of this study, the population of student-athletes is innately competitive. Lawler (1994) added that extrinsic rewards are not necessarily consistent motivators. He wrote, “Studies have shown that factors such as pay satisfaction, job level within the organization, and how pay is determined influence the importance of pay and promotion. Altogether, the studies show that significant and comprehensible individual differences exist in the importance people assign to extrinsic rewards. The studies suggest that organizations have relatively little control over the degree to which their members will value various extrinsic rewards” (Lawler, 1994, p. 145). The results of this study may help determine the power of an extrinsic motivator.

Since scholarships are awarded for athletic ability and not academic achievements, the extrinsic motivator of money does not motivate performance for the academic responsibilities of a student on athletic scholarship. Lawler (1971) demonstrated, “Failure to tie pay closely to performance in many companies could mean that pay is not motivating job performance. In order to pay to motivate performance, it must appear to be related to performance; and employees are not likely to believe that pay is related to performance if it is actually not” (p. 159). Further, “Reward systems
motivate employees to perform well in those aspects of their jobs that are measured by the performance-evaluation system. The problem is that the evaluation system doesn’t always measure all the behaviors that need to be performed. The results are that those behaviors that aren’t measured tend to be ignored or performed poorly” (Lawler, 1994, p. 155). Notz (1975) clarified Herzberg’s hygiene description, explaining, “Rewards such as pay, fringe benefits, and promotions are extrinsic because they provide satisfaction that is independent of the actual activity itself and because they are controlled by someone other than the [recipient]” (p. 884). Student-athletes with athletic scholarships face a balancing act between athletic responsibilities tied to a monetary reward and educational pursuits.

In relation to this proposed study, Herzberg (1966, 2008) and Herzberg et al.’s (1993) classic work describes hygiene (extrinsic) factors and motivators (intrinsic). The hygiene factors including salary and benefits show that athletic scholarships are extrinsic motivators. Notz’s clarification of Herzberg’s hygiene factors confirms this concept. This framework allowed the researcher to examine this study through the lens of the hygiene factors in Herzberg’s two-factor theory. For the purpose of this study, athletic scholarships are extrinsic motivators. Therefore, scholarship student-athletes are viewed through the extrinsic lens, and non-scholarship student-athletes are examined as non-extrinsic. Table 1 shows the relationship between the theory of work motivation, scholarship status, the areas of academic performance, time-to-degree, and athletes’ demographic and profile characteristics.
Table 1

*Relationship between Theory, Scholarship Status, and Variables*

<table>
<thead>
<tr>
<th>Scholarship Status</th>
<th>Non-Scholarship</th>
<th>Scholarship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herzberg’s Two-Factor Theory (Hygiene) (Herzberg, 1966; Herzberg, 2008; Herzberg et al., 1993; Lawler, 1971; Lawler, 1994; Notz, 1975)</td>
<td>Non-Extrinsic</td>
<td>Extrinsic Athletic Scholarship</td>
</tr>
<tr>
<td>Demographic and Profile Characteristics</td>
<td>Sex Race Team Type Sport Type</td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>Cumulative Grade Point Average</td>
<td></td>
</tr>
<tr>
<td>Time-to-Degree</td>
<td>Graduated Status Semesters to Graduation</td>
<td></td>
</tr>
</tbody>
</table>

Because scholarships are specifically given for athletic performance, their effect on academic performance is unclear. This study aims to determine the influence of this extrinsic reward. With the strong foundational work of Herzberg and Herzberg et al., Lawler’s research is most relevant to this study. Through the lens of athletic scholarships as extrinsic motivators, this study will discriminate between scholarship and non-scholarship Division I student-athletes by examining GPA, time-to-degree, and demographic and profile characteristics.

**Summary**

This chapter introduced the development of athletic scholarships and a historical overview of NCAA academic policies that regulate student-athletes. From the review of literature, three areas emerged to inform the study: academic performance, time-to-degree, and demographic and profile characteristics. Studies show that scholarships awarded for athletic ability have a negative effect on student-athletes’ motivation in
college, as their focus is on athletic performance rather than academic success. However, athletic scholarships help retain student-athletes who many not otherwise attend college. Non-scholarship student-athletes must pay their own way through college, so the literature suggests they are more intrinsically motivated academically compared to athletic scholarship recipients. Through the framework of work motivation, this study will examine GPA, time-to-degree, and demographic and profile characteristics of scholarship and non-scholarship student-athletes at Division IA athletic institutions. The next chapter will present the methods, including the study’s research design, sample, and procedures to conduct the study.
CHAPTER 3

METHODS

Student-athletes without scholarships, also known as walk-ons, still compete at the highest level of competition in NCAA Division I institutions. While the academic performance of intercollegiate student-athletes has been an important topic for researchers to investigate, academic performance measures have primarily ignored non-scholarship student-athletes. Therefore, the purpose of this national study is to compare scholarship and non-scholarship student-athletes’ demographic and profile characteristics (e.g., sex, race, team type, sport type), academic performance (e.g., cumulative GPA), and time-to-degree (e.g., semesters) examining athletic scholarships as an extrinsic reward at NCAA Division IA football institutions.

This chapter is divided into three sections. The first section provides a brief overview of the study’s research design. The second section explains the data source, including the study’s population, participant selection, sample, data collection procedures, and ethical considerations. The third section describes the statistical analysis of the data, including the procedure of descriptive discriminant analysis. Next, the variables are introduced as a function of the statistical method, which does not label variables as independent and dependent like most types of analyses. Descriptive discriminant analysis was selected because it differentiates between two groups based on a large amount of variables.

Research Design

This quantitative study draws from institutional secondary data provided by selected institutions to conduct group comparisons. The three areas of academic
performance, time-to-degree, and demographic and profile characteristics emerged from the review of relevant literature as variables to compare scholarship and non-scholarship student-athletes. Discriminant analysis was employed to statistically examine group differences using a large number of variables.

**Data Source**

The population for this study is comprised of all NCAA student-athletes on a university athletic team roster at Division IA football institutions in the cohort that entered college in 2004. There are 120 such institutions in the United States. The entering year of 2004 allows the researcher to study a group of students who have had time to complete a degree in a reasonable time frame given their athlete status. Chapter 2 described the most recent NCAA academic reform policies implemented in the 2004-2005 academic year. All of the student-athletes admitted in 2004 were required to meet the same academic requirements to enter and compete as a Division I student-athlete during their entire enrollment. To ensure mutually exclusive groups, student-athletes who entered college in 2004 without receiving athletic scholarships are considered non-scholarship student-athletes for the whole study even if they earned a scholarship during their enrollment.

**Sample Selection**

The researcher employed non-probability sampling to select a sample by sending a letter of request for data detailing the study to a select number of athletic department academic and/or NCAA compliance directors at Division IA football programs. The data set from each institution is comprised of all student-athletes in the 2004 cohort from 10 sports for both sexes, including scholarship status, background characteristics, cumulative
grade point average, if the student graduated, and time-to-degree (in semesters). All of these students entered the institutions under the same academic and initial eligibility policies for NCAA Division I student-athletes because they entered in the same year the new policies discussed in chapter 2 were implemented. This also allowed the researcher to have a sample of students who had time to graduate in a reasonable time frame while competing in college athletics. Athletic departments typically maintain records of students for seven years, so the researcher is examining the time frame from admittance in 2004 through 2011, though some data had 2012 graduation dates.

The sample draws from eight different institutions in regions around the country. NCAA Division I institutions sponsor at least sixteen teams that play a minimum number of contests with other Division I members (NCAA, 2011a). The size of entering cohorts at Division I institutions depends on the amount of sport teams offered at each university, but generally there are between 100 and 200 student-athletes. For example, the University of Wisconsin, hosting a large athletic program with twenty-three teams, had 211 entering freshmen athletes in 2001 (Ferris et al., 2004, p. 559). Not all of the sampled institutions sponsor the same sports. The eight institutions have 10 sports in common that are considered in this study: Men’s Basketball, Women’s Basketball, Women’s Cross Country, Men’s Golf, Football, Women’s Soccer, Softball, Women’s Tennis, Women’s Outdoor Track and Field, and Women’s Volleyball. From these sports, an entering class may range from approximately 60 to 120 students.

A sample of student-athletes from eight institutions provided an appropriate sample size for this study. According to Raosoft (2004), the recommended sample size for this study is approximately 383 students. This is based on a 5% margin of error and a
population estimate of 120,000 Division 1A student-athletes. If the entering class range of 60 to 120 is averaged and approximately 100 students are estimated to enter in 2004 from each institution, up to 800 students make up the sample. The actual sample size for this study was 593. Table 2 exhibits the characteristics of the eight institutions sampled. Table 3 shows the 10 teams by sport type and team type.

**Table 2**

*Characteristics of Sampled Institutions*

<table>
<thead>
<tr>
<th>Institution</th>
<th>Region</th>
<th>Estimated Undergraduate Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central University</td>
<td>Midwest</td>
<td>24,593</td>
</tr>
<tr>
<td>Desert University</td>
<td>Southwest</td>
<td>27,364</td>
</tr>
<tr>
<td>Midwest University</td>
<td>Midwest</td>
<td>42,099</td>
</tr>
<tr>
<td>Mountain University</td>
<td>Mountain</td>
<td>28,994</td>
</tr>
<tr>
<td>Pacific Northwest University</td>
<td>Northwest</td>
<td>34,523</td>
</tr>
<tr>
<td>Southeast University</td>
<td>Southeast</td>
<td>29,310</td>
</tr>
<tr>
<td>Southwest University</td>
<td>Southwest</td>
<td>27,278</td>
</tr>
<tr>
<td>Valley University</td>
<td>Southwest</td>
<td>58,404</td>
</tr>
</tbody>
</table>
Table 3

_Sampled Athletic Teams by Sport Type and Team Type_

<table>
<thead>
<tr>
<th>Team Type</th>
<th>Revenue</th>
<th>Non-Revenue</th>
<th>Team Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual</td>
<td>Team</td>
<td></td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>Football Men’s Basketball</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Men’s Golf</td>
<td>Women’s Basketball</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women’s Tennis</td>
<td>Women’s Soccer Softball</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women’s Outdoor Track &amp; Field</td>
<td>Women’s Volleyball</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women’s Cross Country</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data Collection Procedures**

Initially, the researcher identified colleagues representing a variety of Division IA institutions in a professional organization of athletic academic specialists, described the study to each contact, and received verbal commitments from eight institutions to provide data upon IRB approval. The researcher filed exempt paperwork for the Office of Research Integrity after meeting the criteria to be exempt from IRB review for Human Subjects research. The institutions were contacted to determine if IRB review would be required at each of them. The researcher complied with those institutions’ policies to collect data.

After receiving approval at the researcher’s institution (see Appendix A) and data source institutions, these athletic academic professionals were sent a letter outlining the institutional approval with the data request, along with a data collection sheet and instructions. The data request included the scholarship status of student-athletes entering in Fall 2004 on the squad lists for the 10 sports examined in the study, cumulative GPAs,
graduated status, semesters to graduation, race, and sex. The contact person on each
campus first requested approval from the athletic director. Then, he or she designated
professionals in the academic services, athletic compliance, and registrar’s office to
compile the appropriate data from those departments. The data collection sheet
instructed institutional data brokers to collect the data requested, delete student identifiers
including names and identification numbers, and send it to the designated data steward
(see Appendix B). The point person then gathered the requested data from these units
and sent all of it to the data steward in a compiled format. After the initial contact of
eight institutions, some were unable to participate. The researcher received approval for
a modification from IRB to be able to contact any institution on the population (see
Appendix C). The researcher then met in person with sources at the professional
organization’s national convention before sending formal written requests to new data
sources. Fifteen institutions were contacted during the data collection process, which
yielded participation from eight for this study.

The researcher collected data from the sample of eight institutions via a data
steward to protect the data and because the data may have come from several offices on
each campus. The data steward selected has an earned doctorate degree and is a neutral
party at the researcher’s institution, working in a separate department from the researcher.
The researcher and data steward had a written agreement that outlined her responsibilities
as steward to collect data from all institutions and ensure the removal of student and
institutional identifying characteristics prior to sending it to the researcher (see Appendix
D). The data steward checked all incoming data to guarantee identifying characteristics
of each student such as student identification numbers and institution where student is
enrolled were removed before providing the data to the investigator. She also made sure the data was sorted so that the students were indistinguishable by institution.

**Ethical Considerations**

Some of the data collected by the researcher and data steward are protected by the Family and Educational Rights to Privacy Act of 1974 (FERPA). Demographic data is often collected by institutional admissions offices and is not protected under FERPA. Student-athletes must sign FERPA waivers for academic and health records at the beginning of each year with their athletic department’s NCAA Compliance office (see Appendix E). To ensure anonymity of participants, the data steward removed all students’ identifying information so the researcher cannot link data to particular individuals or institutions. These data are not distinguishable by institution or individuals. After receiving the data, the researcher password protected the file on a thumb drive in a secure location.

**Data Analysis**

This study posed three research questions to analyze if there are discriminating differences between scholarship and non-scholarship student-athletes at Division IA football institutions. These two groups of students were compared with a statistical technique called discriminant analysis with variables from the three areas that emerged from a review of the literature: academic performance, time-to-degree, and demographic and profile characteristics.

**Descriptive Discriminant Analysis**

This study utilized discriminant analysis to answer the stated research questions. Discriminant analysis is appropriate to compare the two studied groups: scholarship
student-athletes and non-scholarship student-athletes. Discriminant analysis is a statistical technique that allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously (Klecka, 1985; Pedhazur, 1997). Groups, called data cases (or units of analysis) must be mutually exclusive to be compared with discriminant analysis (Klecka, 1985).

Two main types of discriminant analysis exist: interpretation and classification. This study employs the interpretation, or descriptive, version of discriminant analysis (DDA), meaning the researcher is able to discriminate between the groups on the basis of some set of characteristics, and which characteristics are the most powerful discriminators (Huberty & Lowman, 1998; Klecka, 1985). In DDA, analysis describes the grouping variable effects on the multiple outcome variables, explaining differences between two groups (Huberty, 1994; Huberty & Lowman, 1998). The groups in this study, scholarship student-athletes and non-scholarship student-athletes, were compared by the differences of academic performance, time-to-degree measures, and background characteristics of individuals within those two groups.

Variables in the Analysis

Discriminant analysis labels variables differently than simply independent or dependent variables. Huberty (1994) explained that there are two types of variables in DDA. Grouping variables indicate group membership. The grouping variable in this study is scholarship status. The other type of variable is a response variable. Response variables are outcome variables that explain group differences (Huberty, 1994; Huberty & Lowman, 1998). There is no limit to response variables as long as there at least more than two beyond the number of data cases (Klecka, 1985). The eight response variables
in this study are academic performance (measured by GPA), time-to-degree (measured by semesters), and background characteristics (including race, sex, sport type, and team type). According to Huberty (1994), “In a group comparison problem a grouping variable plays the role of an ‘independent’ variable, whereas response variables play the role of ‘dependent’ variables” (p. 34). The variables used in this study are explained below by their roles in discriminant analysis.

**Grouping variable.** The grouping variable is scholarship status. For this study, DDA seeks to determine how the response variables explain the differences between two groups of student-athletes: those who received athletic scholarships and those who did not. All student-athletes on Division I athletic teams compete at the highest level of intercollegiate sports. Regardless of scholarship status, student-athletes must balance the many demands required by athletic participation with a full-time academic course load. Less NCAA student-athletes compete with athletic scholarships than those who are considered walk-ons (NCAA, 2011b).

Multiple researchers (e.g., Kingston et al., 2006; Le Crom et al., 2009; Medic et al., 2007) concluded that non-scholarship student-athletes are more intrinsically motivated than athletic scholarship recipients. Scholarship student-athletes enter college less prepared academically, have lower GPAs, and have lower graduation rates than non-scholarship athletes (Purdy et al., 1982). Dummy variables, a binary form to define indicator variables, were used to code variables for statistical analysis (Huberty, 1994). Scholarship student-athletes are coded as “1” and non-scholarship student-athletes as “0.”

**Response variables.** Response variables, once analyzed with DDA, will differentiate between scholarship and non-scholarship student-athletes. The response
variables are discussed in three categories: academic performance, time-to-degree, and demographic and profile characteristics.

**Academic performance.** Previous studies have shown that scholarship and recruited student-athletes tend to perform worse academically than non-scholarship student-athletes (e.g., Bowen & Levin, 2003; Purdy et al., 1982). Purdy et al. (1982) conducted one of the only studies that used scholarship status as a factor, finding that scholarship student-athletes were less prepared academically for college and performed worse academically than non-scholarship student-athletes. Other studies (e.g., Ferris et al., 2004) have compared student-athlete academic performance to the general student population, but few have compared student-athletes with scholarship status as a factor.

Amorose and Horn (2000) discovered that athletic scholarships may positively influence intrinsic motivation because students receiving them feel confident in their abilities. However, several academic performance studies (e.g., Kingston et al., 2006; Medic et al., 2007; Purdy et al., 1982) show that non-scholarship student-athletes are more intrinsically motivated than their scholarship-receiving counterparts. Student-athletes recruited for athletic talent underperform in the classroom compared to students recruited to campus based on academic merit (Bowen & Levin, 2003). Because athletic departments keep seven years of student academic records, the researcher examined cumulative grade point average as the measure of academic performance from enrollment in 2004 through graduation or the end of students’ enrollment if they did not graduate.

**Time-to-degree.** The researcher utilized two variables: graduation status and semesters enrolled. Student-athletes who graduated within seven years (by 2011) were coded as “1,” and those who did not were coded as “0.” Research by Kiger and
Lorentzen (1986) showed that student-athletes with athletic scholarships tend to persist towards graduation with the incentive to letter in their respective sports. Le Crom et al. (2009) confirmed their results, concluding that athletic scholarships are a significant predictor of retention. In a recent study, Mendez et al. (2009) emphasized that any financial aid in addition to athletic scholarships significantly influence persistence. However, Gaston-Gayles and Hu (2009) found that low profile student-athletes, with little or no athletic scholarship support, were more engaged in academic activities during their enrollment than scholarship student-athletes.

**Demographic and profile characteristics.** Race, sex, team type, and sport type were examined as background variables of student-athletes in this study.

**Race.** The most studied and observed group of student-athletes are Blacks. Many studies have examined the academic preparedness, academic performance, and retention of Black student-athletes (e.g., Mendez et al., 2009; Purdy et al., 1982; Upthe Grove et al., 1999). Blackman (2008) wrote vigorously about the negative effects of NCAA academic policies on Black student-athletes. The Journal of Blacks in Higher Education (2004/2005) insisted that athletic scholarships are a primary reason that Black student-athletes persist through college. More scholarship money is allocated to minority athletes and revenue sport athletes than to other student-athletes (Kiger & Lorentzen, 1986). Dummy variables were used to examine race. Each race (e.g., Asian/Pacific Islander, Black, Caucasian, Hispanic, Native American), was coded as “1” and all others as “0” (e.g., Black = 1 and All Others = 0, White = 1 and All Others = 0).

**Sex.** Female student-athletes play mostly low profile sports, with the exception of women’s basketball at some institutions. Gaston-Gayles and Hu (2009) found that low
profile athletes were more intrinsically motivated toward academics. Meyer (2009) learned that women focus more on academics because of the lack of public support for their sports. Female athletes positively influence their teammates regarding academics (Meyer, 1990). Male teams and sports are considered high profile because male college athletes receive more recognition by the public for athletic achievement rather than academic success (Adler & Adler, 1985). Female athletes tend to be driven academically by intrinsic motivation, and male athletes drive athletically by extrinsic motivation (Kiger & Lorentzen, 1986). In this study, males are coded as “0” and females as “1.”

**Sport and sport type.** Past studies have examined sport type and academic performance. Results from these studies (e.g., Gaston-Gayles & Hu, 2009; Kiger & Lorentzen, 1986; Maloney & McCormick, 1993; Purdy et al., 1982) demonstrated that individual sport student-athletes perform better academically than team sport student-athletes. Le Crom et al. (2009) suggested that individual sport athletes may be more intrinsically motivated towards academics. Individual sport athletes have higher GPAs and were more likely to graduate than team sport athletes (Purdy et al., 1982). For this study, each of the 10 teams studied (Men’s Basketball, Women’s Basketball, Women’s Cross Country, Men’s Golf, Football, Women’s Soccer, Softball, Women’s Tennis, Women’s Outdoor Track and Field, and Women’s Volleyball) were coded as “1” and all others as “0” (e.g., Football = 1 and All Others = 0, Women’s Tennis = 1 and All Others = 0). To analyze sport type, team sports were coded as “1” and individual sports as “0.”

**Team type.** Student-athletes who play revenue sports have been studied the most because of the public interest in football and men’s basketball. Myriad studies (e.g., Adelman, 1990; Pascarella et al., 1999; Purdy et al., 1982; Upthegrove et al., 1999) have
been conducted on this group of students. The results show that these students come to college less prepared than those who participate in non-revenue sports, perform worse in college, and have lower graduation rates than other athletes and the general student population. Revenue sport athletes are the most likely to receive athletic scholarships (Adelman, 1990). The pressures of competing in the most visible, popular sports negatively impacted revenue sport student-athletes’ academic performance (Upthegrove et al., 1999). Non-revenue sport athletes achieve similar grades to the general student body, whereas revenue sport athletes perform worse (Maloney & McCormick, 1994). For this study, revenue sport student-athletes (Football and Men’s Basketball players) were coded as “1” and all others as “0.”

Previous research demonstrates the validity of the grouping and response variables used in this study. All of these variables have been examined in several studies. The purpose of this study is to compare scholarship and non-scholarship student-athletes based on these response variables.

**Descriptive Statistics**

This study presents descriptive statistics for the data set. Descriptive statistics were run for all variables in the analysis. The median and standard deviation were determined for continuous variables (e.g., GPA). Percentages and numbers were generated for all categorical variables (e.g., race). The researcher also utilized chi square and oneway analysis of variance as preliminary tests for significance among variables.

**Question 1: Background Characteristics**

The first research question asked, “Are there differences in demographic and profile characteristics (e.g., sex, race, team type, sport type) between scholarship and
non-scholarship student-athletes at Division IA football institutions examining athletic scholarships as an extrinsic reward?” This question was examined with SPSS (Version 19, 2011) to conduct DDA that used sport type, team type, race, and sex as response variables and scholarship status as a grouping variable.

**Question 2: Academic Performance**

The second research question asked, “Examining athletic scholarships as an extrinsic reward, are there differences in academic performance (e.g., cumulative GPA) between scholarship and non-scholarship student-athletes at Division IA football institutions?” This question was examined with SPSS (Version 19, 2011) to conduct DDA that used cumulative GPA as a response variable and scholarship status as a grouping variable.

**Question 3: Time-to-Degree**

The third research question asked, “Are there differences in time-to-degree (e.g., semesters) between scholarship (extrinsic reward recipients) and non-scholarship (non-extrinsic) student-athletes at Division IA football institutions?” This question was examined with SPSS (Version 19, 2011) to conduct DDA that used semesters enrolled to graduate as response variables and scholarship status as a grouping variable. The researcher employed descriptive statistics to examine graduation status.

**Summary**

This chapter presented the research design, data source, and statistical method to analyze the data and reviewed the population, sample selection, data collection procedures, and ethical considerations of the study. The design of the study allowed the researcher to answer the stated research questions. The researcher utilized secondary
data from eight institutions to conduct descriptive discriminant analysis to distinguish scholarship and non-scholarship student-athletes. The next chapter reports the results of the study.
CHAP TER 4

RESULTS

The purpose of this national study was to compare scholarship and non-scholarship student-athletes’ demographic and profile characteristics (e.g., sex, race, team type, sport type), academic performance (e.g., cumulative GPA), and time-to-degree (e.g., semesters) examining athletic scholarships as an extrinsic reward at NCAA Division IA football institutions. The researcher collected secondary data from eight institutions’ athletic departments via a data steward. The data steward consolidated the data and removed institutional and student identifying characteristics. The researcher then imported the data into SPSS statistics software (Version 19, 2011). Descriptive discriminant analysis (DDA) was employed as the statistical technique to examine what demographic, academic performance, and time-to-degree variables discriminated between (described) two groups: scholarship and non-scholarship student-athletes. The researcher initially analyzed the data in one discriminant function model by including all of the response variables. The grouping variable in the model was scholarship status.

This chapter is divided into four sections. First, the chapter describes the discriminant function analysis model. The second section reports the results of the demographic and profile characteristics analysis and the first research question. The third section presents the results of the academic performance analysis and the second research question. Fourth, the chapter explains the results of the time-to-degree analysis and the third research question. A summary of the results concludes the chapter.
Discriminant Function Analysis Model

The researcher conducted a singular discriminant function analysis model with response variables from all three categories: demographic and profile characteristics, academic performance, and time-to-degree. The DDA model utilized the response variables to describe the grouping variable of scholarship status. The model indicated that the combination of the response variables in the final discriminant function described (correctly classified) 68% of the scholarship status groups’ differences. The canonical correlation of .394, which is “a measure of association which summarizes the degree of relatedness between the groups and discriminant function,” demonstrates the group differences, since larger numbers (closer to one) mean the groups are more closely associated (Klecka, 1985, p. 36).

The function’s group centroids, which are imaginary points with coordinates that are the group’s mean on each of the variables, displayed a good spread with the non-scholarship student-athlete group at .552 and the scholarship student-athlete group at -.332 (Klecka, 1985). The Wilks’ lambda was .845, and the larger the lambda is (closer to one), the more the groups will be separated on the discriminant function (Klecka, 1985). The Wilks’ lambda calculation was also statistically significant. According to Klecka (1985), “a significant lambda means we are safe in assuming that the results [came] from a population which did have differences between the groups” (p. 40). The model is respectable based on these statistical indicators and the discriminant function’s group discrimination (classification) percentage of 68%.
Demographic and Profile Characteristics

The demographic and profile characteristics in this study included race, sex, sport, sport type (team or individual), and team type (revenue or non-revenue). First, descriptive statistics are presented to describe the sample. Then, the results of the DDA are provided to demonstrate which demographic variables describe the groups of scholarship student-athletes and non-scholarship student-athletes.

Descriptive Statistics

Descriptive statistics are provided to describe the students in the sample. The population for this study is comprised of all NCAA student-athletes on a university athletic team roster at Division I football institutions in the cohort that entered college as freshmen for the 2004-2005 academic year. The total sample size was 593. Out of this sample, 221 (37.1%) of students were non-scholarship student-athletes, and 372 (62.4%) were scholarship student-athletes.

Sport and sport type. Examining 10 different sports, this study looked at differences between team sport and individual sport student-athletes. In this study, students playing team sports were 5.2% Men’s Basketball (31), 31.2% Football (186), 3.7% Women’s Basketball (22), 10.9% Women’s Soccer (65), 7.9% Softball (47), and 7% Women’s Volleyball (42). For each sport, the researcher dummy coded the sport as “1” and the other sports as “0.” Participants in individual sports included 5.2% Men’s Golf (31), 9.7% Women’s Cross Country (58), 3.9% Women’s Tennis (23), and 14.8% Women’s Outdoor Track and Field (88). The total number of team sport student-athletes was 393 (65.9%) and the total number of individual sport student-athletes was 200 (33.6%). Team sports were dummy coded as “1” and individual sports as “0” for
analysis. The researcher conducted a chi-square test to determine if sport and scholarship status have a dependent relationship. The probability of the chi-square test statistic ($\chi^2=41.894$) was $p=.000$. With $\alpha=.05$, the significant chi-square test indicates that sport and scholarship status have a dependent relationship.

**Team type.** From the definition in chapter 1, only Football and Men’s Basketball are considered revenue sports in this study. The total number of revenue sport student-athletes was 217 (36.4%). Non-revenue sports included the remaining eight sports in the study (all women’s sports and Men’s Golf). The total number of non-revenue sport student-athletes was 375 (63.1%). The researcher used dummy coding for analysis, with revenue sports coded as “1” and non-revenue sports as “0.”

**Race.** Based on self-reported data by students to their respective institutions, 582 students had information on their race. The student sample was 1.5% Asian (9), 23% Black (137), 4.7% Hispanic (28), 1.2% International (7), 1.5% Mixed (9), 1.8% Native American (11), 1.2% Pacific Islander (7), and 62.8% White (374). Each race was dummy coded as “1” and all others as “0” in the analysis. The researcher conducted a chi-square test to determine if race and scholarship status have a dependent relationship. The probability of the chi-square test statistic ($\chi^2=43.373$) was $p=.000$. With $\alpha=.05$, the significant chi-square test indicates that race and scholarship status have a dependent relationship.

**Sex.** In the overall sample, 41.6% (248) of the students were male and 57.9% (345) were female. Examining the sample by scholarship status, 40.3% (89) of non-scholarship student-athletes were male and 59.7% (132) of non-scholarship student-athletes were female. In the scholarship student-athlete group, 42.7% (159) were male
and 57.3% (213) were female. Females were dummy coded as “1” and males as “0” for analysis. The researcher conducted a chi-square test to determine if sex and scholarship status have a dependent relationship. The probability of the chi-square test statistic ($\chi^2 = .348$) was $p = .555$. With $\alpha = .05$, the chi-square test indicates that sex and scholarship status are independent of each other and do not have a dependent relationship.

**Research Question 1**

The first research question asked, “Are there differences in demographic and profile characteristics (e.g., sex, race, team type, sport type) between scholarship and non-scholarship student-athletes examining athletic scholarships as an extrinsic reward?” This question was analyzed with SPSS software (Version 19, 2011). The data sample was utilized in the DDA with the grouping variable of scholarship status. A large number of demographic variables were non-significant. All but three of these variables were removed from the discriminant function before the final model was analyzed. These variables included Team Type, Hispanic, International, Mixed, Native American, Pacific Islander, Men’s Golf, Women’s Cross Country, Women’s Soccer, Softball, Women’s Tennis, and Women’s Volleyball. The three variables statistically non-significant that were retained in the model were Sex, Football, and Men’s Basketball because they have been extensively researched. Table 4 presents the results of the demographic and profile characteristics segment of the discriminant function analysis.
Table 4

Demographic and Profile Variables in Descriptive Discriminant Analysis

<table>
<thead>
<tr>
<th>Demographic &amp; Profile Characteristics</th>
<th>Standardized Canonical Coefficient</th>
<th>Structure Coefficient</th>
<th>Described Group (Scholarship Status)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women’s Outdoor Track &amp; Field</td>
<td>.587</td>
<td>.503</td>
<td>Non-Scholarship</td>
</tr>
<tr>
<td>Black</td>
<td>-.084</td>
<td>-.386</td>
<td>Scholarship</td>
</tr>
<tr>
<td>Asian</td>
<td>.543</td>
<td>.381</td>
<td>Non-Scholarship</td>
</tr>
<tr>
<td>Women’s Basketball</td>
<td>-.211</td>
<td>-.325</td>
<td>Scholarship</td>
</tr>
<tr>
<td>White</td>
<td>.304</td>
<td>.301</td>
<td>Non-Scholarship</td>
</tr>
<tr>
<td>Sport Type</td>
<td>.019</td>
<td>-.278</td>
<td>Team Sports =Scholarship*</td>
</tr>
<tr>
<td>Sex</td>
<td>.194</td>
<td>.169</td>
<td>Female =Non-Scholarship*</td>
</tr>
<tr>
<td>Men’s Basketball</td>
<td>.105</td>
<td>-.104</td>
<td>Scholarship</td>
</tr>
<tr>
<td>Football</td>
<td>.442</td>
<td>-.058</td>
<td>Scholarship</td>
</tr>
</tbody>
</table>

*Dummy coding explains these results. Team sports were coded as “1” and individual sports as “0.” Females were coded “1” and males, “0.”

Table 4 displays a statistical summary of demographic and profile characteristics and how they describe the scholarship and non-scholarship student-athlete groups. The first column contains the demographic and profile characteristics used as response variables in the analysis. The second column contains the standardized canonical coefficients, which indicate the relative importance of the two student-athlete groups in being described by the demographic characteristics. The larger the magnitude of the standardized canonical coefficient, the greater is that variable’s contribution to the description of a group (Klecka, 1985). This coefficient allows variables that are measured on different scales to be compared within the function. Coefficients over the absolute value of .05 were considered favorable. Only sport type was lower than this benchmark at .019.
The third column presents the structure coefficients, which show the correlations of each variable with the discriminant function. Structure coefficients are not affected by relationships with other variables (Klecka, 1985). The response variables were dummy coded with 0s and 1s, so the closer a structure coefficient is to 1, the more that variable has in common with one of the student-athlete groups. In this study, negative structure coefficients described variables’ relationships with scholarship student-athletes, and positive structure coefficients described variables’ relationships with non-scholarship student-athletes. Women’s Outdoor Track and Field had the highest structure coefficient at .503. Structure coefficients greater than or equal to .2 were considered favorable, confirming that Sex, Men’s Basketball, and Football were statistically non-significant in the discriminant function analysis.

The fourth column shows the described group based on the grouping variable of scholarship status for each response variable. As mentioned previously, each race and sport were dummy coded as “1” and all others as “0” during analysis. For the variable of Sex, females were coded as “1” and males as “0,” and for Sport Type, team sports were coded as “1” and individual sports as “0.” This column displays the following:

- Scholarship student-athletes are more likely to describe Black student-athletes and student-athletes who participate in team sports.
- The teams of Football, Men’s Basketball, and Women’s Basketball tend to have more scholarship student-athletes than non-scholarship student-athletes on their rosters.
- White and Asian student-athletes are more likely to describe non-scholarship student-athletes.
- Female student-athletes are more likely to describe non-scholarship student-athletes.
- The sport of Women’s Outdoor Track and Field tends to have more non-scholarships student-athletes on its roster.
As previously discussed, the response variables that were statistically non-significant besides Sex, Football, and Men’s Basketball were removed from the discriminant function model.

**Academic Performance**

The academic performance variable used in the DDA is the final cumulative grade point average (GPA) of each student-athlete. This section will first present descriptive statistics of the academic performance variable. Subsequently, the DDA results will be provided to express how this variable discriminates between the scholarship and non-scholarship student-athlete groups.

**Descriptive Statistics**

Of the sample of 593 student-athletes, 581 had GPAs submitted. The mean GPA for the entire data set was 2.93 (SD=.680). Table 5 displays GPAs by sport.

**Table 5**

*Grade point average by sport*

<table>
<thead>
<tr>
<th>Sport</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s Basketball</td>
<td>31</td>
<td>2.60</td>
<td>.583</td>
</tr>
<tr>
<td>Football</td>
<td>184</td>
<td>2.56</td>
<td>.698</td>
</tr>
<tr>
<td>Men’s Golf</td>
<td>31</td>
<td>2.71</td>
<td>.571</td>
</tr>
<tr>
<td>Women’s Basketball</td>
<td>22</td>
<td>2.87</td>
<td>.628</td>
</tr>
<tr>
<td>Women’s Cross Country</td>
<td>56</td>
<td>3.29</td>
<td>.551</td>
</tr>
<tr>
<td>Women’s Soccer</td>
<td>64</td>
<td>3.34</td>
<td>.481</td>
</tr>
<tr>
<td>Softball</td>
<td>45</td>
<td>2.98</td>
<td>.692</td>
</tr>
<tr>
<td>Women’s Tennis</td>
<td>22</td>
<td>3.33</td>
<td>.376</td>
</tr>
<tr>
<td>Women’s Outdoor Track &amp; Field</td>
<td>87</td>
<td>3.17</td>
<td>.547</td>
</tr>
<tr>
<td>Women’s Volleyball</td>
<td>39</td>
<td>3.07</td>
<td>.568</td>
</tr>
</tbody>
</table>

Five of the seven women’s teams had GPAs over 3.00, with the highest being Women’s Soccer (3.34), Women’s Tennis (3.33), and Women’s Cross Country (3.29). The lowest
GPAs were Football (2.56) and Men’s Basketball (2.60). The data was submitted to a oneway analysis of variance (ANOVA) with sport as the independent variable and GPA (maximum=4.00) as the dependent variable. The statistical test for sport was significant, $F_{(9,571)}=17.408$ [$MS_e=6.420$], $p<.05$. There is a significant difference between each sport’s mean GPAs.

The mean GPA for females in the data set was 3.18 (SD=.571). The mean GPA for males was 2.58 (SD=.669). The data was submitted to a oneway analysis of variance with sex as the independent variable and GPA (maximum=4.00) as the dependent variable. The statistical test for sex was significant, $F_{(1,579)}=132.168$ [$MS_e=49.876$], $p<.05$. There was a significant difference between the mean scores of men’s and women’s GPAs in the sample.

GPA was also examined by race in the data set. Many of the race variables had a small number for analysis. The mean GPAs by race were Asian (2.75, SD=.672), Black (2.52, SD=.633), Hispanic (2.84, SD=.987), International (3.50, SD=.144), Mixed (2.59, SD=.608), Native American (3.32, SD=.463), Pacific Islander (2.34, SD=.638), and White (3.07, SD=.610). The data was submitted to a oneway analysis of variance with race as the independent variable and GPA (maximum=4.00) as the dependent variable. The statistical test for race was significant, $F_{(7,562)}=13.203$ [$MS_e=5.302$], $p<.05$. There was a significant difference between the mean GPAs of each race variable.

Examining scholarship status, the mean GPA for non-scholarship student-athletes was 2.96 (SD=.772). Scholarship student-athletes’ mean GPA was 2.91 (SD=.619), a difference of .05 between the two groups. The data was submitted to a oneway analysis of variance with scholarship status as the independent variable and GPA
(maximum=4.00) as the dependent variable. The analysis yielded no statistical significance, $F_{(1,579)}= .807 \ [MS_e=.373], p>.05$. The means for both groups were only different by .05. This ANOVA tests for a significant difference between the group means. The DDA is a statistical technique that can test the means of these unequal group sizes for further analysis.

**Research Question 2**

The second research question asked, “Examining athletic scholarships as an extrinsic reward, are there differences in academic performance (e.g., cumulative GPA) between scholarship and non-scholarship student-athletes?” SPSS (Version 19, 2011) was used to analyze this question. The entire data set was used in the DDA, with 581 GPAs submitted. The results of the academic performance segment of the discriminant function analysis are shown in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Academic Performance Variable</th>
<th>Standardized Canonical Coefficient</th>
<th>Structure Coefficient</th>
<th>Described Group (Scholarship Status)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Point Average</td>
<td>.481</td>
<td>.361</td>
<td>Higher GPAs =Non-Scholarship*</td>
</tr>
</tbody>
</table>

*As mentioned previously, negative structure coefficients relate to scholarship student-athletes, and positive structure coefficients are associated with non-scholarship student-athletes.

The standardized canonical coefficient is .481, much higher than the minimum benchmark of .05 discussed previously. The larger this coefficient, the more contribution it has to describing differences between the scholarship and non-scholarship student-athlete groups (Klecka, 1985). The structure coefficient of .361 is above the benchmark of .2 previously mentioned. The closer this number is to 1, the more it has in common
with the non-scholarship student-athlete group. The positive .361 value indicates that
non-scholarship student-athletes are described by higher GPAs. Though the ANOVA
showed no significance in the group means, the outcome of the DDA is a stronger
analysis based on group sizes and reported GPAs in the data.

**Time-to-Degree**

The time-to-degree variables include graduated status and semesters to graduate.

First, descriptive statistics are presented that analyze both variables. Graduated status
was statistically non-significant in the DDA and was removed from the discriminant
function model. The DDA results present how the semesters to graduate variable
describe the student-athlete groups based on scholarship status.

**Descriptive Statistics**

**Graduated status.** Out of the total data set, 589 reported graduated status.

Student-athletes in the data set included 200 (33.6%) who did not graduate and 389
(65.3%) who graduated. There are 389 valid cases of graduated student-athletes though
392 report semesters to graduation. Examining graduated status in the scholarship status
groups, 71 non-scholarship student-athletes did not graduate (35.5% of non-graduates,
32.7% of non-scholarship student-athletes). Non-graduates were comprised of 129
scholarship student-athletes (64.5% of non-graduates, 34.7% of scholarship student-
athletes). Of the student-athletes who graduated, 146 were non-scholarship (37.5% of
graduates, 67.3% of non-scholarship student-athletes), and 243 had an athletic
scholarship (62.5% of graduates, 65.3% of scholarship student-athletes).

The researcher conducted a chi-square test to determine if graduated status and
scholarship status have a dependent relationship. The probability of the chi-square test
statistic ($\chi^2=.234$) was $p=.628$. With $\alpha=.05$, the chi-square test indicates that graduated status and scholarship status are independent of each other and do not have a dependent relationship. The data was submitted to a oneway analysis of variance with scholarship status as the independent variable and graduated status (maximum=1, graduates dummy coded as “1” and non-graduates as “0”) as the dependent variable. The analysis yielded no statistical significance, $F(1,587)=.234$ [MS$_e=.053$], $p>.05$. The means based on the dummy codes for both groups were only different by .02 (non-scholarship .67, SD=.470, scholarship .65, SD=.477).

**Semesters to graduate.** Within the data set, there were 392 submissions of semesters to graduate. The count of semesters did not include summer sessions. For this study, data from any quarter schools matched graduation dates provided that fell within a traditional semester to denote the semester graduated. Traditionally, college students graduate in four years, which equates to eight semesters. The mean semesters to graduate for the data set was 9.09 (SD=1.489). Table 7 on the following page shows the mean semesters to graduate and standard deviations by sport. The team with the lowest semesters to graduation was Women’s Tennis at 8.53.
Table 7

*Semesters to graduate by sport*

<table>
<thead>
<tr>
<th>Sport</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s Basketball</td>
<td>18</td>
<td>10.22</td>
<td>1.987</td>
</tr>
<tr>
<td>Football</td>
<td>98</td>
<td>9.30</td>
<td>1.610</td>
</tr>
<tr>
<td>Men’s Golf</td>
<td>15</td>
<td>9.07</td>
<td>1.534</td>
</tr>
<tr>
<td>Women’s Basketball</td>
<td>12</td>
<td>8.92</td>
<td>.996</td>
</tr>
<tr>
<td>Women’s Cross Country</td>
<td>46</td>
<td>8.87</td>
<td>1.258</td>
</tr>
<tr>
<td>Women’s Soccer</td>
<td>50</td>
<td>8.84</td>
<td>1.361</td>
</tr>
<tr>
<td>Softball</td>
<td>37</td>
<td>8.95</td>
<td>.941</td>
</tr>
<tr>
<td>Women’s Tennis</td>
<td>17</td>
<td>8.53</td>
<td>.874</td>
</tr>
<tr>
<td>Women’s Outdoor Track &amp; Field</td>
<td>71</td>
<td>9.08</td>
<td>1.381</td>
</tr>
<tr>
<td>Women’s Volleyball</td>
<td>30</td>
<td>9.10</td>
<td>2.123</td>
</tr>
</tbody>
</table>

The data was submitted to a oneway analysis of variance (ANOVA) with sport as the independent variable and semesters to graduate (maximum=16) as the dependent variable. The statistical test for sport was significant, $F_{(9,382)}=2.013$ [MS$_c=4.360$], $p<.05$. There is a significant difference between each sport’s mean semesters to graduate.

The semesters to graduate variable was analyzed with sex. There were 129 males with the data submitted for this variable, with a mean of 9.40 semesters to graduate (SD=1.679). Of the 263 females with data for this variable, the mean semesters to graduate was 8.94 (SD=1.363). The data was submitted to a oneway analysis of variance with sex as the independent variable and semesters to graduate (maximum=16) as the dependent variable. The statistical test for sport was significant, $F_{(1,390)}=8.567$ [MS$_c=18.629$], $p<.05$. There is a significant difference in mean semesters to graduate between females and males.

The variable semesters to graduate was also examined by race in the data set. The mean semesters to graduate by race were Asian (9.83, SD=9.983), Black (9.45,
SD=1.868), Hispanic (9.20, SD=.862), International (9.00, SD=1.155), Mixed (8.60, SD=.894), Native American (8.89, SD=1.965), Pacific Islander (10.50, SD=1.915), and White (9.00, SD=1.388). The data was submitted to a one-way analysis of variance with race as the independent variable and semesters to graduate (maximum=16) as the dependent variable. The analysis yielded no statistical significance, $F_{(7,376)}=1.427$ $[MS_e=3.173]$, $p>.05$.

Next, scholarship status was examined with semesters to graduate. The non-scholarship student-athlete group had 146 with a mean of 9.34 semesters to graduate (SD=1.568), while the scholarship student-athlete group had 246 with a mean of 8.95 semesters to graduate (SD=1.423). The data was submitted to a one-way analysis of variance with scholarship status as the independent variable and semesters to graduate (maximum=16) as the dependent variable. The statistical test for scholarship status was significant, $F_{(1,390)}=6.322$ $[MS_e=13.826]$, $p<.05$. There is a significant difference in mean semesters to graduate between scholarship and non-scholarship student-athletes.

**Research Question 3**

This third research question asked, “Are there differences in time-to-degree (e.g., semesters) between scholarship (extrinsic reward recipients) and non-scholarship (non-extrinsic) student-athletes?” This question was analyzed with SPSS (Version 19, 2011). The entire data set was used for the DDA, in which 392 semesters to graduate data points were submitted. Table 8 shows the time-to-degree portion of the discriminant function analysis.
Table 8

*Time-to-Degree Variable in Descriptive Discriminant Analysis*

<table>
<thead>
<tr>
<th>Time-to-Degree Variable</th>
<th>Standardized Canonical Coefficient</th>
<th>Structure Coefficient</th>
<th>Described Group (Scholarship Status)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semesters to Graduate</td>
<td>.488</td>
<td>.288</td>
<td>More Semesters to Graduate = Non-Scholarship*</td>
</tr>
</tbody>
</table>

*As mentioned previously, negative structure coefficients relate to scholarship student-athletes, and positive structure coefficients are associated with non-scholarship student-athletes.

The semesters to graduate standardized canonical coefficient is .488, well above the minimum .05, demonstrating statistical strength in discriminating between the two student-athlete groups. The structure coefficient is above the .2 threshold, but is relatively weak in magnitude. The positive number indicates that the higher the number for semesters to graduate, the non-scholarship student-athlete group is described. Essentially, the analysis suggests non-scholarship student-athletes take longer to graduate than scholarship student-athletes in this study.

**Summary**

This chapter presented the results of the study. The descriptive discriminant analysis examined the statistical significance of response variables describing the scholarship and non-scholarship student-athlete groups. The discriminating variables in the demographic and profile characteristics category were Asian, Black, White, Women’s Basketball, Women’s Outdoor Track and Field, and Sport Type. The model included Sex, Men’s Basketball, and Football for informational purposes but they were statistically non-significant variables. Grade point average was the discriminating variable for academic performance, and semesters to graduate was the discriminating variable for
time-to-degree. These results and implications from the literature and theoretical framework will be discussed more in depth in Chapter 5.
CHAPTER 5
DISCUSSION OF RESULTS

This study compared scholarship and non-scholarship student-athletes by examining demographic and profile characteristics and variables of academic performance and time-to-degree at Division IA football institutions. The purpose of this chapter is to provide an overview of the study and discuss the results reported in Chapter 4. The discussion of the results is divided into sections on demographic and profile characteristics, academic performance, and time-to-degree. The study’s implications for theory, implications for practitioners, limitations, and directions for future research are then presented.

Overview of Study

For decades, research has focused on college student-athletes and their academic performance. Many studies examined differences between student-athletes and the general student population (e.g., Purdy et al., 1982; Ferris et al., 2004). Purdy et al.’s (1982) study was groundbreaking in its inclusion of demographic characteristics and athletic scholarship status, yet it compared student-athletes to non-athlete students and was not in the era of the NCAA’s new academic policies.

In 2003, through a policy change, the NCAA implemented the Academic Performance Program with the intent of improving graduation rates and helping students in the sports of football and men’s basketball (Christy et al., 2008). The NCAA created new academic performance metrics, the Graduation Success Rate and the Academic Progress Rate, which measured only scholarship student-athletes (LaForge & Hodge, 2011). The NCAA’s academic performance metrics, required by all institutions with
NCAA athletic programs, only include student-athletes who receive athletic scholarships (LaForge & Hodge, 2011). Out of approximately 400,000 student-athletes in NCAA sports, approximately 126,000 receive athletic scholarships from Division I and II institutions (NCAA, 2011b). With more non-scholarship student-athletes than scholarship student-athletes participating in elite intercollegiate athletics programs, the exclusion of these students in academic performance metrics is apparent. The population of non-scholarship student-athletes has not only been overlooked in the metrics but also in research.

The purpose of this national study is to compare scholarship and non-scholarship student-athletes’ demographic and profile characteristics (e.g., sex, race, team type, sport type), academic performance (e.g., cumulative GPA), and time-to-degree (e.g., semesters) examining athletic scholarships as an extrinsic reward at NCAA Division I A football institutions. The theoretical framework for this study was work motivation. The study used following research questions to guide the study:

1. Are there differences in demographic and profile characteristics (e.g., sex, race, team type, sport type) between scholarship and non-scholarship student-athletes examining athletic scholarships as an extrinsic reward?

2. Examining athletic scholarships as an extrinsic reward, are there differences in academic performance (e.g., cumulative GPA) between scholarship and non-scholarship student-athletes?

3. Are there differences in time-to-degree (e.g., semesters) between scholarship (extrinsic reward recipients) and non-scholarship (non-extrinsic) student-athletes?
The researcher utilized descriptive discriminant analysis (DDA) to analyze these data and appropriately answer the research questions. DDA, a “statistical technique which allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously,” is the appropriate method for describing the groups of scholarship and non-scholarship student-athletes by the variables in the study (Klecka, 1985, p. 7). The study sample, collected through secondary data, was comprised of 593 student-athletes who entered Division IA football institutions in the 2004-2005 academic year as freshmen at eight different institutions. The results of this study were analyzed through literature and the theoretical framework to answer the research questions.

**Discussion of the Results**

This study compared variables of demographic and profile characteristics, academic performance, and time-to-degree between scholarship and non-scholarship student-athletes at Division IA football institutions. The results expressed in Chapter 4 demonstrate that several variables describe these two groups based on scholarship status. The purpose of this discussion is to analyze the results of the study through the lens of previous research presented in Chapter 2. This discussion has three sections: demographic and profile characteristics, academic performance, and time-to-degree.

**Demographic and Profile Characteristics**

The study examined the demographic and profile characteristics of race, sex, sport type (team or individual), and team type (revenue or non-revenue). The first research question asked, “Are there differences in demographic and profile characteristics (e.g., sex, race, team type, sport type) between scholarship and non-scholarship student-athletes
examining athletic scholarships as an extrinsic reward?” This question was examined through descriptive discriminant analysis to describe differences between scholarship and non-scholarship student-athletes based on the variables mentioned above.

**Sport and sport type.** In previous studies, comparisons by sport were not the focus of research. Research has compared student-athletes to the general student population (e.g., Purdy et al., 1982; Ferris et al., 2004). In this study, a preliminary chi-square test indicated a significant dependent relationship between sport and scholarship status. The more powerful statistical test of descriptive discriminant analysis described this relationship in more detail between the sports in the sample and the scholarship and non-scholarship groups. The sports of Women’s Basketball, Men’s Basketball, and Football emerged as descriptors of scholarship student-athletes. The sport of Women’s Outdoor Track and Field described non-scholarship student-athletes. The other six sports in this study did not have significant results in describing either of the two student-athlete groups. These sports included Men’s Golf, Women’s Cross Country, Women’s Soccer, Softball, Women’s Tennis, and Women’s Volleyball.

Sport and scholarship status has not been extensively researched previously, and there are many possibilities for the lack of significance in the DDA. Many of these teams have small rosters. Some of these sports provide full scholarships and some of them provide partial scholarships to student-athletes. Three of them are team sports and three of them are individual sports. This outcome should be examined further in the future by looking at roster size and scholarship amounts. This study did, however, examine sport type to describe differences between scholarship and non-scholarship student-athletes.
Several studies (Gaston-Gayles & Hu, 2009; Kiger & Lorentzen, 1986; Le Crom et al., 2009; Purdy et al., 1982) have looked at team and individual sport comparisons. The results of the DDA showed that team sports are strong descriptors of scholarship student-athletes. This outcome could explain that individual sports describe non-scholarship student-athletes. From the definitions in Chapter 1, the NCAA has two types of scholarship systems, head count or full scholarships and equivalency or partial scholarships. Four of the five head count sports in this study are team sports (Football, Men’s Basketball, Women’s Basketball, and Women’s Volleyball). Three of the five equivalency sports in this study are individual sports (Men’s Golf, Women’s Cross Country, and Women’s Outdoor Track and Field). Interestingly, scholarship student-athletes on head count sport teams have most academic and living expenses covered, and the non-scholarship student-athletes on these teams receive no athletic scholarship – this would support an all or nothing situation. On equivalency sport teams, scholarship student-athletes may have as little as a book scholarship or as much as a full scholarship, and non-scholarship student-athletes receive nothing. The disparity is less apparent, and coaches have more flexibility to disburse scholarship funds among their team members.

Previous research did find a disparity between team and individual sport student-athletes. For example, Purdy et al. (1982) noted, “Athletes involved in individual sports secured better college grades and were more likely to graduate than those who participated in team sports” (p. 444).

Team sports usually have a wider audience. More people purchase tickets to watch college sports like football, basketball, and soccer than they do for golf or tennis, even though this is not the norm for professional sports. Sports like Men’s Basketball
receive enormous media attention (Adler & Adler, 1985). Adelman (1990) found that student-athletes in revenue sports are more likely than non-revenue and individual sport athletes or non-athlete students to receive scholarships. The revenue sports in this study are Football and Men’s Basketball, which are team sports.

**Team type.** Football and Men’s Basketball are popular sports to study because of their media attention. In this study, these two revenue sports accounted for 36.4% of the sample size. An abundance of research on revenue sports has been conducted (Adelman, 1990; Adler & Adler, 1985; Ervin et al., 1985; Maloney & McCormick, 1993; Pascarella et al., 1999); Purdy et al., 1982; Upthegrove et al., 1999). Revenue sport student-athletes are more apt to experience academic difficulties, intensely competitive environments, and time management problems, all of which affect long term achievement (Upthegrove et al., 1999). A few studies (Kiger & Lorentzen, 1986; Purdy et al., 1982) discovered that revenue sport student-athletes came into college less prepared than other student-athletes and have a low probability of completing their education compared to other student-athletes and non-athlete students. Pascarella et al. (1999) found that football and men’s basketball student-athletes had significantly lower writing ability than other student-athletes after the second year in college.

Maloney and McCormick (1993) summarized, “Athletes in the nonrevenue sports grade nearly identically to the rest of the student body relative to their background characteristics. On the other hand, football and basketball men do somewhat worse than their peers” (p. 562). All of these findings are alarming, and though the NCAA continues to implement policy changes to increase requirements for student-athletes to compete at the college level, revenue sport student-athletes continue to struggle. Surprisingly, the
DDA results for sport type were non-significant. The sports of Football and Men’s Basketball were also non-significant in the descriptive discriminant analysis. The DDA results showed that Football and Men’s Basketball are more likely to have scholarship student-athletes on their teams, but the structure coefficients were weak, below the .2 benchmark for significance. They were included in the results because of the amount of previous literature about these sports.

**Race.** The sample included students reported in the categories of Asian, Black, Hispanic, International, Mixed, Native American, Pacific Islander, and White. A significant chi-square test indicated that race and scholarship status have a dependent relationship. Several races were non-significant in the DDA, including Hispanic, International, Mixed, Native American, and Pacific Islander. Most of these groups had very few student-athletes in the category. Little research has been conducted on any race categories besides Black and White. The DDA did show significant results for the remaining categories. Black student-athletes describe the scholarship student-athlete group, and both White and Asian student-athletes describe the non-scholarship student-athlete group.

The Journal of Blacks in Higher Education (2004/2005) emphasized that Black student-athletes receiving athletic scholarships perform better in the classroom and have higher retention rates. In contrast, this study found that Black student-athletes have lower GPAs (mean=2.52 in this study) and need more semesters to graduate (mean=9.45 in this study) than other student-athletes. In this study, scholarship student-athletes as a group, which are more likely to be described by Black students, graduated at a mean of 8.95 semesters. The group as a whole graduated half a semester faster than did the Black
student-athletes in the study. Not surprisingly, Upthegrove et al. (1999) warned that the high concentration of Black student-athletes in revenue sports caused a troubling athletic-academic tension. According to Kiger and Lorentzen (1986), both minority and revenue sport student-athletes receive higher proportions of financial assistance compared to other student-athletes. From the DDA results, Black student-athletes, Football student-athletes, and Men’s Basketball student-athletes all describe the scholarship student-athlete group, confirming the results of Kiger and Lorentzen.

**Sex.** In this study, both student-athlete groups had more females than males, since only three men’s sports were included while there were seven women’s sports. Statistical tests showed no significant relationship between sex and scholarship status. In the discriminant analysis, the variable of sex was kept in the function because it is an important variable and has been researched previously. However, the structure coefficient was weak. Based on the results, females are more likely to be described as the non-scholarship student-athlete group. Meyer (1990) determined that female student-athletes are able to balance academics and athletics due to the lack of recognition for women’s sport. Teammates encourage each other to excel in academics (Meyer, 1990). Kiger and Lorentzen (1986) stated that White female nonrevenue student-athletes perform the best academically, but their study did not connect this with scholarship status. This finding links the academic success of female student-athletes with the lack of athletic scholarships.

**Academic Performance**

This study examined cumulative grade point average (GPA) as the variable for academic performance. The second research question asked, “Examining athletic
scholarships as an extrinsic reward, are there differences in academic performance (e.g., cumulative GPA) between scholarship and non-scholarship student-athletes?”

Descriptive discriminant analysis was utilized to examine the differences in academic performance between the scholarship and non-scholarship student-athlete groups.

The sample included seven women’s teams, five of which had mean GPAs over 3.00. Softball was close with a mean GPA of 2.98. In contrast, the lowest mean GPAs were from Football and Men’s Basketball. The poor academic performance of participants on these teams has been researched previously (e.g., Adelman, 1990; Pascarella et al., 1999; Purdy et al., 1982). A one-way analysis of variance found a significant difference between each sport’s mean GPAs. There was also a significant difference in mean GPAs between male and female student-athletes in this study. Females had a mean GPA of 3.18 and males had a mean GPA of 2.58, a large difference of .60. Meyer (1990) discussed the power of academic encouragement within women’s teams as a support system for student-athletes, whereas Adler and Adler (1985) mentioned the reinforcement of athletic achievements over academics among Men’s Basketball student-athletes.

An ANOVA found a significant difference in mean GPAs of each race category in this study. The lowest GPAs were Pacific Islanders with a mean GPA of 2.34 and Blacks with a mean GPA of 2.52. Purdy et al. (1982) determined that Black athletes had significantly lower scores on the entire range of educational achievement measures they studied, including GPA. Upthegrove et al. (1999) stressed that Black student-athletes brought academic inequalities to college, which are exacerbated by their participation in intercollegiate athletics, primarily in the revenue sports. From their study’s results, Kiger
and Lorentzen (1986) examined several demographic characteristics with GPA, concluding, “In general, White female nonrevenue sport participants, as a group, have the highest level of university academic performance. Black male revenue sport players perform most poorly as a group.” However, The Journal of Blacks in Higher Education (2004/2005) found, “The evidence is clear that Black scholarship athletes actually perform better academically than Black students as a whole” (p. 68). Looking at scholarship status, there was only a mean difference of .05 between the scholarship and non-scholarship groups, which was statistically non-significant.

The descriptive discriminant analysis results for the academic performance variable of grade point average indicated that the non-scholarship student-athlete group is described by higher GPAs. Though the ANOVA was not significant, the DDA is a more powerful statistical technique and had definitive, significant results for academic performance. The study by Purdy et al. (1982) was the first and only major study that included scholarship status as a factor. One important finding from the study was that scholarship student-athletes had lower GPAs than non-scholarship student-athletes (Purdy et al., 1982). Kingston et al. (2006) cautioned that scholarships can negatively affect student motivation. Through their extensive study of nineteen athletic institutions, Bowen and Levin (2003) noted, “Recruited athletes underperform significantly whereas most walk-ons do not” (p. 167). Thus, the results that non-scholarship student-athletes are more likely to have higher GPAs is not surprising, and this finding confirms the results of previous empirical research.
Time-to-Degree

This study examined semesters to graduate as the variable for time-to-degree. The third research question asked, “Are there differences in time-to-degree (e.g., semesters) between scholarship (extrinsic reward recipients) and non-scholarship (non-extrinsic) student-athletes?” Descriptive discriminant analysis was utilized to examine the differences in time-to-degree between the scholarship and non-scholarship student-athlete groups.

Of the data set in this study, 589 reported graduated status. From this group, 33.6% did not graduate, and 65.3% reported graduating. No significant relationship was found between graduated status and scholarship status, with only a .02 difference in the means. Several researchers concluded that athletic scholarships are positively related with retention and persistence toward graduation. Kiger and Lorentzen (1986) learned that scholarship student-athletes lettered in sports over the years with the more aid he or she received. Le Crom et al. (2009) insisted that scholarship support is a significant predictor of retention. Adelman (1990) added that a student who earns a scholarship is less likely to drop out for financial reasons.

For the student-athletes in this study who graduated, the mean semesters to graduate was 9.09. Examining the variable by sport, an ANOVA reported a significant difference between each sport’s mean semesters to graduate. Women’s Tennis graduated the fastest with a mean of 8.53 semesters. The struggling revenue sport participants took the longest to graduate, with Football’s mean of 9.30 semesters and Men’s Basketball’s mean of 10.22 semesters. The findings of previous studies (Adelman, 1990; Adler &
Adler, 1985; Ervin et al., 1985; Maloney & McCormick, 1993; Pascarella et al., 1999; Purdy et al., 1982; Upthegrove et al., 1999) help to explain these startling numbers.

Semesters to graduate was also examined by sex. The mean semesters to graduate for male student-athletes was 9.40 and the mean for females was 8.94, a difference of .46. A one-way analysis of variance showed a significant difference between the means by sex. However, there was no significant difference between semesters to graduate and race in an ANOVA. According to Mendez et al. (2009), race and ethnicity are significant factors in student-athlete persistence in combination with financial aid formulas. The Journal of Blacks in Higher Education (2004/2005) stated,

The evidence is clear that Black scholarship athletes actually perform better academically than Black students as a whole…It is likely that the financial aid provided by an athletic scholarship is a critical factor in enabling many Black student athletes to stay in school. Black students who are not on athletic scholarship are far more likely to drop out of college for financial reasons. For Whites, the financial barriers to a higher education are not as formidable. Thus, White students generally are able to stay in school and achieve their diplomas at a rate very similar to White college athletes who receive scholarship aid. (p. 68).

Essentially, this conjecture incorporates scholarship as a major factor in determining the graduated status and time-to-degree of Black student-athletes.

One of the most surprising results of this study was the mean differences in time-to-degree by scholarship status. The mean semesters to graduate for the non-scholarship student-athlete group was 9.34, and the scholarship student-athletes’ group mean was 8.95, a difference of .39. This was a significant difference in a one-way analysis of
variance. The descriptive discriminant analysis confirmed this significance with a strong result that the higher number of semesters it takes to graduate, the more the non-scholarship student-athlete group is described. Mendez et al. (2009) found that student-athlete persistence is significantly influenced by financial aid in addition to athletic scholarships. Non-scholarship student-athletes may or may not have financial aid. Therefore, non-scholarship student-athletes may need aid, whether in the form of financial aid from the institution or athletic scholarships, to reduce the longer time-to-degree process. All NCAA student-athletes are required to be enrolled full-time to be eligible for participation in intercollegiate athletics. A full-time course load is twelve semester credit hours. For students to graduate in the traditional eight semesters, students would most likely take fifteen credit hours to graduate on time. However, students (including student-athletes) without any type of aid may choose to enroll in only twelve credits because it is all they can afford, therefore slowing down the time-to-degree and increasing the semesters to graduate.

Implications

This study examined the comparison of scholarship and non-scholarship student-athletes through three categories of variables utilizing work motivation as the theoretical framework. This section first provides implications for theory based on the results of the study. Implications for practitioners from the literature and study results are then presented.

Implications for Theory

In the foundational work of Herzberg (1966), two factors of work motivation were introduced, motivators and hygiene. Herzberg (1966, 2008) explained that
motivators are growth factors related to intrinsic motivation, while hygiene factors are extrinsic motivators, also called dissatisfaction-avoidance factors. According to Herzberg (1966) and Herzberg et al. (1993), hygiene factors are temporary motivators. Hygiene factors in work motivation include salary and benefits (Herzberg, 2008; Notz, 1975). This study examines athletic scholarships as an extrinsic reward. The extrinsic benefit of athletic scholarships is not tied to academic performance but rather to athletic ability and potential. Herzberg et al. (1993) warned, “An overemphasis on hygiene carries within itself the seeds of trouble. It can lead to greater and greater focus on the extraneous rewards that reside in the context of jobs” (pp. 131-32). Medic et al. (2007) examined the dissatisfaction-avoidance notion of hygiene factors, finding that scholarship athletes worried that losing their scholarship would limit their decision-making abilities, making their main responsibility now to pay for their educational expenses. Scholarship student-athletes in this study were examined through this theoretical framework as recipients of an extrinsic reward, and non-scholarship student-athletes were non-extrinsic.

In their famous participant-observer study of a Division I A men’s basketball team, Adler and Adler (1985) learned how powerful media attention and emphasis on athletic ability was for revenue sport student-athletes. They found, “The athletes received greater reinforcement for athletic performance than for academic performance. No one closely monitored their academic behavior, but they were carefully watched at games, practices, booster functions, and on road trips. The celebrity and social status they derived from the media, boosters, and fans brought them immediate gratification, which the academic realm, with its emphasis on future rewards, could not offer” (Adler & Adler, 1985, p. 245). Because athletic scholarships are awarded for athletic ability and
not academic achievements, the extrinsic motivator of money in the form of an athletic scholarship does not motivate performance for the academic responsibilities of a student on athletic scholarship.

Kingston et al. (2006) determined that scholarship student-athletes exhibited significantly higher levels of extrinsic motivation and lower levels of intrinsic motivation towards accomplishments and stimulation than their non-scholarship counterparts did. Medic et al. (2007) found, “Full athletic scholarships can exert control over scholarship athletes’ behavior, and can also be perceived as potential controllers of non-scholarship athletes’ behavior, rather than the method than can provide incentive for an athlete’s effort and performance” (pp. 301-2). Several researchers (Gaston-Gayles & Hu, 2009; Kingston et al., 2006; Le Crom et al., 2009; Medic et al., 2007; Purdy et al., 1982) considered academic performance and scholarship status variables when examining the intrinsic motivation of student-athletes. Herzberg’s two-factor theory, including motivator factors towards intrinsic motivation, could be applied as a framework for a future study based on this literature. However, this study aimed to determine the influence of athletic scholarships as an extrinsic reward.

**Implications for Practice**

The results of this study demonstrate that student-athletes receiving athletic scholarships graduate in fewer semesters than non-scholarship student-athletes do. Previous empirical research (Kiger & Lorentzen, 1986; Le Crom et al., 2009; Mendez et al., 2009; The Journal of Blacks in Higher Education, 2004/2005) concluded that scholarship support and financial aid significantly influence the retention of student-athletes. Athletic department staff, including academic advisors, student-athlete
development coordinators, financial officers, and coaches should make sure that all
student-athletes, but especially non-scholarship student-athletes, are aware of institutional
financial aid opportunities and the Federal Application for Free Student Aid (FAFSA).
Mendez et al. (2009) argued that even student-athletes on athletic scholarship may
require additional financial aid to persist towards graduation.

Currently, only scholarship student-athletes count in the NCAA’s academic and
graduation metrics (Ferris et al., 2004; LaForge & Hodge, 2011). Coaches can offer non-
scholarship student-athletes an athletic scholarship during their matriculation after initial
enrollment. Once a student-athlete receives an athletic scholarship, he or she is counted
in the NCAA metrics from that point forward. Equivalency sport coaches can give
student-athletes as little as a scholarship to pay for textbooks, or a tuition-only
scholarship. A small amount of money will add new athletic scholarship recipients into
the metrics. Head count sports have an all-or-nothing scholarship set-up. Athletic
academic advisors should identify academically successful non-scholarship student-
athletes to head count sport coaches, so if a full scholarship becomes available, a strong
student with athletic potential may have the winning combination to receive an athletic
scholarship and count in academic metrics. The results of this study show that non-
scholarship student-athletes earn higher GPAs than scholarship student-athletes, so
athletic academic advisors should be able to identify academically successful non-
scholarship student-athletes. Though scholarship student-athletes have lower GPAs, this
should not deter an athletic administrator from providing scholarships to non-scholarship
student-athletes. This study’s results indicate that scholarship student-athletes have a
shorter time-to-degree than do non-scholarship student-athletes. If time-to-degree
improves, graduate rates will follow suit. The goal for all students is graduation, so a slight trade-off in academic performance is worth awarding athletic scholarships to non-scholarship student-athletes.

This study expressed the strong academic performance of female student-athletes. There are significant differences in academic performance and time-to-degree between male and female student-athletes, regardless of scholarship status. Females had a mean GPA of 3.18, and males had a mean GPA of 2.58. The mean semesters to graduate for females was 8.94 compared to a mean of 9.40 for males. Five of the seven women’s teams had over 3.00 mean GPAs. The academic encouragement and support Meyer (1990) discussed in her study on female student-athletes is a major factor in this academic success. Adler and Adler (1985) talked about the emphasis on athletic achievement in men’s revenue sports. The attention of the media, revenue generated by these sports, and excitement often overshadow the goal of graduating student-athletes. Athletic and university administrators must look at the example set by women’s teams and foster an environment for men’s and revenue sport teams that champions academic success along with athletic success.

Academic athletic advisors should continue to provide academic support services, including advising, mentoring, study hall, tutoring, and academic workshops to all student-athletes, not discounting non-scholarship student-athletes. The advisors need to encourage coaches to enforce involvement in academic activities and services for their entire rosters of student-athletes, and not just mandate participation to student-athletes receiving athletic scholarships. The athletic advising and student-athlete development communities must then draft and support NCAA policy changes to include non-
scholarship student-athletes, who meet the same academic and eligibility rules and participate fully in all aspects of the intercollegiate athletic experience at the highest Division IA level, in academic and graduation metrics.

Limitations

There are several limitations to the study. The data samples are from select NCAA Division IA football institutions, all of which are large, public universities. Due to the size of the institutional sample, the data is not generalizable to all NCAA Division IA football institutions. However, it may be useful for comparable institutions to those studied. The study only examined 10 specific sports, including three men’s and seven women’s athletic teams. There are many other Division IA sports. Also, this study does not distinguish between student-athletes receiving partial athletic scholarships and those receiving full athletic scholarships. Finally, non-scholarship student-athletes who earn an athletic scholarship in a time between enrollment and graduation are still counted in the non-scholarship student-athlete group in this study.

Future Research

The purpose of this study was to examine differences between scholarship and non-scholarship student-athletes at Division IA football institutions across demographic, academic performance, and time-to-degree variables. The study was viewed through the lens of Herzberg’s work motivation theory, focusing on athletic scholarships as extrinsic rewards. Meyer (1990) interviewed female student-athletes about their experiences balancing athletics and academics. One could design a study to explore how scholarship status affects the academic motivation of NCAA Division IA student-athletes,
interviewing student-athletes about their experiences and applying Herzberg’s two-factor theory to look at both intrinsic and extrinsic motivation.

This study found that non-scholarship student-athletes have higher grade point averages than non-scholarship student-athletes. Considering that the current NCAA metrics leave out this group, one could design a study including non-scholarship student-athletes into the past metrics calculations and comparing them with the reported numbers. Christy et al. (2008) found that most athletics administrators and coaches were unhappy with the academic reform policy when implemented between 2003 and 2004. Now, the reported metrics of only non-scholarship student-athletes were disappointing, so the NCAA is raising the minimum standards. If non-scholarship student-athletes, who already perform better academically, were included in the past metrics, the NCAA may not need to raise the standards of the Academic Progress Rate to improve retention and graduate rates.

Mendez et al. (2009) emphasized the importance of additional financial aid as a factor that influences persistence. A new study could be conducted with an additional factor of financial aid. Also, this study could be replicated with the additional information of when non-scholarship student-athletes received an athletic scholarship after initial enrollment and prior to graduation, to see if the introduction of an extrinsic reward related to demographic and profile characteristics or influenced academic performance and time-to-degree. Finally, this study only looked at Division IA football institutions. Student-athletes at Division IAA football institutions, Division IAAA non-football institutions, and Division II institutions all participate in high level intercollegiate athletics and are eligible for athletic scholarships. These divisions have many differences
from each other in terms of facilities, academic athletic staff, budgets, and in the case of Division II, different NCAA rules to regulate. All of these institutional types provide an opportunity for additional research.

Summary

Research on college student-athletes’ academic performance has been a compelling topic for decades. Previous research compared student-athletes to the general student population or omitted scholarship status as a major factor (Ferris et al., 2004; Purdy et al., 1982). With more non-scholarship student-athletes competing in NCAA intercollegiate athletics than athletic scholarship recipients, the need for research on this important group emerged. This study compared scholarship and non-scholarships student-athlete groups, examining differences between demographic and profile characteristics, academic performance, and time-to-degree. The researcher collected secondary data from eight Division IA football institutions, analyzing the data through descriptive discriminant analysis to describe the differences between scholarship and non-scholarship student-athletes in the sample.

This study contributed to the abundant research on student-athletes and academic performance by adding the context of recent NCAA policies, which had not been introduced in previous empirical studies. The study also focused on scholarship status as the major discriminating factor in the research, not found in the design of earlier research. Results of this study showed that non-scholarship student-athletes were described by the variables of sport (Women’s Outdoor Track and Field), race (Asian, White), sport type (Individual), and sex (Female). Non-Scholarship student-athletes also had higher grade point averages than scholarship student-athletes. The scholarship student-athlete group
was described by race (Black), sport (Football, Men’s Basketball, Women’s Basketball),
sport type (Team), and sex (Male). Scholarship student-athletes graduated in fewer
semesters than non-scholarship student-athletes did. This finding was the most surprising
to the researcher, since the academic performance and time-to-degree variables were
inversely related. This may be attributed to the tuition cost for non-scholarship student-
athletes of additional credits to graduate in the traditional eight semesters, or the lack of
academic support and resources for non-scholarship student-athletes in athletic
departments.

This national study supports that scholarship status significantly differentiates
student-athletes based on demographic and profile characteristics, academic performance,
and time-to-degree. The theoretical framework provided a lens through which the study
examined the power of the extrinsic reward of athletic scholarships. The results of the
study presented theoretical implications and applications for practitioners. This study
allows for future research in many directions to continue investigating scholarship status,
NCAA academic and graduation metrics, and motivation through the perspective of
Herzberg’s two-factor theory. The results of the discriminant analysis expressed
significant differences in demographic, academic performance, and time-to-degree
variables between scholarship and non-scholarship student-athletes at Division IA
football institutions.
Appendix A

IRB Exempt Approval

UNLV

Social/Behavioral IRB – Exempt Review
Deemed Exempt

DATE: March 9, 2012
TO: Dr. Vicki Rosser, Educational Research, Cognition, & Development
FROM: Office of Research Integrity – Human Subjects
RE: Notification of IRB Action
Protocol Title: Comparing Division IIA Scholarship and Non-Scholarship Student-
Athletes: A Discriminant Analysis of Academic Performance
Protocol # 1203-4079M

This memorandum is notification that the project referenced above has been reviewed as indicated in
Federal regulatory statutes 45 CFR 46 and deemed exempt under 45 CFR 46.101(b)4.

Any changes to the application may cause this project to require a different level of IRB review.
Should any changes need to be made, please submit a Modification Form. When the above-
referenced project has been completed, please submit a Continuing Review/Progress Completion
report to notify ORI – HS of its closure.

If you have questions or require any assistance, please contact the Office of Research Integrity -
Human Subjects at IRB@unlv.edu or call 895-2794.
Appendix B

Data collection instruction sheet

Dear [Name of Academic Services and/or Compliance Director in Athletic Department]:

Thank you for participating in this research study comparing scholarship and non-scholarship student-athletes at Division IA institutions across several variables related to academic performance, time-to-degree, and background characteristics. Once completed, the data collection sheet will be sent to a data steward outside of the researcher’s department who will compile all of the participating institutions’ data to ensure 1) all student identifying characteristics have been removed, and 2) all institutional identifying characteristics have been removed. The data will be compiled into one document prior to sending it to the researcher. I will not know who the students are or what institution they attended upon receiving the data collected.

The data collection sheet has been sent to you electronically as a Microsoft Excel file. The research includes ten of your athletic teams: Men’s Basketball, Women’s Basketball, Women’s Cross Country, Men’s Golf, Football, Women’s Soccer, Softball, Women’s Tennis, Women’s Outdoor Track and Field, and Women’s Volleyball. Each team has its own sheet in the Excel file, labeled on tabs at the bottom of the document. Within each tab are columns to enter information. The format is set up so the best starting point for the data collector is to consult athletic squad lists for these teams. This research is focused solely on freshmen who entered in Fall 2004, so only the 2004-2005 squad list for each team is needed for reference.

The first column is only for your institution’s ease in gathering the data, since it may come from multiple departments. After you enter the names or identification numbers of students who entered as freshmen in the Fall 2004 semester and collect the data for each student, please delete Column A in each team’s tabbed sheet. Column B is to remind the data collector that only freshmen from 2004 are part of the study.

From the squad lists, the data collector can get the information for Column C (Athletic Scholarship Status). Student-athletes receiving partial or full athletic scholarships of any amount are to be marked with “S.” Student-athletes receiving no athletic scholarship money are to be marked with “W.”

Column D asks for Graduated Status. If the student-athlete graduated on or before December 2011, please mark the column “G.” If the student-athlete did not graduate, please mark the column “N.” Column E requests the graduation date for the student-athletes who did graduate. Column E asks for the student’s race. Lastly, Column G requests the student-athlete’s Cumulative Final Grade Point Average to three decimal places.
Once the data collection is completed, please delete column A in all of the team’s Excel workbook sheets. Then e-mail it to Dr. Lisa Kelleher at lisa.kelleher@unlv.edu. In the subject line, please type Student-Athlete Study Data. Thank you for all of your time and effort in contributing to this research study.

Sincerely,

Lisa Rubin
Doctoral Candidate
Department of Educational Psychology and Higher Education
University of Nevada, Las Vegas
Appendix C

IRB Modification Approval

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

Social/Behavioral IRB – Exempt Review Modification Approved

NOTICE TO ALL RESEARCHERS:
Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting subjects, researcher probation, suspension of any research protocol at issue, suspension of additional existing research protocols, invalidation of all research conducted under the research protocol at issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.

DATE: April 26, 2012
TO: Dr. Vicki Rosser, Educational Leadership
FROM: Office of Research Integrity - Human Subjects
RE: Notification of IRB Action
Protocol Title: Comparing Division IA Scholarship and Non-Scholarship Student-Athletes: A Discriminant Analysis of Academic Performance
Protocol #: 1203-4079M

The modification of the protocol named above has been reviewed and deemed exempt.

Modifications reviewed for this action include:
- Expanding the potential contact to all 120 institutions in the data population.

This IRB action does not change your exempt status.

PLEASE NOTE:
Upon approval, the research team is responsible for conducting the research as stand in the protocol most recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer which contains the date deemed exempt.

Should there be any change to the protocol, it will be necessary to submit a Modification Form through ORI - Human Subjects. No changes may be made to the existing protocol until modifications have been reviewed and a determination has been made by the ORI-HS and or the IRB. Modified versions of protocol materials must be used upon final determination. Unanticipated problems, deviations to protocols, and adverse events must be reported to the ORI – HS within 10 days of occurrence.

If you have questions or require any assistance, please contact the Office of Research Integrity – Human Subjects at IRB@unlv.edu or call 895-2794.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway • Box 451047 • Las Vegas, Nevada 89154-1047
(702) 895-2794 • FAX: (702) 895-0805
Appendix D

Data steward agreement

February 2, 2012

This agreement between doctoral student Lisa Rubin and data steward Lisa Kelleher, PhD outlines the role of data steward for purposes of Lisa Rubin’s dissertation at the University of Nevada Las Vegas. The duties of the data steward include the following:

- Serve on the research team of Lisa Rubin’s dissertation,
- Serve as the recipient of data collection sheets from Lisa Rubin’s institutional data sources,
- Upon receiving data from each source, ensuring all student identifying characteristics have been removed, or removing them if they are present,
- Safely storing data received from sources until all sources have submitted data,
- Removing institutional characteristics of each data source by combining all data into one spreadsheet (separated by sport as designated by the design of the data collection sheet),
- Upon combining data from all sources, sort them in a way that the researcher Lisa Rubin cannot tell that students above and below each other are on the same team at the same institution, and
- Give combined data with no identifying characteristics to Lisa Rubin in a safe manner for analysis.

The role of the data steward is vital to the success of the dissertation and is much appreciated.

All terms are agreed upon for the duration of the data collection and dissertation processes for Lisa Rubin, Department of Educational Research, Cognition and Development.

Lisa Kelleher, PhD

Lisa Rubin

Date

2/15/12

2/16/12
Appendix E

FERPA waiver signed by NCAA student-athletes

Buckley Amendment Consent.
By signing this part of the form, you certify that you agree to disclose your education records. You understand that this entire form and the results of any NCAA drug test you may take are part of your education records. These records are protected by the Family Educational Rights and Privacy Act of 1974 and they may not be disclosed without your consent.

You give your consent to disclose only to authorized representatives of this institution, its athletics conference (if any) and the NCAA, except as permitted in the Drug-Testing Consent form, the following documents:
1. This form;
2. Results of NCAA drug tests and related information and correspondence;
3. Results of positive drug tests administered by a non-NCAA national or international sports governing body;
4. Any transcript from your high school, this institution, or any junior college or any other four-year institution you have attended;
5. Precollege test scores, appropriately related information and correspondence (e.g., testing sites, dates, and letters of test-score certification or appeal), and where applicable, information relating to eligibility for or conduct of nonstandard testing;
6. Graduation status;
7. Your social security number and/or student identification number;
8. Race and gender identification;
9. Diagnosis of any education-impact disabilities;
10. Accommodations provided or approved and other information related to any education-impact disabilities in all secondary and postsecondary schools;
11. Records concerning your financial aid; and
12. Any other papers or information pertaining to your NCAA eligibility.

You agree to disclose these records only to determine your eligibility for intercollegiate athletics, your eligibility for athletically related financial aid, for evaluation of school and team academic success, for awards and recognition programs highlighting student-athlete academic success (e.g., Elite 88), for purposes of inclusion in summary institutional information reported to the NCAA (and which may be publicly released by it), for NCAA longitudinal research studies and for activities related to NCAA compliance reviews and athletics certification. You will not be identified by name by the NCAA in any such published or distributed information. This consent shall remain in effect as long as any issues regarding the purposes listed above exist.

You also agree that information regarding any infractions matter in which you may be involved may be published or distributed to third parties as required by NCAA policies, bylaws or procedures.

Adapted from Toliver & McDonald, 2010, pp. 19-20
REFERENCES


National Collegiate Athletic Association (NCAA). (2011a, March 31). Differences among the three divisions: Division I. Retrieved from http://www.ncaa.org/wps/wcm/connect/public/ncaa/about+the+ncaa/who+we+are/differences+among+the+divisions/division+i/about+division+i


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Comparing Division IA Scholarship and Non-Scholarship Student-Athletes:
A Discriminant Analysis of Academic Performance

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Committee Member, Mario Martinez, Ph.D.
Committee Member, Elizabeth Baldizan, Ed.D.
Graduate Faculty Representative: Kurt Stahura, Ph.D.