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NCAA DIVISION III STUDENT-ATHLETE'S ATTITUDES AND KNOWLEDGE
OF ANABOLIC STEROIDS

by
Keith Smicklo

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree in Higher Education Administration
of
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at
Rowan University
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Approved by _____
Dr. Burton Sisco

Date Approved May 31, 2006

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ABSTRACT

Keith Smicklo

NCAA DIVISION III STUDENT-ATHLETES'S ATTITUDES AND KNOWLEDGE OF ANABOLIC STEROIDS

2005/2006

Dr. Burton Sisco

Master of Arts in Higher Education Administration

The purpose of this study was to provide data on the attitudes, knowledge, and deterrents of National Collegiate Athletic Association (NCAA) Division III student-athletes related to illegal steroid abuse. One hundred and two student-athletes from Rowan University completed a survey to evaluate their knowledge of anabolic steroids and the NCAA Division III Drug-testing policy. The student-athletes also responded to statements regarding their current attitudes towards anabolic steroids and some deterrents to the use of steroids. Results indicated that NCAA Division III student-athletes do possess general knowledge of anabolic steroids and feel the use of anabolic steroids during athletic competition is morally wrong. The findings also suggest that there is a significant difference in the attitudes of male and female athletes in their opinions on anabolic steroid use, general knowledge of anabolic steroids, NCAA Drug-testing knowledge, and deterrents to the use of anabolic steroids.

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TABLE OF CONTENTS

CHAPTER		PAGE
ONE	INTRODUCTION.....	1
	Statement of the Problem.....	2
	Significance of the Problem.....	4
	Purpose of the Study.....	5
	Relevance of the Study.....	5
	Assumptions and Limitations.....	6
	Operational Definition of Terms.....	7
	Research Questions.....	10
	Organization of Remaining Chapters.....	10
TWO	REVIEW OF RELATED LITERATURE.....	12
	What is an Anabolic Steroid.....	12
	History of Anabolic Steroids.....	13
	Why People Take Anabolic Steroids.....	15
	How People Take Anabolic Steroids.....	17
	What Athletes Want from Anabolic Steroids.....	18
	Health Problems Associated with Anabolic Steroids..	19
	Common Male Side Effects.....	21
	Common Female Side Effects.....	22
	NCAA Drug Testing Program.....	22
	Summary of Literature Review.....	25
THREE	METHODOLOGY.....	27
	Context of the Study.....	27
	Population and Sample Selection.....	27
	Instrumentation.....	28
	Data Collection.....	29
	Procedure of Gathering Data.....	30
	Data Analysis.....	30
FOUR	FINDINGS.....	32
	Profile of the Sample.....	32
	Research Questions.....	34
FIVE	SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS.....	48
	Summary of the Study.....	48

Purpose of the Study.....	48
Methodology.....	49
Data Analysis.....	50
Discussion of the Findings.....	51
Conclusions.....	55
Recommendations for Future Research.....	56
REFERENCES.....	58
APPENDIX A: Institutional Review Board	
Application (IRB) Rowan University	
Approval.....	60
APPENDIX B: Cover Letter.....	69
APPENDIX C: Consent Form.....	71
APPENDIX D: Survey.....	73

LIST OF TABLES

TABLE		PAGE
4.1	Gender.....	32
4.2	Current Year in School.....	33
4.3	Sports Represented.....	33
4.4	Drug Tested Student-Athletes.....	34
4.5	Number of Teammates Drug Tested by the NCAA.....	34
4.6	Student-athlete's Attitudes Toward Anabolic Steroids.....	36
4.7	Student-athlete's Knowledge of Anabolic Steroids.....	38
4.8	Student-athlete's Knowledge of NCAA Division III Drug Testing Policy.....	40
4.9	Deterrents of Anabolic Steroid Use in Student-athletes.....	41
4.10	Significant Difference Between Males and Females on Opinions of Anabolic Steroids.....	43
4.11	Significant Difference Between Males and Females on General Knowledge.....	44
4.12	Significant Difference Between Males and Females on the NCAA Drug Testing Policy.....	46

4.13	Significant Difference Between Males and Females on Deterrents from Steroids.....	47
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CHAPTER ONE

INTRODUCTION

The athletic world has come under much scrutiny recently. On March 17, 2005 in the nation's capitol, Washington D.C., the United States House of Representatives Committee on Government Reform conducted a hearing on steroid abuse in Major League Baseball. The primary cause for the hearing was the numerous allegations of illegal steroid use in professional baseball. One of the biggest allegations of steroid use was published in *Juiced*, a book written by Jose Canseco. The book accused several former major leaguers including Mark McGwire, former single-season homerun king, of taking steroids during their playing careers. The book not only accused many players of steroid abuse, but the managers, owners, and Bud Selig, commissioner of Major League Baseball, of knowing about rampant steroid use and doing nothing about it.

During the congressional hearing six former and current major league baseball players were subpoenaed to appear before congress to testify on the steroid issue. The six players were Jose Canseco, Mark McGwire, Curt Schilling, Rafael Palmeiro, Frank Thomas, and Sammy Sosa. The six players were asked numerous questions on steroids in Major League Baseball. The representatives of the house committee posed difficult questions at the panel of players trying to uncover information on the allegations of steroids use. The representatives tried to determine why Major League Baseball did not have a steroid policy in place until 2003. Under oath the players, including Mark McGwire, seemed very apprehensive and dodged many questions. McGwire did not answer any question about his playing days, stating that he was at the hearings to talk

about the future, not the past. One player, Rafael Palmeiro stated under oath that he had never taken any illegal substance including steroids.

Palmeiro, a 40-year-old slugger with the Baltimore Orioles, became only the fourth player in Major League Baseball history to reach 3,000 hits and 500 career home runs on July 15, 2005, pitting himself alongside Hank Aaron, Willie Mays, and Eddie Murray (2005, August 2)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>). Major League Baseball celebrated Palmeiro's accomplishment and awarded him with many accolades. Two weeks later on August 1, 2005, Major League Baseball revealed that Palmeiro tested positive for illegal steroids. This tarnished the records that Palmeiro accomplished only two weeks earlier and may even hurt his chances of being inducted into the Major League Baseball Hall of Fame.

Statement of the Problem

Amateur athletes view professional athletes as role models and try to imitate them in all aspects of life. Many college athletes see the multi-million dollar contracts and endorsement deals that professional athletes have, and may be willing to try illegal substances in order to get an extra edge against their competition. Steroids are a major problem in intercollegiate athletics and some incidences have occurred recently to draw concern to National Collegiate Athletic Association (NCAA).

On May 17, 2005, Shawn Jordan, a reserve fullback on the Louisiana State University (LSU) football team, was caught driving across a bridge from Ciudad Juarez, Mexico, to El Paso, Texas when U. S. Customs and Border inspectors stopped him, they seized 30 milliliters of anabolic steroids (2005, May 22)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>). This seizure of steroids was not an

isolated case. In 2001, two football players from the University of Texas-El Paso were arrested on charges of transporting steroids across the border (2005, May 22)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>). Further, Stephan Cooper of the University of Maine, the 2002 Division I-AA football player of the year, admitted to the possession of illegal steroids after a police officer found 1,200 pills in his car during a routine traffic stop. Cooper, who reported about the situation to his coach at the University of Maine, said he never used steroids while in college. He planned to use the steroids to get ready for the National Football League (NFL) draft.

Football is not the only sport where steroids are impacting the landscape of the game. In January of 2003, Andy Slocum a backup center on the Texas A&M basketball team was arrested at a fraternity party in College Station, Texas. Police officers arrested Slocum and found syringes and anabolic steroids in his possession (Suggs, 2003). In the wake of steroid allegations involving the Duke University baseball team, several college baseball coaches were calling on more drug testing from the NCAA, "I think steroids in college baseball is getting out of hand," said East Carolina University head baseball coach Randy Mazy. "It filters down from the majors. Steroids in college baseball are a problem" (2005, May 23)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>). Coach Mazey is not alone in his opinion on steroid use, North Carolina State head baseball coach Elliot Avent also believes steroid use is growing in college baseball. "You hear things in this business. I heard things (about steroids in college baseball) for the past four or five years," Avent said. "I think it has trickled down from the major leagues. I think most things from pro sports trickle down. Anything that happens from earrings to goatees, you're going to see trickle down.

Something serious as steroids, you'd just think they be more careful. We are going to have to get a hold of it" (2005, May 23)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>). A report by the NCAA shows that the NCAA did not test a single Division I baseball player for steroids during the 2003 regular season (2005, May 23)(Retrieved November 2, 2005 from <http://web.lexis-nexis.com/universe/document>).

Significance of the Problem

Athletes all over the world have been trying things to get bigger, stronger, and faster for more then 50 years, and today's college men and women are no exception. NCAA officials believed that steroid use went out in the 1980s with the new drug testing policies and medical revelations associated with the health risks due to long-term steroid use. The problem with steroids may have been silent for some time, but it has never gone away. Several college coaches and former NCAA players believe steroid use is rampant in intercollegiate athletics and that more student-athletes need to be educated on the possible dangers associated with anabolic steroid use.

The NCAA and other sports federations have banned steroids to ensure fair competition while keeping student-athletes healthy and safe. However, student-athletes still believe suspension, jail time, side effects, and even death are worth the risk to make it to the top, whether it be the professional ranks, the Olympics, or just a conference title (Suggs, 2003). Steroid use affects all student athletes, no matter if they are playing at a very small Division III institution or at a premier Division I institution. Athletes want to perform well, and if steroids will help achieve goals, student-athletes might experiment with them.

Purpose of the Study

Given the growing popularity of steroid use among athletes, and our society's emphasis on winning, it is important that the NCAA become familiar with the student-athletes attitudes on steroids. The purpose of this study was to provide data on the attitudes, knowledge, and deterrents of NCAA Division III student-athletes related to illegal steroid abuse. NCAA Division III athletics place special importance on the impact of athletics on the participants rather than on the spectators, and place greater emphasis on the internal constituency (students, alumni, institutional personnel) than on the general public and its entertainment needs (Retrieved November 8, 2005 from http://www1.ncaa.org/membership/governance/division_III/d3_philosophy_stmt). Division III athletics can only grant financial aid based on need not athletic ability. Further, NCAA Division III institutions assure that athletic participants are not treated differently from other members of the student body (Retrieved November 8, 2005 from http://www1.ncaa.org/membership/governance/division_III/d3_philosophy_stmt).

Relevance of the Study

Since the philosophy of NCAA Division III athletics focuses on participation and the overall academic and athletic experience, the NCAA does not place as much emphasis on the issue of drug testing in Division III. NCAA Division I and II institutions have year-round drug testing. This allows the NCAA to test any student-athlete involved in any sport offered by the institution during the entire academic school year. NCAA Division III institutions are only subjected to drug testing during NCAA championships or post-season events. This means NCAA Division III athletes could participate in a

sport for four years and not be tested by the NCAA. Division III athletes are aware that the NCAA will not test them in the off-season, which could lead to experimentation with illegal steroids. The Division III testing policy is more lenient than the Division I and II policy; this study sought to determine the Division III student-athlete's knowledge and attitudes about steroid use. Further, this study investigated the major deterrents for Division III student-athletes against steroid use.

Assumptions and Limitations

Members of Division III institutions may benefit from this study. Currently there is limited research focused directly on Division III student-athletes and their knowledge and attitudes towards steroid use. Steroids are a serious problem in amateur athletics and the study will lead to a better perspective of the attitudes Division III athletes have on them. The study should benefit Division III head coaches who work with the student-athletes on a day-to-day basis. Coaches should be one of the major deterrents of steroid abuse, but coaches need to know the attitudes of athletes about steroids. Lastly, the study could help Division III athletic administrators. Division III administrators who work with the NCAA need to be aware of the attitudes and knowledge of Division III athletes towards steroids, so proper rules and regulations can be implemented to try and eliminate steroid use in Division III athletics.

It is assumed that all Division III student-athletes surveyed were familiar with anabolic steroids. Further, it is assumed that the student-athletes surveyed had basic knowledge about how steroids work and the health risks associated with steroid use. The student-athletes that were surveyed need to know general knowledge about steroids for accurate data collection. Lastly, with steroids being illegal and banned by the NCAA, it

is assumed that the student-athletes answered the survey questions truthfully. Subjects could have felt reluctant on revealing true thoughts and feelings. Subjects might have answered the survey items in a manner that sought to please the researcher.

A limitation with the study is the researcher used student-athletes from Rowan University. Rowan University is a Division III institution that competes in 16 varsity sports. Rowan has seven male teams and nine female teams that are sanctioned by the NCAA Division III and compete in the New Jersey Athletic Conference (NJAC). The university has strong athletic teams that are consistently competing for NJAC and NCAA national titles. While Rowan University is a member institution in NCAA Division III athletics and its athletes compete under NCAA Division III bylaws, it cannot be assumed that the knowledge and attitudes of Rowan athletes are in compliance with other Division III colleges and universities throughout the United States. Also, deterrents to the use of steroids by the subjects maybe limited because resources might not be available at other institutions. For example, a coach at Rowan University might educate his or her team on steroid abuse. This could be a major deterrent for some subjects, but this coach is limited to the number of students he or she works with because coaches only deal with students at his or her institution. Further, the researcher may have biased the findings of the study because of personal experience as a former Division III student-athlete and a current assistant coach.

Operational Definition of Terms

The following definitions apply to the terms used in the study:

Anabolic Androgenic Steroids: Anabolic Androgenic Steroids represent chemical derivatives of the male sex hormone testosterone. Anabolic and androgenic are the

functions in the hormone testosterone that cause male secondary sex characteristics and help build muscle and other bodily tissue. For the purpose of the study Anabolic Androgenic Steroids, Anabolic Steroids, and Steroids can all be use interchangeably.

Division I: To qualify as a Division I institution, an NCAA member must have at least seven male athletic teams and seven female athletic teams or at least six men's teams and eight women's teams. Division I institutions may also provide athletic scholarships. In football, there is Division IA and Division IAA. Division IA football teams are required to meet certain attendance standards and have parameters for stadium size. Division IAA football team do not have to meet standards of attendance.

Division II: Division II member institutions have to sponsor at least four sports teams for men and four for women, with at least two team sports for each gender and each gender representing a playing season. Division II policies are not as stringent as Division I.

Division III: Division III members institutions have to sponsor at least four sports for men and four for women, with two team sports for each gender and each playing season represented by each gender. Division II institutions may only grant financial aid based on need not athletic ability.

Division I Drug Testing Policy: Every Division I member institution is subjected to drug-testing once each academic year. Every sport sponsored by a Division I institution is subjected to out-of-season drug testing. If an institution sponsors football, 18 football student-athletes plus eight student-athletes from one additional sport will be randomly selected for drug testing. If an institution does not sponsor football, only eight student-athletes from one sport will be randomly selected.

Division II Drug Testing Policy: Every Division II institution is subjected to out-of-competition drug testing. Every Division II institution sponsoring football will be drug tested at least once each academic year. In addition to football, one additional sport will be randomly selected for drug testing. If an institution sponsors football, 12 football student-athletes plus four student-athletes from one additional sport will be randomly selected for drug testing. For institutions not sponsoring Division II football, Drug Free Sport randomly will select institutions to be tested. Institutions not sponsoring football will be selected at least once every two years. If an institution does not sponsor football, four student-athletes from one sport will be tested.

Division III Drug Testing Policy: Division III institutions are only subjected to drug testing during NCAA Championship events and post-season events. Division III athletes are not subjected to in-season or out-of-season testing.

NCAA: The National Collegiate Athletic Association. The NCAA was established in 1906 as the governing body for college athletics. The NCAA enforces rules, sets guidelines that are related to athletic eligibility, recruitment and financial aid.

New Jersey Athletic Conference (NJAC): The NJAC conference was established in 1985. The 10 founding members are public institutions in the state of New Jersey. The 10 members of the conference are Ramapo College of New Jersey, William Paterson University, New Jersey City University, Montclair State University, Rutgers Newark, Rutgers Camden, The College of New Jersey, The Richard Stockton College of New Jersey, Kean University, and Rowan University, Cortland State University, and Western Connecticut State University. Cortland State University and Western Connecticut State University are participants in the NJAC only in football.

Student-Athlete: For the purpose of this study a student athlete is any student enrolled in an NCAA sanctioned institution that represents their institution as a member of a varsity sport at Rowan University.

Testosterone: Testosterone is the naturally occurring male sex hormone necessary for differentiation, growth, and development of male sexual organs and male secondary sex characteristics.

Research Questions

1. What are the attitudes of selected Division III student-athletes on the use of anabolic steroids while participating in intercollegiate athletics?
2. What knowledge do selected Division III student-athletes have of anabolic steroids?
3. Do selected Division III student-athletes have knowledge of the NCAA Division III drug testing policy?
4. What are selected Division III student-athletes biggest deterrents from anabolic steroids?
5. Is there a significant difference in the attitudes, general knowledge, NCAA knowledge, and deterrents of selected NCAA Division III male and female student-athletes on anabolic steroids?

Organization of Remaining Chapters

Chapter two provides a review of the related literature and gives background information about steroid use and the reasons why student-athletes use them. Chapter three addresses the methodology of the study including who participated in the study, where and how the data were collected, and how the data were analyzed. Chapter four

presents the results of the study. Lastly, chapter five provides a summary of the results, along with discussion and recommendations for practice and further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

What is an Anabolic Steroid

Before realizing why an athlete would use steroids, it is important to first understand what steroids are, how they were developed, how they work, and how athletes use them. The medical term for the drug, the world knows as steroids, is anabolic-androgenic steroids. Anabolic means the ability to promote body growth and repair body tissue (Dolan, 1986). It comes from the Greek word *anabolikos*, meaning “constructive” (Dolan, 1986). Simply put, anabolic means to put on or add. According to Dr. Charles E. Yesalis, (1993), androgenic effects are those that relate to the growth of the male reproductive tract or to the development of the secondary sexual characteristics in men. The term steroid refers to a number of compounds of a certain chemical nature (Dolan, 1986). Anabolic-androgenic steroids are artificial synthetic derivatives of the natural male steroid hormone, testosterone (Taylor, 1982).

Testosterone is a naturally occurring male sex hormone necessary for the differentiation, growth, and development of the male sexual organs and male secondary sex characteristics (Virginia State Dept., 1993). The main producer of testosterone is the testes, but a smaller amount of testosterone is produced in the adrenal glands. In women, the primary source of testosterone is produced by the adrenal gland; however, the daily amounts produced by women are very low when compared to men. In males, testosterone has two functions, androgenic and anabolic. These developmental

characteristics in males take place with the onset of puberty. As previously explained, androgenic effects are those that relate to the growth of the male reproductive tract or to the development of the secondary sexual characteristics in men. Growth associated with androgenic functions are initial growth of the penis, growth and development of the seminal vesicles and prostate gland, increased body and facial hair, development of pubic hair, deepening tone of the voice, increase oil production of the sebaceous gland, and awakening of sexual interest (Taylor, 1982). The anabolic functions of testosterone are increased skeletal muscle mass, increased hemoglobin concentration, increased red blood cell mass, decreased percentage of body fat, control of the distribution of body fat, increased calcium disposition in the bones, increased total body nitrogen retention, and increased retention of several electrolytes (Taylor, 1982). Basically, testosterone is essential for male growth and development during puberty and into adulthood.

Athletes use anabolic steroids for the anabolic functions it has on the body, in hope of creating more muscle mass and cutting down body fat to enhance athletic performance. Athletes take steroids with the intentions of becoming bigger, stronger, and faster. Not all the athletes who take steroids know that the drug will also affect the androgenic functions of the body, disrupting the natural function of the male's sexual tract and secondary sex characteristics.

History of Anabolic Steroids

Scientific research has been reported on the endocrine function of the testes dating back many centuries. Numerous descriptions of the affects testosterone has on the human body, especially in males, have been reported. In the early 1920s, interest in the development of the male reproductive tract was accelerated and experimenting with the

use of artificial synthetic derivatives of testosterone was underway. In the 1930s, when anabolic steroids were first developed, doctors believed these were “miracle drugs.” Physicians used anabolic steroids in attempting to restore vitality in aging men who were presumed to have low testosterone levels (Virginia State Dept., 1993). Steroids’ amazing ability to build new tissue made them superb medications for patients recovering from starvation and other severe injuries.

In the records of World War II are numerous accounts of hormonal manipulations and experimentation with human prisoners by Nazi scientists (Taylor, 1982). Nazi scientists did not only experiment with prisoners of war, several publications also suggested that anabolic steroids were given to Nazi troops to make them stronger, more aggressive in battle, and help with the rehabilitation of the wounded (Taylor, 1982). Perhaps one of the first, and the most famous steroid users was Adolf Hitler. From the records of Hitler’s personal physician, it was reported that Hitler was given injections of the “derivatives of testosterone” for a variety of presumed mental and physical ailments (Taylor, 1982).

After World War II, weightlifters and bodybuilders in the Soviet Union and other eastern European countries used steroids to improve strength and gain a competitive advantage. The results of the steroid use spoke for themselves in the 1952 Olympic Games; the Soviet Union won seven medals in weightlifting events (Stewart, 1998). Spectators were amazed by the strength of the Soviet Union athletes and rumors began to spread that athletes were using testosterone to enhance athletic performance. From the first experimentation of steroids behind the Iron Curtain, the use of steroids spread to the rest of Europe, and eventually overseas to the United States and Canada. The earliest use

of steroids appears to be associated with weight lifters and power lifters. Since then, steroids have found their way into a wide variety of sports including track and field, football, and swimming.

During the 1960s and early 1970s, there was an increased demand for steroids among the elite athletes in the sports world. Most of the athletes under the influence of steroids at the time were world-class athletes striving for national and international titles. By this time, it was known that steroids used in large amounts could prove to be dangerous and by the mid 1970s they joined stimulants and other harmful drugs on the Olympics' "Banned" list (Stewart, 1998).

Since 1975, steroids have been banned by the United States Olympic Committee (USOC), followed by other groups, such as the National Football League (NFL), The National Collegiate Athletic Association (NCAA), the International Amateur Athletic Federation, and the International Federation of Body Builders (Virginia State Dept., 1993). Even with steroids being banned for all international and professional sports, and most importantly being an illegal substance in the United States, there is a huge amount of trafficking illegal steroids. It is reported that black-market sales of steroids, especially from Mexico, the primary source of illegal steroids, generates more than \$780 million dollars a year (Stewart, 1998). Entering the 21st century, steroid abuse has been a dominant issue in the sports world, and the steroid problem in athletics needs to be addressed to show the youth of America that there are no short cuts in athletics.

Why People Take Anabolic Steroids

Anabolic steroids were developed for medical purposes, and steroids do have uses in medical therapy prescribed for specific conditions. For example, steroids might be

given to a weakened patient before or after a surgery. Some hormonal problems can be corrected with steroids (Yesalis & Cowart, 1998). Some steroids have been tested successfully as a male contraceptive, and they are used routinely to fight the wasting associated with Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) (Yesalis & Cowart, 1998). Steroids can serve as legitimate medical therapy when prescribed by a doctor and taken under professional supervision. The problem with steroids is the illegal purchase and use for non-medical purposes.

The attraction to steroids by members of the athletic community is simply because they do provide a competitive advantage for the user. Steroids have been proven to build muscle mass and add strength when combined with a weight-training program and a high-caloric diet (Virginia State Dept., 1993). Therefore, they are attractive to young athletes because steroids give them a competitive advantage over other athletes. The desire for that winning edge, which helps make someone a champion, is the main force behind society's steroid problem. People look for a competitive advantage in all facets of life and sports are no different. According to the Virginia State Department of Education (1993), it was reported in a 1988 survey that out of 3,400 male high school seniors, who admitted to steroid use in Virginia, 47.1% of them used steroids to increase athletic performance. The same source stated that 26.7% used steroids to improve appearance, and 10.7% percent to treat or prevent injury.

Another reason for steroid use in athletics is the money that can come from superb athletic performance. The increasing size of professional contracts today and athletes being worth hundreds of millions of dollars, the thought of making money has lured many young athletes into enhancing their physical abilities with steroids (Virginia State

Dept., 1993). The high prices of college education today has some aspiring athletes to also see steroids as a way to improve athletic performance and thereby obtain an athletic scholarship (Virginia State Dept., 1993).

Lastly, the public media has influenced the publics' mind with what the perfect body should look like. Every time a person turns on the television or picks up a magazine, images of the perfect body are projected. For females, it is tall and extremely thin. For males, it is a thin, cut, muscular appearance that society idolizes. From early childhood, boys learn that the ideal man looks something like Mr. Universe (Virginia State Dept., 1993). Saturday morning television is filled with cartoons characters with huge, abnormally muscled heroes (Virginia State Dept., 1993). Sports stars are no exception, constantly flexing and showing off their sculpted bodies. The idea of the perfect body is everywhere. It should be no surprise that many physically underdeveloped people are willing to pay large sums of money for pills and injectables to enhance their physical appearance (Virginia State Dept., 1993). Similar to athletes searching for perfection in sports, many people in society use steroids in search of the perfect body.

How People Take Anabolic Steroids

Anabolic steroids are taken in three ways. First, a steroid can be ingested, usually in a pill form, which is taken in through the mouth and swallowed (Virginia State Dept., 1993). Next, are injectable steroids, these steroids are generally oil based, and are introduced into body tissue or a blood vessel by way of a needle (Virginia State Dept., 1993). Lastly, and most recently, steroids can be absorbed through the skin by forms of skin creams and patches (Yesalis & Cowart, 1998). Although each form of the steroids

has a different chemical make-up and structure, they all have the same affect on the human body.

An athlete or any individual on steroids uses them in what is called a cycle. A cycle is an episode of steroid use lasting 6 to 12 weeks (Yesalis & Cowart, 1998). A steroid user would take steroids for the 6 to 12 weeks, and then stop using for the same 6 to 12 week period, before starting up again. During a cycle, steroid abusers usually use pyramiding or stacking techniques to increase the benefit of the steroids. Pyramiding is a practice of beginning a cycle with a low dosage of one steroid, and adding other steroids each week of the cycle, until the mid-way point of the cycle. Then the abuser eliminates one steroid each week till the end of the cycle, when the abuser is using just one steroid again (Virginia State Dept., 1993). Stacking is the practice of taking more than one anabolic steroid at a time for multiple effects (Virginia State Dept., 1993). This is based on the same principle as pyramiding. Both of these techniques are very common among steroid users and are extremely dangerous and potentially deadly. The normal prescribed dose of steroids for medical purposes is 1 to 5 milligrams per day (Virginia State Dept., 1993). When steroid abusers start stacking and using pyramiding techniques during a steroid cycle it can result in an individual taking hundreds of milligrams a day (Virginia State Dept., 1993).

What Athletes Want from Anabolic Steroids

Each individual who uses steroids takes the drug for a different reason. Some users take it to change personal appearance and increase self-confidence. Athletes tend to take steroids for a different set of reasons. As cited in Chng and Moore (1990), a recent nation-wide study (Buckley, Yesalis, & Friedl, 1988) indicated that 6.6% of male high

school seniors, and perhaps as many as 500,000 adolescents nation-wide, reported using steroids. These individuals believe that steroids will make them stronger, faster, and heavier, while providing a competitive edge over other athletes (Chng & Moore, 1990). According to Yesalis and Cowart (1998), athletes use steroids for a different set of reasons compared to non-athletic steroid users. Athletes use steroids for the alteration of body composition (increased muscle mass and reduce fat). Steroids increase muscle mass, reduced fat on the athlete's bodies, and also increase strength and endurance. Steroids give athletes an advantage in training for competition. Steroids allow athletes to recovery faster from exercise (so the athlete can perform longer, more frequently, or higher-intensity workouts). The increased muscle mass, endurance, and the ability to train longer and harder enhance the athletic performance of the steroid user not only physically, but mentally as well. Many steroid users believe that the increased strength and new physical appearance gives the user more confidence. Some users believe that the mental confidence steroids give users is more of an advantage then the physical attributes the steroids provide.

Health Problems Associated with Anabolic Steroids

Studies regarding steroids have been linked to troubling health problems. These health problems have been seen in steroids users, but cannot be linked or associated to every user. The health conditions associated with steroids have been linked to users who took steroids for a long duration of time and in high doses. People who take high doses of steroids may experience a variety of emotional and psychological changes. Users have reported feelings of irritability and aggression. This is a common change in many steroid users and it is know as "Roid Rage." "Roid Rage" is feelings of irritability, unexplained

aggressive outburst of anger, and overreaction to incidents that would usually be ignored as a result of steroid use (Virginia State Dept., 1993). “Roid Rage” is a major contributor to physical violence, anxiety, paranoia, and disturbed sleep patterns (Virginia State Dept., 1993). During these periods, situations that would usually not bother an individual can, with steroids creating strong feelings of anger and hostility. Unfortunately, many times these feeling are expressed in some type of physical violence.

Along with the emotional and psychological changes steroids have on individuals, it also has countless physical effects. Steroids have undesirable effects to an individual’s physical appearance. Oily skin and acne, which can cause scarring, are among the most frequently observed side effects (Yesalis & Cowart, 1998). Moreover, changes in hair patterns, such as increased body hair growth and acceleration in male pattern baldness in those predisposed to it (Yesalis & Cowart, 1998). Also, it is possible that chronic steroid use, especially before puberty or in early adolescence, can cause premature closure to the growth plates of the long bones so that adult stature is significantly shorter than nature intended (Yesalis & Cowart, 1998).

Extended high dose steroid use has also been associated with muscle and bone injuries. Due to the increase muscle mass, athletes whose muscle mass has exceeded the strength of the attachment to bone, has lead to ligament and tendon ruptures (Yesalis & Cowart, 1998). Taking synthetic sex hormones disrupts the normal hormonal process. Many steroid users reported an increase in libido (sex drive) initially, but diminished sex drive is associated with prolong use (Yesalis & Cowart, 1998). Although no cases have been documented, prolonged steroid use is associated with male infertility. The main

reason for the association is the significant reduction in the size of the testicles as a result of steroid use.

Steroids have a strong negative effect on the liver and its functions. The liver is the principle site where steroids are cleared from the body. Changes in the liver structure have been associated with the use of some oral steroids. When steroids are taken by mouth, the liver is exposed to the full dose of the drug before it is distributed in the circulation throughout the body (Yesalis & Cowart, 1998). Prolonged high dosage of steroids can lead to liver tumors, Peliosis Hepatis, and Jaundice.

Steroid use can also be linked to different infections, most commonly HIV/AIDS and hepatitis. Abusers who inject anabolic steroids use non-sterile injection techniques or share contaminated needles with other users (National Inst. on Drug Abuse, 2000). In addition, some steroid preparations are manufactured illegally under non-sterile conditions, which can develop bacterial illness, which can be transferred to the steroid user after usage.

Common Male Side Effects

Prolonged steroid use has led to common side effects in males. Male steroid users have decreased libido (sex drive). Many male users develop gynecomastia, which is the development of female breasts (Virginia State Dept., 1993). It is also common to find testicular atrophy, which is degeneration or wasting away of the testicles (Virginia State Dept., 1993). Male steroid users who have used for an extended period of time can become sterile, and unable to reproduce sexually (Virginia State Dept., 1993). Lastly, it is common for male steroid users to become impotent, and lose the ability to have sexual intercourse (Virginia State Dept., 1993).

Common Female Side Effects

The side effects of steroid use in females are often immediate and irreversible. The female body produces small amounts of testosterone and steroid use can cause some serious physical changes to a female's appearance. Women begin to develop masculine characteristics, including shrinkage of breast tissue, increased facial and body hair, and menstrual irregularities (Virginia State Dept., 1993). After a period of about six months, females can experience deeper voices, darker facial and body hair, thinning of the hair, broader shoulders, and changes in skin color (Virginia State Dept., 1993). Women also experience clitoral enlargement. Because of the irreversible nature of these side effects, a female pays a high price for the small increase in muscle size and strength attained by steroids (Virginia State Dept., 1993).

NCAA Drug Testing Program

With the approval of Proposal No. 30 at the January 1986 National Collegiate Athletic Association (NCAA) Convention and proposal Nos. 52-54 at the January 1990 Convention, NCAA institutions reaffirmed the dedication to the ideal of fair and equitable competition at championships and postseason certified events (found Oct. 23, 2005 at www.ncaa.org/health-safety). During the 1990 NCAA Convention, the official NCAA drug-testing program was established. The program was created to ensure fair competitions, while protecting the health and safety of the student-athletes. Anabolic steroids are under the NCAA banned substance list, and are one of the substances tested for by the NCAA.

Each member institution is responsible for the drug-testing legislation according to the NCAA. Each student-athlete has to complete and sign a drug-testing consent form

every academic year at the time the intercollegiate teams first reports for practice or prior to the Monday of the institutions fourth week of classes (found Oct. 23, 2005 at www.ncaa.org/health-safety). Failure to complete and sign the form prior to practice or appropriate date may result in the student-athletes ineligibility for participation in all intercollegiate athletes. This consent form has to be kept on file in the office of the director of athletics, and such file shall be available for examination upon request by an authorized representative of the NCAA. A member of the institution's athletic department staff is responsible for holding the meeting with all the athletic teams of that institution to discuss the NCAA drug-testing policy and review the NCAA banned substances. This ensures the athletic director that every student athlete associated with the institution is aware of the NCAA drug-testing program.

Members of NCAA Division III institutions can be subjected to drug testing during the NCAA championships. It is the responsibility of the institution that each student-athlete is familiar with the NCAA drug-testing procedure prior to leaving campus for a championship event. Drug testing can happen at any phase of the championship (first round, second round, quarterfinals, semi-finals, or finals) and drug testing can occur more than once at any championship (found Oct. 23, 2005 at www.ncaa.org).

Participating institutions and student-athletes are not given any advance notice that drug testing is being conducted at the championship (found Oct. 23, 2005 at www.ncaa.org/health-safety). Student-athletes will be notified immediately after the game. An NCAA drug testing crewmember will provide an institutional representative with a list of student-athletes who have been selected for drug testing. Each athlete selected is drug tested through urinalysis with a drug testing crewmember of the same sex

observing (found Oct. 23, 2005 at www.ncaa.org/health-safety). The length of the collection process depends on the student-athlete's ability to provide an adequate specimen. If a student-athlete provides an adequate specimen immediately upon arriving at the drug testing station, the entire process usually is completed in less than 20 minutes (found Oct. 23, 2005 at www.ncaa.org). The student-athlete cannot be released from drug testing until an adequate specimen is provided.

A student-athlete, who is found to have utilized a substance on the banned drug list, shall be declared ineligible for further participation in postseason and regular-season competition. The student-athlete shall remain ineligible for all regular-season and postseason competition during the time period ending one calendar year (365 days) after the student-athlete's positive drug test and until the student-athlete tests negative (found Oct. 23, 2005 at www.ncaa.org/health-safety). Testing positive on a second occasion for a "street drug" will lead to a loss of a minimum of one additional season of competition in all sports and should remain ineligible for one calendar year. Testing positive on a second occasion for a performance-enhancing drug, like anabolic steroids, a student-athlete shall lose all remaining regular-season and postseason eligibility in all sports (found Oct. 23, 2005 at www.ncaa.org/health-safety).

According to the NCAA Drug-Testing results from August 2002 through June 2003 there were 9,256 drug samples collected from all members of NCAA institutions (Division I, II, and III). During that academic year 103 student-athletes tested positive for a NCAA banned substance. Out of the 103 student-athletes 78 of them tested positive for anabolic agents (found Nov. 8, 2005 at www.ncaa.org).

Summary of Literature Review

Anabolic steroids are artificial synthetic derivatives of the natural male steroid hormone, testosterone (Taylor, 1982). Testosterone is a naturally occurring male sex hormone necessary for the differentiation, growth, and development of the male sexual organs and male secondary sex characteristics (Virginia State Dept., 1993). Athletes take steroids with the intention of becoming bigger, stronger, and faster due to the increase in muscle mass and decreased in body fat. Searching for a competitive edge is nothing new in sports and athletes will go to extreme measures to gain these competitive advantages.

Young athletes today are faced with tough decisions about performance enhancing drugs like steroids because of the added societal pressures to perform at a high level. Due to the high price of college education and multi-million dollar salaries professional athletes are making today, some athletes succumb to the pressure placed by parents, coaches, and even teammates.

Use of steroids, especially in high doses is extremely harmful to the body and is linked to deadly diseases. People who take high doses of steroids may experience a variety of emotional and psychological changes. Users have reported feelings of irritability and aggression. This is a common change in many steroid users and it is known as "Roid Rage." "Roid Rage" is a major contributor to physical violence, anxiety, paranoia, and disturbed sleep patterns (Virginia State Dept., 1993). Extended high dose steroid use has also been associated with muscle and bone injuries. Due to the increase in muscle mass, athletes whose muscle mass has exceeded the strength of the attachment to bone, has led to ligament and tendon ruptures (Yesalis & Cowart, 1998). Steroids definitely have a strong negative effect on the liver and its functions. The liver is the

principle organ were steroids are cleared from the body. Steroids can cause extreme health problems in both male and female users.

The NCAA has placed anabolic steroids on the banned substance list and each member of a NCAA institution signs a consent form that allows them to be tested by the NCAA. According to the NCAA Drug-Testing results from August 2002 through June 2003 there were 9,256 drug samples collected from all members of NCAA institutions (Division I, II, and III). During that academic year 103 student-athletes tested positive for a NCAA banned substance. Out of the 103 student-athletes 78 of them tested positive anabolic steroid (found Nov. 8, 2005 at www.ncaa.org). These data show that nearly 75% of the positive tests from the 2002/2003 school year were associated with anabolic steroids.

The use of anabolic steroids is a growing problem in intercollegiate athletics and more research needs to be done to determine the main reasons why NCAA Division III student-athletes feel the need to use steroids. The only way to eliminate the steroid problem in college athletics is to get a better understand of why student-athletes feel the need to use anabolic steroids. Without a better understanding of the problem, steroid use will continue to have a serious affect on landscape of college athletics.

CHAPTER THREE

METHODOLOGY

Context of the Study

Rowan University is a medium-sized state university located in southern New Jersey between Atlantic City and Philadelphia. The university enrolls more than 9,500 students who represent the mid-Atlantic states and over 30 foreign countries. The university offers 36 undergraduate majors among six academic colleges (Business, Communications, Education, Engineering, Fine and Performing Arts, Liberal Arts and Sciences). There are currently 26 graduate programs leading to masters and a doctoral degree (Retrieved November 10, 2005 at <http://www.rowan.edu>).

Rowan University athletics consist of 16 varsity sports that compete on the NCAA Division III level, as a member of the New Jersey Athletic Conference (NJAC). Of the 16 varsity sports on campus, the seven male athletic teams include: baseball, basketball, cross-country, football, soccer, swimming and diving, and track and field. The remaining nine sports are female sports and they include: basketball, cross-country, field hockey, lacrosse, soccer, softball, swimming and diving, track and field, and volleyball. Rowan University has a strong traditional background in athletics and their athletic teams are consistently challenging for NJAC and National championships.

Population and Sample Selection

The researcher surveyed selected male and female student-athletes from the current Rowan University official team rosters. Out of approximately 365 student-athletes that represent Rowan University, 110 were randomly selected to form a stratified

sample to complete a survey. The student-athletes at Rowan University were chosen because they represent a diverse population of student-athletes that compete in 16 different sports all under NCAA Division III rules and regulations. Access to the student-athletes was made possible with help from the athletic administrators at Rowan University. A total of 110 current student-athletes at Rowan University received the survey. In order to ensure the rights of each subject, an Institutional Review Board (IRB) application (Appendix A) was submitted on November 30, 2005. The application included a cover letter (Appendix B), consent form (Appendix C), and a copy of the survey (Appendix D). The application was approved by the IRB (Appendix A) in December of 2005. Subjects were asked to read and sign the consent form (Appendix C) before completing the survey.

Instrumentation

The researcher designed a survey titled NCAA Division III Student-Athletes Attitudes and Knowledge of Anabolic Steroids (Appendix D). The survey was developed to determine the attitudes and knowledge of NCAA Division III student-athletes on anabolic steroid use. The survey also determined some of the major deterrents to steroid use in NCAA Division III student-athletes. Upon receiving approval from the IRB (Appendix A), the survey was distributed to 110 stratified randomly selected student-athletes at Rowan University. The survey consisted of two sections. The first section obtained background information of each subject including gender, current year in school, sport or sports participated in, if the subject was ever drug tested by the NCAA, and if any member of the subjects team was ever drug tested by the NCAA. The second section consisted of 30 statements based on a Likert scale designed to determine the

degree to which each subject agreed with the statement. The scale was designed accordingly, 1- Strongly Agree, 2- Agree, 3- Neutral, 4- Disagree, and 5- Strongly Disagree. The statements on the survey were designed to gauge the attitudes and knowledge of the student-athletes on anabolic steroid use in NCAA Division III athletics.

In an attempt to confirm the validity and reliability of the survey, 10 former student-athletes participated in a pilot study. With the help of Patty Raube (Assistant Athletic Director for Compliance at Rowan University) and Dr. Burton Sisco (Research Advisor) the pilot survey results were reviewed to ensure the face and content validity and reliability of the survey. Upon completion of the pilot survey, the researcher was confident that the survey would answer the research question presented in chapter one.

Data Collection

Following approval from the Institutional Review Board (IRB) (Appendix A) at Rowan University, a cover letter (Appendix B) and consent form (Appendix C), along with a survey (Appendix D) was distributed to the sample of 110 student-athletes at Rowan University. The cover letter (Appendix B) consisted of a brief introduction of the researcher, the instrument being used, and the rationale of the study. In the cover letter (Appendix B), the researcher ensured the subjects that the answers to the survey would be kept confidential and that the privacy of the subjects would be respected. Before completing the survey each subject reviewed and completed a consent form (Appendix C). The researcher then contacted each head coach at Rowan University to schedule a meeting time to distribute the surveys to the selected student-athletes.

Procedure of Gathering Data

During the months of February and March, 2006 110 surveys (Appendix D) were distributed to the selected student-athletes at Rowan University. The subjects were given a packet containing a cover letter (Appendix B), a subject's consent form (Appendix C), and the survey (Appendix D). Upon opening the packet, the subjects reviewed the cover letter (Appendix B) stating the researcher's position as a graduate student seeking help in obtaining information on the anabolic steroid use in NCAA Division III athletics. Confidentiality was stressed in the cover letter (Appendix B) as an essential part of the survey (Appendix D). Subjects were advised that their identity would be kept confidential, and the research was being done for a master's thesis project.

The response date for the survey was March 1, 2006. The researcher asked the subjects to return the completed surveys to their head coach by March 1, 2006. The researcher visited each head coach at Rowan University on March 3, 2006 to pick up the completed surveys. The researcher thanked each head coach for his or her participation in data collecting process.

Data Analysis

The researcher used quantitative data analysis procedures to determine the knowledge and attitudes of NCAA Division III athletes regarding anabolic steroid use. The data were coded using the Statistical Package for Social Sciences (SPSS) program. Using SPSS, the researcher calculated the descriptive statistics of frequency counts, percentages, means, and standard deviation of each statement used in the survey. Research question five was analyzed using an Independent-Samples *t* Test to determine if

there was a significant relationship ($p<.05$) between the knowledge, attitudes, and deterrents of male and female participants on anabolic steroid use.

CHAPTER FOUR

FINDINGS

Profile of the Sample

The subjects in this study consisted of 102 male and female NCAA Division III student-athletes from Rowan University. The researcher selected a stratified random sample of 25% of the total student-athlete population at Rowan University. For the purpose of the study 110 surveys were distributed and 102 were returned, giving a response rate of 92%.

Table 4.1 represents the gender distribution of the subjects in the survey. Male student-athletes represent 59.8% of the sample, while female counterparts represent 40.2% of the sample.

Table 4.1

Gender

n=102, M=1.40, SD=.493		
Gender	Frequency	%
Male	61	59.8
Female	41	40.2
Total	102	100

Table 4.2 represents the breakdown of the current year in school by the subjects in the survey. Overall, 32.4% or 33 student-athletes that completed the survey were sophomores. Juniors followed the sophomores with 25.5% or 26 surveys completed. The freshman completed 24.5% or 25 surveys. Conversely, the seniors only completed 17.6% or 18 surveys.

Table 4.2

Current Year in School

n=102, M=2.36, SD=1.042		
Year in School	Frequency	%
Senior	18	17.6
Juniors	26	25.5
Sophomores	33	32.4
<u>Freshman</u>	<u>25</u>	<u>24.5</u>
Total	102	100

Table 4.3 describes the different intercollegiate sports and the number of student-athletes that represent each sport in the survey.

Table 4.3

Sports Represented

n=102, M=8.28, SD=5.56		
Sport	Frequency	%
Baseball	11	10.7
Men's Basketball	5	4.9
Football	21	20.6
Men's Soccer	7	6.9
Men's Swimming	8	7.8
Men's Track and Field	1	1.0
Women's Basketball	5	4.9
Field Hockey	7	6.9
Lacrosse	5	4.9
Women's Soccer	7	6.9
Softball	7	6.9
Women's Swimming	5	4.9
Lacrosse/Soccer	1	1.0
Lacrosse/Field Hockey	1	1.0
Men's Cross Country/T&F	5	4.9
Women's Cross Country/T&F	3	2.9
<u>Football/Track & Field</u>	<u>3</u>	<u>2.9</u>
Total	102	100

Table 4.4 represents the number of student-athletes that have been drug tested by the NCAA. Of the 102 NCAA Division III student-athletes who participated in the

survey only 10 or 9.8% were drug tested by the NCAA. Conversely, 92 or 90.2% of the student-athletes never received a drug test by the NCAA.

Table 4.4

Drug Tested Student-Athletes

n=102, M=1.90, SD=5.56		
# Drug Tested	Frequency	%
Yes	10	9.8
<u>No</u>	<u>92</u>	<u>90.2</u>
Total	102	100

Table 4.5 represents the number of student-athletes that know a teammate that has been drug tested by the NCAA. Out of 102 student-athletes surveyed 33 or 32.4% know a teammate who was drug tested by the NCAA. Conversely, 69 or 67.6% of the student-athletes surveyed had no recollection of any teammates tested by the NCAA.

Table 4.5

Number of Teammates Drug Tested by the NCAA

n=102, M=1.68, SD=.470		
# of Teammates Drug Tested	Frequency	%
Yes	33	32.4
<u>No</u>	<u>69</u>	<u>67.6</u>
Total	102	100

Research Questions

Research Question 1: What are the attitudes of selected Division III student-athletes on the use of anabolic steroids while participating in intercollegiate athletics?

Table 4.6 provides information regarding research question 1. Table 4.6 provides information regarding the attitudes of NCAA Division III student-athletes on anabolic steroids. A list of statements was presented to the student-athletes to identify attitudes towards the use of anabolic steroids while under NCAA policy. Ninety percent or 92 of

the 102 subjects surveyed strongly disagreed or disagreed that it is okay for student-athletes to use anabolic steroids. Ninety percent or 92 of the 102 subjects surveyed strongly disagreed or disagreed that it is okay for a student-athlete to use steroids if he/she knows he/she will not get drug tested. Further, 72.5% of the subjects surveyed strongly disagreed and disagreed that the benefit of anabolic steroids outweighs the potential health problems.

Table 4.6

Student-athlete's Attitudes Toward Anabolic Steroids

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
It is okay for a student-athlete to use steroids as long as he/she avoids detection. n=102, M=4.61, SD=.706	0	0.0	2	2.0	7	6.9	20	19.6	73	71.5
It is okay for a student-athlete to use steroids. n=102, M=4.51, SD=.864	3	2.9	0	0.0	7	6.9	21	20.6	71	69.6
It is okay for a student-athlete to use steroids if he/she knows he/she will not get drug tested. n=102, M=4.48, SD=.780	0	0.0	4	3.9	6	5.9	29	28.4	63	61.8
The NCAA provides student-athletes with adequate drug testing programs. n=102, M=2.91, SD=.999	6	5.9	28	27.5	39	38.2	27	26.4	2	2.0
Steroid use improves physical appearance n=102, M=2.93, SD=1.04	9	8.8	27	26.5	33	32.4	28	27.4	5	4.9
Using steroids helps a student-athlete recover quicker from an injury. n=102, M=2.92, SD=1.05	7	6.8	34	33.3	26	25.5	30	29.4	5	4.9
It is okay for a student-athlete to use steroids if it helps the team win. n=102, M=4.41, SD=.825	1	1.0	2	2.0	10	9.8	30	29.4	59	57.8
The benefit of steroids outweighs the potential health problems. n=102, M=4.05, SD=.999	2	2.0	5	4.9	21	20.6	32	31.4	42	41.1

Research Question 2: What knowledge do selected Division III student-athletes have of anabolic steroids?

Table 4.7 provides information regarding the subject's general knowledge of anabolic steroids and the physical and psychological effects it has on the body. Out of the 102 subjects surveyed 94.1% strongly agreed or agreed that steroid use leads to serious health problems. Ninety-seven percent or 99 subjects surveyed strongly agreed or agreed that anabolic steroid use can lead to irritability, aggressive behavior, and unexplained outbursts. Further, 93.1% or 95 out of 102 subjects strongly agreed or agreed that anabolic steroid use can increase an individuals muscle mass.

Table 4.7

Student-athlete's Knowledge of Anabolic Steroids

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Long-term steroid use in males can make them sterile. n=102, M=2.02, SD=.706	30	29.4	48	47.1	18	17.6	4	3.9	2	2.0
Female steroid users develop masculine characteristics. n=102, M=1.60, SD=.721	50	49.0	47	46.0	2	2.0	2	2.0	1	1.0
Steroid use can increase an athlete's quickness. n=102, M=2.41, SD=1.13	21	20.6	44	43.1	17	16.7	14	13.7	6	5.9
Steroid use leads to serious health problems. n=102, M=1.57, SD=.738	54	52.9	42	41.2	3	2.9	2	2.0	1	1.0
Steroids can be taken orally, in pill form. n=102, M=2.07, SD=1.00	32	31.4	44	43.1	16	15.7	7	6.9	3	2.9
Steroid use increases muscle mass. n=102, M=1.62, SD=.676	48	47.0	47	46.1	5	4.9	2	2.0	0	0.0
Steroids can be rubbed into the skin in a form of a cream. n=102, M=2.67, SD=1.06	13	12.7	35	34.3	33	32.4	15	14.7	6	5.9
Steroids can be injected into body tissue or a blood vessel by way of a syringe. n=102, M=1.61, SD=.632	47	46.1	49	48.0	5	4.9	1	1.0	0	0.0
Steroid use raises the risk of HIV/AIDS exposure. n=102, M=2.38, SD=.955	19	18.6	39	38.2	31	30.4	12	11.8	1	1.0
Steroid use can lead to irritability, aggressive behavior, and unexplained outbursts. n=102, M=1.60, SD=.585	45	44.1	54	52.9	2	2.0	1	1.0	0	0.0
Steroids enhance athletic performance. n=102, M=1.96, SD=.832	29	28.4	55	53.9	12	11.8	5	4.9	1	1.0

Research Question 3: Do selected Division III student-athletes have knowledge of the NCAA Division III drug testing policy?

The third research question is answered by looking at table 4.8. Table 4.8 represents the subject's knowledge of the NCAA Division III drug testing policy. Of the 102 subjects surveyed 45.1% strongly agreed or agreed that NCAA Division III student-athletes can only get drug tested during NCAA championship events. Conversely, 37.3% of the subjects strongly disagreed or disagreed to the same question. Further, 55.8% or 57 subjects surveyed agreed that the punishment from the NCAA for a positive drug test is one-year (365 days) suspension from the time of the positive test. Thirty-seven percent of the subjects surveyed remained neutral to this question.

Table 4.8

Student-athlete's Knowledge of NCAA Division III Drug Testing Policy

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
All NCAA divisions have the same drug testing policy. n=102, M=3.10, SD=1.23	9	8.8	28	27.5	27	26.5	20	19.6	18	17.6
The punishment from the NCAA for a positive drug test is a one-year suspension (365 days) from the time of the positive test. n=102, M=2.36, SD=.888	17	16.7	40	39.2	38	37.3	5	4.9	2	2.0
NCAA Division III student-athletes can get drug tested out of season n=102, M=3.26, SD=1.06	4	3.9	23	22.5	29	28.4	34	33.4	12	11.8
The NCAA has increasing penalties for a positive drug test. n=102, M=2.13, SD=.804	21	20.6	52	51.0	25	24.5	3	2.9	1	1.0
NCAA Division III student-athletes can only get drug tested during NCAA Championship events. n=102, M=2.89, SD=1.27	15	14.7	31	30.4	18	17.6	26	25.5	12	11.8
NCAA Division III student-athletes can get drug tested during the regular season. n=102, M=2.70, SD=1.16	13	12.7	41	40.3	21	20.6	18	17.6	9	8.8

Research Question 4: What are selected Division III student-athletes biggest deterrents from anabolic steroids?

The fourth research question is answered in table 4.9. Table 4.9 provides information regarding deterrents NCAA Division III student-athletes have against anabolic steroids. According to the subjects surveyed 20.6% strongly agreed or agreed that teammates are the major reason why Division III student-athletes use steroids. Sixty-four percent or 65 of 102 subjects surveyed strongly agreed or agreed that a major reason

why Division III student-athletes do not use steroids is because they are illegal. Further, 52% of the subjects surveyed strongly agreed or agreed that the NCAA drug testing policy is the major reason why Division III student-athletes do not use steroids.

Table 4.9

Deterrents of Anabolic Steroid Use in Student-athletes

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Teammates are the major reason why Division III student-athletes use steroids. n=102, M=3.50, SD=1.04	3	2.9	18	17.7	21	20.6	45	44.1	15	14.7
Head coaches are the major reason why Division III student-athletes avoid using steroids. n=102, M=3.36, SD=1.09	6	5.9	16	15.7	30	29.4	35	34.3	15	14.7
A major reason why Division III student-athletes do not use steroids is because they are illegal. n=102, M=2.48, SD=1.10	16	15.7	49	48.0	14	13.8	18	17.6	5	4.9
Athletic directors are the major reason why Division III student-athletes avoid using steroids. n=102, M=3.55, SD=1.00	1	1.0	14	13.7	36	35.3	30	29.4	21	20.6
The NCAA drug testing policy is the major reason why Division III student-athletes do not use steroids. n=102, M=2.75, SD=1.14	10	9.8	43	42.2	21	20.6	19	18.6	9	8.8

Research Question 5: Is there a significant difference in the attitudes, general knowledge, NCAA knowledge, and deterrents of selected NCAA Division III male and female student-athletes on anabolic steroids?

Table 4.10 relates to research question 5 and presents an Independent-Samples *t* Test to represent the significantly different opinions that NCAA Division III males and females had regarding their attitudes about anabolic steroids. An Independent-Samples *t* Test comparing the attitudes of male and female student-athletes on the use of anabolic steroids if detection could be avoided found a less favorable attitude in the males ($m = 4.39$, $sd = .822$) compared to the females ($m = 4.94$, $sd = .264$). The difference between the males and females is statistically significant at the .01 level ($t = -4.719$, $df = 77.059$). When asked if it is okay for a student-athlete to use steroids there was a less favorable opinion in the males ($m = 4.38$, $sd = .916$) compared to the females ($m = 4.78$, $sd = .725$). The difference between the two groups is statistically significant at the .05 level ($t = -2.475$, $df = 97.244$). Further, the Independent-Samples *t* Test reported that males ($m = 4.33$, $sd = .831$) were less favorable than females ($m = 4.71$, $sd = .642$) to use anabolic steroids knowing that they will not get drug tested. Males and females are statistically significant at the .05 level ($t = -2.595$, $df = 97.982$). Males ($m = 3.79$, $sd = 1.051$) were more favorable than females ($m = 4.44$, $sd = .776$) when asked if the benefit of steroids outweighs potential health problems. The difference is statistically significant at the .01 level ($t = -3.398$, $df = 100$). Lastly, males ($m = 2.74$, $sd = 1.079$) were more favorable than females ($m = 3.22$, $sd = .936$) to think that steroid use improves physical appearance. The difference between the males and females is statistically significant at the .05 level ($t = -2.33$, $df = 100$).

Table 4.10

Significant Difference Between Males and Females on Opinions of Anabolic Steroids

Item	Equal Variances	t-test for Equality of Means				Std. Error Difference	95% Confidence Interval of the Difference	
		T	DF	sig. (2-tailed)	Mean Difference		Lower	Upper
Okay to use steroids as long as athlete avoids detection.	Equal variance not assumed	-4.719	77.059	.000**	-.53	.113	-.758	-.308
Okay to use steroids.	Equal variance not assumed	-2.475	97.244	.015	-.40	.163	-.727	-.080
Okay to use steroids as long as athlete will not get drug tested.	Equal variance not assumed	-2.595	97.982	.011	-.38	.146	-.670	-.089
Benefit outweighs problems.	Equal variance assumed	-3.398	100	.003**	-.65	.192	-1.033	-.271
Improved physical appearance.	Equal variance assumed	-2.330	100	.022	-.48	.207	-.892	-.072

** statistically significant $p < .01$

Table 4.11 relates to research question 5 and presents an Independent-Samples t Test to represent the significantly different opinions that NCAA Division III males and females had regarding their general knowledge of anabolic steroids. NCAA Division III males ($m = 2.20$, $sd = 1.046$) were more favorable to agree than NCAA Division III females ($m = 2.73$, $sd = 1.205$) that steroids use can increase an athlete's quickness. The difference between the males and females is statistically significant at the .05 level ($t = -2.382$, $df = 100$). Males ($m = 1.46$, $sd = .594$) were more favorable to agree than females ($m = 1.85$, $sd = .727$) that anabolic steroid use can increase muscle mass. The difference is statistically significant at the .01 level ($t = -3.006$, $df = 100$). Further, males ($m = 2.34$, $sd = 1.047$) were more favorable to agree than females ($m = 3.15$, $sd = .910$)

that steroids can be rubbed into the skin in a form of a cream. The statistical significant difference is at the .01 level ($t = -3.994$, $df = 100$). According to the Independent-Samples t Test males ($m = 2.57$, $sd = 1.008$) were less favorable than females ($m = 2.10$, $sd = .800$) to agree that steroids use raises the risk of HIV/AIDS exposure. Males and females are statistically significant at the $p.01$ level ($t = 2.651$, $df = 97.140$). Lastly, NCAA Division III male student-athletes ($m = 1.70$, $sd = .615$) were less favorable than female student-athletes ($m = 1.44$, $sd = .502$) to agree that steroid use can lead to irritability and aggressive behavior. The statistical significance between the males and females is at a .05 level ($t = 2.299$, $df = 100$).

Table 4.11

Significant Difference Between Males and Females on General Knowledge

Item	Equal Variances	t-test for Equality of Means					95% Confidence Interval of the Difference	
		T	DF	sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Steroids can increase quickness.	Equal variance not assumed	-2.317	77.534	.023	-.53	.231	-.995	-.075
Steroids can increase muscle mass.	Equal variance assumed	-3.006	100	.003**	-.39	.131	-.655	-.134
Steroids could be take in the form of a cream.	Equal variance assumed	-3.994	100	.000**	-.80	.201	-1.201	-.404
Steroids raise the risk of HIV/AIDS exposure.	Equal variance not assumed	2.651	97.140	.009**	.48	.180	.120	.833
Steroids can lead to irritability and aggressive behavior.	Equal variance assumed	2.299	100	.024	.27	.116	.036	.495

** statistically significant $p < .01$

Table 4.12 relates to research question 5 and presents an Independent-Samples *t* Test to represent the significantly different opinions that NCAA Division III males and females had regarding their knowledge of NCAA Drug testing policy. NCAA Division III male student-athletes ($m = 3.36$, $sd = 1.184$) had a more favorable knowledge then female student-athletes ($m = 2.71$, $sd = 1.230$) about all NCAA divisions having the same drug testing policy. Males and females are statistically significant at the .01 level ($t = 2.691$, $df = 100$). Males ($m = 2.21$, $sd = .915$) tended to know the punishment for a positive drug test more then the females ($m = 2.59$, $sd = .805$). These statistics are significant at the .05 level ($t = -2.112$, $df = 100$). Further, males ($m = 2.30$, $sd = .803$) were less favorable to know then females ($m = 1.88$, $sd = .748$) that the NCAA has increasing penalties for positive tests. The difference between the males and females is statistically significant at the .01 level ($t = 2.642$, $df = 100$). Male student-athletes ($m = 2.62$, $sd = 1.157$) were more favorable then females ($m = 3.29$, $sd = 1.346$) to understand that NCAA Division III student-athletes can only get drug tested during championship events. The difference is statistically significant at the .01 level ($t = -2.683$, $df = 100$). Lastly, males ($m = 2.92$, $sd = 1.144$) were more favorable then females ($m = 2.37$, $sd = 1.135$) on understanding that NCAA Division III athletes can not get drug tested during the regular season. The difference between the males and females is statistically significant at the .05 level ($t = 2.397$, $df = 100$).

Table 4.12

Significant Difference Between Males and Females on the NCAA Drug Testing Policy

Item	Equal Variances	t-test for Equality of Means					95% Confidence Interval of the Difference	
		T	DF	sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
All NCAA divisions have the same drug testing policy.	Equal variance assumed	2.691	100	.008**	.65	.243	.172	1.135
Positive drug test policy.	Equal variance assumed	-2.112	100	.037	-.37	.225	-.722	-.023
Increasing policy for positive tests.	Equal variance assumed	2.642	100	.010**	.42	.158	.104	.730
Drug tested during championship events.	Equal variance assumed	-2.683	100	.009**	-.67	.250	-1.165	-.174
Drug tested during the regular season.	Equal variance assumed	2.397	100	.018	.55	.230	.095	1.009

** statistically significant $p < .01$

Table 4.13 relates to research question 5 and presents an Independent-Samples t Test to represent the significantly different opinions that NCAA Division III males and females had regarding deterrents to the use of anabolic steroids. Division III male student athletes ($m = 2.79$, $sd = 1.199$) were more likely than females ($m = 2.02$, $sd = .758$) to take anabolic steroids even though they are illegal. The difference between the males and females is significant at the .01 level ($t = 3.934$, $df = 99.695$). Further, males ($m = 2.97$, $sd = 1.238$) were more likely than females ($m = 2.41$, $sd = .894$) to use anabolic steroids even though they are banned substance by the NCAA. The difference is statistically significant at the .01 level ($t = 2.617$, $df = 99.438$).

Table 4.13

Significant Differences Between Males and Females on Deterrents from Steroids

Item	Equal Variances	t-test for Equality of Means				Std. Error Difference	95% Confidence Interval of the Difference	
		T	DF	sig. (2-tailed)	Mean Difference		Lower	Upper
Student-athletes do not use steroids because they are illegal.	Equal variance not assumed	3.934	99.695	.000**	.76	.194	.378	1.147
NCAA drug policy is the reasons why student-athlete do not use steroids.	Equal variance not assumed	2.617	99.438	.010**	.55	.211	.134	.972

** statistically significant $p < .01$

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

Athletes all over the world have been trying different techniques to get bigger, stronger, and faster since the beginning of athletic competition, and today's NCAA Division III student-athletes are no exception. Student-athletes at the NCAA Division III level want to perform well, and if anabolic steroids will help achieve goals, Division III student-athletes might experiment with them. Several college coaches and many former NCAA student-athletes believe steroid use is rampant in intercollegiate athletics and more student-athletes need to be educated on the possible dangers associated with anabolic steroid use. In this study, randomly selected NCAA Division III student-athletes from Rowan University were surveyed to determine their attitudes and knowledge on anabolic steroids.

Purpose of the Study

The philosophy of NCAA Division III athletics focuses on participation and the overall academic and athletic experience, the NCAA does not place as much emphasis on the issue of drug testing in Division III athletics. Given the growing popularity of steroid use among athletes, and society's emphasis on winning, it is important that the NCAA become familiar with NCAA Division III student-athletes attitudes on steroids. The purpose of this study was to provide data on the attitudes, knowledge, and deterrents of NCAA Division III student-athletes related to illegal steroid abuse. Further, the survey

also examined the different opinions male and female student-athletes had on anabolic steroids.

Methodology

The researcher surveyed selected male and female student-athletes from the current Rowan University official team rosters. Out of approximately 365 student-athletes that represent Rowan University, 110 of them were stratified randomly selected to complete the survey. The student-athletes at Rowan University were chosen because they represent a diverse population of student-athletes that compete in 16 different sports all under NCAA Division III rules and regulations. Access to the student-athletes was made possible with help of the athletic administrators at Rowan University. A total of 110 current student-athletes at Rowan University received the survey. In order to ensure the rights of each subject, an Institutional Review Board (IRB) application (Appendix A) was submitted on November 30, 2005. The application was approved by the IRB (Appendix A) in December of 2005.

The researcher designed a survey titled NCAA Division III Student-Athletes Attitudes and Knowledge of Anabolic Steroids (Appendix D). Upon receiving approval from the IRB (Appendix A), the survey was distributed to 110 stratified randomly selected student-athletes at Rowan University. The survey consisted of two sections. The first section obtained background information of each subject including gender, current year in school, sport or sports participated in, if the subject was ever drug tested by the NCAA, and if any member of the subjects team was ever drug tested by the NCAA. The second section consisted of 30 statements based on a Likert scale designed to determine the degree to which each subject agreed with the statement. The scale was

designed accordingly, 1- Strongly Agree, 2- Agree, 3- Neutral, 4- Disagree, and 5- Strongly Disagree.

Following approval from the Institutional Review Board (IRB) (Appendix A) at Rowan University, a cover letter (Appendix B) and consent form (Appendix C), along with a survey (Appendix D) was distributed to 110 stratified randomly selected student-athletes at Rowan University. The cover letter (Appendix B) consisted of a brief introduction of the researcher, the instrument being used, and the rationale of the study. In the cover letter (Appendix B), the researcher ensured the subjects that the answers to the survey will be kept confidential and that the privacy of the subjects would be respected. Before completing the survey each subject reviewed and completed a consent form (Appendix C). The researcher then contacted each head coach at Rowan University to set up a meeting time to distribute the surveys to the selected student-athletes.

The response date for the survey was March 1, 2006. The researcher asked the subjects to return the completed surveys to their head coach by March 1, 2006. The researcher would visit each head coach at Rowan University on March 3, 2006 to pick up the completed surveys. The researcher thanked each head coach and appreciated his or her participation in the data collecting process.

Data Analysis

The researcher used quantitative data analysis procedures to determine the knowledge and attitudes of NCAA Division III athletes regarding anabolic steroid use. The data were coded using the Statistical Package for Social Sciences (SPSS) program. Using the SPSS, the researcher calculated the descriptive statistics of frequency counts, percentages, means, and standard deviation of each statement used in the survey.

Research question five was analyzed using an Independent-Samples *t* Test to determine if there was a significant relationship ($p < .05$) between the knowledge and attitudes of the male and female participants on the NCAA Division III Drug testing policy.

Discussion of the Findings

Research Question 1: What are the attitudes of selected Division III student-athletes on the use of anabolic steroids while participating in intercollegiate athletics?

Nearly, 90% of the subjects surveyed strongly disagreed or disagreed that is okay for a NCAA Division III student-athlete to use anabolic steroids. Further, 90.2% of the subjects surveyed strongly disagreed or disagreed that it is okay for a NCAA Division III student-athlete to use steroids if he/she knows he/she will not get drug tested. The findings suggest that a majority of NCAA Division III student-athletes are against the use of anabolic steroids.

These findings do not support the research of Suggs (2003) who stated student-athletes still believe suspension, jail time, side effects, and even death are worth the risk to make it to the top, whether it be the professional ranks, the Olympics, or just a conference title. The findings seem to suggest that NCAA Division III student-athletes have negative attitudes regarding the use of anabolic steroids during competition.

Research Question 2: What knowledge do selected Division III student-athletes have of anabolic steroids?

The findings show that 93.1% of the subjects strongly agreed or agree that steroid use increases muscle mass. Further, 97% of the subjects surveyed strongly agreed or agreed that steroid use can lead to irritability, aggressive behavior, and unexplained outbursts. Nearly, 94% of the subjects strongly agreed or agreed that steroids can be

injected into body tissue or a blood vessel by the way of a syringe. The findings show that NCAA Division III student-athletes have general knowledge of anabolic steroid.

The findings tend to agree with the Virginia State Department of Education (1993) that steroids have been proven to build muscle mass and add strength when combined with a weight-training program and a high-caloric diet (Virginia State Dept., 1993). Further, steroid use in high doses can lead to a variety of emotional and psychological changes. This common change in many steroid users is known as “Roid Rage.” “Roid Rage” is marked by feelings of irritability, unexplained aggressive outbursts of anger, and overreaction to incidents that would usually be ignored as a result of steroid use (Virginia State Dept., 1993). NCAA Division III student-athletes seemed to be well informed on common anabolic steroid knowledge.

Research Question 3: Do selective Division III student-athletes understand the NCAA Division III drug testing policy?

Only, 45.2% of the subjects surveyed strongly disagreed or disagreed that NCAA Division III student-athletes can get drug tested out-of-season. Further, 53% of the subjects surveyed strongly agreed or agreed that NCAA Division III student-athletes can get drug tested during the regular season. These data indicated that a majority of NCAA Division III student-athletes are unfamiliar with the NCAA Division III Drug-testing policy.

The data reveal that a majority of NCAA Division III student-athletes do not fully comprehend the NCAA Division III Drug testing consent form each athlete signs every academic year at the time the intercollegiate team first reports for practice (found Oct. 23, 2005 at www.ncaa.org/health-safety). These NCAA Division III Drug-testing consent

forms are kept on file to ensure the athletic director that every student-athlete associated with the institution is aware of the NCAA drug-testing program.

Research Question 4: What are selective Division III student-athletes biggest deterrents from anabolic steroids?

Nearly, 64% of the subjects surveyed strongly agreed or agreed that the major reason why NCAA Division III student-athletes do not use steroids is because they are illegal. Further, nearly 50% of the subjects surveyed strongly disagreed or disagreed that head coaches are the major reason why NCAA Division III student-athletes avoid using steroids. Fifty-nine percent of the subjects surveyed strongly disagreed or agreed that teammates are the major reason why NCAA Division III student-athletes use steroids.

Since 1975, steroids have been banned by the United States Olympic Committee (USOC), followed by other groups, such as the National Football League (NFL), The National Collegiate Athletic Association (NCAA), the International Amateur Athletic Federation, and the International Federation of Body Builders (Virginia State Dept., 1993). According to the statistics a majority of NCAA Division III student-athletes respect the laws against steroids and feel they are a major reason why NCAA Division III student-athletes refrain from anabolic steroid use.

Research Question 5: Is there a significant difference in the attitudes, general knowledge, NCAA knowledge, and deterrents of selected NCAA Division III male and female student-athletes on anabolic steroids?

The data reveals a significant difference in the attitudes, general knowledge, NCAA knowledge, and deterrents of selected Division III male student-athletes when compared to their female counterparts. An Independent-Samples *t* Test comparing the

attitudes of male and female student-athletes on the use of anabolic steroids if detection could be avoided found a less favorable attitude in the males ($m = 4.39$, $sd = .822$) compared to the females ($m = 4.94$, $sd = .264$). The difference between the males and females is statistically significant at the .01 level. In relation to general knowledge of anabolic steroids males ($m = 1.46$, $sd = .594$) were more favorable to agree than females ($m = 1.85$, $sd = .727$) that anabolic steroid use can increase muscle mass. The difference is statistically significant at the .01 level ($t = -3.006$, $df = 100$). Further, males ($m = 2.34$, $sd = 1.047$) were more favorable to agree than females ($m = 3.15$, $sd = .910$) that steroids can be rubbed into the skin in a form of a cream. The statistical significant difference is at the .01 level ($t = -3.994$, $df = 100$).

NCAA Division III male and female student-athletes had significantly different opinions regarding their knowledge of the NCAA Drug testing policy. Male student-athletes ($m = 2.62$, $sd = 1.157$) were more favorable than females ($m = 3.29$, $sd = 1.346$) to understand that NCAA Division III student-athletes can only get drug tested during championship events. The difference is statistically significant at the .01 level ($t = -2.683$, $df = 100$). Further, males ($m = 2.92$, $sd = 1.144$) were more favorable than females ($m = 2.37$, $sd = 1.135$) on understanding that NCAA Division III athletes can not get drug tested during the regular season. The difference between the males and females is statistically significant at the .05 level ($t = 2.397$, $df = 100$). An Independent-Samples t Test was done to represent the significantly different opinions that NCAA Division III males and females had regarding deterrents to the use of anabolic steroids. Division III male student athletes ($m = 2.79$, $sd = 1.199$) were more likely than females ($m = 2.02$, $sd = .758$) to take anabolic steroids even though they are illegal. The difference between the

males and females is significant at the .01 level ($t = 3.934$, $df = 99.695$). Further, males ($m = 2.97$, $sd = 1.238$) were more likely than females ($m = 2.41$, $sd = .894$) to use anabolic steroids even though they are banned substance by the NCAA. The difference is statistically significant at the .01 level ($t = 2.617$, $df = 99.438$).

According to the NCAA Drug-Testing results from August 2002 through June 2003 there were 9,256 drug samples collected from all members of NCAA institutions (Division I, II, and III). During that academic year 103 student-athletes tested positive for a NCAA banned substance. Out of the 103 student-athletes 78 of them tested positive for anabolic agents (found Nov. 8, 2005 at www.ncaa.org). Out of the 78 NCAA student-athletes who tested positive for anabolic agents 75 of them were male. Statistics show males are more willing to use anabolic steroid than females. Because males are more willing to take the risk of getting caught on anabolic steroids, they are more informed on the NCAA Drug-testing policy.

Conclusions

The findings suggest that NCAA Division III student-athletes believe that the use of anabolic steroids during athletic competition is harmful, illegal, and against NCAA rules. The majority of the student-athletes surveyed believed that using anabolic steroids to enhance athletic performance was unethical and violates the NCAA Drug-testing policy. Nearly, 76% of the NCAA Division III student-athletes strongly disagreed or disagreed that the benefit of anabolic steroid use outweighs the potential health problems.

Moreover, nearly 95% of the NCAA Division III student-athletes surveyed had a general understanding of why student-athletes would take anabolic steroids. They understand that anabolic steroids increase muscle mass which could lead to improved

athletic performance. Further, a vast majority of student-athletes surveyed had a basic understanding of how anabolic steroids are injected or absorbed into the body. The findings suggest that NCAA Division III student-athletes have general background knowledge on anabolic steroids and the effects they could have on the body.

The findings further suggest that 63.7% of NCAA Division III student-athletes do not use anabolic steroids because they are illegal. This was the biggest deterrent of anabolic steroids. The vast majority of student-athletes surveyed believe that head coaches and teammates had no significant influence on the use of anabolic steroids in NCAA Division III athletics.

Finally, the findings show that male NCAA Division III student-athletes have a better understanding of the NCAA Division III Drug-testing policy than females. Males understand the NCAA Division III Drug-testing policy and know when the NCAA can and cannot test them throughout the course of the academic school year.

Recommendations for Future Research

The following recommendations are made for further research:

1. A larger study involving a bigger population of NCAA Division III student-athletes from across the country. The researcher examined only selected NCAA Division III student-athletes from Rowan University.
2. It is recommended that a more detailed study be done on the comparison of male and female NCAA Division III student-athletes in reference to their knowledge of the NCAA Division III Drug-testing policy. Do males have a greater understanding of the NCAA Drug-testing policy because they are more at risk to experiment with anabolic steroids?

3. A follow up study is recommended that examines the current NCAA Division III Drug-testing policy and compare it's effectiveness to the current year round drug testing policies in NCAA Division I and II.

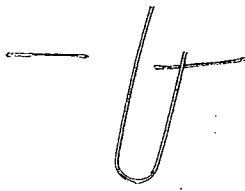
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APPENDIX A

Institutional Review Board (IRB) Application
Rowan University Approval



RECEIVED NOV 30 2005

Rowan University
INSTITUTIONAL REVIEW BOARD
HUMAN RESEARCH REVIEW APPLICATION

INSTRUCTIONS: Check all appropriate boxes, answer all questions completely, include attachments, and obtain appropriate signatures. Submit an **original and two copies** of the completed application to the Office of the Associate Provost.

NOTE: **Applications must be typed.**
Be sure to make a copy for your files.

FOR IRB USE ONLY:

Protocol Number: IRB- 2005-231

Received: _____ Reviewed: _____

Exemption: ☐ Yes ☐ No

Category(ies): _____

Approved Squak (date) 2/23/06

Step 1: **Is the proposed research subject to IRB review?**

All research involving human participants conducted by Rowan University faculty and staff is subject to IRB review. Some, but not all, student-conducted studies that involve human participants are considered research and are subject to IRB review. Check the accompanying instructions for more information. Then check with your class instructor for guidance as to whether you must submit your research protocol for IRB review. If you determine that your research meets the above criteria and is not subject to IRB review, **STOP**. You do not need to apply. If you or your instructor have any doubts, apply for an IRB review.

Step 2: **If you have determined that the proposed research is subject to IRB review, complete the identifying information below.**

Project Title:

NCAA Division III Student-Athlete's Attitudes and Knowledge on Anabolic Steroids

Keith Smicklo

Researcher: Keith Smicklo

Department: Educational Leadership

Location: Education Hall

Mailing Address: 596 Cedar Grove Rd.
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(Town/State/Zip)

E-Mail: smickl39@students.rowan.edu

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Co-Investigator/s:

Faculty Sponsor (if student)* Dr. Burton Sisco

Department: Educational Leadership

Location: Education Hall

E-Mail: sisco@rowan.edu

Telephone: (856) 256-4500 ext. 3717

**Rowan University
INSTITUTIONAL REVIEW BOARD
HUMAN RESEARCH REVIEW APPLICATION**

INSTRUCTIONS: Check all appropriate boxes, answer all questions completely, include attachments, and obtain appropriate signatures. Submit an **original and two copies** of the completed application to the Office of the Associate Provost.

NOTE: **Applications must be typed.**
Be sure to make a copy for your files.

FOR IRB USE ONLY:

Protocol Number: IRB-_____

Received: _____ Reviewed: _____

Exemption: ☐ Yes ☐ No

Category(ies): _____

Approved _____ (date)

Step 1: Is the proposed research subject to IRB review?

All research involving human participants conducted by Rowan University faculty and staff is subject to IRB review. Some, but not all, student-conducted studies that involve human participants are considered research and are subject to IRB review. Check the accompanying instructions for more information. Then check with your class instructor for guidance as to whether you must submit your research protocol for IRB review. If you determine that your research meets the above criteria and is not subject to IRB review, **STOP**. You do not need to apply. If you or your instructor have any doubts, apply for an IRB review.

Step 2: If you have determined that the proposed research is subject to IRB review, complete the identifying information below.

Project Title:

NCAA Division III Student-Athlete's Attitudes and Knowledge on Anabolic Steroids

Keith Smicklo

Researcher: <u>Keith Smicklo</u>	
Department: <u>Educational Leadership</u>	Location: <u>Education Hall</u>
Mailing Address: <u>596 Cedar Grove Rd.</u> (Street)	
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E-Mail: <u>smickl39@students.rowan.edu</u>	Telephone: <u>(732) 330-8283</u>
Co-Investigator/s: _____	
Faculty Sponsor (if student)* <u>Dr. Burton Sisco</u>	
Department: <u>Educational Leadership</u>	Location: <u>Education Hall</u>
E-Mail: <u>sisco@rowan.edu</u>	Telephone: <u>(856) 256-4500 ext. 3717</u>

Step 3: Determine whether the proposed research eligible for an exemption from a full IRB review.

Federal regulations (45 CFR 46) permit the exemption of some types of research from a full IRB review. If your research can be described by one or more of the categories listed below, check the appropriate category(ies), complete questions 1-5, and complete the Assurances on the last page of the application.

If your research cannot be described by any of these categories, your research is not exempt, and you must complete the entire "Human Research Review Application."

- ☐ **Category 1** - Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as: (a) research on regular and special education instructional strategies; or (b) research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.
- ☒ **Category 2** - Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that the human participants can be identified, directly or through identifiers linked to the participants; and (b) any disclosure of the human participants' responses outside the research could reasonably place the participants at risk of criminal or civil liability or be damaging to the participants' financial standing, employability, or reputation.
(Note: Exemption for survey and interview procedures does not apply to research involving children. Exemption for observation of public behavior does not apply to research involving children except when the investigator does not participate in the activities being observed.)
- ☐ **Category 3** - Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under Category 2 above if: (a) the human participants are elected or appointed public officials or candidates for public office; or (b) federal statute requires without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
- ☐ **Category 4** - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that participants cannot be identified, directly or through identifiers linked to the participants.
- ☐ **Category 5** - Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (a) public benefit or service programs; (b) procedures for obtaining benefits or services under those programs; (c) possible changes in or alternatives to these programs or procedures; or (d) possible changes in methods or levels of payment for benefits or services under those programs.
- ☐ **Category 6** - Taste and food quality evaluation and consumer acceptance studies: (a) if wholesome foods without additives are consumed; or (b) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.
(Note: Exemption categories cannot be applied to research involving fetuses, pregnant women, human in vitro fertilization, or prisoners.)

Please answer Questions 1-5 below

1. WHAT IS THE OBJECTIVE OF THE RESEARCH?

The object of this research is to determine the attitudes and knowledge of NCAA Division III student-athlete's on anabolic steroid use.

2. DESCRIBE THE DESIGN OF THE RESEARCH INCLUDING WHAT WILL BE REQUIRED OF SUBJECTS (ATTACH ADDITIONAL SHEET IF NECESSARY):

The subjects will be asked to complete a survey dealing with NCAA Division III student-athlete's attitudes and knowledge on anabolic steroid use. (see attached survey)

3. DESCRIBE THE SUBJECTS WHO WILL BE PARTICIPATING (NUMBER, AGE, GENDER, ETC):

The subjects participating in the study are NCAA Division III male and female student-athletes that represent Rowan University in varsity athletic competition.

4. DESCRIBE HOW SUBJECTS WILL BE RECRUITED (e.g. ADVERTISEMENTS, ANNOUNCEMENTS IN CLASS, E-MAIL, INTERNET)

Out of approximately 375 student-athletes at Rowan University, 125 will be randomly selected to take the survey.

5. WHERE WILL THE RESEARCH BE CONDUCTED:

The research will be conducted on the campus of Rowan University.

NOTE: IF THE RESEARCH IS TO BE CONDUCTED IN ANOTHER INSTITUTION (e.g. A SCHOOL, HOSPITAL, AGENCY, etc.) A PERMISSION LETTER FROM AN ADMINISTRATOR ON THE LETTERHEAD OF THAT INSTITUTION MUST BE ATTACHED.

IF THE RESEARCH IS TO BE CONDUCTED AT ANOTHER UNIVERSITY, A SIGNED COPY OF THE IRB APPROVAL FORM FROM THAT UNIVERSITY MUST BE ATTACHED.

ATTACH THE CONSENT FORM TO THIS APPLICATION. The Consent Form must address all of the elements required for informed consent (SEE INSTRUCTIONS).

NOTE: IF THE ONLY RECORD LINKING THE SUBJECT AND THE RESEARCH WOULD BE THE CONSENT DOCUMENT, AND THE RESEARCH PRESENTS NO MORE THAN MINIMAL RISK OF HARM TO SUBJECTS, YOU MAY USE AN ALTERNATIVE PROCEDURE FOR CONSENT. IF YOU WISH TO REQUEST PERMISSION FROM THE IRB TO USE AN ALTERNATIVE PROCEDURE, ATTACH A COPY OF THE FIRST PAGE OF YOUR RESEARCH INSTRUMENT OR A LETTER WITH THE REQUIRED INFORMATION (see Instructions).

If you are requesting an exemption from a full IRB review, STOP. Complete the last page of this application ("Certifications"), and forward the completed (typed) application to the Office of the Associate Provost for Research, The Graduate School, Memorial Hall.

IF YOU CANNOT CLAIM ONE OF THE EXEMPTIONS LISTED ABOVE, COMPLETE ALL OF THE ABOVE AS WELL AS THE FOLLOWING ADDITIONAL QUESTIONS FOR A FULL IRB REVIEW.

Does your research involve a special population?

- ☐ Socioeconomically, educationally, or linguistically disadvantaged racial/ethnic group
- ☐ Pregnancy/fetus
- ☐ Cognitively impaired
- ☐ Elderly
- ☐ Terminally ill
- ☐ Incarcerated
- ☐ No special population

At what level of risk will the participants in the proposed research be placed?

(Note: "Minimal risk" means that the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during performance of routine physical or psychological examinations or tests. The concept of risk goes beyond physical risk and includes risks to the participant's dignity and self-respect as well as psychological, emotional, or behavioral risk.)

☐ Minimal Risk ☐ More than Minimal Risk ☐ Uncertain

1. HOW WILL SUBJECTS BE RECRUITED? IF STUDENTS, WILL THEY BE SOLICITED FROM CLASS?

2. WHAT RISKS TO SUBJECTS (PHYSIOLOGICAL AND/OR PSYCHOLOGICAL) ARE INVOLVED IN THE RESEARCH?

3. IS DECEPTION INVOLVED IN THE RESEARCH? IF SO, WHAT IS IT AND WHY WILL IT BE USED?

4. WHAT INFORMATION WILL BE GIVEN TO THE SUBJECTS AFTER THEIR PARTICIPATION? IF DECEPTION IS USED, IT MUST BE DISCLOSED AFTER PARTICIPATION.

5. HOW WILL CONFIDENTIALITY BE MAINTAINED? WHO WILL KNOW THE IDENTITY OF THE SUBJECTS? IF A PRE-AND POSTTEST DESIGN IS USED, HOW WILL THE SUBJECTS BE IDENTIFIED?

6. HOW WILL THE DATA BE RECORDED AND STORED? WHO WILL HAVE ACCESS TO THE DATA? ALL DATA MUST BE KEPT BY THE PRINCIPAL INVESTIGATOR FOR A MINIMUM OF THREE YEARS.

CERTIFICATIONS:

Rowan University maintains a Federalwide Assurance (FWA) with the Office of Human Research Protection (OHRP), U.S. Department of Health & Human Services. This Assurance includes a requirement for all research staff working with human participants to receive training in ethical guidelines and regulations. "Research staff" is defined as persons who have direct and substantive involvement in proposing, performing, reviewing, or reporting research and includes students fulfilling these roles as well as their faculty advisors.

Please attach a copy of your "Completion Certificate for Human Participant Protections Education for Research Teams" from the National Institutes of Health.

If you need to complete that training, go to the Web Tutorial at <http://cme.nci.nih.gov/>

Responsible Researcher: I certify that I am familiar with the ethical guidelines and regulations regarding the protection of human participants from research risks and will adhere to the policies and procedures of the Rowan University Institutional Review Board. I will ensure that all research staff working on the proposed project who will have direct and substantive involvement in proposing, performing, reviewing, or reporting this research (including students fulfilling these roles) will complete IRB approved training. I will not initiate this research project until I receive written approval from the IRB. I agree to obtain informed consent of participants in this project if required by the IRB; to report to the IRB any unanticipated effects on participants which become apparent during the course or as a result of experimentation and the actions taken as a result; to cooperate with the IRB in the continuing review of this project; to obtain prior approval from the IRB before amending or altering the scope of the project or implementing changes in the approved consent form; and to maintain documentation of consent forms and progress reports for a minimum of three years after completion of the final report or longer if required by the sponsor or the institution. I further certify that I have completed training regarding human participant research ethics within the last three years as indicated below my signature.

Signature of Responsible Researcher: _____ Date: _____

Faculty Advisor (if Responsible Researcher is a student): I certify that I am familiar with the ethical guidelines and regulations regarding the protection of human participants from research risks. I further certify that I have completed training regarding human participant research ethics within the last three years as indicated below my signature (attach copy of your "Completion Certificate for Human Participant Protections Education for Research Teams" from the National Institutes of Health).

Signature of Faculty Advisor: _____ Date: _____



Completion Certificate

This is to certify that

Keith Smicklo

has completed the **Human Participants Protection Education for Research Teams** online course, sponsored by the National Institutes of Health (NIH), on 10/30/2005.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research.
- ethical principles and guidelines that should assist in resolving the ethical issues inherent in the conduct of research with human participants.
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process.
- a description of guidelines for the protection of special populations in research.
- a definition of informed consent and components necessary for a valid consent.
- a description of the role of the IRB in the research process.
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

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APPENDIX B

Cover Letter

February 21, 2006

Dear Student-Athlete:

For the past year and a half, I have been a full-time graduate student at Rowan University, working towards a master's degree in Higher Education Administration. I am currently a graduate assistant with the Annual Fund and the assistant baseball coach.

Presently, under the direction of Dr. Burton Sisco, I have been working on a research project, "NCAA Division III Student-Athlete's Attitudes and Knowledge of Anabolic Steroids." I am asking for your assistance in collecting data for my research project. I would appreciate if you could complete the attached survey.

The survey should take no longer than 20 minutes to complete. All responses will be kept confidential. It is my hope that the information collected here will provide some insight on steroids use in NCAA Division III athletics.

If you have any questions regarding this research project, please feel free to contact Dr. Burton Sisco, my thesis advisor at (856) 256-4500 ext. 3717. You may also contact me directly at (732) 330-8283 or via email at smickl39@students.rowan.edu.

Your help is invaluable for the research project to be successful. Thank you in advance for your time and consideration.

Sincerely,

Keith Smicklo
Higher Education Program (Administrative Track)

APPENDIX C

Consent Form

Consent Form

By signing this form I agree to participate in a study entitled "NCAA Division III Student-Athlete's Attitudes and Knowledge of Anabolic Steroids" which is being conducted by Keith Smicklo, a graduate student at Rowan University. The purpose of this study is to determine NCAA Division III student-athlete's attitudes and knowledge on anabolic steroid use. The data collected in this study will be used as part of his Master's Thesis.

I understand that I will be required to answer questions on a survey. My participation in this study will not exceed 20 minutes.

I understand that my responses will remain anonymous and that all the data collected in the study will be confidential. I agree that any information obtained from this study may be used in any way thought best for the research project provided that I am not identified and my name is not used.

I understand that there are no physiological or psychological risks involved in this study and that I am free to withdraw from the study at any time.

If I have any questions regarding this research project, I may contact project advisor, Dr. Burton Sisco at (856) 256-4500 ext. 3717 or Keith Smicklo at (732) 330-8283 or via email at smickl39@students.rowan.edu.

(Signature of Participant)

(Date)

(Signature of Investigator)

(Date)

APPENDIX D

Survey

NCAA Division III Student-Athlete's Attitudes and Knowledge of Anabolic Steroids

Anabolic steroids are chemical derivatives of the male sex hormone testosterone, used by athletes to build muscle mass and strength. Athletes take anabolic steroids because it gives them a competitive advantage over other athletes. The primary purpose of this survey is to determine the attitudes and knowledge of NCAA Division III student-athletes on anabolic steroid use. A second purpose is to determine major deterrents of steroid use in NCAA Division III athletics.

Please read each sentence carefully and respond to it as accurately as possible. Check, circle, or list the appropriate response.

Part 1: Background Information

1. What is your Gender?

☐ Male
☐ Female

2. What is your current year in school?

☐ Senior
☐ Junior
☐ Sophomore
☐ Freshman

3. What varsity sport or sports do you participate in?

4. Have you ever been drug tested by the NCAA?

☐ Yes
☐ No

5. To your knowledge, has any member of your team ever been drug tested by the NCAA?

☐ Yes
☐ No

Part 2. Attitudes Toward Anabolic Steroid Use Among Division III Student-Athletes

The following items reflect some of the attitudes NCAA Division III student-athletes have on anabolic steroids and the NCAA Division III drug testing philosophy. NCAA Division III student-athletes are members of a NCAA Division III institution that represents their institution by participating in a varsity sport. Please read the following statements and respond to them as accurately as possible. The statements are on a scale from "Strongly Agree" to "Strongly Disagree." Please circle the corresponding letter that depicts the degree to which you agree with the statement. If you feel neutral or undecided on a statement please circle (N). Remember, all responses will be kept confidential.

Key:

SA	A	N	D	SD
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

1. It is okay for a student-athlete to use steroids as long as he/she avoids detection.	SA	A	N	D	SD
2. Long-term steroid use in males can make them sterile.	SA	A	N	D	SD
3. Female steroid users develop masculine characteristics.	SA	A	N	D	SD
4. All NCAA divisions have the same drug testing policy.	SA	A	N	D	SD
5. It is okay for a student-athlete to use steroids.	SA	A	N	D	SD
6. Steroid use can increase an athlete's quickness.	SA	A	N	D	SD
7. The punishment from the NCAA for a positive drug test is a one-year (365 days) suspension from the time of the positive test.	SA	A	N	D	SD

8. Teammates are the major reason why Division III student-athletes use steroids.	SA	A	N	D	SD
9. NCAA Division III student-athletes can get drug tested out of season	SA	A	N	D	SD
10. It is okay for a student-athlete to use steroids if he/she knows he/she will not get drug tested.	SA	A	N	D	SD
11. Steroid use leads to serious health problems.	SA	A	N	D	SD
12. The NCAA has increasing penalties for a positive drug test.	SA	A	N	D	SD
13. Steroids can be taken orally, in pill form.	SA	A	N	D	SD
14. Head coaches are the major reason why Division III student-athletes avoid using steroids.	SA	A	N	D	SD
15. Steroid use increases muscle mass.	SA	A	N	D	SD
16. The benefit of steroid use outweighs the potential health problems.	SA	A	N	D	SD
17. NCAA Division III student-athletes can only get drug tested during NCAA Championship events.	SA	A	N	D	SD
18. The NCAA provides student-athletes with adequate drug education programs.	SA	A	N	D	SD
19. Steroid use improves physical appearance.	SA	A	N	D	SD
20. Steroids can be rubbed into the skin in a form of a cream.	SA	A	N	D	SD

21. Using steroids helps a student-athlete recover quicker from an injury.	SA	A	N	D	SD
22. A major reason why Division III student-athletes do not use steroids is because they are illegal.	SA	A	N	D	SD
23. Steroids can be injected into body tissue or a blood vessel by way of a syringe.	SA	A	N	D	SD
24. It is okay for a student-athlete to use steroids if it helps the team win.	SA	A	N	D	SD
25. Athletic Directors are the major reason why Division III student-athletes avoid using steroids.	SA	A	N	D	SD
26. Steroid use raises the risk of HIV/AIDS exposure.	SA	A	N	D	SD
27. Steroid use can lead to irritability, aggressive behavior, and unexplained outbursts.	SA	A	N	D	SD
28. The NCAA Drug testing policy is the major reason why Division III student-athletes do not use steroids.	SA	A	N	D	SD
29. NCAA Division III student-athletes can get drug tested during the regular season.	SA	A	N	D	SD
30. Steroids enhance athletic performance.	SA	A	N	D	SD

