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# The Relationship of Collegiate Athletic and Recreational Sports Involvement to Student Success and Persistence

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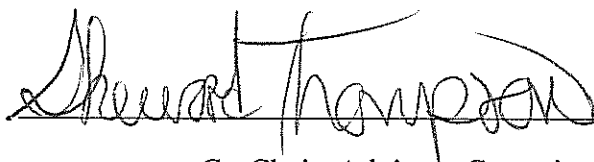
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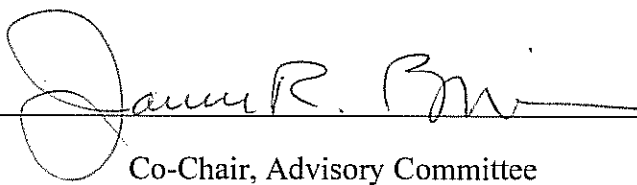
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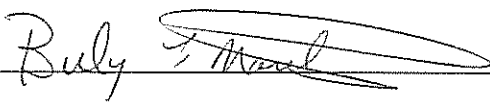
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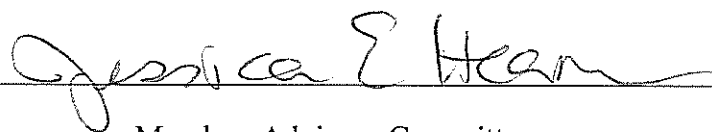
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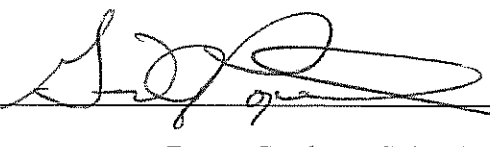
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Date

4/11/14

THE RELATIONSHIP OF COLLEGIATE ATHLETIC AND RECREATIONAL  
SPORTS INVOLVEMENT TO STUDENT SUCCESS AND PERSISTENCE

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DOCTOR OF EDUCATION  
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## DEDICATION

This dissertation is dedicated to my loving wife and children. Their unending support and dedication to my quest to finish this degree pushed me through the hardest times, and the worst of days. Without their support and smiling faces I would never completed this journey, and would not be the man I am today. Thank you so much for everything. I love you three ladies so very much.

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## ABSTRACT

Administrators often scrutinize extracurricular involvement in college as an unnecessary financial strain on dwindling university budgets. Student Affairs practitioners must constantly justify programs as adequate additions to the in-class learning students receive on a daily basis. The experiential education students receive through extracurricular programming is well documented, and an essential part of the college experience. Varsity athletes and intramural participants gain valuable skills through their participation in sports activities and are consequently present some of the highest group success rates on campus.

The purpose of this study was to determine the relationship between involvement in collegiate varsity and recreational sports and student success and persistence. The two major variables analyzed in the study were college grade point average and credits completed. Regression models were constructed using predictors including socioeconomic status, ACT score, college major, gender, and involvement hours. The results of the regression analyses and other statistical tests revealed interesting data in terms of extracurricular involvement.

Analysis of the data yielded involvement hours as a significant single predictor of both college grade point average and credits completed. In the regression models involvement hours was a significant, but weak, predictor of variance in college grade point average, and a significant and strong predictor of credits completed. Implications for practice include the increased use of ACT as a predictor of student success and a focus on early major selection for college freshmen. Additionally increased support of



varsity athletics and recreational sports is supported by the research, as these students performed well in the classroom, and were more likely to persist to graduation.

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# CHAPTER 1

## INTRODUCTION

### **Background**

Extracurricular involvement is one of the most important predictors of college student success and persistence to graduation (Astin, 1984). Pascarella and Terezini (2005) posit the impact of the college experience is largely determined by a student's involvement in extracurricular activities. Sport activities on the collegiate varsity and intramural levels, provide participants valuable skills including time management, organization, problem solving, leadership, teamwork, discipline, resilience, perseverance, rule adherence, social interaction, and increased personal identity (Brandenburgh & Carr, 2002; Emerson, Brooks & McKenzie, 2009; Holbrook, 2004; Pierce, 2007). A National Intramural and Recreational Sports Association (NIRSA) survey reported participation in recreational activities increases scholastic achievement, persistence rates, and college experience satisfaction (NIRSA, 2002). The more integrative administrators make the college experience, the more likely students are to succeed in the classroom and persist to graduation (Astin, 1975, 1977, 1993; Tinto, 1975).

The National Collegiate Athletic Association (NCAA) sponsored 444,077 athletes and 18,044 teams in three divisions during the 2011-2012 academic year (NCAA, 2012). The National Intramural and Recreational Sports Association estimates over 11 million participants use recreational facilities on over 700 college campuses annually (NIRSA, n.d.). Collegiate athletic participants experience gains in institutional satisfaction,

personal confidence, and overall well being, correlating to increased academic success and persistence (Astin, 1993). Students failing to utilize athletic resources on campus are less likely to join the social community and, consequently, are more likely to leave prior to degree attainment (Swail, Redd, & Perna, 2003). Abrahamowicz (1988) reported students seeking involvement in campus organizations experience feelings of personal satisfaction, place bonding, and belonging to the overall campus community. Active involvement in learning bonds students together, allowing for increased feelings of camaraderie, and drive to graduation (Ullah & Wilson, 2007).

College students across the country are dropping out of school at an alarming rate (National Center for Education Statistics [NCES], 2011). Despite the best efforts of college administrators, student retention is a difficult problem to solve, and is almost impossible to predict. Students leaving college damage financial coffers, and loan default rates for thousands of institutions in the United States (U.S. Dept. of Education, 2011). Many students choose to leave college due to poor academic achievement, longings for family and friends, and lack of a social network on campus (Astin, 1993). Although extensive research describes predictable reasons for student disenrollment, few studies investigate a correlation between collegiate athletic involvement, especially on the recreational level, and student success.

Studies by Astin (1975, 1977, 1984, 1993) and Tinto (1975, 1988, 1990, 1993) propose a significant relationship between high levels of extracurricular involvement and feelings of belonging; both creating increased chances for student success. Increased extracurricular involvement, especially in athletic activities, provides innumerable benefits to college students, including increased social belonging, time management and

teamwork skills, as well as increased feelings of self-worth and confidence (Dalgarn, 2001). The effect of intramural sports participation on student success, college grade point average (CGPA), and persistence at a university, credits earned has yet to be thoroughly defined (Miller, 2011). The significance of retention to the success of brick and mortar colleges is at the forefront of scholarly studies, and it was imperative a correlation study be conducted.

### **Purpose and Significance of the Study**

The purpose of this quantitative, correlational, study was to determine the relationship participation in extracurricular collegiate athletics has to students' academic success and retention at a four year, regional university. This study made comparisons between three groups, varsity athletes, intramural sports participants, and non-athletes, in regards to CGPA and credits earned, while controlling for various pre-disposing factors. The dependent variables for this study were CGPA, and number of college credits completed. The independent variables for this study were level of athletic involvement, varsity, intramural or non-participant; gender; ethnicity; socio-economic status (SES), a combination of parent's education level and total household income; American College Test score (ACT), and college major.

This study was designed to determine the relationship between levels of athletic participation, number of hours involved per semester, and student success. In fall 2009, 3,998 freshman students, were enrolled on the research institution's main campus (Miller, Murray, Adkins, & Woody, 2012). For the purposes of this study, only freshman students attending at least one class on the main campus during fall 2009 were included



in the data set. This was the first year intramural participation data was available due to a software upgrade during summer 2009 (Corack, 2010). Using data from this specific semester allowed for a four-year study of all students possessing the minimum necessary average time, eight semesters, to graduate between December 2009 and May 2013 (DesJardins, Ahlburg, & McCall, 2002). Students enrolling after fall 2009 did not meet the traditional student enrollment requirement of four complete years, eight semesters, at an institution. One hundred-twenty total academic credits are needed for most undergraduate degrees at the institution, allowing for 15 credits per semester in four fall semesters, and 15 credits per semester in four spring semesters (Office of the Registrar, 2013). Students enrolled in online degree programs or exclusively at a regional campus were not included in the population, due to a disproportionate inability to participate in on-campus athletic activities, compared to students enrolled on the main campus.

The study was conducted at a Masters Two regional comprehensive university in the southeastern United States as classified by the Carnegie Foundation for the Advance of Teaching (2014). During fall 2009 freshman enrollment was 3,998 students on the university's main campus (Miller et al., 2012). Freshmen varsity athletes numbered 92 during the 2009-2010 academic year (Department of Athletics, 2010). The varsity athletics teams participated in NCAA Division I athletics as part of the Ohio Valley Conference (Ohio Valley Conference, 2013). In 2012 the Ohio Valley Conference was comprised of 12 regionally comprehensive universities in the mid-western portion of the United States, including schools located in Alabama, Tennessee, Kentucky, Illinois, and Missouri (Ohio Valley Conference, 2013). The 2012 budget for athletics was approximately \$12.8 million (Department of Athletics, 2012).

Seventeen hundred-and-sixty freshmen intramural sports participants played over 2,000 games, in 12 leagues and 10 special events, during the 2009-2010 academic year (Corack, 2010). Intramural sports program offerings ranged from flag-football and outdoor soccer, to special events such as a triathlon and golf scramble (Appendix A) (Corack, 2012). All league sports were played in on-campus facilities from 6:00PM to 11:00PM Monday through Thursday, giving ample opportunities for students from all academic disciplines to participate (Corack, 2012). Students choose to play in one of five single-gender leagues: fraternity, sorority, men's competitive, men's recreational, women's, and one co-recreational league, in which teams are comprised of an equal number from each gender (Corack, 2012). A period of participation from the data set was disrupted by a 2010 intramural facility renovation, adding lights, turf fields and regulation softball fields for competition (B. Martin, personal communication, February 24, 2012).

A dearth of research exists regarding the effect of varsity athletic participation on student success, yet few studies describe the relationship between intramural sports and students classroom aptitude. Practitioners in the recreational sports field are consistently asked to academically justify multi-million dollar budgets, and a study correlating intramural participation to student success is needed in the field. While studies link recreational sports participation and student growth outcomes or grade point average, an absence of research linking sports participation to student success exists while controlling for pre-disposing factors such as SES and ACT score. This study fills the gap in the research to determine the benefit, or hindrance, varsity or intramural sports participation provides to students' college success.

This research benefits numerous entities in the fields of varsity athletics, collegiate recreation, and Student Affairs. Administrators may use this research to support budget increases, program learning outcomes, and existence on campus. Funding is continually pulled from non-academic pursuits in favor of activities benefiting the classroom experience (Astin, 1993). Advocates of extracurricular activities may use this study's results to legitimize the programs offered as learning opportunities for the well-rounded student (Astin, 1993). The future of recreational and athletic budgets depends on a strong correlation between extracurricular activities and student success, especially success in the classroom and persistence to graduation. Recreation centers and athletic venues are no longer merely destinations for fun, but are powerful sources of learning, using experiential activities to supplement powerful cognitive processes (Bryant, Banta, & Bradley, 1995).

### **Scope of Study**

This study utilizes students enrolled at the research institution's main campus between August 2009 and May 2013. All students possessing between zero and 30 total credit hours, enrolled in fall 2009, were included in the population, allowing for four full academic years of data collection (DeJardins et al., 2002). Data used for the study were compiled from undergraduate admissions applications, Free Applications for Federal Student Aid (FAFSA), varsity athletics team rosters, and the intramural participant database. The researcher analyzed archival data from the Office of Institutional Research, the Department of Athletics, and the Department of Campus Recreation. The study does not delve into the intangible relationship between student and athletic experience, including cognitive processes or social rewards as a result of participation;

instead it focuses on the statistical relationship between athletic participation and student success. Although cognitive processes gained through sports participation may provide the mitigating factors for the advancement of a student's classroom aptitude, the focus of this study is determine the correlation between extracurricular athletic involvement, academic achievement, and persistence to graduation.

### **Research Questions and Hypotheses**

1. Which study group, varsity athletes, intramural participants, or non-participants earned the highest CGPA?
2. Which study group, varsity athletes, intramural participants, or non-participants compiled the most credits earned?
3. What is the relationship, if any, between total involvement hours and CGPA?
4. What is the relationship, if any, between total involvement hours and persistence?
5. What are the relative contributions, if any, of ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to college GPA?
6. What are the relative contributions, if any, of ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to persistence to degree completion?

*Hypothesis 1. The groups with the highest level of involvement, varsity athletes and intramural participants, will have the highest mean CGPA.*

*Hypothesis 2. The groups with the highest level of involvement, varsity athletes and intramural participants, will compile the most credits earned.*

*Hypothesis 3. Total involvement hours will have a significant predictive relationship to CGPA.*

*Hypothesis 4. Total involvement hours will have a significant predictive relationship to credits earned.*

*Hypothesis 5. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have a significant predictive relationship to CGPA.*

*Hypothesis 6. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have a significant predictive relationship to persistence to degree completion.*

### **Definition of Terms**

This section includes the operational terms used throughout this study.

**Academic Success** - College grade point average (CGPA). The average of all grades earned for college credit represented by the following:

A = 4.0

B = 3.0

C = 2.0

D = 1.0

F = 0.0

**American College Test (ACT)** - Standardized test administered to high school students as an admissions requirement for colleges and university around the United States. Scores range from 1-36, 36 being the best possible, or perfect score (ACT, 2013).

**Athletic Involvement** - One of three levels of sports involvement in which the subject participated during enrollment at the institution.

**Credits Completed** - Number of academic credits completed to the point of data collection; three credits equal one traditional three-hour class meeting per week, for 16 weeks during the fall or spring semesters, or by other arrangement in summer terms (Office of the Registrar, 2013).

**Ethnicity or Race** - The cultural, or familial, origin group the student selects on official enrollment forms at the institution. Groups at the institution in Fall 2009 included: Race or Ethnicity Unknown; Black, Non-Hispanic only; American Indian or Alaskan Native, Non-Hispanic Only; Asian, Non-Hispanic only; Hispanic or Latino, regardless of race; White, Non-Hispanic only; and Nonresident Alien.

**Intramural Sports Participant** - A voluntary program, sponsored by the Department of Campus Recreation, comprised of varying athletic activities (Appendix A). Participants self-registered online using Recreational Solutions IM Track®, August 2009 to December 2011, or IMLeagues®, January 2012 to May 2013, programming software. Intramural participants are quantified by number of hours involved during each season. Membership on one team is equal to one hour of involvement per week. Participants are limited to two teams, per sport, each season (Appendix A).

**Involvement Hours** - Number of hours a student is involved with an athletic or recreational sports activity on campus. Intramural sports participants were assigned 1 hour per team, per week in-season (Appendix C). Varsity athletics participants were

assigned 20 hours for each week of sport activity in-season, and eight hours for each week out-of-season (Brutlag-Hosick, 2011) (Appendix D).

**Major** - The college under which the student chooses his or her major. At the time of the study the colleges represented at the institution included: Undeclared – University Programs; College of Arts and Sciences; College of Business and Technology; College of Education; College of Health Sciences; College of Justice and Safety.

**Non-participant** - Subject chooses not to participate in either varsity athletics or intramural sports. Subjects in this category are quantified as zero hours of involvement.

**Socioeconomic Status (SES)** - A composite measure, for the purpose of this study, incorporating total household income, and parents' highest education level obtained as reported on the student's FAFSA (Adler, 1994).

**Parent or Guardian's Highest Level of Education** - The highest level of education obtained by the student's parent or guardian as indicated on the student's FAFSA.

**Student, Subject or Participant** - Any freshman student enrolled in at least one academic credit hour on the institution's main campus in fall 2009.

**Total Household Income** - The annual salary of the participant's parent or guardian as indicated on the student's FAFSA.

**Varsity Athlete** - An official team listed by the institution as competing on the NCAA Division I level, including the following as of February, 2013: Men's baseball, men's basketball, football, men's track and field, men's cross country, men's golf, men's tennis, women's softball, women's basketball, women's track and field, women's cross country,

women's golf, women's tennis, women's soccer, and women's volleyball (Department of Athletics, 2013). Varsity athletes are quantified by number of hours involved in athletics per week in-season, 20, and eight hours per week out of season, per NCAA policy (Brutlag-Hosick, 2011). Involvement hours do not include mandatory study hours or travel time as these vary by sport.

**Year in college** - As listed by the University Registrar's Office, the number of credits successfully completed, earning a 60% or above, equivalent to the following (Office of the Registrar, 2013):

**Freshman** - 0-29 credit hours

**Sophomore** - 30-59 credit hours

**Junior** - 60-89 credit hours

**Senior and above** - 90-XX credit hours

## **Chapter Summary**

Chapter one provides an introduction to this dissertation, justification for the research, research questions and operational definitions of the terms used in this study. The researcher examined various scholarly articles in chapter two, providing a framework for developing a validated methodology. The literature reviewed in this dissertation provides a panoramic view of varsity and recreational sports relating to the success of the college student.



## CHAPTER 2

### LITERATURE REVIEW

Extracurricular activities are an essential part of the college experience, providing students learning opportunities outside the classroom (Astin, 1975; Tinto, 1975). Students are constantly receiving requests for new events to attend, and clubs to join, all while trying to balance academic schedules, and separation from former lives (Tinto, 1975). Some faculty members understate the value of activities and clubs, feeling students should only concentrate on in-class learning and not experiential education (Potuto & O’Hanlon, 2006). Faculty opinions are damaging to first-year students coming to college having little knowledge of previously established communities (Tinto, 1975). As Astin (1975) posited on student involvement, “the more students are involved the more they will learn” (p. 65); administrators must continue to foster a sense of campus community, ensuring new students succeed in the classroom and persist to graduation.

Academic persistence is a complex issue at the forefront of college administrators’ greatest challenges for the future (Tinto, 1988). University boards, presidents, and chancellors are evaluated on abilities to prepare institutions for the future, and fostering community is essential to financial stability through student retention (Potuto & O’Hanlon, 2006). Many public institutions are losing state appropriations at an alarming rate, and see tuition increases as the only alternative to fiduciary insolvency (Potuto & O’Hanlon, 2006). Administrators must place increased effort into freshman and sophomore retention, as nearly 75% of students leaving college do so during the first two years (Tinto, 1975). Encouraging involvement in extracurricular activities, namely

sports organizations, is a way to build community among new students, a key factor in early departure avoidance (Light, 1990).

Student success in the classroom, increased CGPA, is another key predictor of graduation (Belch, Gebel, & Maas, 2001). Students transitioning from high school not only navigate a new, free lifestyle, but the rigors of classwork significantly more difficult than secondary school studies (Huesman, Brown, Lee, Kellogg, & Radcliffe, 2009). The CGPA students earn freshmen year is a not only a significant predictor of persistence to degree completion, but is also correlated to involvement in activities such as recreation and varsity athletics (Garrett, 2000; Huesman et al., 2009; Todd, Czyszczon, Wallace-Carr, & Pratt, 2009). CGPA is also a significant factor for students leaving college, as failed success in the classroom is a leading reason for early departure (Churchill & Iwai, 1981). There are differing opinions on how to ensure academic success, but administrators do have the ability to provide engagement activities, including varsity athletics and recreation, allowing for deeper involvement in the campus community (Tinto, 1988).

### **Pre-College Predictors of Student Success**

Enrollment at four-year colleges and universities has increased over 30% in the past 30 years, yet graduation rates have remained stagnant (Bowen, Chingos, & McPherson, 2009; Bronstein, 2009). More than 25% of first-time, full-time, college students leave sometime during freshman year, and only 57% earn a baccalaureate degree in six years (Education Trust, 2004; NCES, 2011). Various factors including gender, SES, ethnicity, ACT score, and chosen college major, predict the chances of college

academic success and persistence to graduation (Allen & Robbins, 2008; Arbona & Novy, 1990; Astin, 1975; DeBerard, Spielmans, & Julka, 2004). Increases in public college tuition, an average yearly cost of \$13,600 in 2011, compounded by crippling student debt load, an average of \$17,613 per student, makes college graduation even greater in significance (NCES, 2012; U.S. Dept. of Education, 2011). The median income for a college graduate, aged 25-34, is \$44,900, while the median income for a high school graduate, aged 25-34, is only \$28,900 (NCES, 2012). Mounting student loan debt, and the significant economic advantage of bachelor's degree attainment, exacerbates admissions officers' requirements to admit students having the best pre-college indicators for classroom achievement and persistence to degree attainment.

### **Standardized Test Scores**

Standardized college admissions tests, including the SAT and ACT, are an admission's requirement for countless four-year colleges and universities across the country (Tom, 1982). High School Grade Point Average (HSGPA) and standardized test scores account for up to 25% of a student's academic success in the college classroom (Wolfe & Johnson, 1995). Standardized test scores, required by the research institution for undergraduate admissions, effectively predict college success and persistence, indicating generic abilities and academic motivation (Beecher & Fischer, 1999; Office of Admissions, 2013). The ACT score for college-bound students, ranks generalized knowledge on a scale of 1-36, 36 representing a perfect score in the mathematics, verbal and reading comprehension disciplines (ACT, 2013). The average score of college students persisting to sophomore year is 22, while the average student succumbing to attrition scored 20 (Allen et al., 2008). Higher ACT scores are also linked to higher rates

of persistence, as students scoring 25 or above graduate at a rate nearly 28% higher than peers (DesJardins et al., 2002).

Numerous scholars espouse the bias of standardized tests towards minority students, especially African-Americans (Breland, 1978; Wilson, 1981; Kirby et al., 2007; Lanham, Schauer, Osho, 2011). A study of African-American students attending predominately Caucasian campuses, less than 10% minority student population, demonstrated students' first semester CGPA's correlated to HSGPA, rather than standardized test scores (Allen, 1986). Young and Sowa (1992) reported HSGPA as the only positive predictor of success in the college classroom for African-American students. A Flemming (2002) study indicated ACT scores and CGPA have a strong positive correlation for most Caucasian students, but not for minority students. The ACT is used as a predictor of college student success by countless admission offices around the U.S., but the pressing need for a non-culturally biased evaluation of academic aptitude is essential to ensure diverse enrollments of future college students (Kirby et al., 2007).

### **Socioeconomic Status**

Socioeconomic status is not easily defined, but is commonly considered to be a measure of economic and social position (Adler, 1994; Stawarski & Boesel, 1988). Total household income measures economic position for students, while parent or guardian's highest level of education obtained measures social position (Adler, 1994; Stawarski & Boesel, 1988). Multiple studies on college degree attainment and academic success correlate socioeconomic status to classroom achievement (Eagle & Tinto, 2008; Allen & Robbins, 2008, 2010). A bachelor's degree increases earning potential for graduates by

\$16,000 annually translating to over \$500,000 in lifetime (NCES, 2012). Eagle & Tinto (2008) concluded students from affluent families, \$70,000 or more in annual income, had a 56% chance of graduating, while students from family incomes of \$25,000 or less had only a 26% chance of degree attainment. Eighty-percent of students whose parent's possess a college degree will graduate, while only 43% of first-generation college students will persist to graduation (Eagle & Tinto, 2008). The chance of attending college parallels parent's education level; 82% chance of attendance for students from parents having a college degree or higher, 56% chance from parents having a high school diploma, and only 36% chance from parents not completing high school (Choy, 2001).

The large discrepancy in post-secondary educational success between students of differing socioeconomic status is related to weaker academic preparation, lower degrees of academic aspiration, less peer and high school teacher involvement, and a lack of support in college transition (Terenzini, Spring, Yaeger, Pascarella, & Nora, 1996; Tinto, 1993). First-generation college students leave college at a rate of 60% freshman year, while only 11% of first-generation, low-income students held bachelor's degrees in 2003, compared to 55% for more advantaged peers (Eagle & Tinto, 2008). "When parents and family without college degrees form the primary support structure of students in college, there is a lack of experience surrounding the students leading to insufficient levels of emotional support, or lack of understanding of the commitment necessary for a student to persist in college" (Sparkman, Maulding, & Roberts, 2012, p. 648). Parental involvement, or the lack thereof, in a child's early educational development, is the most predictive factor of future academic success (Lanham et al., 2011). Students from high-income families have a greater tendency to be retained in college, largely due to

increased academic performance and parental support (Braunstein, McGrath, & Pescatrice, 2000).

Not all low-income students are destined for college attrition, as some students perform at higher rates when facing scholarship and financial aid grade requirements (Kirby, et al., 2007). Students earning scholarships, both for academic and financial necessity, earn higher CGPAs than students not receiving scholarships (Murdock, Nix-Mayer, & Tsui, 1995). Students needing financial aid are especially motivated to keep grades elevated as federal financial aid is often denied to students falling below a certain CGPA (U.S. Department of Education, 2013). Low-income students, lacking familial support, are more likely to seek lucrative academic majors than higher income peers (Davies & Guppy, 1997). Socioeconomic status plays a significant role in the academic success of college students, best mitigated through increased campus involvement and academic-specific motivation (Pascarella & Terenzini, 2005).

## **Ethnicity**

Socioeconomic status is a predictor of college performance most likely to affect minority students (Furr & Elling, 2002). Ethnic minorities are less likely to succeed in college because of poor economic background, poor education, and lack of integration into campus life (Education Trust, 2005). A national study conducted by the Education Trust (2009) revealed 60% of Caucasian students were on track for graduation, while only 40% of minority students held similar academic transcripts. The U.S. Census Bureau (2011) reported college degree percentages for adults 25 and over as 52.4% for Asians, 30.4% for Caucasians, and only 19.9% for African-Americans.

Men of African-American heritage are the demographic group least likely to enroll in college, as only 20% of the population under 24 attended some form of post-secondary education (King, 2006). This is partially attributed to lack of high school academic preparation and disproportionate success on standardized tests (Hale, 2001). In aggregate, minority students are more likely to be economically disadvantaged, first generation, and more likely to leave a postsecondary institution after adjusting for first year academic performance (Allen et al., 2008).

### **College Major**

While no significant correlation exists between college major, academic success and persistence to graduation, there are a number of interesting studies reporting aggregate results. Astin (2005) observed students, majoring in allied health, fine arts, and engineering fields have the lowest levels of persistence, and the lowest first year CGPA. DesJardins et al. (2002) reported similar results for students selecting technology majors. Choosing a major early in a student's college career is essential to degree attainment, as students selecting "undecided," during freshman or sophomore years are much more likely to leave prior to junior year (Leppel, 2001). Students majoring in the social sciences are more likely to graduate than students in the technological sciences, due to increased levels of faculty interaction, and easier course loads (Pascarella & Terenzini, 2005). St. John, Hu, Simmons, Carter and Weber (2004) revealed African-American students' academic success is influenced more than Caucasian students by majors having high earning potential, business, technology, and Allied Health.

The most important factor in major selection appears to be the pairing of a student's interests and related field of study, known as interest-major congruence (Allen & Robbins, 2010). Students having high interest-major congruence are less likely to change major, and more likely to persist to degree attainment (Allen & Robbins, 2008, 2010; Tinto, 1993). This explains why many young students, having little career direction, vacillate between various majors during freshman and sophomore years, often leading to poor academic performance and decreased likelihood of persistence (Pascarella & Terenzini, 2005). Male college students from wealthier families, versed in business, are more likely to succeed in business and technology majors, than students coming from families of lower social class (Davies & Guppy, 1997). Women, influenced by mother's education level, are more likely to persist in Allied Health and science majors, than women from first-generation college families (Leppel, 2001). A student's overall interest in a major leads to further immersion in the university, participation in academic and social organizations, and higher rates of persistence and achievement (Pascarella & Terenzini, 2005).

## **Gender**

The biological sex of a student was at one time a detriment to the chances of college degree attainment (Ge & Yang, 2013). "In 1980, 57% of young men, aged 25-34, compared with 46% of young women, had some college education by age 34" (Ge & Yang, 2013, p.478). By 1996 percentages had flipped as 64% of similar-aged women had some college education, compared to only 59% of men (Ge & Yang, 2013). National college enrollment data from 2012 indicated 11,723,000 degree-seeking women compared to only 8,919,000 men (NCES, 2013). The push for Title IX in athletics,



coupled with advances in education equality made gains in gender equality possible in the period from 1973 to the present (Ge & Yang, 2013). Women not only outnumber men in total enrollment, but also outperform them in both percentages of graduates and freshman to sophomore retention (Astin, 2005).

### **Summary of Pre-college Predictors**

Academic performance has the largest effect on the likelihood of retention, controlling for all other pre-disposing factors (Allen et al., 2008). Students enrolling in college after succeeding in the high school classroom, and on standardized tests, are more likely to have general abilities applying to the rigors of college (Beecher & Fischer, 1999). College graduates, on average, have families of higher socioeconomic status and earn salaries \$16,000 higher than high school-educated peers (Sparkman et al., 2012; U.S. Census Bureau, 2011). Minority students, especially African-Americans, are less likely to enroll in college, less likely to succeed academically and less likely to persist to graduation than Caucasian peers (Education Trust, 2005). Female students are more likely than male counterparts to graduate college, and persist from freshman to sophomore year (Astin, 2005). Major also plays a role in college success as students choosing allied health and social sciences are more likely to graduate than peers choosing STEM and business studies (Leppel, 2001). A bachelor's degree is a large undertaking for any high school graduate, and the students having the most favorable predisposing factors show a significant predication to success in the classroom and persistence to graduation.

## **Extracurricular Involvement in College**

“It is not so much what an individual thinks or feels, but what the individual does, how he or she behaves, that defines and identifies involvement” (Astin, 1999, p. 298). The sheer amount of interaction between the individual student, and the faculty, has widespread effects on student development (Astin, 1993). Student-faculty interaction occurs during recreational activities, or at athletic events, as faculty members serve as fans or teammates of students (Astin, 1993). “Involvement with one’s peers and with the faculty, both inside and outside the classroom, is itself positively related to the quality of student effort, and in turn to both learning and persistence” (Tinto, 1993, p. 112). Activities keeping students engaged in college include clubs and organizations, residential-life programs, expanded campus orientations, convocations and community service opportunities (Barefoot, 2004). Scholars recognize student involvement as a necessary ingredient for facilitating collegiate success and overall university experience satisfaction (Astin, 1975, 1985, 1999).

A lack of social integration into the college social system leads to low campus community commitment, and increased probability students will decide to leave college (Tinto, 1975). Tinto (1988) identified three major steps in the high school to college transition essential for degree attainment and academic success (a) separation; (b) transition; and (c) integration. Separation requires students to disassociate from membership in past communities, typically found in high schools or hometowns (Tinto, 1988). This first stage is extremely important to first-year students, as homesickness is a common reason for attrition (Barefoot, 2004; Daugherty & Lane, 1999). Studies by Tinto (1988) and Barefoot (2004) concluded nearly 75% of college dropouts occur during the

first two years of college, conclusively resulting from transition issues to the campus community. The stage following separation, transition, calls for students to begin assimilation to the college environment by joining varsity sports teams, intramural teams, clubs and organizations, or becoming involved in residential life (Tinto, 1988).

Recreational sports programs provide an avenue of escape for students from the stressors of academic and personal demands (Student Affairs Research Education Office [SAREO], 1987). The final stage, integration, identifies students fully engaged in institutions, belonging to a campus community (Tinto, 1988). Students belonging to fraternities, sororities, student resident associations, student unions, extracurricular groups, and intramural athletic teams establish repetitive peer and community contact, leading to integration (Tinto, 1988).

A college student's social environment has a strong influence on development and maturation into adulthood (Astin, 1999). Students living at home, while attending college, fail to fully engage themselves in the college atmosphere, and are more susceptible to attrition (Tinto, 1988). College students are, after all, moving from one community, high school and family, to another, university campus (Tinto, 1988). First-year students must find a connection tool such as recreation or athletics to form a community place-bond, meet friends, hangout, and be seen by other students (Dalgarn, 2001). While participating in recreation or athletic activities students experience intellectual and social development (Dalgarn, 2001). Students have the ability to meet faculty and other students at sport activities creating lasting bonds, the most potent form of positive college involvement (Astin, 1996). Elkins, Braxton and James (2000) concluded, students willing to reject the values of previous communities have the greatest

chance of freshman year success, and are the most likely to engage and persist to graduation.

Astin (1984, p. 307-309) postulated five standards for student involvement:

- Involvement means the investment of physical and psychological energy in different “objects” that range in their degree of specificity.
- Involvement occurs along a continuum, with different students investing different amounts of energy, in various objects, at various times.
- Involvement includes qualitative and quantitative components.
- The amount of student learning and personal development is directly proportional to the quality and quantity of involvement.
- The effectiveness of an educational practice is directly related to the capacity of that policy or practice to increase involvement.

The postulate most pertaining to recreation and athletics is the last entry, evaluating policies based on involvement potential. Participation in the varied leadership positions in recreation and athletics, captains, managers or team leaders, enhances an individual’s willingness to assume and fulfill duties, manage aggression, remain loyal and altruistic, and handle stressful situations (Todaro, 1993). Involvement in athletic teams helps thwart the most common reasons successful students leave college, poor institutional fit, failure to connect to social systems, financial problems, and desire to transfer to another institution (Tinto, 1990). Students involved in recreation and athletic services are more likely to continue enrollment next semester, at the same institution, than non-participants (NIRSA & NASPA, 2010). Students visiting various on-campus

facilities or attending activities on a regular basis, including, the campus library, recreation center, student union, dining halls, working as a campus employee, attending a dance or concert, and taking outdoor adventure trips, have increased probabilities of retention (Mallinckrodt & Sedlacek, 2009; Miller, 2011; Webster & Sedlacek, 1982).

Involvement in extracurricular activities is a significant component of any student's college experience (Tinto, 1988). Athletes entering college are, at times, academically disadvantaged compared to non-athlete peers, and need the social bonding experience provided by sports teams to succeed on campus (Astin, 1993; Young & Sowa, 1992). The advanced academic tutoring offered to athletes by NCAA-mandated support services allows troubled students to seek assistance for courses far-surpassing academic abilities (NCAA, 1993). College enrollees, not athletically gifted enough to pursue varsity careers, take solace in recreational competitions, such as intramural games, held on thousands of campuses each year (NIRSA, n.d.). The social and physical wellness benefits obtained from intramural competitions allow students to feel a sense of belonging on campus, similar to other campus organizations, increasing desire to remain enrolled (Astin, 1993). Collegiate athletic competition exists for numerous reasons, the least apparent being the intrinsic rewards team membership affords to students otherwise leaving college, due to feelings of solidarity and a lack of belonging (Astin, 1993).

### **The History of Athletic Involvement**

Colleges and universities have long supported athletic programs, both intramural and extramural in nature (Taylor, Canning, Brailsford, & Rokosz, 2003). Eleven million participants use recreation programs annually and over 380,000 student athletes compete

on the varsity level (NCAA, 2010a; NIRSA, n.d.). The annual budget for a campus recreation program in 2008 was \$1.7 million, and the annual budget for an NCAA Football Bowl Subdivision athletics program in 2010 was well over \$20 million (NCAA, 2010b; NIRSA, n.d.). This vast percentage of university budgets is a far cry from the start of recreation and athletics in the early 1900's, but the explosion of college enrollment after World War II forced substantial institutional support for sport activities (Stewart, 1992). Recreation and varsity athletics are now largely considered a mainstay in college communities, but 100 years ago it was hard to imagine the effect college sports would have on extracurricular education (NCAA, 2010a; NIRSA, n.d.).

### **Varsity Athletics**

The National Collegiate Athletic Association, founded in 1906 under the guises of U.S. President Theodore Roosevelt, formed in response to the gruesome nature of college football, run by student groups often hiring non-students to play (NCAA, 2010a). This fear of unregulated athletic activities prompted the formation of the Intercollegiate Athletic Association of the United States in 1906, later becoming the NCAA in 1910 (NCAA, 2010a). For its first 15 years of existence the NCAA was merely a governing body providing guidance for athletic competitions (NCAA, 2010a). The first national championship sponsored by the NCAA, track and field, did not occur until 1921 (NCAA, 2010a).

From its beginnings in 1906, the NCAA grew substantially to an organization sponsoring over 1200 member schools, in over 50 sports (NCAA, 2010a). In 1973 the first academic restrictions were placed on college athletes, known as Proposition 48

(NCAA, 1993). This required incoming student athletes to obtain a HSGPA of 2.0 in core subjects, and have standardized test scores of 700, on the Scholastic Aptitude Test (SAT), or 17 on the ACT (NCAA, 1993). This landmark decision, made at the annual NCAA convention, forever changed the landscape of collegiate athletics, as it significantly altered the recruiting practices of many coaches (Ferris, Finster, & McDonald, 2004). During the post-World War II years, coaches recruited thousands of academically challenged African-American players from poor southern cities in response to open-enrollment initiatives after the Civil Rights Act of 1964 (Ferris et al., 2004). The new enrollment restriction severed the ties many coaches had in the south, namely in basketball and football (Ferris et al., 2004). In 1990 the United States Congress passed the Student Right to Know and Campus Security Act, mandating colleges and universities publish graduation, participation and crime rates for the general public (Ferris et al., 2004). Educational statistics are made available to the United States Department of Education on an annual basis, including an aggregate grade report for all scholarship athletes receiving financial aid as freshmen (Ferris et al., 2004). Athletic academic reports contribute to varying degrees of athletic eligibility with the NCAA including bans from postseason play and scholarship reductions (Ferris et al., 2004).

The Patsy T. Mink Equal Opportunity in Education Act, signed into law on June 23, 1972, provided for equal opportunity in education to students attending schools receiving any type of financial aid from the federal government, regardless of gender or ethnicity (U.S. Department of Labor, n.d.). Title IX of the act provided for the equal promotion of women's sports at all public and private educational institutions in the U.S. (U.S. Department of Education, 1998). Title IX, as the Equal Opportunity in Education

Act is affectionately known in the sporting community, provided opportunities to female athletes not existing prior to the 1980's (NCAA, 2010c). In 1981 the NCAA sponsored 74,239 female athletes on 4,776 teams; in 2010 the NCAA sponsored 186,460 female athletes on 9,660 teams, a 200% increase in only 30 years (NCAA, 2010c). Title IX operates under the auspices of the Office of Civil Rights in the United States Department of Education and is enforced through the "three-prong test"; proportionality of enrollment, history of opportunity for the underrepresented sex, and accommodating the interest of the underrepresented sex (U.S. Dept. of Education, 1998). The "three-prong test" provided numerous new opportunities for female athletic participation, but caused some detriment to male athletes, seeing athletic teams cut to ensure Title IX compliance (Beveridge, 1996). Title IX is, and was, a great leap forward for women and the NCAA, as it modernized an association, long forgetting the gender comprising more than half of the its' participants (NCAA, 2010C).

The National Collegiate Athletic Association currently represents over 1200 member schools at three levels of competition, Division I, Division II and Division III (NCAA, n.d.). Students in Divisions I and II are eligible for athletic financial aid, separate from traditional student financial aid, in the form of athletic scholarships, meal plans, book scholarships, and housing waivers (NCAA, n.d.). Students at the 444 Division III member institutions survive on no athletic scholarships, only receiving academic financial support (Emerson et al., 2009). The goal of athletic programs at the Division I level is to win national championships and serve as a source of entertainment for the surrounding community; while the goal of Division III programs is to promote a



sense of community in smaller towns, and to provide learning opportunities for student athletes (Emerson et al., 2009).

College sports are a driving force behind the NCAA's multi-billion dollar empire, utilizing amateur athletes in exchange for a subsidized education (NCCA, 2010b).

During the 2008-2009 school year the NCAA estimated sports revenues for universities at \$10.6 billion, while in 2010, 20 Division I NCAA schools turned an athletic profit (NCAA, 2010b). This staggering sum of money is hard to believe, but in actuality this total is only a small fraction of the university budgets supporting many of the NCAA's athletic programs (NCAA, 2010b). Students, after all, are the driving force behind colleges, and the existence of higher learning institutions is substantiated by the existence of athletics and its governing body, the NCAA (NCAA, 2010b).

### **Recreational Sports**

Intramural sports began at two institutions, The Ohio State University and The University of Michigan in 1913, followed by numerous schools in the years leading up to the Great Depression (Beeman, & Humphrey, 1960). In 1939 University of Michigan professor A.S. Whitney coined the term "intramural", from the Latin, *intra*, meaning "within", and *mural*, meaning "these walls" (Mitchell, 1939). Intramural sports existed for many years in the form of games between classmates on university green spaces, but until the early twentieth century there was no recognition from universities as to the merits of intramural activities (Stewart, 1992). The University of Michigan constructed the nation's first, truly recreational, college intramural building in 1928 (Stewart, 1992). This new building was the first of thousands to come, revolutionizing the landscape of

collegiate athletic participation for millions of students, faculty and staff (Turman, Morrison, & Gonsulin, 2004).

As new recreational programs materialized on college campuses, a need to govern the standards of recreational sports became apparent to institutional leaders in the southern U.S. (NIRSA, n.d.). In 1950 Dr. William Wasson hosted the first meeting of 22 Intramural practitioners, from 11 Historically Black Colleges and Universities in New Orleans, LA (NIRSA, n.d.). The practitioners voted to organize themselves as the National Intramural Association, naming Dr. Wasson as president (NIRSA, n.d.). Twenty-five years later, in 1975, at an annual conference, the members of the National Intramural Association voted to change names to the National Intramural and Recreational Sports Association (NIRSA, n.d.). This governing body creates the standard for recreational sports professionals, and serves as the organization creating rules and regulations for an industry boasting millions of participants (NIRSA, n.d.).

During the first quarter of the twenty-first century, NIRSA member institutions planned to build \$12 billion worth of recreational facilities (NIRSA, 2007). A 2007 *Oregonian* article reported “the recreation center is the most important building for students on campus” (Gragg, 2007). During fiscal year 2007 the average NIRSA member institution annual budget for recreational sports was \$1.7 million (NIRSA, 2007). This explosion of construction and funding is an indicator of the great value collegiate administrators place on recreational opportunities (Haines & Fortman, 2008). The construction of new recreation facilities not only impacts on-campus involvement, but also new student recruitment, and retention of current students (Lamont, 1991; Turman, Morrison, & Gonsulin, 2004). The increased

importance of collegiate recreation gravitated recreational sports programs away from athletic departments to Student Affairs divisions, placing an emphasis on customer service, quality programming, and learning outcomes (Blumenthal, 2009). A 2007 NIRSA survey observed 75% of NIRSA member institutions reported to Student Affairs on campus, estimating four recreational sports participants to every one NCAA varsity athlete (Blumenthal, 2009).

The ability of recreational programs to produce viable experiential learning opportunities, places them on the forefront of academe, as academic units are not the only facilitators of college educational instruction (Blumenthal, 2009). Student involvement in recreational programs was at an all-time high in 2011; 11 million student facility users at NIRSA member institutions, over two million sport club participants, and over one million intramural games scheduled annually (NIRSA, n.d.). Recreational programs including, group fitness classes, adventure programs, intramural sports, wellness classes, and informal recreation opportunities attract students of varying backgrounds, providing them opportunities for social, intellectual and physical growth (Henchy, 2011). The variety of recreational program offerings attracts students from all walks of life; some studies indicate almost 95% of students participate at their college in some type of recreation activity each year (Bryant et al., 1995).

Campus recreation buildings are often labeled social centers, drawing thousands of students each day to healthy lifestyle programs (Dalgarn, 2001). Acting as a hub for campus activity, recreation centers serve as a meeting place for students, second only to dining halls in voluntary campus usage (Mallinckrodt & Sedlacek, 2009). Intramural sports have the innate ability to teach students valuable lessons outside of the classroom,

while at the same time keeping students socially engaged and bonded to campus (Blumenthal, 2009). William Wasson's foresight in creating the National Intramural Association in 1950 (NIRSA, n.d.), paved the way for a growing field involving millions of students each year, in activities ranging from intramural basketball to whitewater kayaking (Blumenthal, 2009). Recreational sports programs on college campuses are established entities, continually evolving and changing to fit the needs of today's college student (Blumenthal, 2009).

### **Sport Involvement and Academic Success**

The inception of the NCAA in 1906, and the NIRSA in 1950, afforded college administrators the regulating authority over growing athletic and recreation programs (NCAA, 2010a; NIRSA, n.d.). The 1973 enactment of NCAA proposition 48, and the subsequent passing of the Student Right to Know and Campus Security Act in 1990, required schools to remain accountable for athletes (Ferris et al., 2004; NCAA, 1993). Two new regulations, one enforced by the NCAA, and one enforced by the U.S. Secretary of Education, placed stringent academic standards on athletes, and made all aggregate academic success data available to the public (Ferris et al., 2004). Although no current academic regulations exist for recreational sports, other than standards imposed by individual institutions, there is still a degree of academic accountability placed on recreation programmers (Blumenthal, 2009).

### **Varsity Athletics and Academics**

Colleges and universities support athletic programs for varying reasons, from university identity and marketing, to building stellar national reputations (Pascarella &

Smart, 1991). Athletic programs often carry high financial risks and, at times, academically strain the athletes participating on college teams (Pascarella & Smart, 1991). The ability of athletes to overcome academic deficiencies, such as lower HSGPA, standardized test scores, and stress from long practices, leads to large payoffs for the university, including increased admissions applications, student athlete graduations, and contributions from alumni (Maloney & McCormick, 1993). The balance between putting a quality product on the field, and keeping students academically eligible, is a constant challenge for athletic administrators (Jolly, 2008). In terms of academic success and graduation rates, athletes are surprisingly superior to average college students (Ferris et al., 2004). College athletics in the United States are a financial juggernaut; the only issue is whether or not the students playing on college teams are enrolled for classes during the day, or games played under the lights (NCAA, 2010b).

Larger universities produce giant revenue streams from athletic departments, making the term student-athlete seem counterintuitive, as classes merely satisfy NCAA requirements (Meyer, 2005). Athletes participating in non-revenue sports, making little to no money from sponsorships and ticket sales, such as soccer and softball, participate at the same level, but do not receive the same recognition as athletes in the two revenue-generating college sports, football and basketball (Jolly, 2008). Athletes in revenue-generating sports, at the 20 of the 121 NCAA Division I Football Bowl Subdivision schools earning money in 2010, must still enroll and pass twelve credit hours each semester (Meyer, 2005; NCAA, n.d.), all while earning schools upwards of \$80 million each year (NCAA, n.d.). Potuto and O'Hanlon (2006) conducted a national study of student athletes indicating 82.1% practiced ten or more hours per week in-season, and

40.2% spent ten or more hours per week playing games. The summation of three activities; class, practice and games, equates to over 32 hours per week, causing many faculty members to wonder if athletic commitments are straining young athletes' minds (Meyer, 2005).

The 1973 enactment of NCAA Proposition 48 and the Student Right to Know and Campus Security Act of 1990 initiated a new wave of sports research, centering on the academic success of student athletes (Ferris et al., 2004; NCAA, 1993). Student athletes are more likely than peers to feel apprehensive about visiting professors and succeeding in classwork (Aries, McCarthy, Salovey, & Banaji, 2004; Eiche, Sedlacek, Adams-Gaston, & University of MD, 1997; Jaasma & Koper, 1999; Watson, 2005). Athletes are more likely to live together, study together, socialize, and engage themselves less in class discussions, than fellow students (Sparent, 1989). Potuto and O'Hanlon (2006) indicated 53% of college athletes did not spend enough time on studies due to athletics, while 61.8% of the same student sample viewed himself or herself as an athlete, not a student. Wolverton (2007) reported 20% of college athletes could not choose a desired major because of athletic commitments, yet only 5% regretted this choice.

Student athletes not only fragment themselves from the general student population through inclusive communities, but also through academic preparation (Sparent, 1989). Male athletes in revenue generating sports, football and basketball, have significantly lower incoming HSGPAs, standardized test scores, and score lower on reading and math comprehension than their peers (Aries et al., 2004; Pascarella, Bohr, Nora, & Terezini, 1995; Ryan, 1989). Multiple studies by Adler and Adler (1985, 1987, 1991) reported the freshman year optimism regarding degree attainment and academic success faded during

subsequent semesters. Shulman and Bowen (2001) indicated preferential treatment in the admissions process damages the academic success of athletes admitted to programs beyond scholarly abilities. Male student athletes normally bear the brunt of negative stereotypes, especially athletes participating in NCAA Division I basketball and football (Maloney & McCormick, 1993). A four-year study of athletes at Clemson University from 1985-1989 yielded interesting results about two sports, basketball and football, namely male athletes performing 20% lower in cumulative CGPA than the general student population (Maloney & McCormick, 1993). The same study also indicated, after controlling for HSGPA, SAT and SES, male athletes still performed lower academically than peers, and graduated at rates 10% lower than classmates (Maloney & McCormick, 1993). Ullah and Wilson (2007) added to the same line of research, reporting male athletic peer association negatively influences CGPA, damaging proponents of athletic community as a catalyst for student success.

Research on college athlete academic success often reports the negative aspects of athletics participation, yet at the same time research abounds touting the positives of college sports (NCAA, 2010a). Pierce (2007) observed athletes in the College of Engineering at South Carolina had CGPAs significantly higher than peers, and had far surpassed peers in time management, organization and problem solving. Engineering student-athletes had the innate ability to transfer the on-field skills of concentration, and desire to excel, to the classroom (Pierce, 2007). Multiple studies demonstrate athletic participation contributing to academic satisfaction, and persistence to completion (Astin, 1993; Ryan, 1989). Athletes are more engaged in the classroom, and on-campus, than peers, as participation builds a deep sense of community and belonging (Umbach,

Palmer, Kuh, & Hannah, 2006). Additionally, college sport participants report campuses are more supportive of academic and social needs, and report greater gains in academic knowledge than peers (Umbach et al., 2006).

The National Collegiate Athletic Association (2003) reported a record 62% six-year graduation rate, compared to 59% for the general student population, for all student-athletes entering college after 1996. This improvement, over a previous survey, is linked to changes in academic and social support in the athlete community, and improved athletic counseling services (Melendez, 2007). Hood, Craig and Ferguson (1992) reported, after controlling for HSGPA, SES and SAT, athletes performed just as well, if not better, than peers. Additionally Gottschalk and Milton (2010) observed female athletes performed even better, often outperforming both male counterparts and the general student population. This is partially a result of female college athlete realizations their careers having little chance of ascension to the professional ranks (Simons, Van Reehnen, & Covington, 1999). Female athletes tend to focus more on studies, using athletics as a means for free or discounted tuition (Simons et al., 1999). Sport teams are a summation of members; women value the socialization and prosper from it, while men value autonomy, and suffer from too much socialization (Ullah & Wilson, 2007).

Astin's (1984) theory of student development posits the more students are involved in their campus community, the more benefit they will obtain from extracurricular experiential learning. Ryan (1989) reported the college athletic experience is directly related to increases in leadership skills and college choice satisfaction. Miller and Kerr's (2002) study revealed college athletes have an easier time adjusting to college than peers, due to teammate social networks. The study also reported



athletic participation eased feelings of loneliness and the associated stressors of difficult course loads (Miller & Kerr, 2002). Student athletes not only achieve success on the field, but also learn life lessons including teamwork, discipline, resilience, perseverance, how to play by the rules, and how to accept unfavorable outcomes (Emerson et al., 2009). The tangible benefits, CGPA, and intangible benefits, life skills, athletes earn from involvement are innumerable, and only become more valuable as athletes mature in both athletic and academic venues (Emerson et al., 2009). Athletes possessing only the most exceptional skill are selected to play on the NCAA Division I Level, yet on-field talents do not always translate to academic prowess (Jolly, 2008). Varsity team membership allows academically disadvantaged athletes to succeed in the classroom through gains in course knowledge from peers, campus experience from senior team leaders, and advanced tutoring from academic support services (Umbach et al., 2006).

### **Recreational Sports and Academics**

Participation in sports provides many benefits to students including skill mastery, increases in self-esteem, and actualization of abilities (Schumaker, Small, & Wood, 1986). Recreational sports create the perfect avenue for non-cognitive benefits, as the extrinsic motivation of competition, meets the intrinsic need to live a healthy lifestyle (Blumenthal, 2009). Campus recreation facilities provide a social gathering place for students to congregate, seeking the common goals of belonging, sense of community, and trust (Miller, 2011). Multiple studies link campus recreation to gains in college student recruitment, retention, and overall college experience satisfaction (Astin, 1975; Belch et al., 2001; Bryant et al., 1995; Hall, 2006). Pace (1990, p. 147) concluded, “Extra-curricular activities are a very important part of higher education and contribute to

the intellectual skills of college students.” Every program recreation centers offer creates experiential learning, complimenting in-class lessons for thousands of participants each day (Miller, 2011).

The first-year experience of college students is crucial to academic success, as more than 50% of attrition at four-year universities results from students leaving during freshman year (Tinto, 1993). Studies espouse first-year CGPA as the single most important predictor of future academic success, linked to both degree attainment and retention (Huesman, Brown, Kellogg, Lee, & Radcliffe, 2007). The recreation center experience is critical during the first year of college, as high users of recreation centers earn CGPAs 0.2 points higher than non-user peers (Todd et al., 2009). Huesman et al. (2007) reported similar results, indicating freshman recreation center users having CGPAs 0.11 points higher than non-user peers. Additionally Belch et al. (2001) demonstrated first semester users of recreation centers not only have higher CGPAs, but also higher rates of persistence than non-user peers. The ability of recreation centers to influence the first-year student experience, and contribute to college satisfaction, provides justification for the \$3 billion invested in new recreation facilities from 2006-2011(NIRSA, 2008). Surveys linking student usage rates at some institutions to as high as 95%, are an indication recreation programs are popular on-campus activities, and a source for extracurricular growth (Bryant et al., 1995).

Value-added benefits to the college experience are a significant indicator of a program’s worth on campus (Tinto, 1988). The student fees paid by students outside of tuition support 75% of recreation center budgets, and are often scrutinized for the burden put on students already paying high tuition rates (Taylor et al., 2003). The intangible

benefits of recreation abound: Large percentages of student users report gains in well-being, overall health, fitness level, physical strength, stress management, weight control, self-confidence, time management skills, social interaction, leadership skills, and self-actualization (Haderlie, 1987; NIRSA & NASPA, 2010). Ragheb and Mckinney (1993) observed increased participation in recreational programs decreases perceived academic stress. Self-efficacy, locus of control, and coping strategies are key influences on the academic and social integration of college students (Bean & Eaton, 2002). Recreation programs contribute to the well-being and growth of the whole student, not only the academic portion developed through course work (Snodgrass & Tinsley, 1990). Artinger et al. (2006) reported significant gains for students in the areas of social bonding and community development after using recreation programs. In a Henchy (2011, p. 179) study, 81% of respondents selected “use of university recreation centers made them feel more ‘at home’ while attending school”. This result is especially significant as Tinto’s (1988) model of college transition states the third stage, incorporation, involves students becoming as fully engaged on-campus as in previous lives.

Experiential learning is defined as: “The learning that occurs in a particular person as a result of changes in that person’s judgments, feelings, knowledge and skills” (Todaro, 1993, p. 23). Ullah & Wilson (2007) concluded students actively involved in learning, through extracurricular experiences, have increased probabilities of positive academic achievement. The experiences provided by campus recreation programs have the potential to substantially impact the overall development of students (Todaro, 1993). Facilitating positive experiences is a major goal of all campus recreation programs, pairing an emphasis on participant’s social and intellectual interactions to overall

wellness (Bourgeois et al., 1995; Kanters & Forrester, 1997). The learning students encounter in experiential recreation programs is not only used in the classroom, but also in the workforce, as leadership skills transfer to the business world (NIRSA & NASPA, 2010). Academic success and persistence are essential outcomes for the experiential learning offered through recreational programs (Bryant et al., 1995). Increased involvement levels in experiential learning create additional student development opportunities and positive correlations to graduation (Astin, 1975, 1977, 1993; Tinto, 1975, 1988).

Recreational programs add numerous benefits to the college experience, including the social engagement so valuable to student success initiatives (Astin, 1993). Recreation center users are more likely to feel at home on a campus, and are more likely to make friends outside of residence halls (Watson, Ayers, Zizzi, Naoi, 2006). Freshman and junior campus recreation employees have significantly higher CGPAs than non-employee peers (Hackett, 2007). This is partially related to weekly engagement in programming created to provide experiential learning to recreation participants (Astin, 1984; Hackett, 2007). Student engagement leads to institutional satisfaction, a key determinant of CGPA for students at all levels (Bean & Bradley, 1986). College choice satisfaction is no more evident than in the most involved recreation participants, sport club members (Brandenburgh & Carr, 2002). Collegiate sport club members rank as the most satisfied campus group, possessing the most powerful social bonds (Brandenburgh & Carr, 2002). College satisfaction is key determinant of engagement, and is only furthered by participation in recreational programs promoting the physical, emotional, and social wellness of university students nationwide (Mull, Bayless, Ross, & Jamieson, 1997).

A significant factor in creating engagement, and consequent academic success, is the feeling of community on campus (Dalgarn, 2001). Varsity athletics create community through common mascots, mass gatherings at sporting events, and visual identities for universities (Holbrook, 2004). Campus Recreation programs create community through an innate ability to bring students together in a fun and exciting atmosphere, promoting positive social interactions in healthy forums (Dalgarn, 2001). Recreational sports facilities are more than places to exercise, but also venues for education, development of self-esteem, enhancing relationships and community engagement (Dalgarn, 2001). College students face a difficult transition after high school, and success in this transition is only obtained through separation from former lives, and integration into post-secondary institutions (Tinto, 1988). Integration is achieved primarily through social interaction often present during recreation programs (Dalgarn, 2001; Tinto, 1988). The social groups students form at recreation centers provide a great deal of influence on academic success, and help to build life-long friendships (Astin, 1993).

Mallinckrodt and Sedlacek (2009) reported student users of non-academic facilities ranked recreation centers as the second most popular campus destination behind campus dining halls. A Snodgrass and Tinsely (1990) study reported 56% of students rank the recreation center, at California Polytechnic University San Luis Obispo, as important to academic success as a residence hall. A 1995 study indicated students at a mid-western university were 20% more likely to participate in a recreation program than in any other campus activity (Bryant et al., 1995). The same study concluded, “recreation may constitute the single most important college student experience, other than required

freshmen courses” (Bryant et al., 1995, p. 159). Student use of campus recreation centers is the most communal of all college experiences, providing the best avenue to create lasting friendships and campus community bonds (Bryant et al., 1995).

Although the academic success of collegiate recreation participants correlates to use of recreation programs, there are scholars espousing little relationship between the two variables (Watson, 2005). Watson (2005) and Huesman et al. (2007) observed no significant difference in CGPA between users and non-users of campus recreation facilities. A 1974 study of college students in western Pennsylvania reported no relationship between number of extracurricular activity hours and CGPA (Call, 1974). Non-users of recreation centers enter college having higher HSGPAs and standardized test scores, two of the most important predictors of academic success in college (Astin, 1999; Belch et al., 2001; DeBerard et al., 2004). Despite the availability of recreation centers, more than 50% of students at NIRSA member institutions fail to utilize the programs offered each year (NIRSA, 2002). The main detractions for non-users appear to be lack of time, crowded facilities, lack of interest, and inconvenient campus locations (Lankford, Rice, Chai, & Hisaka, 1993). In 2000 only 27.4% of adults, 18 and over, participated in the recommended daily physical activity set by the Centers for Disease Control (CDC, 2003). Recreation programmers must realize not every student will want to participate in programs for varying reasons, but offering diverse activities creates options for all.

Students gravitate to any activity allowing for a release from the stressors of coursework, and longings for home (Tinto, 1988). Recreational activities, including intramural sports, provide an opportunity for students to engage socially outside of a

residence hall, and establish a sense of belonging to campus (Dalgarn, 2001). Students engaged on campus are more likely to succeed academically, fulfilling an intrinsic desire to remain enrolled for the greater good of campus membership (Astin 1993). A student valuing group membership, especially created on an athletic field, is more likely to place advanced effort into academic ventures meeting expectations for oneself and social group (Astin, 1993). Sport teams are unique entities on college campuses, valued not only by athletes, but also by administrators viewing the intellectual rewards teamwork affords to thousands of students every day (Holbook, 2004).

### **Sport Involvement and Retention**

Academic retention at universities is the only way to ensure financial stability, outside of private donations (Astin, 1997). As student attrition rates rise, tuition coffers dwindle, faculty and staff positions disappear, and the university, as it was once known, does not exist (Astin, 1997). The successful retention of students offers at least three benefits to the university: Students will reap the rewards a college degree affords, the college or university will be able to maintain income derived from student attendance, and society utilizes the skills of increased student productivity (Tierney, 1992).

Persistence at a university is more a factor of what students do while enrolled, than prior to admission (Pascarella & Terenzini, 2005). Varsity athletes are some of the most active and involved university community members, and often graduate at rates better than the general student population (Holbrook, 2004). Recreation participants are 2% more likely to graduate in five years than peers, and are 1% more likely to remain enrolled after freshman year (Huesman et al, 2007). Extracurricular clubs and activities drive student involvement at universities and, as many researchers present, involvement leads to

educational satisfaction and degree attainment (Astin, 1975, 1977, 1999; Belch et al., 2001; Bryant et al., 1995; Hall, 2006; Light, 1990; Mallinckrodt & Sedlacek, 1987; Pascarella & Terenzini, 2005; Tinto, 1975, 1988).

### **Varsity Athletics and Academic Retention**

Student athletes practice upwards of four hours each day, attend 15 hours of class per week, and complete 25 hours of study hall each month (Jolly, 2008). Athletes are expected to earn a CGPA of 2.0 each semester to remain academically eligible, and must complete pre-determined quantities of credit hours by the end of each academic year (Jolly, 2008). The stress of academics, practices, games, and the adjustment to a new college community, is frustrating for many student-athletes, inducing bouts of anxiety and longings for home (Young & Sowa, 1992). Despite all of the impediments to academic success, NCAA athlete graduation rates were 3% higher than the general student population from 1996 to 2002 (NCAA, 2003). This is partially a result of the intensive community created by athletes, and the personalized academic support athletes receive through NCAA mandated student athlete academic support services at all Division I schools (Gayles & Hu, 2009).

Varsity athletes, both in-season and out-of-season, have largely regulated schedules set by coaches including practice, conditioning, classes and study hall (Melendez, 2007). Many players spend as much time out-of-season preparing for sports, as in-season (Wolverton, 2007). This rigid scheduling prohibits athletes from entering into some of the most common situations negatively affecting retention (Melendez, 2007). Three elements significantly influencing the voluntary departure decision for the



traditional college student do not pertain to college athletes including: Living on campus, restriction to campus on weekends, and priority course selection (McGrath & Braunstein, 1997; Tinto, 1975). Rescheduling examinations and completing missed assignments due to sports travel are often difficult, yet many athletes learn to seek help from classmates and faculty (Jolly, 2008). Jaasma & Koper (1999) observed informal interactions between faculty and athletes help bolster student confidence and success. Faculty-student relationships alleviate the fears of athletes being labeled “dumb jocks”, and enhance feelings of confidence in the classroom (Emerson et al., 2009). Despite all the factors limiting academic success, nearly 90% of athletes, starting college in 1994, graduated by 2006 (Wolverton, 2007).

Tinto (1988) outlined three stages of transition students must pass through in order to assimilate to the campus community; separation from previous community, transition to current community, and incorporation to campus. Freshman athletes entering college are thrust into a self-contained sports community, needing senior teammate’s assistance in navigation of complex campus dynamics (Miller & Kerr, 2002). Athletes cleave to a new social order, making friends, and learning the intricacies of campus, all while developing self-confidence in the new environment (Miller & Kerr, 2002). Athletes experience progression in school easier than peers due to involvement in the social and academic structure of the university (Umbach et al., 2006). Varsity athletes are the student group engaged more than any other, required to be on campus, attend extracurricular events, and serve as ambassadors to the school (Brandenburg & Carr, 2002). After graduation athletes are full-functioning alumni, and proud members of the graduating class (Brandenburg, & Carr, 2002).

There is a distinction made in the literature between the academic persistence of male and female athletes (Ullah & Wilson, 2007). Male athletes, especially African-Americans, define themselves as autonomous members of the team, more likely to pursue athletic excellence at the expense of classroom success (Braddock, 1980; Ullah & Wilson, 2007). Women tend to focus more on academic pursuits at the expense of athletic excellence, due to lack of professional sport opportunities (Simons et al., 1999). Male athletes in revenue producing sports have lower academic motivation, lower levels of career maturity, and less clarity in educational plans, than non-revenue athletes (Blann, 1985; Simons et al., 1999). On the opposite side, female athletes show higher levels of academic motivation, career maturity, and graduation rates, than both male athletes and female peers (NCAA, 2003). Female athletes, as a group, are more engrained in team community, and are socialized more along collectivist values than men (Melendez, 2007).

At best, athletic programs contribute to school spirit, help build community, and provide valuable learning opportunities (Emerson et al., 2009). The communities athletes join, while fully integrated into campus life, are especially important to success (Tinto, 1988). African-American athletes are the most successful when tied into the surrounding black community, and are more likely to remain at a school if transition to college is eased by students and community members experiencing similar transitions (Young & Sowa, 1992). African-American athletes need help understanding racism, help navigating the college community, and the social support system readily apparent on largely diverse campuses (Young & Sowa, 1992). African-American athletes, on average, receive less family support for college education than Caucasian teammates, making involvement in the community more important (Elkins et al., 2000). Tinto (1988)

concluded, freshmen athletes are the most susceptible to attrition, but are the most receptive to new communities, and relieve the stress of transition through social networks. Outside of freshman programs, athletics and recreation create the single greatest college bond between students, an effective conduit for classroom success and retention (Artinger et al., 2006).

The experiential learning athletes obtain through on-field actions is similar to the learning non-athletes experience in laboratories and concert halls (Holbrook, 2004). Athletes gain numerous intangible benefits in the areas of leadership and decision-making, translating to academic success, and subsequent desire to remain enrolled (Ullah & Wilson, 2007). Active involvement in the decision-making process on the field creates “buy-in” from athletes, allowing for team and community engagement (Marchese, 1969; Ullah & Wilson, 2007). Students involved in organizations, including athletic teams, show higher levels of academic effort, involvement in other organizations, and increased levels of student interaction (Pike & Askew, 1990). Team sports help students achieve group-oriented goals, increase levels of group cohesion, and improve group decision-making and problem solving, all skills transferable to both the classroom and workforce (Todaro, 1993). Haines and Fortman (2008, p. 55) concluded, “the entire college landscape is a learning environment” from the classroom, to a residence hall room, to the athletic fields, and back to the dining hall. Tinto (1993) summarized the college experience by stating the more learning occurs outside the classroom the more likely a student is to graduate.

As many benefits as varsity athletics offer to students, there are scholars touting the detriments of athletics to the academic mission (Milem & Berger, 1997). Bowen and

Levin (2003) indicated athletes attending highly selective schools failed to qualitatively engage in the same beneficial ways as non-athlete classmates. Multiple studies by the NCAA show a negative correlation between missed classes, resulting from sports travel, and CGPA (Gump, 2005). Baseball, one of the most traveled sports in the NCAA, often takes students away from campus as many as three days per week in-season, forcing some athletes to miss class lectures, exams and assignments (Wolverton, 2007). Scholarship athletes 1990-2000, graduated at a rate of 57.7% compared to 58.8% for the traditional student population (Ferris et al., 2004). Multiple studies indicate the most significant predictors of retention are entrance exam score, SAT or ACT, and HSGPA, two factors commonly lacking for revenue athletes (Allen et al., 2008; Allen & Robbins, 2006; Astin, Korn & Green, 1987; Astin, 1993; Beecher & Fischer, 1999; Daugherty & Lane, 1999; DeBerard et al., 2004; Kirby et al., 2007; Schauer et al., 2011; Ullah & Wilson, 2007).

Maloney and McCormick (1992) studied a group of revenue athletes at five colleges in NCAA Division I and indicated basketball and football athletes graduated at a rate 10% lower than the general student body, had high school ranks 20 percent lower than classmates, and SAT scores averaging 150 points lower than peers. The predisposed disadvantage many athletes experience when entering college makes participation in sports even more valuable. Learning academic skills from team leaders, and the extra tutoring afforded varsity athletes, ensure this at-risk group success in the face of tremendous propensity for college attrition.

## **Recreation and Retention**

In the collegiate recreation field it is estimated for every varsity athlete, there are four non-varsity college students participating in recreational activities (Blumenthal, 2009). The sheer number of participants attracted to collegiate recreation centers is astronomical; some scholars estimate as much as 95% of the student population uses recreational programs at universities (Bryant et al., 1995). Research conducted by NIRSA (2002) indicated participation in campus recreational activities shows a number of positive outcomes, correlating to scholastic achievement, persistence to graduation, and college experience satisfaction. Bryant et al. (1995) reported 30% of students, at six colleges, selected campus recreation facilities as important in the decision to attend, and persist, at an institution. Freshman students using student recreation centers are more likely to persist to sophomore year, and earn higher CGPAs, than non-user peers (Belch et al., 2001; Huesman et al., 2007). Recreation programs facilitate learning opportunities, increasing the satisfaction and engagement for millions of college students each year (Blumenthal, 2009).

Participation in recreational sports is a key determinant of college satisfaction, success, recruitment, and retention (Blumenthal, 2009). The 2009 National Survey of Student Engagement observed, 60% of college students exercised or participated in physical activities often, or very often, during the academic year (Kampf, 2010). Intramural sport contests are a source of pleasure and satisfaction, introducing balance into college students' lives (Emerson et al., 2009). Astin's (1993) study established a positive relationship between intramural sports participation, educational satisfaction, and degree attainment. Persistence is related to feelings of community, apparent in intramural

and club sport teams, especially social interaction, meeting friends, and finding study partners (Belch et al., 2001; Wade, 1991). Huesman et al. (2007) reported a positive association between recreational facility use, first-year student retention, and five-year graduation. Churchill and Iwai (1981) indicated students having low CGPAs are more likely to persist after using recreation centers, than peers possessing similar grades failing to utilize recreation services. Recreation centers are no longer places for students to only exercise, but learning annexes, used to supplement and complete a student's classroom experience (Huesman et al., 2007).

Astin (1993) asserted the amount of learning and personal development taking place in college is directly proportional to the quality and quantity of involvement in extracurricular activities. A decade of research shows physically active recreation relieves stress, enhances creativity, and reenergizes the body and mind (Fontaine, 2000). Longevity of participation, especially in organized recreational activities, including club sports, increases levels of sport enjoyment and stress reduction (Brandenburgh & Carr, 2002). Students using recreation programs seek to promote social, emotional and physical wellness through participation (Snodgrass & Tinsley, 1990). Watson et al. (2006) reported users of student recreation centers have increased desires to make positive changes including exercise, diet, and psychological wellness. A popular stress reduction mechanism, intramural sports, is shown to play an important role in helping students balance, and improve quality of life (Iso-Ahola, LaVerde, & Graefe, 1989). Alleviating the anxiety created through difficult course loads is essential for the success of any college student, and only enhances the opportunity for degree attainment (Tinto, 1988).

Recreation centers provide a place for students to connect, socialize, increase healthy lifestyles and faculty interactions, and gain numerous other intangible benefits (Belch et al., 2001; Dalgarn, 2001; Miller, 2011). Students frequenting recreation programs are more likely to attend classes, experience place and social bonding to the university, and integrate into the university community (Miller, 2011). Recreation programs develop students both physically through exercise, and holistically through experiential wellness education (Mull et al., 1997). Haines (2003) indicated 96.4% of students experienced substantial gains in self-confidence, and 89.4% experienced gains in respect for others through recreational program participation. The educational impact of a college's faculty is enhanced when student contact extends beyond the formal classroom, to informal non-classroom settings, including recreation facilities and intramural sports programs (Pascarella & Smart, 1991). The student-to-student interaction at recreation centers allows for gains in leadership development, academic development, and growth in problem-solving skills, critical-thinking skills, and cultural awareness (Astin, 1993). The amount of involvement experienced through recreation creates an intentional community engaging thousands of students each and every day (Astin, 1975, 1993; Dalgarn, 2001; Miller, 2011; Tinto, 1975, 1988).

Erwin (1989) suggested moral development, establishing autonomy, satisfying interpersonal relationships, and appreciating cultural diversity, are goals every institution should aspire to promote. Student opportunities in recreational programming contribute to institutional goals through various learning outcomes, and intentional manipulation of surrounding circumstances (Bryant et al., 1995). Intramural sports provide a less competitive atmosphere for students to learn the value of interpersonal diversion and

control, positive interpersonal development, and interpersonal competence (Coleman & Iso-Ahola, 1993; Kanters & Forester, 1997). A majority of students, in a 2010 study, indicated skills learned through recreational programs contributed to post-college careers (NIRSA & NASPA, 2010). African-American students using recreation centers have easier adjustment periods to predominately Caucasian campuses, are more likely to succeed academically, and persist to graduation, than African-American non-users (Mallinckrodt & Sedlacek, 2009). Henchy (2011) reported 96% of students thought recreation programs positively contributed to development and increased satisfaction at the university.

Recreational programs, facilities, and services contribute to the academic mission, increase recruitment, retention, and integrate students into the campus community (Kovac & Beck, 1997). The increased value of recreation as a recruiting, retention, and student satisfaction tool recently emerged at the forefront of college master plans (Lindsey & Sessoms, 2006). On most campuses collegiate recreation facilities are among the places where relatively large numbers of students congregate to socialize, and meet new friends (Huesman, et al., 2009). Students removed from the social fabric of the community are more likely to leave college than students actively engaged in social groups, especially recreational sports participants (Swail et al., 2003). The most campus-centered institutions focus on community building, and have the highest average standardized test scores and retention rates (Haderlie, 1987). The positive effects of participation in recreational programs are consistently identified as increasing college choice satisfaction and persistence (Bryant et al., 1995).



The broad appeal of recreation is a key decision-making factor for potential students, as nearly 90% in an Ohio State University study indicated recreation was the second most powerful draw to the university, after academic programs (Haderlie, 1987). Lindsey & Sessoms (2006) indicated students report the availability of recreational sports facilities impacting both the decision to attend a school and remain enrolled. A 2000 study reported 50% of high school seniors indicate intramural sports programs as an important determinant in college choice (Kampf, 2010). Hesel (2000) revealed opportunities to participate in intramural programs are of significantly greater value to prospective students, than top ranked athletic teams at the NCAA Division I level. Minority students are more likely to have recreational facilities play a role in the decision to attend a school, than majority students (Bradley, Phillipi, & Bryant, 1992). Construction of new recreation centers at three schools increased enrollment, while at three comparable schools, not having new recreation centers, enrollment remained flat (Kampf, 2010). Lindsey and Sessoms (2006) reported 31% of high school juniors and seniors chose a university for recreational programming, and 37.3% persisted in college as a result of recreation participation. Academic recruitment is a complex problem, helped by diverse recreational programming, and a strong commitment to the socialization provided by centralized facilities (Haderlie, 1987)

Donlin (1985, p. 2) describes satisfaction from sports as, “The positive perceptions of feelings which an individual forms from engaging in an activity. The affective response results from the satisfaction of felt, or unfelt, needs of the individual.” Involvement in college student organizations, such as intramural sports teams, is a source of increased personal satisfaction (Abrahamowicz, 1988). Bryant et al. (1995) linked

campus involvement satisfaction to college choice agreement, and likelihood of persistence. Students involved in extracurricular activities experience more college choice satisfaction, a higher propensity to succeed in the classroom, and are more likely to graduate (Garland, 1985; Light, 1990). The two most powerful predictors of educational satisfaction are faculty relationships and participation in campus recreation programs (Smith & Thomas, 1989). Recreation center users are more likely to indicate return to the same institution, if restarting college, than students not using recreation facilities (NIRSA & NASPA, 2010).

Students using campus recreation centers are more likely to persist than non-users (Churchill & Awai, 1981; Endo & Bittner, 1985; Mallinckrodt & Sedlacek, 1987; Ryan 1990). The primary reasons students leave colleges are lack of fit, inadequate social opportunities and poor grades, all of which are reduced through use of student recreation programming (Bryant et al., 1995). Users of recreation centers are more likely to be younger students, live on campus, not smoke, and be former high school athletes (Watson et al, 2006). A majority of African-American students indicated the recreation center was very important to the decision to persist toward degree attainment (Lindsey, Sessoms & Willis, 2009). Intramural participants are more likely to demonstrate a sense of belonging to the campus community, have more peer interaction, increased emotional health, and increased leadership potential (Moffitt, 2010). Students feeling a sense of belonging are more likely to become involved in other university activities, and are more likely to remain a degree-seeking student (Astin 1975, 1977, 1993; Miller, 2011; Tinto, 1975, 1988, 1993)

Gender is the great divider in athletics, and since the enactment of Title IX, a catalyst for an explosion in recreational programs (Blumenthal, 2009). Most college campuses provide diverse programming for women including intramural sports, informal recreation, club sports, and aerobic fitness classes (Young, Ross, Barcelona, 2003). Female students, as compared to male students, participating in recreation or athletic programs, encounter more socialization and belonging, increasing the likelihood of degree attainment (Adler & Adler, 1987). Ullah and Wilson (2007) demonstrated college women's social relationships positively influence CGPA and persistence, compared to the opposite effect for men. Men are more competitively driven, while women are more socially driven; resulting in large participation disparities in recreational activities; men participate at rates 20% higher than women (Bialesechki, 1988). Women using recreational programs are likely to see gains in intrinsic motivation, skill development, self-esteem, body image, psychological wellness and social belonging (Turman & Hendel, 2004). The enactment of Title IX provided new opportunities for female athletes to participate in more than just aerobics programs, but in every conceivable athletic endeavor, from the male-dominated basketball gyms, to cavernous football stadiums seating thousands of fans (NCAA, 2003).

Recreation centers are not the miracle solution to the college retention problem, as many students have no interest in recreational activities (Blumenthal, 2009). A majority of Americans, age 18 and over, do not get the recommended 30 minutes of physical activity each day (CDC, 2003). Frauman (2005) reported students participating in campus recreation activities are quite similar across academic success, retention, and graduation variables to non-users. Users are largely the younger segment of the college

population, 18-22, and are significantly more likely to reside on-campus, rather than identify as commuters (Frauman, 2005; NIRSA & NASPA, 2010; Turman & Hendel, 2004). Turman and Hendel (2004) studied two institutions having new, comprehensive, indoor recreation facilities, and observed neither facility saw a substantial increase in participation over a five-year period. A Bean and Bradley (1986) study established the best predictor of college satisfaction for men was not recreation, but faculty relationships in academic programs, while women chose institutional fit as the best college satisfaction predictor.

Today's college students demand quality programs, in cutting-edge facilities (Kampf, 2010). A nationwide study by Downs (2003) indicated 50% of colleges and universities built or renovated recreation facilities during the past decade. New recreation centers create higher levels of student satisfaction on campus, but do not indicate higher levels of involvement or perceived benefits (Turman & Hendel, 2004). Campus recreation facilities are not only havens for fun and excitement, but fully-functioning learning centers, supplementing the education of students, and completing the full college experience (Blumenthal, 2009). Recreational sports continue to receive increased attention on college campuses across the U.S., as issues of recruitment, retention, and student satisfaction emerge as institutional priorities (Lindsey & Sessoms, 2006). Attracting new students to lavish new recreational buildings and promises of stellar programming is only half the battle. Providing an educational experience to supplement classroom education is essential to ensure college students stay engaged and retained through graduation.

National six-year graduation rates fluctuate between 55% and 60% on an annual basis (NCES, 2011). The tendency of students to vacate college campuses after freshmen year, due to lack of engagement and longings for home continues to rise (Education Trust, 2004). Varsity athletes, and recreational, participants enjoy a social camaraderie based on common interests and competitive drive (Wankel & Berger, 1990). The sense of belonging, self-worth, and campus knowledge shared by teammates is invaluable to the success of athletic participants, and is a driving factor for continued collegiate sports participation (Kanters & Forrester 1997; Moffit, 2010). Varsity athletic and recreation programs provide valuable experiential learning opportunities for students, supplementing in-class activities, and create a set of life-skills seldom learned inside academic halls (Astin, 1993). The innate ability to unite a campus around a common goal is a powerful indicator of the value sports have to the belonging, and subsequent persistence, of college students.

### **Chapter Summary**

Students experiencing high levels of campus involvement report increased levels of campus satisfaction and classroom success, and are more likely to persist to graduation (Astin, 1975, 1993; Tinto, 1975, 1988). The most reliable pre-college predictors of academic success, HSGPA and standardized test scores, indicate general academic abilities applicable to post-secondary coursework (Beecher & Fischer 1999). Student-athletes on the varsity and intramural levels are invested in the social fabric of college campuses, and subsequently are more likely to remain enrolled and succeed academically (Astin, 1993; Huesman et al., 2007; Miller, 2011; Umbach et al., 2006). Although some athletes enter college at academic disadvantages, athletes are 2% more likely than the

general population, to graduate from college in six years (NCAA, 2003; Young & Sowa, 1992). Recreational program use positively associates to higher freshman year CGPA, and is linked to increased feelings of campus inclusion (Dalgarn, 2001; Todd et al., 2009). Involvement in college is essential to student success, and should be encouraged through quality programming geared towards the interests of all students (Astin, 1993).

Chapter 2 provided a summary of relevant literature pertaining to participation in collegiate varsity and recreational sports. Various study results from scholarly research allowed the researcher to ascertain a cogent methodological process to study the various predisposing variable's in relationship to student success and persistence. Chapter three describes the quantitative methodology developed to answer the six research questions and evaluate the research hypotheses.

## CHAPTER 3

### METHODOLOGY

#### **Introduction**

Chapter three outlines the methodological process used to explore the correlation between collegiate athletic and recreational sports involvement and student success, among students attending the research institution. Chapter 3 includes information on hypotheses developed by the researcher, research design, variables, data collection, population, sample, and study limitations.

#### **Study Design**

Stratified random sampling was conducted, dividing the 3,998 eligible freshmen students into two groups, varsity athletes and non-varsity athletes. Cumulative CGPA, total credits earned, and college major were determined for each participant from university grade reports. For the purposes of this study, any participant obtaining more than 80 credits was considered persisting to graduation, due to the four-year limit on data collection. The U.S. Department of Education utilizes a six-year graduation rate as the standard for student persistence allowing for 12 semesters to complete the required number of credits necessary for an undergraduate degree (National Center for Education Statistics, 2013). A student must average a minimum of ten credits per semester, for 12 semesters to reach a total of 120 undergraduate academic credits and degree completion. Data for ACT score, SES and gender were determined from the participant's admissions application, while college was determined from participants selected major as indicated

with the University Registrar's Office. The 619 subjects were quantified by hours of involvement using participation records from varsity athletics and intramural sports. Total involvement hours were calculated for each participant, and placed into an SPSS® spreadsheet for multiple regression analysis.

A correlational design, utilizing descriptive, one-way analysis of variance, linear regression, multiple regression and stepwise regression analyses, was used to determine the relationship between collegiate athletic and recreational sports involvement, and student success, while controlling for pre-disposing factors related to demographics, pre-college academic success and chosen major. Correlational designs are useful in identifying variables predicting a desired outcome or result (Downing & Clark, 2009). Descriptive data including means, standard deviations, frequencies, ranges and modes, were displayed in both table and in-text formats.

Descriptive analysis was used to ascertain mean data and frequency results for the independent (predictor) variables and the dependent (criterion) variables. The analysis included means by sample group, crosstabs and frequencies. One-way analysis of variance was used to compare mean CGPA and credits hours between the three study groups. Linear regression analysis is best used to test the predictive capacity of one independent variable on one dependent variable (Downing & Clark, 2009). Two research questions and hypotheses utilized linear regression analysis to determine the predictive capacity of involvement hours on CGPA and credits earned.

Multiple regression analysis is the appropriate statistical test to use in studies involving two or more independent variables, and one dependent variable (Downing &



Clark, 2009). This study meets the requirements for multiple regression analysis utilizing two separate criterion variables: CGPA and credits earned, and multiple predictor variables: Level of collegiate athletic involvement, intramural, varsity or none; gender; ethnicity; SES, parent or guardian's education level and annual income; ACT score; and college major. Two separate multiple regression analyses were conducted to determine if the predictor variables correlate to the criterion variables. Stepwise regression analysis was used to explore the predictor variables relationship to the criterion variables and construct a model. "Stepwise regression is a model-building rather than a model-testing procedure. As an exploratory technique, it may be useful for such purpose as eliminating variables that are clearly superfluous in order to tighten up future research" (Tabachnick & Fidell, 2001, p.144). Stepwise regression was not used to determine predictability, but to construct an accurate regression model.

### **Research Questions and Hypotheses**

1. Which study group, varsity athletes, intramural participants, or non-participants earned the highest CGPA?
2. Which study group, varsity athletes, intramural participants, or non-participants compiled the most credits earned?
3. What is the relationship, if any, between total involvement hours and CGPA?
4. What is the relationship, if any, between total involvement hours and persistence?
5. What are the relative contributions, if any, of ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to college GPA?
6. What are the relative contributions, if any, of ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to persistence to degree completion?

*Hypothesis 1. The groups with the highest level of involvement, varsity athletes and intramural participants, will have the highest mean CGPA.*

*Hypothesis 2. The groups with the highest level of involvement, varsity athletes and intramural participants, will compile the most credits earned.*

*Hypothesis 3. Total involvement hours will have a significant predictive relationship to CGPA.*

*Hypothesis 4. Total involvement hours will have a significant predictive relationship to credits earned.*

*Hypothesis 5. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have a significant predictive relationship to CGPA.*

*Hypothesis 6. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have a significant predictive relationship to persistence to degree completion.*

### **Population and Sampling**

The population of interest for the study sample included all freshman students taking classes on the main campus of the research institution during the fall 2009 semester. Students enrolled in online degree programs, and at regional campuses, were purposely excluded from the sample due to a disproportionate inability for participation in athletics on the varsity and intramural levels. Sport and recreation are largely place-bound activities on college campuses, and are somewhat restricted to students visiting campus at least once per week for classes (Blumenthal, 2009). At the research institution

there were 3,998 freshmen students enrolled in at least one class on the main campus in fall 2009 (Miller et al., 2012). 92 were members of a varsity athletics team (Department of Athletics, 2012), and 1,760 participated in some type of intramural sport (Corack, 2010).

In total, 3,998 students were classified as freshmen students, less than 30 academic credits completed, in fall 2009 on the main campus. Utilizing stratified random sampling technique the total population of 3,998 was divided into two strata, non-varsity athletes ( $N = 3,906$ ) and varsity athletes ( $N = 92$ ). A simple random sample of the 3,906 freshmen students enrolled on the research institution's main campus in fall 2009 included at minimum 550 students (Watson, 2001). The random sample of non-varsity athletes ( $n = 550$ ) yielded two subgroups: Intramural participants ( $n = 172$ ) and non-participants ( $n = 378$ ). Twenty-three participants were dropped from non-participant sample as they failed to attend any classes at the university. The small number ( $n = 92$ ) of varsity athletes allowed for a complete data analysis of all group members. The three groups are described in Table 3.1 below.

**Table 3.1.**

*Sampling Groups*

Group Name	N	Men (%)	Women (%)
Varsity Athletes	92	64 (69.6)	28 (30.4)
Intramural Participants	172	105 (61)	67 (39)

**Table 3.1. (continued)**

Group Name	N	Men (%)	Women (%)
Non-Participants	355	132 (37.2)	223 (62.8)
Total	619	301(48.6)	318 (51.4)

*Note. N=619.*

## Variables

### Independent

**Level of collegiate athletic involvement.** The number of hours a student dedicates to collegiate athletic endeavors outside of the classroom. Varsity sports equals 20 hours per week in-season, and eight hours per week out-of-season (NCAA, 2012); intramural sports equals one hour per week, per team, per sport; no sports involvement equals zero hours per week. The three levels of activity were utilized to determine the extremes of athletic involvement on campus from the most intense, varsity, to the least serious, non-participant. In the middle rests the casual participant, enjoying the camaraderie and social bonding experienced during intramural sports competition (Astin, 1993).

**American college test score (ACT).** The ACT is a standardized test distributed by American College Testing Incorporated, examining general knowledge for college applicants on a scale of 1-36, 36 representing a perfect score (ACT, 2013). The test is an admission's requirement for the research institution, and a minimum score of 18 is required for acceptance at the time of this study (Office of Admissions, 2013). The score

earned on the ACT is shown to predict 25% of the variance in college graduation, and is a significant predictor of success in the classroom (Beecher & Fischer, 1999; Wolfe & Johnson, 1995). The average ACT score for first time, full-time freshmen at the research institution in fall 2009 was 20.79 (C. Adkins personal communication, January 16, 2014).

**Socioeconomic status (SES).** Parent or guardian's highest level of education and total household income as reported on the student's FAFSA (Adler, 1994; Stawarski & Boesel, 1988). Seventy-Five percent of students at the research institution complete the form annually, allowing the researcher to include the information as a participant self-selected identifier (S. Park, personal communication, November 12, 2012).

Socioeconomic status is linked to classroom success by multiple researchers and is a significant predictor of college attendance and retention (Allen & Robbins, 2010; Choy, 2001; Eagle & Tinto, 2008). A majority of students in the sample population, 70%, reside in the state of Kentucky; a state ranking in the bottom ten nationally in median household income (DeNavas-Walt et al., 2012). Records for total household income indicating less than \$1,000 in one calendar year were removed from the data set, as they did not reflect at least a part-time minimum wage occupation.

**Ethnicity.** The participant's race, heritage, or parental place of birth as identified by institutional records. This variable is a predictor of academic success in college, as majority population students, mainly Caucasians, show a greater propensity for academic success and graduation (Bowen et al., 2009; Hale, 2001; King, 2006). Options for participants to self-select in 2009-2010 were: Race or ethnicity unknown, Black, Non-Hispanic only; American Indian or Alaskan Native, Non-Hispanic only; Asian, Non-Hispanic only; Hispanic or Latino, regardless of race; White, Non-Hispanic only; and

Nonresident Alien (Miller et al., 2012). It is important to note this identifier is self-selected by the participant at time of enrollment, and is not a required item for university admission.

**Gender.** For the purposes of this study, gender is linked to the biological sex, male or female, selected by the participant on institutional records at time of enrollment. No justification for gender as a societal construct was taken into account by the researcher, i.e. a biological male identifying and appearing as a female (Evans, Forney, Guido, Patton, & Renn, 2010). The NCAA identifies gender as the biological sex assigned to a person at birth, or the process of change, including a minimum of one year of hormone replacement therapy (Lawrence, 2011). A person in the process of gender reassignment is considered to be of biological gender until the time of sexual reassignment surgery (Evans et al., 2010). Although no significant research posits a distinct advantage of either gender in college success, female students do comprise a larger percentage of college attendees and graduates than men; 57.8% of all baccalaureate degrees were awarded to female students in 2010 (Astin, 2005; NCES, 2011).

**College major.** The college from which the student will graduate after completion of undergraduate requirements represents this variable. The research institution offered over 150 degree programs in five colleges, and University Programs in fall 2009 (Miller et al., 2012). Choice of major is important for college students, as interest-major congruence is essential for continued enrollment and academic success (Allen & Robbins, 2010). Students failing to choose a major prior to junior year are much more likely to drop out of school, due to lack of educational commitment, and disinterest in general studies (Leppel, 2001).

## **Dependent**

**College grade point average (CGPA).** The total points for letter grades earned, divided by the number of credits taken. College grade point average is calculated at the research institution on the following scale: A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0. Courses are given quality points based on the credits earned to create a weighted formula for CGPA. For example, an “A” earned in a one-credit course is worth one-third the value of an “A” earned in a three-credit course. College-level courses, excluding remedial courses, taken at the research institution, community college or secondary school, are included in the total weighted CGPA for study participants.

**Persistence to graduation (credits earned).** Number of academic credits completed from August 2009 to May 2013. Three credits equal one traditional three hour class meeting per week, for 16 weeks during the fall and spring semesters, or by special arrangement during the summer term. The number of credits earned, excluding remedial courses, at the institution, community college or secondary school, translates to the following year in college as listed by the University Registrar’s Office (2013): Freshman: 0-29; Sophomore: 30-59, Junior: 60-89, and Senior and Above: 90 and above.

## **Instrumentation**

This quantitative study exploring the predictor variables for college student success and persistence used archival data collected from admissions applications and grade reports (Department of Institutional Research, 2009-2013), FAFSA applications (Office of Student Financial Aid, 2009), varsity athletics team rosters (Department of

Athletics, 2013), and the intramural participant database (Department of Campus Recreation, 2009-2013). All data sources are collected by various departments throughout the research institution, and are required by the specific departments for students utilizing services. Undergraduate admissions applications are offered online by the research institution through a rolling admissions process (Office of Admissions, 2013). FAFSA applications are offered by the United States Department of Education beginning in January of each year for summer, fall and spring academic terms (Office of Student Financial Aid, 2013). Nearly 75% of the students attending the research institution complete FAFSA forms on an annual basis (Office of Student Financial Aid, 2013). Varsity Athletics compiles rosters for each team at various dates throughout the year based on NCAA and specific sport regulations (NCAA, 2012). The intramural sports department compiles a participation list for each sport through the use of online programming software distributed by Recreational Solutions and IMLeagues® (Corack, 2012).

### **Undergraduate Admissions Application**

The Office of Admissions at the research institution received 8,339 applications in fall 2009 (Miller et al., 2012). The matriculation rate for fall 2009 was 44.7%, as 2,564 students accepted full time enrollment from the 5,742 granted admission (Miller et al., 2012). The application is accessible online on the Office of Admissions website, and is perpetually available due to a rolling admissions policy (Office of Admissions, 2013). Questions on the application include demographics, education history, planned course of study, and questions about potential interests at the university (Office of Admissions, 2013). See Appendix C for a copy of the 2013 undergraduate admissions application.



## **Semester Grade Reports**

At the culmination of each semester student grade reports are compiled by the University Registrar and made available to academic advisors and other departments requiring aggregate grade data (Department of Institutional Research, 2013). Grade reports were used to determine the overall CGPA for participants, and the number of credits passed to the point of data collection.

## **Free Application for Federal Student Aid**

The Office of Student Financial Aid at the research institution processes over 12,000 applications each year for financial aid (Office of Student Financial Aid, 2013). The average award for a student is \$6,000, and almost 75% of students apply for scholarships, loans or grants each year (Miller et al., 2012; S. Park personal communication, November 12, 2012). Applications for financial aid are encouraged for all students, regardless of predicted qualification for federal student loans (S. Park, personal communication, November 12, 2012). FAFSA forms require students to indicate expected level of financial contribution to college costs, parent or guardian expected level of financial contribution to college costs, and other demographic factors contributing to the financial burden endured while attending college (U.S. Dept. of Education, 2012). For the purposes of this study, SES factors were compiled from FAFSA forms including parent or guardian's level of education and total household income.

## **Department of Athletics Team Rosters**

The Department of Athletics at the research institution is required by the NCAA to maintain current membership records for all varsity student athletes each semester (NCAA, 2012). The rosters are kept perpetually by the Athletics Compliance Officer to ensure eligibility for all athletes throughout the year (Department of Athletics, 2013). Rosters are available on the Department of Athletics website and in specific sport media guides (Department of Athletics, 2013).

## **Campus Recreation Intramural Sports Participant Database**

The research institution's Department of Campus Recreation utilized two tracking programs for intramural sports participation from 2009-2013 (Corack, 2012). From 2009-2011 the department used Recreational Solutions IMTrack® and IMOnline® software to register, schedule and manage all participations and games (Corack, 2012). In spring 2012, the intramural sports program switched to a new program, IMleagues® online scheduling and participant management software (Corack, 2012). Both programs allow administrators to view nightly participations, manage participants, and complete registration and scheduling online (CFM Enterprises, 2012; IMLeagues, 2012). Data from the two programs were compiled in a single searchable database, allowing access to specific student participation records during the research period.

## **Data Coding**

To perform a statistical analysis the researcher numerically coded various independent variables. The seven race/ethnicity categories were coded as follows: Race and ethnicity unknown = 0; White, non-Hispanic only = 1; Black non-Hispanic only = 2;

Hispanic or Latino regardless of race = 3; Asian, non-Hispanic only = 4; Alaskan native, non-Hispanic only = 5; Nonresident alien = 6. Gender was coded as 1 for male and 2 for female (M = 1, F = 2). Level of involvement was coded as 1 for non-participants, 2 for intramural participants, and 3 for varsity athletes (1 = NON, 2 = IM, 3 = VAR). Chosen major was coded by college into six groups: Undecided = 0; Justice and Safety = 1; Health Sciences = 2; Arts and Sciences = 3; Education = 4; Business and Technology = 5.

Socioeconomic status was measured by total reported income on the FAFSA, including parent or guardian income and student income, and the highest education obtained by the participant's parent or guardian. Any student record indicating a total family income of \$1,000 or less was excluded from the sample as these records did not indicate any member of the household working during the previous year. Total family income was measured to the nearest dollar, while parent or guardian's education was coded based on the highest completed grade or degree as follows: Other/Unknown = 0; Middle School/Junior High School = 1; High School = 2; College or Beyond = 3.

### **Limitations**

The limitations of this type of methodological process include the inability of the researcher to determine actual causation of student success. This type of research is only correlational, and does not provide a causal relationship between collegiate athletic experience and success in the classroom. There are non-cognitive variables, possibly affecting the success of college students, not measured in this particular study. This study's quantitative analysis only measured the correlation between hours of athletic involvement and student success, and makes no determinant as to the merits of other on-

campus involvement, additional study time, participants' personal life, or other mitigating factors. Although future studies may attribute to further reasoning behind student success, this study attempts to first determine if any correlation exists between an athlete's on-field activities and classroom success.

Limitations for the data set include the homogenous representation of Kentucky's population, and the time period for accessible data. Many participants are first-generation college students, having little support, or experience, guiding post-secondary academic careers (Miller et al., 2012). The participants in the data set represent a largely Caucasian population, living less than 100 miles from the institution's main campus (Miller et al., 2012). The lack of diversity at the institution, and the lack of college experience present in students' families, creates difficulty generalizing correlational results to the national college population. The six-year graduation rate at the research institution in spring 2012 was only 37.7%, a statistic setting the institution at a significant disadvantage to universities having more affluent populations (Miller et al., 2012). The state of Kentucky, from which the institution enrolls almost 70% of its students, is one of the ten poorest states in the U.S, predisposing many of the university's students for poor academic performance (Allen & Robbins, 2008, 2010; Denavas-Walt, Proctor & Smith, 2012; Eagle & Tinto, 2008; Miller et al., 2012). Intramural participation records only date to August 2009 due to a program change erasing all previous records (Corack, 2010). This limitation allows for a longitudinal analysis of all students with four possible years of degree completion. The national standard of six-year graduation (NCES, 2013) is impossible to assess with currently available data. This limitation was mitigated by quantifying all participants earning 80 credits or more as "on track" for graduation.

To further the generalizability of the study to the large American college population, results should apply to an average group of healthy college students. The state of Kentucky is currently ranked the third unhealthiest state in the nation by the U.S. Centers for Disease Control, (U.S. CDC) in terms of overweight individuals (U.S. CDC, 2003). The university draws from a population comprised of overweight and obese youth disinclined to participate in recreational activities (Miller et al., 2012; NIRSA, 2002; U.S. CDC, 2003). Compounding the obesity problem, Kentucky also harbors a population smoking at a rate 150% the national average (U.S. CDC, 2003). Kentucky adults, over 18 years of age, smoke at a rate of 33%, compared to a national average of less than 20% (U.S. CDC, 2003). This alarming percentage also predisposes many students in the sample to forego athletic activities, as less than 23% of college athletes report the use or abuse of tobacco related products (Green, Uryasz, Petr, & Bray, 2001).

### **Chapter Summary**

Chapter three contains a rationale for an exploratory correlational design investigating the relationship between collegiate athletics and student success. Information was included on the archival data set and its compilation from institutional databases. The population and sample selection process were described to ensure an accurate sampling of data generalized to the entire student population. Each criterion and predictor was operationally defined, and a plan for a regression analysis was described to address the research questions. Limitations were outlined, including considerations for unidentified indicators of college success and the homogenous population. Chapter four describes the results of the methodological process outlined in this chapter.

## CHAPTER 4

### RESULTS

#### **Overview**

The purpose of this study was to determine if the number of hours a student is involved with collegiate varsity and recreational sports has a relationship to the student's academic success. To further determine if hours involved in collegiate varsity and recreational sports had relationships to academic success various pre-determining factors were isolated including ethnicity, ACT score, gender, college major and socioeconomic status. This chapter reports the results of statistical analysis on the study data set. The data set was divided into three groups, one consisting of only varsity athletes, one consisting of only students playing on at least one intramural team, and one of students not participating in any type of extracurricular varsity or intramural sport. The three resulting analyses are reported in this chapter and the research questions are addressed.

#### **Description of the Sample**

A total of 3,998 students were eligible for study inclusion, as they had earned zero to 29 credits in fall 2009. Utilizing stratified random sampling two strata were defined, one for varsity athletes ( $N = 92$ ) and one for non-varsity athletes ( $N = 3,906$ ). A random sample of 550 non-varsity athletes was selected using a random number generator in Microsoft Excel®. Twenty-three cases were excluded from the sample of non-varsity athlete group as these participants enrolled, but did not attend any classes at the institution. Records in the resulting sample ( $n = 527$ ) were then quantified by number of

intramural sports participation hours and then divided into two groups: Intramural participants ( $n = 172$ ) and non-participants ( $n = 355$ ).

### **Independent Variables**

The predictor variables for the study were: Gender, ethnicity, college, ACT score, SES and involvement hours. Descriptive analysis for each independent variable is presented below.

#### **Gender**

The total study sample ( $n = 619$ ) had a gender breakdown of 318 women (51.4%) and 301 men (48.6%), not statistically similar ( $p = .085$ ) to the total study population ( $N = 3998$ ) of 2168 women (54.2%) and 1830 men 45.8%) (Miller et al., 2012).

#### **Ethnicity**

White, Non-Hispanic only students ( $n = 506$ ) represented the largest ethnic group (81.7%) in the sample. The ethnicity breakdown of the study sample and a comparison to the population is presented in Table 4.1. Gender breakdown by ethnicity is presented in Appendix E.

**Table 4.1.**

*Sample by Ethnicity*

Ethnicity	N	(%) of Sample
Race or Ethnicity Unknown	14	(2.3)
White, Non-Hispanic Only	506	(81.7)

**Table 4.1. (continued)**

Ethnicity	N	(%) of Sample
Black, Non-Hispanic Only	71	(11.5)
Hispanic or Latino, Regardless of Race	7	(1.1)
Asian, Non-Hispanic Only	6	(1.0)
American Indian or Alaskan Native, Non-Hispanic Only	2	(0.3)
Nonresident Alien	13	(2.1)
Total	619	(100.0)

*Note.*  $N=619$ .

### **College**

Arts and Sciences ( $n = 170$ ) represented the highest enrolling college from the sample, with 27.5% of all majors. The sample enrollment by college and gender is presented in Table 4.2. The largest discrepancies in female to male enrollment occurred in the Colleges of Education and Health Sciences. These large differences in gender percentages are likely due to the increased concentration of women in teacher and nursing preparation courses (Snyder & Green, 2008; Timmerman, 2011). College enrollment by ethnicity is presented in Table 4.3. All colleges, including undeclared majors, possessed a majority of White, Non-Hispanic students.



**Table 4.2.***College by Gender*

College	Men	Women	N	(%) of Sample
Undeclared	33	36	69	(11.1)
Justice and Safety	60	21	81	(13.1)
Health Science	50	95	145	(23.4)
Arts and Sciences	84	86	170	(27.5)
Education	7	42	49	(7.9)
Business and Technology	67	38	105	(17.0)
Total	301	318	619	(100.0)

*Note.* N=619.

**Table 4.3.***College by Ethnicity*

College	0	1	2	3	4	5	6	Total
	N	N	N	N	N	N	N	N
Undeclared	4	53	10	1	0	0	1	69
Justice and Safety	2	70	7	2	0	0	0	81
Health Science	3	116	16	3	1	1	5	145
Arts and Sciences	3	143	16	1	3	0	4	170
Education	1	46	2	0	0	0	0	49

**Table 4.3. (continued)**

College	0	1	2	3	4	5	6	Total
	N	N	N	N	N	N	N	N
Business and Technology	1	78	20	0	2	1	3	105
Total	14	506	71	7	6	2	13	619

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race, 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

### **American College Test Score**

The mean ACT for the sample was 20.55 ( $SD = 3.51$ ), statistically similar ( $t = -1.917, p = .056$ ) to the population mean of 20.79 ( $SD = 3.57$ ). Thirty participants had no reported ACT score. Men ( $M = 20.71, SD = 3.40$ ) outperformed women ( $M = 20.41, SD = 3.61$ ) by 0.3 points on the ACT. Nonresident Alien students had the highest mean ACT ( $M = 21.90, SD = 4.84$ ), and Hispanic or Latino students had the lowest mean ACT ( $M = 18.57, SD = 3.78$ ). American College Testing score by ethnicity is presented in Table 4.4. Arts and Sciences was the college with the highest entering ACT ( $M = 21.63, SD = 4.17$ ), and undeclared students presented the lowest mean ACT ( $M = 18.68, SD = 2.69$ ). American College Testing score by college is presented in Table 4.5.

**Table 4.4.***American College Testing Score by Ethnicity*

Ethnicity	M	N	SD
0	20.0	12	3.36
1	20.76	488	3.46
2	19.05	64	3.12
3	18.57	7	3.78
4	21.0	6	5.87
5	19.0	2	1.41
6	21.90	10	4.84
Total	20.55	589	3.51

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**Table 4.5.***American College Testing Score by College*

College	M	N	SD
Undeclared	18.68	66	2.69
Justice and Safety	19.95	73	3.02
Health Sciences	20.19	136	3.40
Arts and Sciences	21.63	167	4.17
Education	20.81	48	2.68
Business and Technology	20.80	99	2.98

*Note.* N=589

## Socioeconomic Status

The mean total household income for the sample was \$59,735.89 ( $SD = \$47,303.02$ ). One hundred-twenty students did not report household income, roughly 22.6% of the sample. These students may have reported income too low for the study threshold, less than \$1,000, received an academic or athletic scholarship negating their need for reporting of household income, or they failed to complete a FAFSA prior to enrolling in fall 2009 (Office of Financial Aid, 2013).

Men ( $M = \$61,848.64$ ,  $SD = \$46,658.67$ ) reported nearly \$4,000 more in total household income than women ( $M = \$57,941.27$ ,  $SD = \$47,860.23$ ). American Indian or Alaskan Native students, Non-Hispanic Only reported the highest levels of income ( $M = \$95,779.0$ ,  $SD = \$34,573.28$ ) and Hispanic or Latino students ( $M = \$38,980.60$ ,  $SD = \$20,342.58$ ) reported the lowest levels of total household income. Nonresident Aliens normally are excluded from FAFSA completion due to their Student Visa status, and are consequently not included in SES data for this study (U.S. Department of Education, 2013). Complete results of mean total household income by ethnicity are presented in Table 4.6. The college enrolling students with the highest total household income was Justice and Safety ( $M = \$70,357.65$ ,  $SD = \$52,832.42$ ), while undeclared students reported the lowest total household income ( $M = \$42,800.95$ ,  $SD = \$38,064.00$ ). Results of total household income by college are presented in Table 4.7.

**Table 4.6.***Total Household Income by Ethnicity*

Ethnicity	M	N	SD
Unknown	\$68,021.80	10	\$54,418.52
White	\$61,682.48	402	\$48,724.75
Black	\$43,059.13	54	\$33,155.92
Latino	\$38,980.60	5	\$20,342.58
Asian	\$70,876.50	6	\$37,563.92
American Indian	\$95,779.00	2	\$34,573.28
Total	\$59,735.89	479	\$47,303.02

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only.

**Table 4.7.***Total Household Income by College*

College	M	N	SD
Undeclared	\$42,800.95	55	\$38,064.00
Justice and Safety	\$70,357.65	66	\$52,832.42
Health Sciences	\$61,571.30	106	\$55,126.83
Arts and Sciences	\$59,780.93	134	\$44,447.44
Education	\$63,128.40	43	\$39,855.15
Business and Technology	\$58,188.12	75	\$43,040.09
Total	\$59,735.89	479	\$47,303.02

*Note.* 140 students did not report household income.

The second portion of the socioeconomic status variable is highest level of education obtained by the student's parent or guardian. A high school diploma was the most frequent level of education obtained for students' fathers (44.3%) and mothers (43.1%). Twenty-four point three percent of students' fathers and 32.3% of student's mothers completed a college degree or beyond. American Indian or Alaskan Native, Non-Hispanic Only students had the most educated fathers, with 100% completing a college degree or beyond. Asian, Non-Hispanic Only, and American Indian or Alaskan Native, Non-Hispanic Only had the most educated mothers with 50% completing a college degree or beyond. The College of Health Sciences had the highest concentration of college-educated fathers (25.3%) and mothers (26.0%).

### **Involvement Hours**

The number of extracurricular varsity and recreational involvement hours was the basis for the study grouping. Students were divided into three groups, varsity athletes ( $n = 92$ ), intramural participants ( $n = 172$ ), and non-participants ( $n = 355$ ) based solely on the type and quantity of their involvement. Mean involvement hour data by group is presented in table 4.8.

**Table 4.8.**

#### *Group Involvement Hours*

Group	M	N	SD
Varsity Athletes	1362.04	92	678.87
Intramural Participants	37.78	172	43.61

**Table 4.8. (continued)**

Group	M	N	SD
Non-participants	0	355	0
Total	212.94	619	547.31

*Note. N=619.*

### Sampling Groups

#### Group 1 Varsity Athletes

**Gender.** Varsity athletes in the study included 28 women (30.4%) and 64 men (69.6%). See Table 4.9 for a presentation of varsity athletes by gender.

**Table 4.9.**

#### *Varsity Athletes by Gender*

	Men (%)	Women (%)	Total (%)
Count	64	28	92
% of Varsity Athletes	(69.6)	(30.4)	(100.0)
% of Gender	(21.3)	(8.8)	(14.9)
% of Sample	(10.3)	(4.5)	(14.9)

*Note. N=92.*

**Ethnicity.** The varsity athletes participating in the study were primarily represented by the White, Non-Hispanic ethnicity (46.7%). See Table 4.10 for varsity athletes by ethnicity.

**Table 4.10.***Varsity Athletes by Ethnicity*

Ethnicity	Count	% of Varsity Athletes	% of Ethnicity	% of Sample
0 (%)	4	(4.3)	(28.6)	(0.6)
1 (%)	43	(46.7)	(8.5)	(6.9)
2 (%)	32	(34.8)	(45.1)	(34.8)
3 (%)	3	(3.3)	(42.9)	(0.5)
4 (%)	0	(0.0)	(0.0)	(0.0)
5 (%)	0	(0.0)	(0.0)	(0.0)
6 (%)	10	(10.9)	(76.9)	(1.6)

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**College.** Varsity athletes ( $n = 92$ ) were evenly dispersed through the university's five colleges, with Health Sciences (28.3%) being the most frequently declared college for concentration of study. See Table 4.11 for results of varsity athletes by college.

**Table 4.11.***Varsity Athletes by College*

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Total (%)
Count	9	9	26	21	3	24	92
% Within Varsity Athletes	(9.8)	(9.8)	(28.3)	(22.8)	(3.3)	(26.1)	(100.0)



**Table 4.11. (continued)**

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Total (%)
% Within College	(13.0)	(11.1)	(17.9)	(12.4)	(6.1)	(22.9)	(14.9)
% of Sample	(1.5)	(1.5)	(4.2)	(3.4)	(0.5)	(3.9)	(14.9)

*Note.* 0 = Undeclared, 1 = Justice and Safety, 2 = Health Science, 3 = Arts and Sciences, 4 = Education, 5 = Business and Technology.

**Socioeconomic status.** For the purposes of this study SES was measured by total household income and parent’s highest level of obtained education (Adler, 1994). The range of total household income for varsity athletes was \$4,689 to \$177,821 with a mean of \$66,880.08 ( $SD = 46,133.28$ ). Thirty-three study participants in this group did not report household income. Sixty-four point three percent of varsity athletes indicated their fathers completed at least a high school degree, while another 26.8% indicated their fathers completed a college degree or beyond. Sixty-nine point six percent of varsity athletes indicated their mothers completed at least a high school degree, while another 28.6% indicated their mothers completed a college degree or beyond. Thirty-six participants did not indicate their parent’s highest level of obtained education. Frequencies of parents’ education are presented in Table 4.12.

**Table 4.12.***Frequencies for Varsity Athletes' Parents' Education*

Level of Education	Father		Mother	
	N	(%)	N	(%)
Other/Unknown	5	(8.9)	0	(0.0)
Middle School/Junior High	0	(0.0)	1	(1.8)
High School	36	(64.3)	39	(69.6)
College or Beyond	15	(26.8)	16	(28.6)
Total Reported	56	(100.0)	56	(100.0)

*Note. Only 56 varsity athletes reported parent's education.*

**ACT score.** American College Test scores for varsity athletes ranged from 16 to 31 with a mean of 20.81 ( $SD = 3.17$ ). Eighteen participants in this group were admitted without submission of an ACT score. Male athletes ( $M = 20.94$ ,  $SD = 3.30$ ) scored slightly higher than female athletes ( $M = 20.48$ ,  $SD = 2.86$ ) on the ACT. Nonresident Alien students had the highest average ACT score by ethnicity ( $M = 22.63$ ,  $SD = 3.62$ ), while Hispanic of Latino, Regardless of Race athletes ( $M = 18.0$ ,  $SD = 2.0$ ) had the lowest average score. College of Education varsity athletes had the highest average score on the ACT entrance exam ( $M = 22.33$ ,  $SD = 4.04$ ), while Justice and Safety students ( $M = 19.00$ ,  $SD = 1.63$ ) had the lowest average score.

**Involvement hours.** The range of varsity athletics involvement hours was 448 to 3520. The 92 varsity athletes participated in a mean of 1354.3 hours ( $SD = 679.97$ ) of varsity athletics, and a mean of 7.74 hours of intramural sports ( $SD = 15.94$ ) during their

tenure at the university. The mean total sports participation for varsity athletes was 1362.04 ( $SD = 678.87$ ).

### **Group 2 Intramural Participants**

**Gender.** There were 67 female (39%) and 105 male (61%) students in the intramural participant group. See Table 4.13 for the results of intramural participants by gender.

**Table 4.13.**

*Intramural Participants by Gender*

	Men (%)	Women (%)	Total (%)
Count	105	67	172
% Within Intramural Participants	(61)	(39)	(100)
% Within Gender	(34.9)	(21.1)	(27.8)
% of Sample	(17)	(10.8)	(27.8)

*Note. N=172.*

**Ethnicity.** The intramural participants in the study were predominately (86.6%) White, Non-Hispanic Only students. Table 4.14 presents intramural participants by ethnicity.

**Table 4.14.***Intramural Participants by Ethnicity*

Ethnicity	Count	% Within Intramural Participants	% Within Ethnicity	% of Sample
0 (%)	3	(1.7)	(21.4)	(0.5)
1 (%)	149	(86.6)	(29.4)	(24.1)
2 (%)	13	(7.6)	(18.3)	(2.1)
3 (%)	2	(1.2)	(28.6)	(0.3)
4 (%)	3	(1.7)	(50.0)	(0.5)
5 (%)	0	(0.0)	(0.0)	(0.0)
6 (%)	2	(1.2)	(15.4)	(0.3)

*Note.* 1 = Race or Ethnicity Unknown, 2 = White, Non-Hispanic Only, 3 = Black, Non-Hispanic Only, 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**College.** Intramural participants were evenly dispersed throughout the university's five colleges with Arts and Sciences, 43 students (25%), ranked as the top college for declared majors in the study. See Table 4.15 for complete results of Intramural Participants by college.

**Table 4.15.***Intramural Participants by College*

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Total (%)
Count	6	28	42	43	11	42	172
% of Group	(3.5)	(16.3)	(24.4)	(25.0)	(6.4)	(24.4)	(100.0)

**Table 4.15. (continued)**

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Total (%)
% of College	(8.7)	(34.6)	(29.0)	(25.3)	(22.4)	(40.0)	(27.8)
% of Total	(1.0)	(4.5)	(6.8)	(6.9)	(1.8)	(6.8)	(27.8)

*Note.* 0 = Undeclared, 1 = Justice and Safety, 2 = Health Science, 3 = Arts and Sciences, 4 = Education, 5 = Business and Technology.

**Socioeconomic status.** The range of household income for intramural participants was \$1,349 to \$380,000 with a mean total household income of \$70,341.67 ( $SD = 54920.50$ ). Twenty-eight intramural participants did not report household income. Forty-four point two percent of intramural participants indicated their fathers completed at least a high school diploma, while 28.5% indicated their fathers completed a college degree or beyond. Forty-three point six percent of intramural participants reported their mothers completed at least a high school diploma, while 38.4% indicated their mothers completed a college degree or beyond. Thirty-seven participants did not report their father's highest level of education earned, and 27 did not report their mother's highest level of education earned. For complete results of intramural participants parents' education see Table 4.16.

**Table 4.16.***Frequencies for Intramural Participants' Parents' Education*

Level of Education	Father		Mother	
	N	(%)	N	(%)
Other/Unknown	37	(21.5)	27	(15.7)
Middle School/Junior High	10	(5.8)	4	(2.3)
High School	76	(44.2)	75	(43.6)
College or Beyond	49	(28.5)	66	(38.4)
Total Reported	172	(100.0)	172	(100.0)

*Note.*  $N=172$ .

**American college test score.** Scores on the ACT for intramural participants ranged from 14 to 30 with a mean of 20.80 ( $SD = 3.36$ ). Four participants in this group were admitted without submission of an ACT score. Nonresident Alien students ( $M = 26$ ) had the highest average ACT score by ethnicity, while Hispanic or Latino, regardless of race students ( $M = 16$ ,  $SD = 2.83$ ) had the lowest average scores. Students choosing majors in the College of Arts and Sciences ( $M = 22.51$ ,  $SD = 3.61$ ) had the highest average ACT scores, and students in undeclared majors ( $M = 18.0$ ,  $SD = 1.79$ ) had the lowest average scores.

**Involvement hours.** Intramural participants completed an average of 37.78 hours of intramural sports activity ( $SD = 43.61$ ), with a minimum of four hours and a maximum of 231 hours.

### Group 3 Non-Participants

**Gender.** The gender breakdown for non-participants was 223 women (62.8%) and 132 men (37.2%). Table 4.17 presents non-participants by gender.

**Table 4.17.**

*Non-participants by Gender*

	Men (%)	Women (%)	Total (%)
Count	132	223	355
% Within Non-Participants	(37.2)	(62.8)	(100.0)
% Within Gender	(43.9)	(70.1)	(57.4)
% of Sample	(21.3)	(36.0)	(57.4)

*Note.* N=355.

**Ethnicity.** The non-participants in the study were predominately represented by White, Non-Hispanic only students (88.5%). Table 4.18 presents non-participants by ethnicity.

**Table 4.18.**

*Non-participants by Ethnicity*

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	Total (%)
Count	7	31	26	2	3	2	1	355
% Within Group	(2.0)	(88.5)	(7.3)	(0.6)	(0.8)	(0.6)	(0.3)	(100.0)
% Within Ethnicity	(50.0)	(62.1)	(11.5)	(1.1)	(1.0)	(0.3)	(2.1)	(100.0)

**Table 4.18. (continued)**

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	Total (%)
% of Total	(1.1)	(50.7)	(4.2)	(0.3)	(0.5)	(0.3)	(0.2)	(57.4)

*Note.* 1 = Race or Ethnicity Unknown, 2 = White, Non-Hispanic Only, 3 = Black, Non-Hispanic Only, 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**College.** Arts and Sciences, the largest of the institution's five colleges, held the largest percentage (29.9%) of declared majors among non-participants (Office of Admissions, 2013). Table 4.19 presents non-participants by college.

**Table 4.19.***Non-participants by College*

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Total (%)
Count	54	44	77	106	35	39	355
% Within Group	(15.2)	(12.4)	(21.7)	(29.9)	(9.9)	(11.0)	(100.0)
% Within College	(78.3)	(54.3)	(53.1)	(62.4)	(71.4)	(37.1)	(57.4)
% of Total	(8.7)	(7.1)	(12.4)	(17.1)	(5.7)	(6.3)	(57.4)

*Note.* 0 = Undeclared, 1 = Justice and Safety, 2 = Health Science, 3 = Arts and Sciences, 4 = Education, 5 = Business and Technology.

**Socioeconomic status.** The range of household income for non-participants was \$1,200 to \$247,947 with a mean income of \$52,864.32 ( $SD = 42,050.82$ ). Eighty subjects did not indicate household income. Forty-five point six percent of non-



participants indicated their fathers completed a high school diploma, while 24.2% indicated their fathers completed a college degree or beyond. Forty-three point one percent of non-participants indicated their mothers completed a high school diploma, while 33.2% reported their mothers earned a college degree or beyond. Seventy-two non-participants did not report their father’s highest level of education earned, while 62 did not report the same statistic for their mother. Parents’ highest levels of education obtained frequencies are presented in Table 4.20.

**Table 4.20.**

*Frequencies of Non-participant’s Parents’ Education*

Level of Education	Father		Mother	
	N	(%)	N	(%)
Other/Unknown	72	(20.3)	62	(17.5)
Middle School/Junior High	35	(9.9)	22	(6.2)
High School	162	(45.6)	153	(43.1)
College or Beyond	86	(24.2)	118	(33.2)
Total Reported	355	(100.0)	355	(100.0)

*Note.* N=355.

**American college test score.** Non-participants ACT scores ranged from nine to 32 with a mean of 20.37 ( $SD = 3.65$ ). Eight non-participants were admitted without submission of an ACT score. Male non-participants ( $M = 20.70$ ,  $SD = 3.54$ ) outperformed female participants ( $M = 20.18$ ,  $SD = 3.71$ ) by over half a point on the ACT. Asian, Non-Hispanic Only students ( $M = 22.33$ ,  $SD = 8.51$ ) compiled the highest

average score on ACT, while Black, Non-Hispanic Only ( $M = 17.29$ ,  $SD = 1.57$ ) compiled the lowest average scores. The College of Arts and Sciences ( $M = 21.35$ ,  $SD = 4.43$ ) enrolled the non-participants with the highest average ACT scores, while undeclared students ( $M = 18.51$ ,  $SD = 2.72$ ) had the lowest average scores.

### **Dependent Variables**

The following section describes the study dependent variables, CGPA and credits earned. Results for each variable are divided into four sections, one for the sample as a whole, and one for each of the three sample groups

#### **College Grade Point Average**

The research institution requires all undergraduates maintain a 2.0 CGPA to remain academically eligible for continued, non-probated enrollment (Office of the Registrar, 2013). Numerous academic programs, including many majors in the College of Health Sciences, require undergraduate students to obtain minimum CGPAs of 2.5 or higher for program admittance (Undergraduate Catalogs, 2013). Varsity athletes, and those students with a higher propensity to participate in recreational activities, are likely to enroll in majors under the Health Sciences umbrella due to their interests in fitness, wellness, and medical studies (College of Health Sciences, 2013). Students participating in varsity athletics and recreational activities have increased chances of success in the classroom, as their dedication to sports, partnered with advanced time management skills, provides clarity in their academic endeavors (Ferris et al., 2004; Gottschalk & Milton, 2010; Pierce, 2007; Umbach et al., 2006).

The mean CGPA for the sample was 2.47 ( $SD = .91$ ), 23.5% higher than the minimum CGPA required for graduation. The average CGPA for all students in spring 2013 was 3.05 ( $SD = .73$ ), 19% higher than the sample mean (C. Adkins personal communication, January 16, 2014). Women ( $M = 2.61$ ,  $SD = .87$ ) earned grades nearly .3 points higher than their male counterparts ( $M = 2.32$ ,  $SD = .92$ ). Nonresident Alien ( $M = 3.31$ ,  $SD = .52$ ) students performed the best in the classroom, while Hispanic or Latino students ( $M = 1.93$ ,  $SD = .80$ ) performed the worst on average. See Table 4.21 for results of CGPA by Ethnicity. Students enrolled in College of Education majors held the highest mean CGPA ( $M = 2.91$ ,  $SD = .70$ ), and students in undeclared majors ( $M = 1.76$ ,  $SD = 1.11$ ) held the lowest CGPAs. This is consistent with data from the total student population in May 2013 (C. Adkins, personal communication, January 16, 2014). See table 4.22 for results of CGPA by College. Students with college-educated father's ( $M = 2.51$ ,  $SD = .94$ ) performed the best in the classroom, while students whose mother's had other/unknown educational attainments ( $M = 2.62$ ,  $SD = .88$ ) held the highest CGPA. See Table 4.23 for results of CGPA by Parents Education.

**Table 4.21.**

*College Grade Point Average by Ethnicity*

Ethnicity	Mean	N	SD
0	2.51	14	.78
1	2.51	506	.91
2	2.09	71	.80
3	1.93	7	.80
4	2.56	6	1.27

**Table 4.21. (continued)**

Ethnicity	Mean	N	SD
5	2.39	2	.51
6	3.31	13	.52
Total	2.47	619	.91

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race, 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**Table 4.22.**

*College Grade Point Average by College*

College	Mean	N	SD
0	1.76	69	1.11
1	2.35	81	.81
2	2.53	145	.88
3	2.62	170	.79
4	2.91	49	.70
5	2.50	105	.90
Total	2.47	619	.91

*Note.* 0 = Undeclared, 1 = Justice and Safety, 2 = Health Science, 3 = Arts and Sciences, 4 = Education, 5 = Business and Technology.

**Table 4.23.***College GPA by Parents Level of Education*

Level of Education	Father			Mother		
	M	N	SD	M	N	SD
Other/Unknown	2.51	150	.94	2.62	125	.88
Middle School/Junior High	2.55	45	.89	2.26	27	.75
High School	2.34	274	.87	2.38	267	.84
College or Beyond	2.65	150	.92	2.52	200	1.01
Total	2.47	619	.91	2.47	619	.91

*Note.*  $N=619$ .

**Varsity athletes.** Students competing in varsity athletics performed the best in the classroom with an overall mean CGPA of 2.64 ( $SD = .79$ ). Female athletes ( $M = 2.93$ ,  $SD = .58$ ) outperformed male athletes ( $M = 2.51$ ,  $SD = .84$ ) by almost half a CGPA point. Consistent with averages for credits completed, nonresident alien students performed the best academically with a mean CGPA of 3.38 ( $SD = .38$ ). Varsity athletes enrolled in the College of Health Sciences earned the highest grades ( $M = 2.89$ ,  $SD = .54$ ), while undeclared majors performed the worst ( $M = 1.63$ ,  $SD = 1.31$ ). Similar to academic retention, classroom academic success also correlates with students' socioeconomic status (Allen & Robins, 2010; Eagle & Tinto, 2008). The education of a varsity athletes parents did play a roll in their classroom success, as students with fathers ( $M = 2.81$ ,  $SD = 1.03$ ), and mothers ( $M = 2.96$ ,  $SD = .68$ ) completing a college degree or beyond, had higher CGPA's than their peers without similarly educated parents.

**Intramural participants.** Intramural participants in the sample earned a mean CGPA of 2.50 ( $SD = .90$ ), 0.14 points lower than the mean result for varsity athletes' CGPA ( $M = 2.64, SD = .79$ ). Female students ( $M = 2.80, SD = .89$ ) outperformed male students ( $M = 2.31, SD = .94$ ) by .49 points. Similar to varsity athletes, the ethnic group earning the highest classroom grades was nonresident Aliens ( $M = 3.53, SD = .67$ ). The ethnic group with the lowest overall CGPA was Black, Non-Hispanic Only students ( $M = 1.55, SD = .67$ ). Arts and Sciences students ( $M = 2.83, SD = .68$ ) had the highest mean CGPA, while students in undeclared majors ( $M = 1.81, SD = 1.32$ ) had the lowest mean CGPA. Students whose fathers completed a college degree ( $M = 2.59, SD = .95$ ) earned the highest CGPA, while student's whose mother's completed a middle school/junior high school ( $M = 2.74, SD = .76$ ) education earned the highest CPGA.

**Non-Participants.** Student's not participating in varsity or intramural sports ( $M = 2.41, SD = .93$ ) performed .23 points lower in the classroom than varsity athletes. Female non-participants ( $M = 2.52, SD = .92$ ) outperformed male non-participants ( $M = 2.23, SD = .94$ ) by nearly .3 points. Asian Non-Hispanic Only students ( $M = 3.10, SD = .31$ ) performed the best in terms of CGPA, while Hispanic or Latino students ( $M = .88, SD = .07$ ) performed the worst. Non-participants enrolled in Education majors ( $M = 3.03, SD = .72$ ) earned the highest classroom marks, compared to undeclared students ( $M = 1.78, SD = 1.07$ ) earning the lowest grades. Students whose father's completed college degrees compiled the highest CGPA ( $M = 2.65, SD = .89$ ), while student's with mother's education in the other/unknown category ( $M = 2.49, SD = .90$ ) compiled the best grades.

## Credits Earned

All Bachelor's degrees conferred at the research institution require a minimum of 120 undergraduate credit hours, 60 of which must be earned at the degree-granting institution (Office of the Registrar, 2013). The participation data for this study was only available from fall 2009 to spring 2013 allowing for a traditional college student, completing 15 hours per semester, to achieve 120 credit hours in eight consecutive semesters. Due to the hectic lives of today's college students, and the commonly accepted six-year graduation rate statistic employed by many academic success units, this study indicated any student successfully completing 80 or more credit hours in four academic years as "on-track" for graduation (NCES, 2013). The 2011 national average for six-year graduation at degree-granting four-year colleges and universities was 59% (NCES, 2013).

The mean credits earned for the sample was 73.04 ( $SD = 45.62$ ). Fifty-two percent of participants reached the 80-credit threshold to be "on-track" for graduation, slightly lower than the 59% national average (NCES, 2013). Women ( $M = 76.42$ ,  $SD = 45.83$ ) compiled nearly seven more credit hours on average than their male counterparts ( $M = 69.47$ ,  $SD = 45.19$ ). Nonresident Alien students completed the most credit hours ( $M = 106.31$ ,  $SD = 32.46$ ) as an ethnic group, while Black, Non-Hispanic Only students ( $M = 64.81$ ,  $SD = 43.14$ ) completed the fewest hours on average. Results of credit hours by ethnicity are presented in Table 4.24. Students in the College of Education ( $M = 91.96$ ,  $SD = 39.72$ ) completed the highest number of credits on average, while undeclared students ( $M = 20.00$ ,  $SD = 14.14$ ) completed the lowest number of credits. Credit hours by college are presented in Table 4.25. Parent's education listed as Other/Unknown

produced the highest mean credits earned for both fathers ( $M = 78.86$ ,  $SD = 46.07$ ) and mothers ( $M = 81.82$ ,  $SD = 45.40$ ).

**Table 4.24.**

*Credit Hours by Ethnicity*

Ethnicity	Mean	N	SD
0	75.89	14	37.52
1	73.21	506	46.13
2	64.81	71	43.14
3	72.71	7	53.02
4	76.50	6	48.54
5	76.00	2	45.26
6	106.31	13	32.46
Total	73.04	619	45.62

*Note.* 0 = Race or Ethnicity Unknown, 1 = White, Non-Hispanic Only, 2 = Black, Non-Hispanic Only, 3 = Hispanic or Latino, Regardless of Race, 4 = Asian, Non-Hispanic Only, 5 = American Indian or Alaskan Native, Non-Hispanic Only, 6 = Nonresident Alien.

**Table 4.25.**

*Credit Hours by College*

College	Mean	N	SD
0	20.00	69	14.14
1	71.39	81	44.11
2	76.91	145	44.84
3	78.11	170	43.06



**Table 4.25. (continued)**

College	Mean	N	SD
4	91.96	49	39.72
5	86.76	105	43.84
Total	73.04	619	45.62

*Note.* 0 = Undeclared, 1 = Justice and Safety, 2 = Health Science, 3 = Arts and Sciences, 4 = Education, 5 = Business and Technology.

**Varsity athletes.** Varsity athletes outperformed national graduation rates by nine percentage points with 68.5% of varsity athletes completing at least 80 credits (NCES, 2013). The mean number of credits earned for varsity athletes was 92.04 ( $SD = 38.47$ ), nearly 19 credits higher than the overall sample average. Female athletes completed a mean 96.09 ( $SD = 36.46$ ) credits, fairing slightly better than male athletes ( $M = 90.27$ ,  $SD = 39.63$ ). All five ethnicity groups represented in the sample group reached the 80-credit level of credit completion necessary for six-year graduation. The college reporting the highest number of credits earned for varsity athletes was the College of Education ( $M = 113$ ,  $SD = 9.54$ ).

Academic retention is often linked to parental SES, as students fortunate enough to come from privileged upbringing are more likely to receive educational and financial support from parents and extended family members (Choy, 2001). Mean data from freshmen varsity athletes in fall 2009 did not correlate to these previous studies as students with high school ( $M = 87.42$ ,  $SD = 40.49$ ) or college-educated ( $M = 87.87$ ,  $SD = 42.28$ ) father's earned less credits, on average, than their peers ( $M = 92.04$ ,  $SD = 38.46$ ). The same was not true for athlete's mothers as students coming from families were the

matriarch earned a college degree ( $M = 96.06$ ,  $SD = 34.04$ ) fared better than their peers ( $M = 92.04$ ,  $SD = 38.46$ ).

**Intramural participants.** Intramural participants as a group, ( $M = 82.97$ ,  $SD = 45.68$ ) reached the minimum number of credits, 80, to be considered “on track” for six-year graduation, nine points higher than the overall sample mean. Fifty-nine point three percent of students participating in some type of intramural sport reached 80 or more credits after four years of enrollment, even with the 2011 national average (NCES, 2013). Female intramural participants ( $M = 97$ ,  $SD = 41.27$ ) earned on average 23 more credits than their male ( $M = 74.02$ ,  $SD = 46.28$ ) counterparts. Four out of six ethnic groups reached the 80-credit plateau, while Asian, Non-Hispanic Only ( $M = 72$ ,  $SD = 61.99$ ) and Black, Non-Hispanic Only ( $M = 41.04$ ,  $SD = 37.82$ ) students did not reach the required level. Four out of the five colleges had credits earned averages above the minimum 80 required for timely graduation. The only college with students averaging below 80 was Justice and Safety ( $M = 76.14$ ,  $SD = 46.41$ ).

Father’s increased levels of education correlated to a higher number of credits earned, as students from college-educated fathers ( $M = 89.78$ ,  $SD = 48.70$ ) completed the most credits in four years. The same was not true for mother’s education as students from mothers with other/unknown education ( $M = 91.41$ ,  $SD = 48.40$ ) completed the most credits.

**Non-participants.** Non-participants did not fair well compared to varsity or intramural athletes in terms of credits completed with a mean of 63.30 ( $SD = 44.81$ ). Only 37.5% of non-participants had completed 80 or more credits four years after starting

their undergraduate degrees. This percentage matches the university's 2012 six-year graduation rate of 37.5% (Miller et al., 2012). Women fared well in retention with a mean of 67.76 ( $SD = 45.64$ ) credits earned in four years, compared to only 55.76 average credits ( $SD = 42.47$ ) for men. Two ethnicities earned an average of 80 credits or more, nonresident Aliens ( $M = 81$ ), and Asian, Non-Hispanic Only ( $M = 81$ ,  $SD = 44.58$ ). The only college to retain non-participant students at an adequate rate to ensure six-year graduation was Education ( $M = 92.63$ ,  $SD = 41.49$ ).

Parental education data for non-participants indicated students whose fathers earned college degrees completed the most credits ( $M = 68.91$ ,  $SD = 44.59$ ), while students with mother's education ( $M = 67.70$ ,  $SD = 45.84$ ) listed as Other/Unknown progressed the farthest to degree completion.

### **Hypothesis Tests**

The six research questions for the study are restated below. The research hypotheses for the study guided descriptive and statistical regression analysis to determine the variance predicted by the model. Step-wise regression was then used to determine the added predictive value of each variable to the model.

1. Which study group, varsity athletes, intramural participants, or non-participants performed the best in CGPA?
2. Which study group, varsity athletes, intramural participants, or non-participants compiled the most credits earned?
3. What is the relationship, if any, between total involvement hours and CGPA?
4. What is the relationship, if any, between total involvement hours and persistence?

5. What are the relative contributions, if any, of ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to college GPA?
6. What are the relationships, if any, among ACT, SES, ethnicity, college major, gender, and level of athletic involvement, to persistence to degree completion?

*Hypothesis 1. The groups with the highest level of involvement, varsity athletes and intramural participants, will have the highest mean CGPA.*

Varsity athletes were involved in the highest average hours of collegiate varsity and recreational sports activity ( $M = 1362.04$ ,  $SD = 678.87$ ), and compiled the highest mean CGPA ( $M = 2.64$ ,  $SD = .79$ ). Intramural participants were involved in the second highest average hours of collegiate varsity and recreational sports activity ( $M = 37.78$ ,  $SD = 43.61$ ), and compiled the second highest mean CGPA ( $M = 2.50$ ,  $SD = .90$ ). Non-participants were not involved in any collegiate varsity and recreational sports activity, and compiled the lowest average CGPA ( $M = 2.41$ ,  $SD = .93$ ).

A one-way analysis of variance indicated the level of collegiate or recreational sports did not have a significant effect on college grade point average ( $F(2, 618) = 2.63$ ,  $p = .073$ ). There was however a significant linear trend ( $F(1, 618) = 4.93$ ,  $p = .027$ ), indicating as the level of involvement increased, CGPA increased proportionally. Paired contrasts revealed any involvement in collegiate or recreational sports significantly increased CGPA compared to having no involvement ( $t(499) = 2.26$ ,  $p = .024$ ), but participating in varsity sports did not significantly increase CGPA compared to participating in intramural sports ( $t(208) = 1.30$ ,  $p = .20$ ). See table 4.26 for complete results of the one-way analysis of variance.

**Table 4.26.***Level of Involvement on CGPA, One-way Analysis of Variance*

		<i>Sum of Squares</i>	<i>Df</i>	$\mu^2$	<i>F</i>	$\alpha$
Between Groups (Combined)		4.32	2	2.16	2.63	.073
Linear Term	Unweighted	4.04	1	4.04	4.93	.027
	Weighted	4.26	1	4.26	5.20	.023
	Deviation	.054	1	.054	.07	.80
Within Groups		505.32	616	.82		
Total		509.63	618			

*Note. N=619.*

*Hypothesis 2. The groups with the highest level of involvement, varsity athletes and intramural participants, will compile the most credits earned.*

Varsity athletes were involved in the most average hours of collegiate varsity and recreational sports activity ( $M = 1362.04$ ,  $SD = 678.07$ ) and completed the most average credits ( $M = 92.04$ ,  $SD = 38.46$ ). Intramural participants were involved in the second most average hours of collegiate varsity and recreational sports activity ( $M = 37.78$ ,  $SD = 43.61$ ) and completed the second most average credits ( $M = 82.97$ ,  $SD = 45.68$ ). Non-participants were not involved in any collegiate varsity and recreational sports activities and completed the least average credits ( $M = 63.30$ ,  $SD = 44.81$ ).

A one-way analysis of variance indicated the level of collegiate or recreational sports had a significant effect on college credits earned ( $F(2, 618) = 21.49, p < .000$ ). There was also a significant linear trend ( $F(1, 618) = 30.93, p < .000$ ), indicating as the level of involvement increased, college credits increased proportionally. Paired contrasts revealed any involvement in collegiate or recreational sports significantly increased college credits compared to having no involvement ( $t(502) = 6.79, p < .000$ ), but participating in varsity sports did not significantly increase college credits compared to participating in intramural sports ( $t(215) = 1.71, p = .09$ ). See table 4.27 for complete results of the one-way analysis of variance.

**Table 4.27.**

*Level of Involvement on Credits Earned, One-way Analysis of Variance*

		<i>Sum of Squares</i>	<i>Df</i>	$\mu^2$	<i>F</i>	$\alpha$
Between Groups (Combined)		83,869.29	2	41,934.61	21.49	.000
Linear Term	Unweighted	60,356.35	1	60,356.35	30.93	.000
	Weighted	80,823.63	1	80,223.63	41.42	.000
	Deviation	3,045.59	1	3,045.59	1.56	.212
Within Groups		1,202,065.93	616	1,951.41		
Total		1,285,935.14	618			

*Note. p < .000.*

*Hypothesis 3. Total involvement hours will have a significant predictive relationship to CGPA.*

A linear regression analysis was conducted using the independent variable involvement hours on CGPA. Regression analysis revealed involvement hours explained a significant amount of variance in CGPA ( $R^2 = .024$ ,  $F(1, 618) = 15.157$ ,  $p < .000$ ). As a single predictor in the regression model, total collegiate varsity and recreation sports involvement hours explained 2.4% of the variance in CGPA.

*Hypothesis 4. Total involvement hours will have a significant predictive relationship to credits earned.*

A linear regression analysis was conducted using the independent variable involvement hours on credits earned. Regression analysis revealed involvement hours explained a significant amount of variance in credits earned ( $R^2 = .072$ ,  $F(1, 618) = 49.016$ ,  $p < .000$ ). As a single predictor in the regression model, involvement hours predicted 7.2% of the variance in credits completed.

*Hypothesis 5. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have significant predictive relationship to CGPA.*

A multiple regression analysis was conducted using the independent variables (ACT, SES, ethnicity, college major, gender and level of athletic involvement) on CGPA. Regression analysis revealed the independent variables explained a significant amount of variation for CGPA ( $R^2 = .190$ ,  $F(8, 462) = 14.831$ ,  $p < .000$ ). Stepwise regression was used to determine the variation explained by each predictor variable and to construct a model. The regression revealed ACT, gender, total household income, college, and

involvement hours were significant ( $p < .000$ ) predictors of CGPA and should be entered into the model. See Table 4.28 for a model summary. Ethnicity ( $p = .210$ ), father's education ( $p = .419$ ), and mother's education ( $p = .109$ ) were removed from the model and were not significant predictors of CGPA. American College Testing score ( $R^2 = .081$ ,  $\beta = .284$ ,  $t = 6.355$ ,  $p < .000$ ) explained the most variance (8.1%), while total involvement hours ( $R^2 = .183$ ,  $\beta = .089$ ,  $t = 2.069$ ,  $p = .039$ ) explained the least amount of variance (.8%) for a total of 18.3%.

**Table 4.28.**

*Model Summary Predictor Variables on CGPA*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	$\sigma^{\text{est}}$
1	.284	.081	.079	.877
2	.350	.123	.119	.858
3	.398	.158	.153	.841
4	.418	.175	.168	.834
5	.427	.183	.174	.831

*Note. 1. Predictors: ACT, 2. Predictors: ACT, Gender, 3. Predictors: ACT, Gender, Total Income 4. Predictors: ACT, Gender, Total Income, College 5. Predictors: ACT, Gender, Total Income, College, Total Involvement Hours.*

*Hypothesis 6. American College Testing score, SES, ethnicity, college major, gender, and level of athletic involvement will have significant predictive relationship to persistence to degree completion.*

A multiple regression analysis was conducted using the independent variables (ACT, SES, ethnicity, college major, gender and level of athletic involvement) on credit



hours completed. Regression analysis revealed the predictor variables explained a significant amount of variation (21.8%) in college credits earned ( $R^2 = .218$ ,  $F(8, 462) = 15.775$ ,  $p < .000$ ). Stepwise regression was used to determine the variation explained by each predictor variable, and to construct a model. The analysis revealed college, total involvement hours, ACT, total household income, and gender were significant ( $p < .000$ ) predictors of college credits earned and should be entered into the model. See Table 4.29 for a model summary. Mother's education ( $p = .894$ ), father's education ( $p = .842$ ) and ethnicity ( $p = .516$ ) were removed from the model and were not significant predictors of college credits completed. College of chosen major ( $R^2 = .113$ ,  $\beta = .336$ ,  $t = 7.657$ ,  $p < .000$ ) explained the most variance (11.3%) in college credits completed, while gender ( $R^2 = .217$ ,  $\beta = .107$ ,  $t = 2.555$ ,  $p = .011$ ) explained the least amount of variance (.11%).

**Table 4.29.**

*Model Summary Predictor Variables on College Credits Completed*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	$\sigma^{\text{est}}$
1	.336	.113	.111	43.209
2	.393	.154	.151	42.231
3	.434	.188	.183	41.429
4	.453	.206	.199	41.024
5	.466	.217	.208	40.779

*Note. 1. Predictors: College, 2. Predictors: College, Total Involvement Hours, 3. Predictors: College, Total Involvement Hours, ACT 4. Predictors: College, Total Involvement Hours, ACT, Total Income, 5. Predictors: College, Total Involvement Hours, ACT, Total Income, Gender.*

## Chapter Summary

Linear regression analysis revealed involvement hours as a single predictor were significant ( $p < .000$ ) predictors of the dependent variables, explain 2.4% of the variance in CGPA and 7.2% of the variance in credits earned. Multiple regression analyses revealed five out of eight predictor variables (ACT, college, total household income, gender, and total involvement hours) explained a significant ( $p < .000$ ) variance in CGPA and college credits earned. American College Testing score explained 8.1% of the variance in CGPA, while college of chosen major explained 11.3% of variance in credits earned. Varsity athletes compiled the highest average CGPA ( $M = 2.64$ ,  $SD = .79$ ) and average credits earned ( $M = 92.04$ ,  $SD = 38.47$ ). Intramural participants compiled the second highest average CGPA ( $M = 2.50$ ,  $SD = .90$ ) and credits earned ( $M = 82.97$ ,  $SD = 45.68$ ). Both groups were “on track” for graduation by completing at least 80 credits in four years of data collection. Non-participants compiled an average CGPA of 2.41 ( $SD = .93$ ), and 63.30 ( $SD = 44.81$ ) credits earned. The results of this study indicate involvement in varsity and recreational sports has a significant ( $p < .000$ ) relationship, combined with ACT, college major, total household income, and gender, to classroom success and persistence to graduation of college students at a Masters Two regional comprehensive university. The next chapter furthers the results described in chapter four by referencing similar results in previous reviewed literature and providing implications for use of results in varsity and recreational sports practice.

## CHAPTER 5

### DISCUSSION, IMPLICATIONS & RECCOMENDATIONS

This chapter presents a discussion of study results and findings followed by implications for practice in collegiate athletic and Student Affairs administration. Following implications for practice, recommendations for further research and a conclusion are presented. Coordinating

#### **Discussion of Results**

The purpose of this study was to determine the relationship between varsity and recreational sports participants and student success in terms of CGPA and credits completed. Eight independent variables were examined to determine effect size on both CGPA and persistence to graduation. Descriptive statistics, linear regression analysis, multiple regression analyses, and stepwise regression analyses are discussed below.

As a single independent variable, total involvement hours were a significant predictor of both CGPA and persistence to degree completion. Involvement in collegiate varsity and recreational sports explained 2.4% of the variance in CGPA, and 7.2% of the variance in credits earned. This finding aligns with the research of Astin (1993, 2005) and Tinto (1988). Extracurricular involvement has a significant relationship to a student's place bonding at a university, and to their eventual classroom success (Astin, 1993, 2005; Tinto, 1988).

Multiple regression analysis revealed ACT score, college, total involvement hours, gender and total household income as significant variables to be added to a model for the prediction of both CGPA and persistence to degree completion. Both regression analyses excluded ethnicity and parent's education as significant predictors of the two dependent variables. Results of the descriptive and regression analyses are discussed below. Table 5.1 presents included variables by group.

**Table 5.1.**

*Variables Means by Group*

Variable	Varsity Athletes	Int. Participants	Non-participants	Total
CGPA	2.64	2.50	2.41	2.47
Credits	92.04	82.97	63.30	73.04
ACT	20.81	20.80	20.37	20.55
College (%)	Arts & Sciences (28.3)	Arts & Sciences (25.5)	Arts & Sciences (29.9)	Arts & Sciences (27.5)
Total Income	\$66880.08	\$70341.67	\$52864.32	\$59735.89
Involvement Hours	1362.04	37.78	0	212.94
Men N	64	105	132	301
Women N	28	67	223	318

*Note. N=619.*

## American College Test Score

The mean ACT score for the sample was 20.55 ( $SD = 3.51$ ), statistically similar ( $t = -1.917, p = .056$ ) to the average 20.79 ACT score for incoming freshman in fall 2009, and statistically different ( $t = -3.789, p < .000$ ) from the 2009 national average 21.1 ACT score (American College Testing Inc., 2009). The score students earned on the ACT explained 8.1% of the variance in CGPA, validating its status as a nationally recognized predictor of college student success (Beecher & Fischer, 1999, Tom, 1982). American College Testing score was a significant predictor ( $p < .000$ ) of persistence, explaining 3.4% of the variance in credits completed, aligning with the research of Allen et al. (2008) and DesJardins et al. (2002).

Varsity athletes ( $M = 20.81, SD = 3.17$ ) and intramural participants ( $M = 20.80, SD = 3.36$ ) outperformed non-participants ( $M = 20.37, SD = 3.65$ ) by nearly one half of a point in CGPA. American College Testing score partially explains ( $R^2 = .081$ ) why the average CGPA for varsity athletes ( $M = 2.64, SD = .79$ ) and intramural participants ( $M = 2.50, SD = .90$ ) was higher than non-participants ( $M = 2.41, SD = .93$ ). Standardized test scores for this study explained 3.4% of the variance in credits completed, which may be partially attributed to increased ACT averages for varsity and intramural participants. Varsity athletes ( $M = 92.04, SD = 38.47$ ) and intramural participants ( $M = 82.97, SD = 45.68$ ) completed more credits than non-varsity athletes ( $M = 63.30, SD = 44.81$ ), and both reached the study's "on track" level of 80 credits for six-year graduation.

It is particularly interesting to find the sample mean ACT scores were significantly lower than both the national and university fall 2009 freshman class averages. Varsity athletes and intramural sports participants had slightly higher ACT scores than non-participants, but still well below the national and university averages. Contrary to the study by Allen et al. (2008), an average ACT score of less than 22, dampened neither the classroom success of varsity athletes and intramural participants, nor persistence to degree completion. Standardized test scores are nationally recognized predictors of college success, but may only be useful prior to college, as a student's campus involvement may overcome the obstacles created by minimum entrance requirements. Varsity athletes and intramural participants both outscored non-participants on the ACT and outgained non-participants in classroom success and persistence. The significant amount of variance explained by ACT scores impacted both dependent variables, yet lower than national and institution average scores strengthen the relationship with varsity and recreational sports involvement.

### **Gender**

The sample of 318 (51.4%) men and 301 (48.6%) women was not statistically similar ( $p = .085$ ) to the gender breakdown of all freshman students in fall 2009. Gender explained 4.2% of the variance in CGPA, making it a significant ( $p < .000$ ) predictor of classroom success. Students' gender also explained 1.1% of the variance in persistence to degree completion. Descriptive analysis revealed women outperformed men by .3 points in CGPA, and nearly seven credit hours, aligning with the research of Adler & Adler (1987) and Ullah & Wilson (2007).

Gender was the second largest predictor of CGPA and the fifth largest predictor of persistence to degree completion. College women are more likely to group together, socialize, and consequently succeed in the classroom, than their male counterparts, partially explaining the variance displayed in this study (Adler & Adler, 1987). Women are more likely to stay engaged in a campus through clubs and organizations, and persist to graduation than male peers (Ullah & Wilson, 2007). In all three groups there was a significant difference ( $p < .000$ ) in the CGPA and credits earned between men and women. Although male athletes may provide higher financial incentives for college athletic programs, they are certainly not raising classroom or graduation standards (Jolly, 2008; Meyer, 2005).

### **Ethnicity**

Ethnicity did not prove to be a significant predictor of variance in either CGPA or college credits completed similar to the results indicated by Huesman et al. (2009). This is likely a result of the low numbers in each ethnic group represented in the study, and the homogenous nature of the university's student body (Miller et al., 2012). The large percentage of White, Non-Hispanic Only students (81.9%) in the study may have effected the distribution of data, and subsequent predictive capacity of this variable. Ethnicity may be a significant predictor of college success at more diverse institutions as consistent with other research, but this study was unable to replicate those results (Education Trust, 2005; Hale, 2001; King, 2006).

## **College**

The five colleges encompassing each of the participant's declared majors, and University Programs representing undeclared majors, played a significant role ( $p < .000$ ) explaining 1.7% of the variance in CGPA, and 11.3% of variance in credits earned. Undeclared students were the worst performing students in both CGPA and credits earned, strengthening research by Leppel (2001) suggesting early major selection is essential to student success. The College of Education enrolled the study participants with the highest average CGPA ( $M = 2.91, SD = .70$ ) and the most average credits earned ( $M = 91.96, SD = 39.72$ ), similar to the results of a study by St. John et al. (2004). The ability of this college to enroll successful and persistent students is both a testament to academic advising and major structures. A student enters a teacher-education program with the notion they will seek employment as an elementary, middle, or secondary school teacher upon graduation. The ability of a college major to provide a career path is a strong intrinsic motivator for student success (Allen & Robbins, 2008, 2010; Pascarella & Terenzini, 2005; Tinto, 1993).

## **Socioeconomic Status**

The mean total household income for the sample was \$59,735.89 ( $SD = \$47,303.02$ ). Only 75% of the sample contained income data, as it is not required for university admission (Office of Admissions, 2013). Reasons for not submitting data included failure to complete a FAFSA, or the ability of the student to obtain scholarships from the University (S. Park personal communication, November 12, 2012). This may have slightly altered the data for total household income, but due to university



requirements income information could not be obtained for each student record. The sample mean is above the median household income for Kentucky of \$42,610 and for the United States of \$53,406 (U.S. Census Bureau, 2013). Total household income explained 3.5% of the variance in CGPA, and 1.8% of the variance in persistence to degree completion. Black and Hispanic students had the lowest household income and the lowest average CGPA consistent with the results described by Furr & Ellings (2002). These results are consistent with the research of Terezini et al. (1996) and Eagle & Tinto (2008) as students coming from financially stable backgrounds are more likely to succeed in the classroom.

Parent's education, the second socioeconomic variable in this study, was a variable with little significant predictive capacity for CGPA or college credits completed. Over 20% of the sample indicated they did not know their father's level of education, and an additional 24% indicated they did not know their mother's level of education. This omission of data may have caused a change in the correlation of this variable to CGPA and persistence to degree completion. Various studies espouse the correlation of parent's education to college success, but this study, possibly due to lack of accurate data, could not replicate these results (Choy, 2001; Eagle & Tinto, 2008).

### **Involvement Hours**

Total involvement hours in varsity and recreational sports provided quantitative division for the three study groups. Involvement hours as a single predictor explained 2.4% of the variance in CGPA and 7.2% of the variance in credits earned. It is not surprising to find increased levels of involvement hours leading to increased numbers of

credits completed, as a student must stay enrolled to participate in either varsity or recreational athletics. It is impossible for a varsity athlete to continue participation unless they complete a predetermined number of credits by the NCAA (Ferris et al., 2004). The same implication can be made about intramural participants, as they must stay academically eligible for university enrollment to compete on intramural teams, and increase involvement hours. Increased levels of varsity and recreational sports involvement were significant predictors ( $p < .000$ ) of both CGPA and college credits completed. The ability of these two activities to positively effect student success outcomes correlates with findings of numerous studies (Astin, 1993; Belch et al., 2001; Bryan et al., 1995; Ferris et al., 2004; Hall, 2006; Pierce, 2007).

### **Discussion of Findings**

Many significant and predictive relationships were observed in regards to varsity and recreational sports involvement. These findings further validate five of the independent variables as valuable predictive methods for student success and persistence to graduation. Three of the independent variables, although supported by research, had insignificant relationships within the regression model to CGPA and persistence. This may be linked to lack of diversity in the data pool, or insufficient reporting of variables due to instrumentation error.

### **American College Test Score**

Standardized test scores are used nationally as predictors of college student success and consequently admissions requirements. The score earned by study participants predicted 8.1% of the variance in CGPA, further validating the use of ACT

as an effective metric for college admittance. This finding is 20% lower than the 28% of variance espoused in American College Testing Incorporated's 1997 study on college student success prediction (Allen & Robbins, 2006). Additionally ACT score explained 3.4% of the variance in credits completed, validating its use as a predictor of continued enrollment. Contrary to a Garrett (2000) study standardized test scores proved to be a significant predictor of retention and a useful admissions requirement for different ethnicities. The use of standardized tests scores was found to be an effective entrance metric for the university and should continue to be used as a qualifier for freshman admittance.

### **College**

The college of chosen major was not indicated by research as a significant predictor of student success or persistence. Results of stepwise regression analysis revealed college of chosen major explained 11.3% of the variance in persistence to graduation. Students choosing majors from the College of Education completed 91.96 credits, 18 more than the sample mean of 73.04. College of Education students are mainly enrolled in majors involving teacher preparation, and are guided down a narrow career path. This partially explains why the explained variance was so large in this study, as students with clear career plans proceed to graduation at higher rates than their peers (Allen & Robbins, 2008, 2010; Pascarella & Terenzini, 2005; Tinto, 1993).

Undeclared students performed the worst in both CGPA ( $M = 1.76$ ) and credits earned ( $M = 20.00$ ), furthering the need for students to choose a course of study early in their college careers. Students failing to declare majors had CGPAs nearly .7 points

lower than their peers, and completed 47 less credits, consistent with results from Leppel (2001) finding undeclared students earned CGPA .5 points lower than peers. This finding exacerbates the need for increased advisement of incoming freshmen, and the need for early intervention with undeclared students.

### **Involvement Hours**

This independent variable was the focus of the study, and the quantifier for each study group. As a single variable involvement hours explained 2.4% of the variance in CGPA, and 7.2% of the variance in credits earned. Stepwise regression analysis revealed involvement hours explained .8% of the variance in CGPA and 4.1% of the variance in credits completed, as modeled with ACT, gender, college, and total household income. One-way analysis revealed involvement level did not have a significant effect on CGPA ( $p = .073$ ), but did have a significant effect ( $p < .000$ ) on credits earned. Paired contrasts revealed some involvement, varsity or intramural, did have a significant effect ( $p = .021$ ) on CGPA and credits earned ( $p < .000$ ) as compared to no involvement. There was no previous research pertaining to average number of involvement hours for either varsity athletes or intramural participants, only data pertaining to regulations on maximum varsity involvement hours. Findings for each study group are presented below.

**Varsity athletes.** Students participating in varsity athletics averaged the most involvement hours ( $M = 1,362.04$ ), earned the highest CGPA ( $M = 2.64$ ) .2 points higher than peers, and completed the most college credits ( $M = 92.04$ ) 26 more credits than peers. This contradicts the findings of Maloney & McCormick (1992) indicating varsity athletes performed nearly .3 points lower than peers, but supports the findings of Pierce

(2001) indicating athletes earned an overall mean CGPA of 3.24. Emerson et al. (2009) and Aries et al. (2004) indicated athletes performed equally in CGPA to non-participants at regional universities contrary to the .2 point advantage for varsity athletes at the research institution. The significant advantage afforded to varsity athletes in terms of academic assistance could be the catalyst for their increased success, but their involvement and subsequent connection to their school cannot be understated.

A regional university, such as the research institution seldom recruits the type of athlete wishing to leave school early to join the ranks of professional sports. Athletes stay at the university for a longer period and are persuaded by coaches and academic support staff to complete assignments, study for tests, and succeed in the classroom. Larger universities, sponsoring major athletic programs, may not replicate these same results, as their athletes may be focused on playing careers beyond the halls of their alma maters. Given their advanced levels of academic support and oversight, it is not surprising to find varsity athletes at the top in terms of classroom success and persistence.

**Intramural participants.** As a group, intramural participants completed an average of 35 involvement hours in four years, a mean CGPA of 2.50, and a mean of 82.97 college credits earned; all without assistance of the advanced academic support or monitoring afforded to varsity athletes. The mean CGPA of intramural participants was only one-tenth of a point higher than non-participants slightly less than results of Todd et al. (2009) indicating recreation users outperformed peers by one-fifth of a point. Watson et al. (2006) suggested recreational participation had no relationship to academic success or retention, contrary to these findings indicating a significant difference in retention for high users of intramural programs. The connection intramural sports create between the

student and school allows for a meaningful and social experience similar to a club or student organization (Astin, 1993).

The success of intramural participants is not only attributed to their involvement, but also but their overall development from freshmen to senior years. Staying involved outside the classroom is essential to a students drive to remain enrolled, and to concentrate efforts on academic pursuits. The increased rates of retention for intramural users replicate findings by Moffit (2010) indicating students involved in intramural sports are more engaged in campus life. The ability of students to balance course schedules and recreational activities is a testament to the intangible benefits involvement in sport provides.

**Non-participants.** Non-participants compiled the lowest CGPA ( $M = 2.41$ ) and lowest credits earned ( $M = 63.30$ ). This finding replicates results from both Astin (1993) and Moffit (2010) indicating non-users of recreational programs performed poorly in the classroom and failed to persist to graduation. No analysis was completed for these students as to involvement outside of sports, but given their inability to succeed in the classroom it is apparent lack of involvement can hurt a student's chance of success. The structure, belonging, and sense of purpose extracurricular activities provide are essential to the college experience. Non-participants cannot be classified as a group destined for failure, but as a group needing further examination as to their wants and needs on a college campus.

## **Implications for Practice**

### **College Admissions**

Admissions offices should continue current policies in regards to standardized testing and minimum entrance scores. Tests, such as the ACT are essential for determining a student's chance of success, and must remain as a standard on which to judge the academic preparation of high school graduates. Increased importance should be placed on standardized testing preparation, as results are a valuable predictor of college student success and persistence. Standardized testing cannot be the only metric judged for admittance, but it should be considered a heavily favored determinant of admissions decisions.

### **Academic Advising**

The need for a student to find a major consistent with their interests and career aspirations early in college is essential to curb attrition. Undeclared students are unsuccessful in the classroom, and are much more likely to leave school earlier than their declared peers. University policies and advising guidelines should be adjusted to steer students towards interesting majors with defined career paths. This study indicated students majoring in Education had a significant advantage over their peers due to the defined and available careers waiting after graduation. Students lacking a path to graduation are susceptible to disinterest in general coursework, and lack of direction in degree attainment. Every conceivable effort needs to be made to avoid undeclared students persisting in their current limbo between attrition and persistence.

## **Varsity Athletics**

At a regional university, mired in athletic mediocrity, there are few, if any, athletes leaving school early to join the professional ranks. Schools largely expecting athletes to complete four years of athletic eligibility have a duty and responsibility to assist athletes academically. This mandated academic assistance is of great value and must be continued as a successful venture between athletics and academic support.

Varsity athletes provide valuable branding and identity services for a university and in return they should be afforded special services for classroom assistance. The investment in the academic preparation of athletes is clearly working at this regional university and should be expanded and continued as finances allow.

## **Student Affairs**

Student Affairs programs exist to facilitate the extracurricular experiences of college students. The ability to engage students in a campus is essential for their success and persistence at a university. Recreational sports participation is a large involvement entity on college campuses and continued investments into these leisure activities are warranted. Students need not make the commitment involved with varsity athletics or Greek organizations to compete on intramural sports teams. One hour a week can engender the sense of belonging and purpose needed to keep a student engaged on campus, successful in the classroom, and persisting to graduation.

## **Campus Recreation**

Campus recreation directors are in need of scholarly studies to support increases in funding. Directors may use this research to illustrate the academic value of



participation recreational activities. The increase experienced by participants in both CGPA and credits earned is valuable data for the validation of the tuition and fees invested in recreational programming and facilities. The data obtained through this study will prove to be invaluable for countless recreation departments in their quest to solidify a place on campus as a powerful vector for experiential learning. Intramural programmers can use this information to justify the educational impact of programming, and substantiate their place as a powerful retention vector on campus. The significant impact recreational sports participation has on academic success and retention is essential to the learning-focused programming campus recreation departments produce on a weekly basis.

### **Recommendations for Further Research**

Results of this study raise numerous questions as to the relationships between extracurricular involvement and student success metrics. Recommendations for further research in the areas of extracurricular involvement and student success are presented below.

1. Research needs to be conducted with a full six-year cohort of data on varsity and intramural athletes to determine if these students do complete their undergraduate degrees. Conducting a study with six-years of longitudinal data could provide a thorough explanation of variance in the regression model. The time-limited data for this study could only place students into their junior years, leaving nearly forty credits of CGPA and credit completion data waiting for another researcher to examine in the future.

2. A future study involving students' time spent participating in additional recreational activities may provide insight into relationships between involvement and student success. Activities outside of intramural sports including adventure, fitness, and informal recreation programs may also play a role in the success of student users. This type of data is extremely hard to track over six years for such a large cohort of students, so a longitudinal study of a smaller sample may be the only feasible solution.
3. Future research examining the classroom success and persistence of other involvement groups such as Greek organizations or sport clubs should be conducted. These groups command a significant amount of time from their members, nestled somewhere between the time commitment of intramural participants and varsity athletes. These groups undoubtedly inspire their members to engage in their campus community, and deserve the research to validate their existence as valuable campus entities.
4. Mixed-methods research should be conducted to determine if students intrinsically value recreational or varsity sports participation as a factor in their academic success. Quantitative analysis illustrates correlations between two variables, but the feelings participants experience on the field or court may truly be the motivator needed to be successful in the classroom. Interviews with participants of all involvement levels could be conducted to see if increased time commitment changed feelings of engagement in the campus community.
5. Future research is needed with a more diverse data set to determine if ethnicity does explain a significant amount of variance in student success and persistence.

The homogeneous nature of the data set did not allow for a breadth of analysis with this predictor variable. Research at an institution with a more diverse population, or more succinct stratified random sampling could increase the diversity of the sample.

6. Paired contrasts revealed there was no significant difference between varsity athletes and intramural participants in either CGPA or credits earned. Future research should be conducted to determine if the additional funding spent on varsity athlete academic support is necessary, or if collegiate sport participation itself is the mitigating factor in classroom success.
7. Future research should be conducted in an attempt to replicate the findings. Regression modeling eliminated three of the predictor variables. These three variables may prove to be significant predictors in future studies. A full data set, with no missing records, could provide significant findings for additional variables altering the prediction capacity of the regression model.

### **Conclusion**

This study included predictors of student success and persistence for students over a period of four years at a Carnegie Foundation (2014) Masters Two regional comprehensive university. The researcher provided insight into the predictive relationships between involvement in varsity and recreational sports and student success outcomes. Data posited implications for continued financial support of athletic and recreational programs as influential factors in the academic motivation of college students. A recommendation was made to continue support for interest-major congruence, and a clear definition of career paths for chosen college majors. Finally,

future research was suggested to continue this research through the final two years of the cohort to determine if involvement hours correlated to degree conferment.

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APPENDIX A  
IRB APPROVAL LETTER



EASTERN KENTUCKY UNIVERSITY  
*Serving Kentuckians Since 1906*

Graduate Education and Research  
Division of Sponsored Programs  
Institutional Review Board

Jones 414, Coates CPO 20  
521 Lancaster Avenue  
Richmond, Kentucky 40475-3102  
(859) 622-3636; Fax (859) 622-6610  
<http://www.sponsoredprograms.eku.edu>

#### NOTICE OF IRB EXEMPTION STATUS

**Protocol Number: 13-196**

Institutional Review Board IRB00002836, DHHS FWA00003332

Principal Investigator: **Greg Corack** Faculty Advisor: **James Bliss**

Project Title: **Collegiate Athletic Participation and Its Effect on Student Success**

Exemption Date: **4/23/2013**

Approved by: **Dr. Michael Collier, IRB Member**

This document confirms that the Institutional Review Board (IRB) has granted exempt status for the above referenced research project as outlined in the application submitted for IRB review with an immediate effective date. Exempt status means that your research is exempt from further review for a period of three years from the original notification date if no changes are made to the original protocol. If you plan to continue the project beyond three years, you are required to reapply for exemption.

**Principal Investigator Responsibilities:** It is the responsibility of the principal investigator to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects and follow the approved protocol.

**Adverse Events:** Any adverse or unexpected events that occur in conjunction with this study must be reported to the IRB within ten calendar days of the occurrence.

**Changes to Approved Research Protocol:** If changes to the approved research protocol become necessary, a description of those changes must be submitted for IRB review and approval prior to implementation. If the changes result in a change in your project's exempt status, you will be required to submit an application for expedited or full IRB review. Changes include, but are not limited to, those involving study personnel, subjects, and procedures.

**Other Provisions of Approval, if applicable:** None

Please contact Sponsored Programs at 859-622-3636 or send email to [tiffany.hamblin@eku.edu](mailto:tiffany.hamblin@eku.edu) or [lisa.royalty@eku.edu](mailto:lisa.royalty@eku.edu) with questions.



Eastern Kentucky University is an Equal Opportunity/Affirmative Action Employer and Educational Institution.

APPENDIX B  
INTRAMURAL SPORTS CALENDARS

**Table A.1. Intramural Sports Calendar 2009-2010**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
Flag Football	8/24 – 9/1	9/7
Dodgeball	8/24 – 9/1	9/7
Volleyball	8/31 – 9/8	9/14
Tennis	8/31 – 9/8	9/14
4-Person Golf Scramble (9 Holes)	9/14 – 9/22	TBA
Xbox 360 Madden 2010 Tournaments	Week Prior to Event	9/23, 9/29, 10/5 @ 6pm
5k Homecoming Run	9/14 – 10/17	10/17
Texas Hold'Em	Week Prior to Event	10/6, 12/9, 2/3
Outdoor Soccer	10/5 – 10/14	10/19
Underwater Hockey	10/12 – 10/20	10/26
Wiffleball	10/12 – 10/20	10/26
Xbox 360 Guitar Hero	10/19 – 10/27	10/28 @ 6pm
Table Tennis	Week Prior to Event	11/4, 2/10 @ 6pm
Fall 5 on 5 Basketball	10/26 – 11/3	11/9
N64 GoldenEye 007	11/16 – 12/1	12/2 @ 6pm
Wii Tournament	11/30 – 12/7	12/8 @ 6pm
Spring 5 on 5 Basketball	12/7 – 1/12	1/18
Innertube Water Polo	1/11 – 1/19	1/25



**Table A.1. (continued)**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
Wallyball	1/11 – 1/19	1/25
Wii Tournament	1/25 – 2/1	2/2 @ 6pm
Xbox 360 NCAA Bball 2010 Tourney	Week Prior to Event	2/17, 2/25, 3/1
Swim Meet	2/1 – 2/16	2/22 @ 7:30pm
Texas Hold’Em Championships	Top 6 From Each Tournament	2/24 @ 6pm
Indoor Soccer	2/22 – 3/2	3/15
Softball	2/22 – 3/2	3/15
Ultimate Frisbee	2/22 – 3/2	3/15
Table Tennis Championships	Top 6 From Each Tournament	3/24 @ 6pm
Wii Tournament	3/22 – 3/30	3/31 @ 6pm
3 on 3 Basketball Tournament	3/22 – 3/30	4/5
Triathlon	2/1 – 4/13	4/17
2-Person Golf Scramble (18 Holes)	4/5 – 4/13	TBA
Cornhole Tournament	4/12 – 4/20	4/21 @ 4pm

*Note. Developed from 2009-2010 intramural sports magnet.*

**Table A.2. Intramural Sports Calendar 2010-2011**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
Fall Flag Football	8/23 – 8/31	9/6
Outdoor Soccer	8/23 – 8/31	9/6
Fall Sand Volleyball Tournament	8/23 – 8/31	9/6
Indoor Volleyball	9/6 – 9/14	9/20
Xbox 360 Madden 2011 Tournaments	Week Prior	9/22, 9/28
4-Person Golf Scramble (9 Holes)	9/13– 9/21	TBA
5k Homecoming Run	9/13 – 10/30	10/30
Dodgeball	10/11 – 10/19	10/25
Underwater Hockey	10/11 – 10/19	10/25
Wiffleball Tournament	10/11 – 10/19	10/25
Texas Hold’Em Series	Week Prior	11/10, 12/8
Fall 5 on 5 Basketball Tournament	11/1 -11/9	11/15
Kickball to Kick Butts Tournament	11/1 – 11/9	11/15
Spring 5 on 5 Basketball	12/6 – 1/11	1/17
Innertube Water Polo	1/10 – 1/18	1/24
Table Tennis Tournament	1/24 – 2/1	2/2
Indoor Soccer	2/21 – 3/1	3/14
Softball	2/21 – 3/1	3/14
Ultimate Frisbee	2/21 – 3/1	3/14
Tennis	3/14 – 3/22	3/24

**Table A.2. (continued)**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
Spring Kickball	3/14 – 3/22	3/28
Spring Sand Volleyball	3/14 – 3/22	3/28
Swim Meet	3/14 – 3/24	3/28
Triathlon	2/1 – 4/4	4/9
2-Person Golf Scramble (18 Holes)	4/4 – 4/12	TBA

*Note. Developed from 2010-2011 intramural sports magnet.*

**Table A.3. Intramural Sports Calendar 2011-2012**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
7 v 7 Flag Football	8/20 - 8/27	9/3
Softball	8/20 - 8/27	9/3
4 v 4 Sand Volleyball	8/20 - 8/27	9/3
Tennis	8/27 - 9/4	9/10
Xbox 360 Madden 2012 Tournament	9/10 - 9/17	9/19 @ 6:00pm
2-Person Golf Scramble (18 Holes)	9/10 - 9/17	TBD
5k Homecoming Run	9/10 - 10/13	10/13
Fall Basketball Tournament	10/1 - 10/8	10/15
4 v 4 Indoor Soccer	10/8 - 10/15	10/22
6 v 6 Indoor Volleyball	10/8 - 10/15	10/22
Wiffleball	10/8 - 10/15	10/22
Battleship in the Pool	10/29 – 11/5	11/14 @ 8:00pm

**Table A.3. (continued)**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
5 on 5 Basketball	12/5-1/10	1/16
Innertube Water Polo	1/9-1/16	1/22
Swim Meet	1/16-1/26	1/30
Table Tennis Tournament	1/30-2/6	2/8 @ 6:00pm
Texas Hold'Em Tournament	2/6-2/13	2/15
7 v 7 Outdoor Soccer	2/20-2/27	3/12
Dodgeball	2/20-2/27	3/12
Ultimate Frisbee	2/20-2/27	3/12
4 v 4 Flag Football	2/20-2/27	3/12
Triathlon	2/1-4/9	4/14
4-Person Golf Scramble (9 Holes)	4/2-4/9	TBD

*Note. Developed from 2011-2012 intramural sports magnet.*

**Table A.4. Intramural Sports Calendar 2012-2013**

<b>Event</b>	<b>Registration</b>	<b>Start of Play</b>
7 v 7 Flag Football	8/20 - 8/27	9/3
Softball	8/20 - 8/27	9/3
4 v 4 Sand Volleyball	8/20 - 8/27	9/3
Xbox 360 Madden 2013	9/10 - 9/17	9/19

**Table A.4. (continued)**

<b>Event</b>	<b>Registration</b>	<b>Start</b>
2-Person Golf Scramble (18 Holes)	9/10 - 9/17	TBD
5k Homecoming Run	9/10 - 10/13	10/13
IronMan Challenge	10/1 - 10/31	10/1
4 v 4 Indoor Soccer	10/8 - 10/15	10/22
6 v 6 Indoor Volleyball	10/8 - 10/15	10/22
Wiffleball	10/8 - 10/15	10/22
Dodge Breast Cancer Tournament	10/15 – 10/22	10/26
Midnight Madness Basketball	11/19 - 11/27	11/30
5 on 5 Basketball	12/3 - 1/15	1/21
Dodgeball	12/3 - 1/15	1/21
Innertube Water Polo	1/14 - 1/21	1/28
Table Tennis Tournament	1/28 - 2/4	2/6
Texas Hold'Em Tournament	2/4 - 2/11	2/13
7 v 7 Outdoor Soccer	2/25 - 3/4	3/18
Ultimate Frisbee	2/25 - 3/4	3/18
4 v 4 Flag Football	2/25 - 3/4	3/18
Tennis	3/18 – 3/25	3/26
Triathlon	2/4 - 4/8	4/13
Battleship in the Pool	4/8 - 4/15	4/17
4-Person Golf Scramble (9 Holes)	4/8 - 4/15	TBD

*Note. Developed from 2012-2013 intramural sports magnet.*

APPENDIX C  
UNDERGRADUATE ADMISSIONS APPLICATION

# EASTERN KENTUCKY UNIVERSITY

## Undergraduate Admission Application Form

Complete and mail this form along with your one-time, non-refundable \$30 Application Fee to:

Office of Admissions  
112 Student Success Building, 55B CPO 54  
Eastern Kentucky University  
521 Lancaster Avenue  
Richmond, KY 40475-3154

859-622-2106 or 800-465-9191  
859-622-8024 (Fax)  
admissions@eku.edu

Deadlines:

Fall: August 1  
Spring: December 1

Do Not Write In This Area

Date \_\_\_\_\_ Date \_\_\_\_\_  
AdmTyp \_\_\_\_\_ StuTyp \_\_\_\_\_  
Decision \_\_\_\_\_  
Reviewed by \_\_\_\_\_  
Semester \_\_\_\_\_  
EKU ID No \_\_\_\_\_

1. Name \_\_\_\_\_  
Last First Middle
2. Soc. Sec. No. \_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_ (REQUIRED)
3. Other Names Under Which Records May Be Listed \_\_\_\_\_
4. Permanent Address  
Street Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
County \_\_\_\_\_ Home Telephone \_\_\_\_\_ Cell \_\_\_\_\_
5. Current Mailing Address, if different from above  
Street Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
County \_\_\_\_\_ Home Telephone \_\_\_\_\_ Cell \_\_\_\_\_
6. May we send a text message to your cell phone?  Yes  No
7. Gender  Male  Female
8. Date of Birth \_\_\_\_\_ Student's E-mail Address \_\_\_\_\_  
Month Day Year  
Parent's E-mail Address \_\_\_\_\_
9. Do you have one of the following connections to military service?  
 Active Duty  Reserve/Guard  Veteran  Dependent with VA eligibility
10. Ethnic Group (This information about predominant ethnic background is required in order that EKU may demonstrate to the U.S. Department of Education its compliance with Title VI of the 1964 Civil Rights Act. This information is used for statistical purposes only.)
  - a) Do you consider yourself to be Hispanic/Latino?  Yes  No
  - b) Please select one or more of the following racial groups to describe yourself:  
 American Indian or Alaska Native  Asian  Black or African American  Native Hawaiian or other Pacific Islander  White
11. If you are an international student, please specify country of citizenship, type of visa and the date your visa expires.  
\_\_\_\_\_
12. During which semester do you plan to attend EKU?  
Year \_\_\_\_\_  Fall (August)  Spring (January)  Summer
13. Where will you be taking classes?  
 Richmond  Corbin  Danville  Manchester  Other (please specify) \_\_\_\_\_

14. High (or) Home School \_\_\_\_\_

Street Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
County \_\_\_\_\_ Telephone \_\_\_\_\_

Graduated—Month \_\_\_\_ Year \_\_\_\_     Will Graduate—Month \_\_\_\_ Year \_\_\_\_     Passed GED—Month \_\_\_\_ Year \_\_\_\_

15. Did either of your parents receive a degree from EKU?     Yes     No    What type of degree and when? \_\_\_\_\_

16. Please give specific dates (month/year) during which you have resided in Kentucky \_\_\_\_\_

17. Indicate your intended program of study at EKU (see list of majors at [www.eku.edu/futurestudents/programs.php](http://www.eku.edu/futurestudents/programs.php)).  
If you have not yet made a decision, please write "undeclared."

Major: \_\_\_\_\_ Concentration: \_\_\_\_\_

18. Degree Pursued:     Two-Year Program (Associate Degree)     Four-Year Program (Bachelor's Degree)  
                                   Special Student (Visiting, High School Visitor, or Non-Degree)

19. Applying as (check one):     First-Time Freshman  
   Transfer (You have attempted college work elsewhere, after high school graduation.)  
   Readmission (You previously attended EKU.)  
  Please indicate semester last attended \_\_\_\_\_ Year \_\_\_\_\_  
  Have you ever taken off-campus extension courses?     Yes     No  
   Post Bachelor's (You have a four-year degree and are working on an additional undergraduate degree.)  
   Visiting (You are pursuing a degree at another institution and will transfer EKU credits back to that institution.)  
   High School Visitor (sophomore or junior in high school wishing to enroll at EKU)  
   Non-Degree (You are not pursuing a degree.)

20. Please list all colleges/universities attended since leaving high school

Name of College/University	City/State	Degree (if any)	Dates of Attendance—Month/Year
----------------------------	------------	-----------------	--------------------------------

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_  
5. \_\_\_\_\_  
6. \_\_\_\_\_

21. Financial Aid: Do you want to apply for financial assistance?     Yes     No

22. ROTC Scholarships: Are you interested in ROTC scholarships?     Yes     No

23. Housing (see housing policies at [www.housing.eku.edu](http://www.housing.eku.edu)): Do you plan to     live on campus     commute

24. Did either of your parents attend college?     Yes     No

25. Scholarships: If you want to apply for an academic scholarship, see enclosed application or visit [www.scholarships.eku.edu](http://www.scholarships.eku.edu).

26. I understand that withholding information on this application or giving false information will make me ineligible for admission.  
With this in mind, I certify that the above statements are correct and complete.

\_\_\_\_\_  
Signature (Must be signed; DO NOT PRINT)

\_\_\_\_\_  
Date

A copy of the Eastern Kentucky University annual security report and the daily crime log is available for viewing. Information on viewing these webpages and obtaining a copy of the report can be found at [www.publicaffairs.eku.edu/information](http://www.publicaffairs.eku.edu/information).



APPENDIX D  
INTRAMURAL SPORTS SEASON LENGTHS

**Table A.5. Intramural Sports Season Lengths**

<b>Sport</b>	<b>Season Length</b>
2-Person Golf Scramble	3 Weeks
4-Person Golf Scramble	3 Weeks
4 v 4 Flag Football	7 Weeks
4 v 4 Sand Volleyball	6 Weeks
7 v 7 Flag Football	7 Weeks
Dodgeball	7 Weeks
Fall Basketball	4 Weeks
Indoor Soccer	6 Weeks
Indoor Volleyball	6 Weeks
Innertube Water Polo	6 Weeks
Kickball	4 Weeks
Outdoor Soccer	7 Weeks
Softball	7 Weeks
Spring Basketball	7 Weeks
Swim Meet	3 Weeks
Table Tennis	2 Weeks
Tennis	7 Weeks
Texas Hold'Em	4 Weeks
Ultimate Frisbee	7 Weeks
Underwater Hockey	5 Weeks
Wiffleball	6 Weeks
Xbox 360	3 Weeks

*Note. Averages based on five-week regular season.*

APPENDIX E

VARSITY SPORTS AVERAGE SEASON LENGTHS 2009-2013

**Table A.6. Varsity Sports Average Season Lengths 2009-2013**

Sport	In-Season Length	Out-of-Season Length (Total school weeks – In-season weeks)
Football	18	14
Basketball – Men’s	22	10
Basketball – Women’s	22	10
Baseball	18	14
Softball	16	16
Cross Country – Men’s	18	14
Cross Country – Women’s	18	14
Indoor Track – Men’s	22	10
Indoor Track – Women’s	22	10
Track & Field – Men’s	22	10
Track & Field – Women’s	22	10
Golf – Men’s	22	10
Golf – Women’s	22	10
Soccer – Women’s	16	16
Tennis - Men’s	22	10
Tennis – Women’s	22	10
Volleyball – Women’s	20	12

APPENDIX F

SAMPLE ETHNICITY BY GENDER

**Table A.7. Sample Ethnicity by Gender**

<b>Ethnicity</b>		<b>Men (%)</b>	<b>Women (%)</b>	<b>Total (%)</b>
Race/Ethnicity Unknown	Count	9	5	14
	(%) Within Ethnicity	(64.3)	(35.7)	(100.0)
	(%) Within Gender	(3.0)	(1.6)	(2.3)
	(%) of Total	(1.5)	(0.8)	(2.3)
White, Non-Hispanic Only	Count	234	272	506
	(%) Within Ethnicity	(46.2)	(53.8)	(100.0)
	(%) Within Gender	(77.7)	(85.5)	(81.7)
	(%) of Total	(37.8)	(43.9)	(81.7)
Black, Non-Hispanic Only	Count	38	33	71
	(%) Within Ethnicity	(53.5)	(46.5)	(100.0)
	(%) Within Gender	(12.6)	(10.4)	(11.5)
	(%) of Total	(6.1)	(5.3)	(11.5)
Hispanic or Latino, Regardless of Race	Count	5	2	7
	(%) Within Ethnicity	(71.4)	(28.6)	(100.0)
	(%) Within Gender	(1.7)	(0.6)	(1.1)
	(%) of Total	(0.8)	(0.3)	(2.1)
Asian, Non-Hispanic Only	Count	3	3	6
	(%) Within Ethnicity	(50.0)	(50.0)	(100.0)
	(%) Within Gender	(1.0)	(0.9)	(1.0)
	(%) of Total	(0.5)	(0.5)	(1.0)
American Indian or Alaskan Native, Non-Hispanic Only	Count	0	2	2
	(%) Within Ethnicity	(0.0)	(100.0)	(100.0)
	(%) Within Gender	(0.0)	(0.6)	(0.3)
	(%) of Total	(0.0)	(0.3)	(0.3)

**Table A.7. (continued)**

<b>Ethnicity</b>		<b>Men (%)</b>	<b>Women (%)</b>	<b>Total (%)</b>
Nonresident Alien	Count	12	1	13
	(%) Within Ethnicity	(92.3)	(7.7)	(100.0)
	(%) Within Gender	(4.0)	(0.3)	(2.1)
	(%) of Total	(1.9)	(0.2)	(2.1)

## VITA

GREGORY JOSEPH CORACK

### DATE AND PLACE OF BIRTH

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MAY 20, 1983; FAIRFAX, VIRGINIA

### EDUCATION

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Eastern Kentucky University  
*Doctoral Candidate in Educational Leadership and Policy Studies*

James Madison University  
*Master of Science in Kinesiology Sport Management*

James Madison University  
Bachelor of Science in Kinesiology Sport Management, Business Minor

### PROFESSIONAL EXPERIENCE

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June 2007 – Present Eastern Kentucky University  
*Assistant Director of Campus Recreation*

August 2005 – May 2007 James Madison University  
*Graduate Assistant University Recreation*

December 2006 – April 2007 University of Virginia  
*Intern Intramural-Recreational Sports*

### PRESENTATIONS

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- *The Servant Leadership Way*, NIRSA, Region II Conference, October 2011
- *The ABCD's of Customer Service*, KIRSA State Conference, September 2010

### PROFESSIONAL CERTIFICATIONS

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- National Swimming Pool Foundation Certified Pool Operator
- Aerobics and Fitness Association of America Personal Trainer
- Aerobics and Fitness Association of America Primary Group Fitness
- SOLO Wilderness Schools Wilderness First Aid
- American Red Cross CPR/First Aid for the Professional Rescuer Instructor
- American Red Cross Lifeguard
- NIRSA Registry of Collegiate Recreational Sports Professionals
- USSF Soccer Referee Grade 7