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The use of performance enhancing supplements and the need for drug testing policies

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THE USE OF PERFORMANCE ENHANCING SUPPLEMENTS AND THE NEED FOR DRUG TESTING POLICIES

by
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ABSTRACT

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This study examined the use of performance enhancing supplements of Buena Regional High School student-athletes and the need for drug testing policies. The subjects included 120 student-athletes who had participated at the varsity or sub-varsity level. The student-athletes completed a 21 item survey that consisted of 6 items that measured the students demographics such as age, gender, grade, race, sport and level. The survey also consisted of 15 statements that determined student's use of performance supplements, reasons why they use supplements, the types of supplements that are used and their feelings about drug testing policies. The data were analyzed using the Statistical Package for the Social Sciences (SPSS). The findings suggested that the student-athletes are using supplements that are both legal and illegal to improve sport performance (35.9%). The findings also suggest that the student-athletes would support a drug testing policy (76.7%).

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CHAPTER ONE

INTRODUCTION

Statement of the Problem

Drug testing policies are needed in high school athletics because of the availability of performance enhancing supplements, and to guarantee the safety of the athletes. The performance enhancing supplement industry is growing, and without any federal testing or limitations on the ingredients used in its products, many athletes may endanger their lives or the lives of others. The problem concerns the number of athletes using supplements, their reasons for using them, their knowledge of the supplements effects, the types of supplements that are used, and their feelings towards drug testing policies (Perko, 2000).

Background of the Problem

In the northwest corner of Oregon is the small town of Vernonia. Vernonia is the All-American town; it's family oriented and thrives on local sports, fishing, and logging mills. In 1995, the Supreme Court of the United States decided on the Vernonia School District v. Acton case. The case dealt with Acton, a student from Vernonia, and the violation of his fourth amendment right of an unlawful search and seizure. The problem actually began in the late 1980s when student behavior became dangerous in school with an increased amount of suspensions for fighting and misconduct in the classroom. The administrators and staff determined that many of the problems were being caused by the school's athletes and feared an increased risk of sports related injuries. The school started

intervention and education programs on drug use but the problem persisted. The school board decided to involve the community and together they decided to adopt a drug-testing program (Arnold, 1996).

The drug-testing program applies to all students participating in interscholastic athletics. The student-athletes are required to sign a drug testing consent form and complete a drug test prior to the start of the season. After the start of the season 10% of the population is randomly selected each week to take another drug test, which must be given the same day and proof of any medication must be provided. If a student's sample tests positive, no further action is taken, but if he or she test, negatively, a second test is given to confirm the result. If the second test is negative, then the student has the option of completing a therapy program that includes weekly urinalysis, or he or she are suspended for the current and following athletic season (Arnold, 1996).

The court balanced the student's right of privacy against the district's right of providing a safe learning environment. The court ruled in favor of the school district because they showed a need to test their student athletes based on past behavioral problems and the risk of sport related injuries. The court also determined that collection of the samples was not intrusive, because they were collected with the same privacy under normal conditions. Since this verdict, schools across the United States have begun to implement drug-testing policies to ensure safety and equal opportunity to all athletes (Arnold, 1996).

Purpose of the Study

The purpose of the study was to determine if high school athletes are using performance-enhancing supplements. Also, the study will determine the types of supplements being used, as well as, the reasons for using them, and the athlete's attitudes about drug testing policies.

Assumptions and Limitations

The results of this research project helped determine if there is a problem among high school athletes at Buena Regional High School using performance-enhancing supplements. The study also helped determine what supplements are being used, the student's attitudes towards there use, and their feelings on drug testing policies, and the reasons for using them. Also, the study measured if there is a need for drug testing in our high school by comparing the results of previous studies. The limitations that were encountered include:

1. The study of being limited to one high school.
2. The number of students-athletes available to study.
3. The interest level of student-athletes in the study because of its sensitive subject.
4. The parent consent forms being returned by students.
5. The availability of students to take the survey during the school day.

Operational Definitions

1. Student-Athlete - An individual who attends Buena Regional High School and participates in extra-curricular athletic activities.
2. 2. Performance Enhancing Supplements - A substance used to improve muscular strength, endurance, speed, and recovery time.

3. Drug Testing Policies - a written statement regarding the rules and actions of a school district on the use of drugs by its students or student athletes.

4. Illegal Drugs - any substance that is against the law to use or possess that enhances sport performance.

5. Nutritional Supplement - any legal substance that improves sports performance.

6. Creatine - a performance-enhancing supplement used to increase recovery time during weight training.

7. Ephedrine - dietary supplement used commonly among athletes to decrease weight.

8. Cocaine - an illegal drug used by athletes to increase aggression and intensity.

9. Amphetamines - an illegal narcotic that is classified as a stimulant to increase energy levels of athletes.

10. Barbiturates - an illegal narcotic classified as a sedative that acts as a stimulant if taken in large quantities.

11. Caffeine - a legal stimulant used by athletes used to create a higher energy level.

12. Anabolic Steroids - an illegal synthetic hormone that is used by athletes to increase size and strength.

13. Human Growth Hormone - an illegal synthetic hormone used by athletes to regulate physical growth.

14. Androstenedione - a legal supplement used by athletes to enhance muscle development.

Research Questions

1. Are Buena High School level student athletes using performance-enhancing supplements to gain an athletic advantage?

2. If so, why are Buena High School student athletes using performance-enhancing supplements?

3. What type of performance enhancing supplements are being used?

4. Would high school student athletes support a drug testing policy?

Summary and Organization of Remaining Chapters

The organization of chapter two includes the review of studies on the use of performance enhancing supplements and the increasing number of schools who use drug-testing policies. Chapter three defines the subjects of my study, the procedures used, and the methods of gathering data. Chapter four presents the findings from the data collection in the form of tables and figures. Chapter five contains the discussion, conclusion, and recommendations based on the findings and future research.

CHAPTER TWO

LITERATURE REVIEW

Drug Use Patterns of Athletes and Non-Athletes

Naylor, Gardner, and Zaichkowsky (2001) surveyed 1550 high school students to determine the drug use patterns of athletes and non-athletes and compared their similarities and differences. Naylor et al. (2001) surveyed the students from 15 high schools in Massachusetts with the male population equaling 51% and the females 49%. The students who completed the survey included 35% freshmen, 24.6% sophomores, 23.4% juniors, and 17% were seniors. The students reported that 74% had participated in interscholastic athletic events within the year. The number of students from each school averaged 140, with 180 being the largest and 100 being the lowest representation. The study took a month and a half to complete at the fifteen schools, and all students were assured confidentiality.

Naylor et al. (2001), found that cocaine, creatine, androstenedione, anabolic steroids, pain medications, barbiturates, and amphetamines were the most commonly used supplements. According to Naylor et al. (2001), 68% of the student athletes were aware of Massachusetts's chemical health eligibility rule which discourages the use of recreational or performance enhancing supplements. Thirty-eight percent of the students stated that they violated the rule, 12% had been caught, and 13% of those were suspended. Seventy-one percent felt that a teammate had used recreational or performance enhancing supplements and 48% stated that they would support a random

drug-testing policy.

Naylor et al. (2001) found little difference between the athletes and non-athletes use of performance enhancing supplements. They believe that the lack of difference is because non-athletes use performance-enhancing supplements to improve their appearance, and that high school athletes don't need to use them to perform at an elite level.

Naylor et al. (2001) concluded that athletes tend to lead a healthier lifestyle because of the amount of time and dedication required to compete. Alcohol, cigarettes, and marijuana were the most commonly used drugs among high school athletes and non-athletes. Pain medications were the highest performance-enhancing supplement used among the athletes at 29.3%, followed by creatine 10.4%, amphetamines 6.8%, barbiturates 3.7%, cocaine 3.1%, steroids 2.5%, and andro 2.3%.

Naylor (personal communication, 2003) determined that the high percentage of pain medications was used to hide or lessen the pain of injuries. He also believed that there was a need for drug intervention programs such as testing, discussion, and knowledge of the states regulations regarding illegal substance use.

According to a report from Cornell Medical College and Mount Sinai Medical Center of New York (Teen Athletes, 2001), the effects of creatine for people under the age of 18 are still unknown. In adults, it has been known to increase short-term strength and power, which allows a person to work out longer and recover more quickly. There have been instances when renal failure in children has been the result of creatine use. The researchers found that 9% of males and 2% of females in middle school were

using the supplement. The relationship of sport and performance enhancing supplements were common with athletes who participated in athletics that require weight training, such as, football, hockey, gymnastics, wrestling, and lacrosse. In 11th and 12th grade students the rate increased to 44%. Researchers felt that creatine like other performance enhancing supplements, could lead to more dangerous products (Teen Athletes, 2001).

The Use of Steroids by High School Athletes

Luetkemeier, Baynebridge, Walker, Brown, and Eisenman (1995) studied the use of anabolic steroids of 1,907 11th and 12th grade high school students in Salt Lake City, Utah. The survey included the student's athletic participation, gender, and their use of illegal drugs. The side effects associated with anabolic steroids are: testicular atrophy, prostate enlargement, menstrual irregularities, cancer, liver failure, high levels of bad cholesterol, and low levels of good cholesterol (Luetkemeier et al., 1995).

Luetkemeier et al. (1995) found that 3.3% of boys and 1.4% of females had used steroids. The seniors had the highest use at 39.7% and juniors had the lowest among high school students with 9.5%. The 7th and 8th graders reported that none of them had ever used steroids. The percentages of students who strength trained and used steroids were 5% as compared to the 1.6% who do not strength train and use steroids. The study determined that that steroid users also indulged in other illicit drugs, such as cocaine, marijuana, tobacco, and alcohol. This raised the idea that steroid use may be part of the drug culture and not exclusively related to performance enhancement (Luetkemeier et al., 1995).

Drug Testing Policies in High Schools

The National Federation of State High School Associations (NFHS), The National Interscholastic Athletic Administrators Administrative Association (NIAAA), and The National Center for Drug Free Sport, Inc. (NCDFS) (2003) surveyed 861 athletic directors across the United States on drug testing programs. The purpose of the study was to determine how many schools have drug-testing programs in place, what substances they test for, and why they have the program in the first place.

The National Federation of State High School Associations et al. (2003) found that 13% of schools have drug-testing policies in place and 17% are in the process of implementing a policy. Within the 13%, 63% test student-athletes, 82% have mandatory drug testing, and 76% test randomly. Marijuana is the most common drug tested for, followed by cocaine, amphetamines, opiates, PCP, and alcohol, ephedrine, steroids, ecstasy, and tobacco.

According to the National Federation of State High School Associations et al. (2003), 98% of schools notify parents of any violations, 92% require counseling, and 83% suspend students. Fifty-four percent stated that they did not have a program in place due to finances, 51% did not have approval from the community, and 50% listed legal concerns. The most interesting fact is that 13% feel there is no need for policies, which could mean 87% believe there is. The National Federation of State High School Associations, The National interscholastic Athletic Administrators Association, and The National Center for Drug Free Sport (2003) state that performance-enhancing supplements in high school athletics is a growing problem, and schools want to channel

money toward educating students instead of drug testing.

Drug Use and Drug Testing Policies

Yamaguchi, Johnston, and O'Malley (2003) studied the relationship between illicit student drug use and school drug testing policies. The study focused on the percentage of schools that have drug testing policies, the students that are tested, the basis of the tests, how characteristics of a school and its student body relate to drug testing, and the relationship between student drug use and drug testing. The sample consisted of 30,000 eighth graders, 23,000 tenth graders, and 23,000 twelfth graders. Out of the 46,000 tenth and twelfth graders 3,000 were student athletes.

Yamaguchi et al. (2003) found that 5% of 487 schools tested student athletes for drugs; this contradicts the National Federation of State High School Associations et al. (2003) findings that 63% of 861 schools use drug tests. They also found that 14% of schools test based on suspicion of drug use and this also contradicts the NFHS survey results of 54%. Large high schools and low socioeconomic areas are the characteristics that determine where drug-testing policies exist (Yamaguchi et al., 2003). Yamaguchi et al. (2003) concluded that drug testing does not reduce the use of drugs by high school athletes.

Perceptions of Illegal Substance Use by High School Athletes

Shields (1995) studied the perceptions of coaches and athletic directors on the abuse of illegal substances, and the comparison of abuse between athletes and non-athletes. Three hundred and twenty five athletic directors were surveyed with 215 responding. According to Shields (1995), the number of athletic directors who indicated

that the drug problem for North Carolina student athletes to be very big was, 2% for cocaine, 1% for amphetamines, and 1.5% for steroids. These numbers were lower in comparison to the findings by Naylor et al. (2001).

Shields (1995), found that the percentage of athletic directors who were aware of student-athletes using specific drugs was 11.3% for cocaine and steroids, and 9.4% for amphetamines. These numbers are greater in comparison to the findings by Naylor et al. (2001). Shields (1995), in conclusion found that the perception of drug use by non-athletes was greater at 73% than that of athletes at 27%.

Athletes Use of Mineral Supplements

Sobal and Marquart (1994) studied 742 athletes from nine rural high schools on the use of vitamin and mineral supplements by high school athletes. The demographics of the survey included gender, grade, sports team, and future participation in sports. Survey questions asked if they took supplements, the reasons for taking the supplements, and the influence of their supplement use. The majority of the students surveyed were boys at 58% and girls 42%.

Sobal and Marquart (1994) found that 38% of the student-athletes took vitamin and mineral supplements. Nineteen percent used supplements daily, while 8% stated they used them several times a week, 5% use them several times a month, 9% occasionally during the year, and 61% stated they rarely or never use them.

According to Sobal and Marquart (1994), healthy growth, treating illness, muscle development, and sports performance were the most common answers for use of supplements. The most influential people encouraging athletes using supplements were

parents, doctors, and coaches.

Sobal and Marquart (1994) also found that the use of supplements was evenly distributed throughout all sports. Fifty-nine percent of the wrestlers used supplements, followed by softball and hockey at 50%, cross-country 47%, gymnastics 40% and football 39%.

Sobal and Marquart (1994), conclude that the use of vitamin and mineral supplements is a stepping stone to other more dangerous performance enhancing supplements. The positives of vitamin and mineral use for sports performance are minimal because they are not energy producing supplements. This could lead student-athletes to use supplements that are stronger and more dangerous than vitamins and minerals. The researchers also found that student-athletes would benefit from coaches, parents, and doctors educating them on the use of supplements and sports performance.

The Use of Dietary Supplements by High School Athletes

Perko (2000) surveyed 1737 student athletes between the ages of 14 and 19 enrolled in nine high schools in Georgia. Twenty-three percent of the students were freshmen, 30.7% were sophomores, 26.4% were juniors, and 19.1% were seniors. The gender makeup of the survey was 58% male and 42% female. The percentage of the race sample was 82.4% white, 8.4% African American, 1.4% Native American, and 2.9% other. The athletic events represented in the survey included baseball, softball, diving, swimming, basketball, golf, gymnastics, soccer, tennis, track, volleyball, and wrestling.

Perko (2000) investigated the beliefs and attitudes of student-athletes on the use of dietary supplements. The study showed that 17% of the student athletes agreed that

dietary supplements would improve sports performance, while 32.7% strongly agreed that they are safe to use. Forty-four percent of the athletes strongly agreed that the use of dietary supplements is a good way to build muscle. Forty-one percent of the students-athletes strongly agreed that coaches and 46% of parents would support the use of dietary supplements for health reasons. Twenty-five percent agreed that doctors would support the use of dietary supplements for sports performance.

Perko (2000) also measured the behavioral intentions of athletes and 56% strongly agreed that they would use dietary supplements to improve health. Fifty percent said they would use them to improve sports performance. Fifty-seven percent would use dietary supplements if their athletic trainer gave them to them. Seventy-nine percent would consult a coach, parent or doctor before using a dietary supplement.

In conclusion, Perko (2000) stated that there are no regulations regarding the sale of dietary supplements and the adverse effects they may have on users. The purpose of the study was to help design a drug intervention program and to find out why athletes use drugs. Perko agrees with the assessment of Sabol and Marquart (1994), that dietary supplements are a gateway for the use of more dangerous supplements such as creatine or andro.

CHAPTER THREE

METHODOLOGY

Context of the Study

Buena Regional High School, located in Atlantic County, is one of 6 schools in the Buena Regional School District. Buena High School enrolls 911 students with a distribution of 77% white, 12% Hispanic, 10% Black, and 1% classified as other. The school has 249 freshmen, 216 sophomores, 225 juniors, and 215 seniors. The percentage of male students to females is almost equal with the males making up 50.1% and the females 49.9%. The schools faculty is composed of 90 teachers with 54% male and 46% female (Buena Regional High School, 2000).

The school is set in a rural area with an agricultural based economy and an unemployment rate of 18%. The school's district group factor rating is an "A", meaning the school is of low socioeconomic status. New Jersey ranks their school districts by socioeconomic status from "A" being the lowest to "J" being the highest. The state uses this scale to measure the relationship between test results and economic background. The district's annual budget is 27 million dollars, with $7 million coming from property taxes, $1.5 million from federal aid, and $19.5 million from state aid (Buena Regional High School, 2000).

The school community has a median age of 35.2 and an income of $38,434. The percentage of households with children is 69.9%; single households make up 49.1% and married households 50.9%. The average household size is 2.61, 44% of the work force is

employed in white collar jobs and 16.85% of the population have a college degree.

Buena Regional High School is also part of the Atlantic County Library System and serves as the area's reading center during after school hours. The library offers books and Internet use Monday through Saturday. The schools surrounding community also offers a variety of youth groups involving Scouts, athletics, churches, and youth programs sponsored by the local police, firefighters, and emergency medical technicians (Buena Regional High School, 2000).

Population and Sample

The subjects selected for the study were the student-athletes at Buena Regional High School. The school had 300 student-athletes in the 2003-2004 year with 120 of them playing multiple sports leaving 180 athletes available to survey. The sample was selected randomly from the previous years athletic rosters. Targeted were all the student athletes at the high school through the physical education and health classes. With the assistance of the physical education staff all student athletes were accessible. The sample consisted 120 student-athletes who returned permission slips and completed the survey (See Appendix A).

Instrumentation

The survey was patterned after studies completed by Naylor at al. (2001), Perko (2000), Luetkemeier et al. (1995), Sobal and Marquart (1994), piloted surveys of thirty student-athletes and the opinions of the Buena High School coaching staff. The survey measured the use of performance enhancing supplements of high school athletes, as well as their beliefs and attitudes towards the effects, the types used, and drug testing policies.

The survey requested subjects' grade, age, gender, race, sport, and level. The survey included both general and specific statements about the use of performance enhancing supplements using a 5 point Likert scale ranging from strongly agree to strongly disagree (See Appendix B)

The survey was piloted through two physical education classes with 15 student-athletes in each class. The first draft of the survey was distributed during class time and students discussed the strengths and weaknesses of the tool. Coaches at Buena provided feedback of the survey to determine validity through their experiences with athletes and their use of performance enhancing supplements. Reliability was determined by using a stability measurement in which a small sample of the entire population was surveyed and the findings were compared to the entire population's results. The pilot group was randomly selected using students from health classes. After discussions with the students, feedback from coaches, and reviewing the results of the pilot tests, 25 statements were modified and the instrument finalized for distribution and data collecting.

Institutional Review Board Application and Approval

Before data was collected, the survey required approval from Rowan University's Institutional Review Board (IRB), which included a downloaded approval form from Rowan's web site. A copy of the instrument and permission slip accompanied the form, which required information on the subjects, the objective, and the design of the study. The review board approval was necessary to assure that proper procedures and techniques were followed, as well as, determining the appropriateness of the study (See Appendix C).

Data Gathering Procedures

Once the survey was approved, the subjects were given an explanation that the survey was voluntary and its purpose was to measure the prevalence of performance enhancing supplements in high school athletes. They were also told that parental permission was required to participate in the survey, and no student-athlete will be allowed to participate without it. Assurance was given to the students that their confidentiality will be protected and all data will be reported in groups and not as individuals. The subjects were surveyed on November 5th in the auditorium during their physical education class with assistance from the staff at Buena Regional High School. Once the students were seated in the auditorium, they were given an explanation of the Likert scale and the anonymity of the project. All students had an entire period to complete the survey and all surveys were collected in a box located near the exit door.

Data Analysis

Results were tallied using scoring sheets to separate the results into the demographics of grade, age, gender, race, sport and level (See Appendix D). This was done to make data entry quick and efficient when it came time to enter the data into the program. Responses were then analyzed using the Statistical Package for the Social Sciences (SPSS) software package and then reported in the research project. The program was available at Rowan University's Campbell Library. The program required all statements from the survey instrument to be entered along with the possible responses. Once the statements were completed the data collected can be entered and the results were available at the touch of a button.

CHAPTER FOUR

FINDINGS

Profile of The Sample

The survey consisted of 120 student athletes from Buena Regional High School a rural, low socioeconomic farming community. The population of student athletes who participated in the survey was 70%, which makes adds to the validity for the high school community. The sample of student athletes who participated in the survey was comparable to the percentage within the school community. The ratio of males and females were similar with a majority of those participating in the study being white, senior and a varsity athlete. (See Appendix D).

Research Question 1: Are High School Student-Athletes Using Performance Enhancing Supplements to Gain an Athletic Advantage?

The results of the survey suggest that student-athletes at Buena Regional High School are using performance-enhancing supplements to gain an athletic advantage. Forty-three of the student-athletes surveyed stated that they have used performance-enhancing supplements with males accounting for 62.8% (See Table1). That is a large percentage of the population of student athletes who are using substances to gain an athletic advantage considering there are two hundred student athletes in the high school community. There can be a correlation to age, race and experience with the use of supplements because the study shows that users are white, male, 17 to 18 years old and

compete at the varsity level. The varsity athletes compete at a high level and are facing bigger, faster, and stronger opponents and are trying to find the quickest way to improve their abilities. The percentage of minority users who use supplements surpassed not only the percentage of their athletic population but nearly doubled their percentage of population within the school (See Appendix D).

Table 1

Survey Results of Buena Regional High School Student-Athletes

Student Athletes	Supplement Users	Non Users
120	43	77
Male	27	35
Female	16	42

The freshmen and sophomore classes had the smallest number of users (28.4%), which supports the question that performance-enhancing supplements are being used at the highest level of competition. The junior and senior class at Buena Regional High School accounted for 90% of the varsity athletes and 83.8% of supplement users (See Table 2). When the student athlete assumes a greater role at a high level of competition it is expected that they weight train on a regular basis and this is evident in the results of the survey as compared to the study by the Cornell Medical College where the percentage of junior and senior level athletes use of supplements with weight training was 44% (Teen Athletes, 2001).

Table 2

The Number of Student-Athletes Surveyed by Grade

Student Athletes	Supplement Users	Non Users
Freshmen	4 (9.3%)	19 (24.7%)
Sophomore	3 (6.9%)	8 (10.4%)
Junior	9 (20.9%)	15 (19.5%)
Senior	27 (62.9%)	35 (45.4%)
Total	43 (100%)	77 (100%)

Research Question 2: Why are High School Student-Athletes Using Performance Enhancing Supplements?

The most common response for using performance-enhancing supplements was to increase muscle development and to increase their chance of earning an athletic scholarship. The numbers of student-athletes who feel they agree/strongly agree with the statement that they use supplements purely for muscle development is 15.8% (See Table 3). Although using certain supplements does increase muscle development and enhance performance, it also involves serious side effects such as, testicular atrophy, prostate enlargement, menstrual irregularities, cancer, liver failure, high levels of bad cholesterol and low levels of good cholesterol (Luetkemeier et al., 1995). The males represented 89.5% of those who use performance-enhancing supplements to increase muscle development. The most common reason to increase muscle development was to increase their strength and speed, while physical appearance recorded the smallest number of responses. The female athletes accounted for only 10.5% of the athletes who use

performance-enhancing supplements for muscular development and the response that was most common was to use these substances to improve their physical appearance.

Table 3

Student Athletes Who Use Performance Enhancing Supplements to Increase Muscle

Supplement Users	Frequency	Percent
Strongly Agree	6	5%
Agree	13	10.8%
Total	19	15.8%

The student athletes who use performance-enhancing supplements to earn an athletic scholarship are 20% (See Table 4). The majority (66.6%) of the student-athletes using performance-enhancing supplements are varsity letter winners and 87.5% of the users are male. The study also found that and 83.3% are white which correlates to the number of students and student-athletes that attend Buena High School. This strongly suggests that 35.8% of the athletes at Buena Regional High School who are near the end of their high school career are willing to risk the many health side effects in order to achieve an athletic career in college.

Table 4

Students Who Use Performance-Enhancing Supplements to Earn an Athletic Scholarship

Student Athletes	Frequency	Percent
Strongly Agree	13	10.8%
Agree	11	9.2%
Total	24	20.0%

Research Question 3: What performance-enhancing supplements are being used by high school Student-athletes?

Caffeine is the most commonly used supplement among Buena High School's athletes. It does not compare to other supplements like steroids or creatine but caffeine can be very dangerous to the human body during athletic competition if not used correctly (Naylor et al., 2001). The number of students who use caffeine for performance enhancing supplements is 43 (35.8%) and the students use caffeine in the form of power drinks like Red Bull and Boost (See Table 5). These statistics contradict the study by Naylor et al. (2001) where caffeine was not even considered as a performance-enhancing supplement. Caffeine is not a supplement that will build muscle or allow an athlete to train harder but does provide energy, even though for a short time, to help someone perform at a higher level. The risks of using caffeine for athletic reasons in large quantities over time can damage an athlete's heart, liver, and kidneys (Naylor et al., 2001).

Table 5

Student-Athletes Who Use Caffeine to Gain an Athletic Advantage

Student Athletes	Frequency	Percent
Strongly Agree	16	13.3%
Agree	27	22.5%
Total	43	35.8%

All athletes who take a performance-enhancing supplement are using caffeine, but the survey also found that other supplements are being used with the caffeine. Fourteen student-athletes (11.6%) use creatine to gain an athletic advantage and its use is popular with the 17-year-old varsity athletes (See Table 6). According to the study by Naylor et al. (2001) 10.4% of the athletes used creatine, which is slightly lower than the study of Buena High School athletes. The side effects of creatine are still unknown but the substance allows athletes to train harder and recover quickly (Teen Athletes, 2001).

Table 6

Student-Athletes Who Use Creatine to Gain an Athletic Advantage

Supplement Users	Frequency	Percent
Strongly Agree	7	5.8%
Agree	7	5.8%
Total	14	11.6%

The other supplements reportedly used by athletes are human growth hormones and ephedrine, which included 6 (5%) athletes for each substance (See Table 7). The number of students who use a human growth hormone at Buena High School is greater in comparison to the study by Luetkemeier et al. (1995) who found that 4.7% of high school athletes in Salt Lake City, Utah have used a human growth hormone. The study by Perko (2000) found that 17% of student-athletes from Georgia used ephedrine, a dietary supplement used to lose weight and improve muscle development. The percentage is more than 3 times greater than the 14% at Buena High School. Human growth hormone and ephedrine have been linked to the deaths of athletes at all levels of competition and should be of great concern for anyone who uses them (Luetkemeier et al., 1995).

Table 7
Student-Athletes Who use Steroids and Dietary Supplements to Gain an Athletic Advantage

Student Athletes Who Use Ephedrine And Steroids	Frequency	Percent
Strongly Agree	6	5%
Agree	6	5%
Total	12	10%

Research Question 4: Would High School Athletes Support a Drug Testing Policy?

The number of student-athletes who would support a drug testing policy for the athletic department was 76.7% (See Table 8). Buena Regional High School's athletic

department does not have a drug testing policy but a test could be administered under school policy if a staff member suspected a student of being under the influence of an illegal substance. According to Yamaguchi et al. (2003) 5% of 487 schools tested student-athletes for drugs, which is contradicted by the National Federation of State High School Associations et al. (2003) research that 63% of 861 schools use drug tests in the athletic department. Yamaguchi et al. (2003) also found that schools do not test athletes for drugs because of socioeconomic issues and that drug testing does not reduce the use of drugs by high school athletes.

The reason why student-athletes agree with a drug testing is that they feel it levels the playing field and ensures them of an equal opportunity to be successful and advance in athletics. The reason why student-athletes disagree with a drug testing policy is that they feel it violates their freedom of privacy.

Table 8

Student-Athletes Who Would Support a Drug Testing Policy for Athletes

Student Athletes	Frequency	Percent
Strongly Agree	51	42.5%
Agree	41	34.2%
Undecided	13	10.8%
Disagree	7	6.7%
Strongly Disagree	8	6.7%
Total	120	100%

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

The study was conducted to determine the prevalence and use of performance enhancing supplements and use of performance enhancing supplements among high school student-athletes and to see if there is a need for drug testing policies. The study was conducted at Buena Regional High School and included 120 student-athletes. The student-athletes were surveyed with parental permission and assistance from the physical education teaching staff.

The student-athletes participated in a 21 part survey that collected background information including age, gender, race, sport, and level. The survey also included 15 statements that measured reasons why students use performance enhancing supplements, what supplements are used, and the students feelings toward supplement safety and student support for drug testing policies.

Discussions of the Findings

Research Question One

Are Students Using Performance Enhancing Supplements to Gain an Athletic Advantage?

According to the study by Naylor et al. (2001), 38% of the student athletes that were studied in Massachusetts violated the substance abuse rule of using performance-enhancing supplements. In comparison, the study of Buena Regional High School

student-athletes revealed similar findings of 35.9%. The study by Sobal and Marquart (1994) of 742 student-athletes revealed similar findings that 38% used vitamin and mineral supplements to improve athletic performance. The findings are quite a bit lower than the study by Perko (2000), where 57% said they would use dietary supplements to improve athletic performance.

Research Question Two

Why are Students Using Performance Enhancing Supplements to Gain an Athletic Advantage?

The study by Sobal and Marquart (1994), revealed the reasons why athletes use performance-enhancing supplements were to develop muscle and to improve sports performance. Perko (2000), found that 17% of student-athletes felt that supplements would improve sports performance, 32.7% felt they were safe, and 44% felt it was a good way to build muscle. In comparison, the study of Buena Regional High School student-athletes was much higher, and revealed that 43 (35.9 percent) students felt supplement use would improve sports performance. Eight (6.7 percent) students felt that supplements were safe to use, which was much lower than the 32.7% found by Perko (2000). Nineteen of Buena's student athletes (15.8 percent) felt it was a good way to build muscle, as compared to the 44% found by Perko (2000). Twenty-six (21.6 percent) of Buena's student-athletes also felt that they would use performance-enhancing supplements if they could earn a scholarship.

Research Question Three

What Type of Performance Enhancing Supplements are Being Used?

Naylor et al. (2001), found that cocaine, creatine, androstenedione, anabolic steroids, pain medications, barbiturates, and amphetamines were the most commonly used supplements of 1550 Massachusetts high school athletes. In comparison, the use of creatine by Buena's athletes of 11.6% was similar to Naylor et al. (2001), and their finding of 10.4%. Amphetamine use in the two studies was also similar with Naylor et al. (2001), finding 6.8% use as compared to Buena's 5.8%. The use of barbiturates in Buena's study was 2% higher at 5.8% as compared to Naylor et al. (2001). The study of Buena's student-athletes revealed the use of andro was higher at 3.3% as compared to the 2.3% used in the study by Naylor et al. (2001) The use of steroids and cocaine as a supplement was lower in Buena's study by more than 1% as compared to the study by Naylor et al. (2001).

A study by Cornell Medical College and Mt. Sinai Medical Center of New York (Teen Athlete, 2001), found that 44% of 11^{th} and 12^{th} graders use creatine. Their findings were higher in comparison to the study of Buena's athletes at 11.6%.

The study Luetkemeir et al. (1995), found that 4.7% of student-athletes used steroids, which is higher in comparison to the 1.7% use by Buena's athletes. The 1.7% use of steroids by Buena's athletes is similar to the 1.5% rate of use by North Carolina student-athletes in a study by Shields (1995).

The study of Buena's student-athletes, caffeine was the most common used supplement at 43.3%. Ephedrine, a weight loss supplement was used by 5% of Buena's

student-athletes. These two substances can't be compared to other studies because none were found.

Research Question Four

Would High School Student-Athletes Support a Drug Testing Policy?

A study by the National Federation of State High School Associations et al. (2003), found that 13% of schools have supported drug-testing policies and another 17% are implementing them. In comparison, 76.7% of Buena's student athletes felt they would support a drug testing policy. The findings in Buena's study are considerably higher than in Yamaguchi et al. (2003), that 5% of schools support a drug test for student-athletes.

Conclusions Based on the Findings

Through the data collected in the survey there is evidence to support that high school athletes are using performance-enhancing supplements. There is a concern about the use of illegal substances like steroids, growth hormones, cocaine, amphetamines, and barbiturates because of their potential harm. In comparing previous studies with Buena's, an assumption can be made that there is cause for concern that student athletes are using these substances. Since all of these illegal substances are present in Buena's program and a drug testing policy would be supported, then drug testing of student athletes is warranted. The safety of the user and his or her teammates would be a reason to implement a program to detect the use of illegal substances.

The use of illegal substances such as creatine, andro, caffeine, and ephedrine are also a concern to schools, but they are legal substances that can be bought at any nutritional store. There is not much known about the long term side effects and there has

been a history with the misuse of these supplements causing severe problems with people's health (Perko, 2001). Since not much is known, further studies would have to be completed and state athletic organizations would need to develop policies against the use of these substances.

Drug testing has always been a difficult issue when considering an individual's privacy rights. The safety of athletes participating in an athletic event is a greater concern and eliminates the privacy issue since it is not a mandatory activity (Arnold, 1996). It appears that Buena's student athletes would accept a policy from the data collected and would not only help a less skilled athlete have an equal chance to earn a spot on the team, but also help the person suffering from a substance abuse problem to become healthy.

Recommendations for Practice and Further Research

This study was done with a small number of student athletes in a rural setting and a suggestion would be to include most schools and athletes. The more student athletes a researcher has to study the greater the reliability of the results. Another recommendation would be to focus the study and concentrate on one or two substances. An interview with student athletes done anonymously would be a great asset to a researcher and would provide insights and ideas about substance use in athletics. A study should also be done with large numbers of student athletes of each sport, so a comparison can be made between supplement use and sport.

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APPENDIX A:

Informed Consent Form

Dear Parent/Guardian:

My name is Jim Battersby and I am a Health and Physical Education teacher at Buena Regional High School. I am currently involved in my Educational Leadership internship at Buena Regional High School where I will be completing my thesis on "The Use of Performance Enhancing Supplements in High School Athletics and the Need for Drug-Testing Policies." The goal is to study is to find out how many of our student athletes are relying on supplements to improve their athletic performance and if there is a need for drug testing in high school athletics.

Each of Buena Regional High School's athletes are invited to take part in a survey I have developed for the research. The survey will be anonymous and all data reported will be group results not individual, The data recorded are for class project purposes only.

The decision to allow your child to participate in the survey will be of great assistance to me and will have no effect on your child's standing in their sport. If you have any questions regarding the survey please feel free to call me at school (856) 697-2400. Thank You.

Sincerely,

Jim Battersby

Please indicate whether or not you wish to have your child participate in the study by checking the appropriate statement below.

_____ I grant permission for my child _____ to participate in this study.

_____ I do not grant permission for my child _____ to participate in this study.

APPENDIX B

Performance Enhancing Supplements and The High School Athlete Survey

Performance Enhancing Supplement Survey

Please circle the information that best describes you.

Age:	13	14	15	16	17	18
Gender:	Male			Female		
Grade:	Freshmen			Sophomore	Junior	Senior
Race:	White/Caucasion			African American	Asian	Hispanic
	Other: _____					

Identify your primary sport and level you play:

(Circle One)	Freshmen	JV	Varsity

(Circle One Primary Sport)

Basketball	Baseball	Cross Country	Wrestling
Football	Cheerleading	Tennis	Field Hockey
Golf	Track	Winter Track	Soccer
Softball			

Please answer all questions honestly. Any answer given is for research data only.

1. I have used performance enhancing Supplements to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

2. I use performance enhancing supplements to increase muscle development.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

3. I have a teammate who uses performance enhancing supplements.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

4. I use performance enhancing supplements to earn a scholarship.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

5. I would support a drug testing policy for athletes.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

6. Using performance-nhancing supplements is safe.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

7. I use Creatine to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

8. I use Andro to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

9. I use Amphetamines to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

10. I use Barbiturates to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

11. I use Human Growth Hormone to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

12. I use Ephedrine to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

13. I use Anabolic Steroids to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

14. I use power drinks high in caffeine to gain an athletic advantage.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

APPENDIX C

Institutional Review Board Disposition Form

2004-131
RECEIVED
AUG 31 2004
Government Grants and Sponsored Projects

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 for Research Expediter(s): 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) 10/04

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:
THE USE OF PERFORMANCE ENHANCING SUPPLEMENTS AT HIGH SCHOOL ATHLETICS AND THE NEED FOR DRUG TESTING POLICIES

Researcher: JAMES J. BATTERSBY

Department: EDUCATIONAL LEADERSHIP Location BUENA REGIONAL H.S.

Mailing Address: 200 STOTESBURY AVE (Street)
NEWFIELD, N.J. 08344 (Town/State/Zip)

E-Mail: BATTS52@COMCAST.NET Telephone: 856-697-9603

Co-Investigator/s:
N/A

Faculty Sponsor (if student)* DR. CAPASSO
Department ED. LEADERSHIP Location: MEMORIAL HALL
E-Mail: CAPASSO@ROWAN.EDU Telephone: 609-707-3682

Approved For Use by Rowan IRB: 7/04

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?

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

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

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

5. WHERE WILL THE RESEARCH BE CONDUCTED:

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 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: _____

APPENDIX D:

Frequency Statistics

STATISTICS

	Age	Gender	Grade	Race	Sport Level	Sport	I Use Performance Enhancing Supplements to gain an Athletic Advantage	I Use Performanc e Enhancing Supplement s to Increase Muscle Developme nt
N Valid	120	120	120	120	120	120	120	120
Missing	0	0	0	0	0	0	0	0
Mean	3.28	1.48	3.04	1.27	1.65		3.67	4.18
S.D..	1.25	.502	1.17	.561	.479		1.44	1.23

	I Have a Teammate Who Uses Performance Enhancing Supplements	I Would Use Performance Enhancing Supplements to Earn a Scholarship	I Would Support a Drug Testing Policy for Athletes	Using Performance Enhancing Supplements is Safe	I Use Creatine to Gain an Athletic Advantage	I Use Andro to Gain an Athletic Advantage
Valid	120	120	120	120	120	120
Missing	0	0	0	0	0	0
Mean	3.5	3.57	2.00	3.90	4.28	4.57
S.D.	1.402	1.346	1.174	.991	1.145	.807

	I Use Amphetamines to Gain an Athletic Advantage	I Use Barbiturates to Gain an Athletic Advantage	I Used HGH to Gain an Athletic Advantage	I Use Ephedrine to Gain an Athletic Advantage	I Use Anabolic Steroids to Gain an Athletic Advantage	I Use Power Drinks High in Caffeine to Gain an Athletic Advan.
Valid	120	120	120	120	120	120
Missing	0	0	0	0	0	0
Mean	4.58	4.61	4.56	4.58	4.70	3.22
S.D.	.836	.781	.848	.847	.669	1.47

FREQUENCY TABLE

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
14	18	15	15	15
15	12	10	10	25
16	25	20.8	20.8	45.8
17	49	40.8	40.8	86.7
18	16	13.3	13.3	100
Total	120	100	100	

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	62	51.7	51.7	51.7
Female	58	48.3	48.3	100
Total	120	100	100	

Grade

	Frequency	Percent	Valid Percent	Cumulative Percent
Freshmen	23	19.2	19.2	19.2
Sophomore	11	9.2	9.2	28.3
Junior	24	20	20	48.3
Senior	62	51.7	51.7	100
Total	120	100	100	

Race

	Frequency	Percent	Valid Percent	Cumulative Percent
White	95	79.2	79.2	79.2
African-American	18	15	15	94.2
Hispanic	7	5.8	5.8	100
Total	120	100	100	

Sport Level

	Frequency	Percent	Valid Percent	Cumulative Percent
Sub Varsity	42	35	35	35
Varsity	78	65	65	100
Total	120	100	100	

Sport

	Frequency	Percent	Valid Percent	Cumulative Percent
Baseball	8	6.7	6.7	6.7
Basketball	22	18.3	18.3	25
Cheerleading	10	8.3	8.3	33.3
Cross Country	9	7.5	7.5	40.8
Field Hockey	7	5.8	5.8	46.7
Football	19	15.8	15.8	62.5
Golf	2	1.7	1.7	64.2
Soccer	13	10.8	10.8	75
Softball	6	5	5	80
Tennis	6	5	5	85
Track	12	10	10	95
Wrestling	6	5	5	100
Total	120	100	100	

I use performance-enhancing supplements to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	5	4.2	4.2	4.2
Agree	38	31.7	31.7	35.8
Undecidd	6	5	5	40.8
Disagree	14	11.7	11.7	52.5
Strongly Dis.	57	47.5	47.5	100
Total	120	100	100	

I use performance-enhancing supplements to increase muscle development

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	6	5	5	5
Agree	13	10.8	10.8	15.8
Undecidd	6	5	5	20.8
Disagree	23	19.2	19.2	40
Strongly Dis.	72	60	60	100
Total	120	100	100	

I have a teammate who uses performance-enhancing supplements

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	15	12.5	12.5	12.5
Agree	17	14.2	14.2	26.7
Undecided	21	17.5	17.5	44.2
Disagree	27	22.5	22.5	66.7
Strongly Dis.	40	33.3	33.3	100
Total	120	100	100	

I would use performance-enhancing supplements to earn a scholarship

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	13	10.8	10.8	10.8
Agree	13	10.8	10.8	21.7
Undecided	28	23.3	23.3	45
Disagree	25	20.8	20.8	65.8
Strongly Dis.	41	34.2	34.2	100
Total	120	100	100	

I would support a drug testing policy for athletes

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	51	42.5	42.5	42.5
Agree	41	34.2	34.2	76.7
Undecided	13	10.8	10.8	87.5
Disagree	7	5.8	5.8	93.3
Strongly Dis.	8	6.7	6.7	100
Total	120	100	100	

Using performance-enhancing supplements is safe

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	3	2.5	2.5	2.5
Agree	5	4.2	4.2	6.7
Undecided	32	26.7	26.7	33.3
Disagree	41	34.2	34.2	67.5
Strongly Dis.	39	32.5	32.5	100
Total	120	100	100	

I use creatine to gain an athletic advantage

Strongly Agree	7	5.8	5.8	5.8
Agree	7	5.8	5.8	11.7
Undecided	3	2.5	2.5	14.2
Disagree	32	26.7	26.7	40.8
Strongly Dis.	71	59.2	59.2	100
Total	120	100	100	

I use andro to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	3	2.5	2.5	2.5
Agree	1	.8	.8	3.3
Undecided	3	2.5	2.5	5.8
Disagree	31	25.8	25.8	31.7
Strongly Dis.	82	68.3	68.3	100
Total	120	100	100	

I use cocaine to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	2	1.7	1.7	1.7
Agree	0	0	0	1.7
Undecided	0	0	0	1.7
Disagree	21	17.5	17.5	19.2
Strongly Dis.	97	80.8	80.8	100
Total	120	100	100	

I use amphetamines to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	4	3.3	3.3	3.3
Agree	0	0	0	3.3
Undecided	3	2.5	2.5	5.8
Disagree	28	23.3	23.3	28.3
Strongly Dis.	85	70.8	70.8	100
Total	120	100	100	

I use barbiturates to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	3	2.5	2.5	2.5
Agree	0	0	0	2.5
Undecided	4	3.3	3.3	5.8
Disagree	27	22.5	22.5	30.8
Strongly Dis.	86	71.7	71.7	100
Total	120	100	100	

I use a human growth hormone to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	3	2.5	2.5	2.5
Agree	3	2.5	2.5	5
Undecided	1	.8	.8	5.8
Disagree	30	25	25	30.8
Strongly Dis.	83	69.2	69.2	100
Total	120	100	100	

I use ephedrine to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	3	2.5	2.5	2.5
Agree	3	2.5	2.5	5
Undecided	1	.8	.8	5.8
Disagree	28	23.3	23.3	29.2
Strongly Dis.	85	70.8	70.8	100
Total	120	100	100	

I use anabolic steroids to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	2	1.7	1.7	1.7
Agree	0	0	0	1.7
Undecided	2	1.7	1.7	3.3
Disagree	24	20	20	23.3
Strongly Dis.	92	76.7	76.7	100
Total	120	100	100	

I use power drinks high in caffeine to gain an athletic advantage

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	16	13.3	13.3	13.3
Agree	36	30	30	43.4
Undecided	9	7.5	7.5	50.8
Disagree	24	20	20	70.8
Strongly Dis.	35	29.2	29.2	100
Total	120	100	100	