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Abstract

Performance enhancing and prescription drugs were a growing issue in professional football, as more players in recent years have fallen victim to drug testing; resulting in lengthy suspensions and fines. This research aimed to show that the culture of using performance enhancing and prescription drugs in order to play football starts at the college level or even earlier. Past research had laid the foundation for this study and through the use of a random sampling method; colleges and universities from across the country were asked to take a survey. From their responses, some patterns had started to develop. Results from the study showed that there was some incentive to use performance-enhancing drugs in order to achieve financial success and to sustain a career at the collegiate and professional level. Also, players were willing to take narcotic painkillers and non-steroidal anti-inflammatory drugs in order to play through injuries. This was analyzed to see the overall impact that these drugs were having on the sport and also on player health. Further analysis and a larger sampling method may be necessary in order to make an assumption about the overall population and drug culture within college football.

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DRUG USE AND ABUSE IN SPORT

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SPST495 Senior Thesis

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Results from the study showed that there was some incentive to use performance-enhancing drugs in order to achieve financial success and to sustain a career at the collegiate and professional level. Also, players were willing to take narcotic painkillers and non-steroidal anti-inflammatory drugs in order to play through injuries. This was analyzed to see the overall impact that these drugs were having on the sport and also on player health. Further analysis and a larger sampling method may be necessary in order to make an assumption about the overall population and drug culture within college football.

Introduction

In today's society, several of the biggest names in sport, Alex Rodriguez, Lance Armstrong, Roger Clemens, and many more; had been involved in drug scandals; including the use of performance enhancing drugs (PEDs), prescription medications, and other harmful supplements to gain a quick advantage (Jenkins & Maese, 2013). Although researchers have examined in some fashion, young athletes' attitudes and behaviors towards PEDs and drug use, there had not been research gathered about how college football players viewed professional football players. Specifically, if these college athletes believed that PED use was necessary in order to achieve elite status in the NFL. With such a lengthy list of substances, the league was taking many steps in order to eliminate drug use, however, as the NFL evolved, so too did the world of chemistry and new PEDs were constantly being developed (Schmaltz, 2013). These, often non-FDA approved substances carried with them many harmful side effects on the body, causing several people in power to take a stand against drug use (DeIuliis & DeIuliis, 2012).

The study can greatly benefit practitioners by taking a look at what drugs were used and how, as well as behavioral factors and media attention that have begun to uncover a much larger culture of drug use and abuse (Jenkins & Maese, 2013). By understanding athlete motivation and behavior, some answers may be developed to give researchers more knowledge as to why athletes used these harmful substances. What had been found was that PED and prescription drug use was not restricted or isolated to only professional athletes, but that these drugs had been found in sports teams at the collegiate and high school levels. Further research must be developed to better understand how to stop this problem before severe health risks may begin to develop.

All of this information can be used to partially answer the question; to what degree did NCAA football players view the use of prescription drugs and PEDs as necessary to obtain and sustain a career in the NFL? The purpose of this study was to analyze what current drugs have been used and who were the athletes involved in these scandals; how they were perceived in the media, as well as what young athletes think of this drug use. The perceptions and behaviors will be analyzed through the use of the Theory of Planned Behavior, which provided the study with adequate information on the concepts of behavioral evaluation. The literature gathered thus far, laid the framework for the prevalence of this issue in sport and provided readers' with a better understanding as to the extent of drugs being used.

Literature Review

Performance Enhancing & Prescription Drugs

Steroids and human growth hormone (HGH) usage had become increasingly popular amongst professional athletes in a wide range of sports in the past couple of decades (Tolliver, 2004). However, illegal substances were not the only drugs used; sometimes the biggest threat to these athletes was the drugs received from a team trainer or physician. Between the uses of performance enhancing drugs (PED's), narcotic painkillers often referred to as opioids, and the rampant use of prescription drugs, the NFL faced a daunting task of trying to restrict the use of these drugs while still attempting to help athletes cope with the pain week to week. Jenkins & Maese (2013) examined how pain and pain management in the NFL spawned a culture of prescription drug use and abuse. Through interviews and surveys conducted by the Washington University School of Medicine and The Washington Post, the authors compiled the

findings with their own interviews with former players, to show how widespread the use had become.

Drug Types

Toradol was one of many, nonsteroidal anti-inflammatory drugs (NSAIDs), used in the NFL. It worked by reducing hormones that caused inflammation and pain in the body and was supposed to be used for the short-term treatment of moderate to severe pain in adults, usually before or after medical procedures or surgery (MedlinePlus, 2010). Some side effects from overuse of Toradol are kidney damage and gastrointestinal bleeding, and because of its blood thinning properties, can make players more susceptible to concussions (Jenkins & Maese, 2013). Although Toradol was the most common anti-inflammatory injection used amongst the teams in the NFL, a laundry list of other drugs, were made readily available for players with injuries, aches, and pains (Jenkins & Maese, 2013).

Some of these NSAIDs being used included; Indocin, Xylocaine, and Marcaine. Indocin was used to treat moderate to severe pain and helped with aches caused by arthritis, gout, and tendonitis, and included some serious side effects associated with use such as; confusion, weakness, irregular heartbeat, shortness of breath, or numbness or tingling in the hands, feet or lips, problems with vision, speech, or walking (MedlinePlus, 2010). Xylocaine solution, which blocked nerves from transmitting pain signals to the brain and Bupivacaine Hydrochloride, brand name Marcaine, were the most similar drugs to Toradol, and were also used by NFL teams (Jenkins & Maese, 2013) These prescription drugs can cause seizures, chest pains, uneven heartbeat, trouble breathing and fainting (MedlinePlus, 2010). However, NFL athletes, most recently Tony Romo,

had received shots of Marcaine and Toradol before playing in games (Jenkins & Maese, 2013).

Use and Abuse

The drugs that NFL players used in the order to play each Sunday carried dangerous side effects, could lead to lifelong addictions, as also had increased their chances for further injury. In a 2010 study conducted by the Washington University School of Medicine of 644 retired NFL players, it was found that 52 percent of respondents used opioids to treat pain during their career, and 71 percent of those users said they “misused” these narcotic drugs (Jenkins & Maese, 2013, p. 3). This pattern of players taking drugs in order to play was seen throughout the research. After Fred Smoot, former defensive back of the Washington Redskins, fractured his sternum, he was given a choice from team doctors: miss the rest of the season or “Figure out a way to play,” worrying about his livelihood, Smoot made it on the field each Sunday by receiving shots of Toradol (Jenkins & Maese, 2013, p. 1). The authors found that nearly eight in ten ex-players interviewed reported that they used the drug as a masking agent to play through an injury; 68 percent cited the NFL’s competitive culture as the reason “[Players’] did not feel like they had a choice as to whether to play hurt” (2013, p. 3).

Most of these drugs allowed the athletes to play pretty much pain free, dulling the injured area but also preventing the players from feeling any further injury that may take place during a game until the effects have diminished (Jenkins & Maese, 2013). This adversely affected the players because once the medication had worn off; their pain returned, and they resorted to a “cocktail” or “stacking” of medications. Jenkins and Maese referred to this as taking multiple opioids and NSAID’s congruently, which over

time had caused some athletes to build up a tolerance and dependence to these drugs; leading to addiction in some cases (2013). “They’re like Tic-Tacs. You walked in, you got it and you played the game,” said Hall of Fame defensive lineman Warren Sapp (Jenkins & Maese, 2013, p. 2). These players were not alone in the world of sports as many other athletes dealt with pain management on a regular basis.

Alaranta, Alaranta, and Helenius (2008) discussed the use of prescription drugs by athletes, specifically focused towards Olympic competitors. Although these findings were much more scientifically portrayed, the authors’ provided further insight into the harmful methods that athletes turned to in order to achieve any advantage possible. In a study, the prolonged use of NSAIDs showed that they negatively regulated muscle growth by inhibiting protein synthesis (Alaranta et. al, 2008). This meant that over time an athlete’s muscles were actually becoming more strained, resulting in further possible injury which led to increased NSAID intake to cope with the pain (Alaranta et. al, 2008).

The authors also confirmed that athletes were not fully aware of all the potential dangers of prescription drug abuse; stating that, athletes’ and coaches’ should be better educated on the risks and benefits of these drugs, and what affects they can have on an athlete’s performance if abused (Alaranta et. al, 2008). Physicians also stated that the use of several medications at the same time, this “stacking” that occurs, was very detrimental to an athlete’s health; significantly increasing the risk of internal bleeding as well as diminishing their inflammatory response to injury, causing more severe pain and swelling (Alaranta et. al, 2008). Most athletes with injuries had not taken enough time away from training or competing, and then attempted to be physically active while under the

influence of painkillers, drastically putting them at higher risk to faint, become violently ill, or get injured (Alaranta et. al, 2008).

Another problem that many athletes confronted when abusing NSAIDs was changes in renal function or renal damage. This meant that the flow rate of fluids through the kidneys was slowed, and was life threatening to an athlete exercising in excessive heat (Alaranta et. al, 2008). Hip and knee osteoarthritis were also common among athletes who took NSAIDs for prolonged periods; mostly those who participated in high joint impact sports, like football or running. Inhaled corticosteroids, an inhaled powder normally used for treatment of asthma, was cited by a large number of Olympic track, long distance runners, cyclists, and hockey players as something that was commonly used in training and competition as well. It helped to decrease airway inflammation and stimulated breathing, increasing the amount of physical exertion an athlete could put forth before becoming short of breathe (Alaranta et. al, 2008).

Stimulants such as inhaled corticosteroids were not banned from competition, but some critics argued that the use provided athletes with an unfair advantage over those who did not wish to consume NSAIDs. A survey of, 122 collegiate hockey players in the U.S., was conducted to see the prevalence of stimulants within college sports. The result was that more than half of the players said they use or had used stimulants such as pseudoephedrine; another NSAID, which helped with nasal congestion and clearing of sinuses, while competing in order to enhance performance (Alaranta et. al, 2008). A number of those players, 33%, said that they would use a banned substance if it helped them get to the National Hockey League. This was a recurring issue in the literature

moving forward as young athletes viewed PEDs and other enhancers as an avenue towards a career in professional sports.

Influence

Although most of the attention on PEDs and other supplements came from the professional level, several articles discussed their prevalence at a much lower level. High school athletes all over the country were tempted to gain an edge on their competition through the use of steroids and other PEDs. Lowe (2004) discussed how students in Maine high schools faced little deterrents if they were to use steroids; bound only by a signed code of conduct prohibiting the use of alcohol, drugs, tobacco, and steroids. There was however no actual steroid testing because costs were found to be far too high, about five times the cost of testing for common street drugs (Lowe, 2004). Students were not familiar with all of the long-term risks associated with steroid use; damage to liver, kidneys, heart, brain and other organs, sometimes causing cancerous tumors. Also, steroids had caused stunted growth, baldness, uncontrolled aggression, mood swings, and many other psychological symptoms (Lowe, 2004).

With the low level of testing done across the country, many cases of PED use had gone unchecked, leaving the window open for others to participate. In this country so much emphasis was put on competition and specialization within sports, and steroids have provided a way for an average player to become a better athlete (Lowe, 2004). What society has promoted is that professional athletes need to be bigger, stronger and faster in order to be successful. This encouraged those who were undersized or not physically gifted, to succumb to the use of PEDs in order to remain competitive. Lowe (2004) cited the fact that young athletes were more likely to have taken a risk on a drug knowing that

there could be some adverse side effects because they would not think about where they would be in 40 or 50 years. Several other researchers have looked more closely at how PED use among young athletes was a growing trend in different parts of the country.

Shiple (2013) wrote an article about the usage of PEDs by high school athletes, but the research focused on how the parents of the children were condoning the behavior, often times, purchasing the drugs for them. In South Florida, high school sports were highly competitive and the athletes' parents wanted their children to be as successful as possible. Of the South Florida students that were interviewed, nearly six-dozen said they used hormones or steroids for strength building, or knew other students who had (Shiple, 2013). Parents were looking for dangerous chemicals like HGH and anabolic steroids, to help their teens fulfill athletic dreams. Shiple (2013) also cited that most of the clinics in Florida unfortunately provided these substances to teens, even when not medically necessary.

When reports of Alex Rodriguez's involvement with PEDs from the Biogenesis clinic in Miami, were leaked through the media, the business saw an immediate increase in sales; the parents of sixteen and seventeen year old high school baseball players in Florida contacted the clinic inquiring about obtaining PEDs (Shiple, 2013). Human growth hormone was beginning to emerge among young athletes as the PED of choice because it was believed to help an athlete recover from injuries quicker while it promoted growth in muscle and height. Prescriptions for these hormones in Palm Beach County, FL, were 376 percent higher in 2012 than in 2003 (Shiple, 2013). What many physicians and health care providers suggested to parents was to save money towards a college education for their children, instead of purchasing PEDs, which were usually more

expensive than tuition rates (Shipley, 2013). Some students said during interviews conducted that teens they knew were receiving PEDs from their parents, who had been given prescriptions for personal ailments, such as low testosterone. These high school athletes then used the steroid creams their parents had been given, and saw noticeable growth (Shipley, 2013). With such a stress on competing at the highest level, the current system was subject to increases in cheating and physically harmful activity.

Diacin, Parks and Allison (2003) from Bowling Green State University, examined how male college athletes from both Division I and III viewed drug testing and drug use during intercollegiate athletics. Through interviews with eight different male athletes from each division, the authors understood in more depth the attitude and perceptions of the athletes regarding the use of PEDs. The results after an initial interview of their thoughts about steroid usage and intercollegiate drug testing, was mostly geared toward rejecting steroids, and supporting the drug tests (Diacin et. al, 2003). They then looked at factors that were influencing these athletes such as pressure from teammates/peers, and coaches. These people played a major role in the influence of college athletes, noted by one Division I participant, “If [an athlete] had taken creatine (a legal supplement) or steroids or whatever, and [he had] gotten bigger and stronger...because of it, then I think that’s the main drawing force for the other teammate to start it” (Diacin et. al, 2003, p. 9). This was known as vicarious reinforcement, or influence by observing others actions that had resulted in success (Diacin et al, 2003). Coaches played a vital role in the influence of young athletes also; three participants identified that they felt the need to take PEDs in order to satisfy the coach and solidify playing time (Diacin et. al, 2003). Although this

study was over ten years old, it still helped build a larger data set of how perceptions then, compared to a more recent study of collegiate athletes.

Drugs in the Media

Getting caught.

With every league or organization having different banned substances, athletes' had tested positive for a wide variety of PEDs and also had taken drastic measures in order to pass these tests. One author analyzed the most recent Lance Armstrong case in which twenty-six people, including eleven former teammates, had accused him of rampant PED usage over a twelve-year period; during that time Lance had won seven Tour de France titles and accumulated millions of dollars in sponsorship earnings (Pells, 2012). Many accusers cited detailed accounts of hotel rooms being turned into makeshift blood-transfusion centers, and also stated that Armstrong's former wife used to roll cortisone pills, an anti-inflammatory medication, into foil and handed them out to all team members (Pells, 2012).

As a giant in the world of cycling, Armstrong was able to pay for highly advanced treatment, noted by Chief Executive of the United States Anti-Doping Agency (USADA) Travis Tygart as, "The most sophisticated, professionalized and successful doping program that sport [had] ever seen" (Pells, 2012, p. 1). Also stating that the evidence against Armstrong was stronger than any case the USADA had dealt with during its existence. Lance's main drug of choice was EPO, a hormone which boosted the number of red blood cells in the bloodstream; increasing oxygen intake, and strengthening endurance substantially (Pells, 2012). Hundreds of thousands of dollars were paid over several years by Armstrong to his EPO specialist, Dr. Ferrari, and other team members

were forced to get on board with the Doctor's doping program, if they wanted to remain on the team (Pells, 2012).

Schmaltz (2013) discussed how the use of PEDs in elite levels of sport looked to be a never-ending saga and detailed multiple examples of athletes' who have been caught or were still under investigation for using banned substances. Major League Baseball (MLB) superstars, Alex Rodriguez and Ryan Braun's, names appeared on a list of twenty players' released by a Miami clinic, called Biogenesis in June of 2013, claiming that they had purchased PEDs. Newer MLB enforcement rules against PED use carried much stricter punishments than in the past; the league was trying to enforce 100-game suspensions for each player listed (Schmaltz, 2013). Although lengthy suspensions affect a player's career, Schmaltz believed that the media scrutiny that these athletes' faced was often worse. The author also predicted that because society valued success highly, more so than the way it was achieved, there could be more scandals like this surfacing for many years to come (Schmaltz, 2013).

Healey (2008) illustrated a deep narrative on how another big time baseball player, Roger Clemens, dealt with his court case in 2007, which showed substantial evidence which linked the CY Young winner to the usage of PEDs through, investigations, testimonies, eyewitness accounts, and DNA evidence. Clemens, like the others listed in the Mitchell Report accused of PED use, denied any wrongdoing. However, with all evidence linking Clemens, Bonds, and the others accused to drug usage, they now were faced with possible perjury charges for having lied to a grand jury (Healey, 2008). The author accumulated numerous reports and chronologically examined

the Clemens' case; providing readers with interviews from trainers' and those close to Roger who said they had personally injected him with PEDs (Healey, 2008).

Also noted by Healey (2008), the media seemed to have influenced congress to intervene with the MLB's investigations which had been argued by some as not entirely legal. Players were increasingly reliant on personal trainers to regulate the supplements they took; however with competition at such a high level, the desire for these athletes to seek alternative ways to enhance performance was always escalating (Healey, 2008). Even though all evidence pointed to PED use by Clemens, he denied any involvement and awaited his perjury trial. This case greatly altered the way the MLB looked at PEDs and drug testing but as new scandals are uncovered, athletes were still finding ways to beat the system.

When allegations of PED use surfaced in the popular press, it provided countless viewing hours of interviews, discussions, investigative reports, and grand jury hearings. DeJuliis and DeJuliis (2012), looked at how the Barry Bonds trial was portrayed in the media, and noted that it seemed almost comedic to view all of the evidence presented to the court, and each time, have Bonds deny any wrongdoing. Senator John McCain and others in congress were determined to clean up professional sports after all of the allegations began to surface in the mid-2000's, by implementing the Clean Sports Act, 2005. With protecting the integrity of the sports and the health and safety of the Nation's children as their primary concern, the act called for more stringent drug testing for professional athletes, however, cases such as this were assumed to continue (DeJuliis & DeJuliis, 2012).

A history of PED use.

The Alex Rodriguez Scandal was one case still developing and in an article by Fishman (2013), he investigated deeper into how the Biogenesis scandal unfolded. Through interviews, testimonies, and ledgers from the clinic presented by, Porter Fischer to the *Miami New Times*, Dr. Tony Bosch, who was unlicensed and worked at the anti-aging clinic, grew his small business into a thriving PED distribution center for some high-profile professional athletes (Fishman, 2013). When Fischer and Bosch disputed over a debt Bosch owed to him, Porter took it upon himself to steal documents and notebooks from the clinic in order to get revenge. When Porter looked through the lists of names Bosch had accrued as clients', he noticed several were MLB players, included was Alex Rodriguez (Fishman, 2013).

Porter immediately took his findings to the papers which sent shock waves through the sports world, as media outlets began to swarm the clinic and all parties involved (Fishman, 2013). This was the first major PED scandal that implemented a larger group of players that the MLB had seen since the Mitchell Report in 2007; which accused several high profile athletes such as, Barry Bonds, Roger Clemens, Mark McGwire, Rafael Palmeiro, Ivan Rodriguez, and countless other players of using anabolic steroids, human growth hormones (HGH) and several other PEDs during their careers (Healey, 2008). Due to that fact that it was his second violation of the banned substance policy Rodriguez faced a 211-game suspension, which had since been appealed, losing, but having his suspension lessened to the entire 2014 regular and post-season (Goldberg, 2014).

Teenagers', who looked up to these athletes, were seeing PED use glamorized by them, and built a culture that made it seem as if steroid use was their chance to be as great as their role models. Whether in baseball, cycling, track and field, football, or any other sport, PEDs seemed to be used by athletes everywhere in order to gain a competitive edge. The authors believed that it was important to make sure that these drugs were not filtering down to lower levels of sport as this could have caused severe health problems for our young athletes (DeIuliis & DeIuliis, 2012).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was composed of several key variables; behavioral beliefs and attitude toward behavior, normative beliefs and subjective norms, control beliefs and perceived behavioral control, were the main components of the theory that benefited this research the most (Ajzen, 1991). Behavioral beliefs looked at the probability that a certain behavior will produce a given outcome; for example, an athlete may have seen that a member of the football team had many friends, and therefore believed if he joined the football team, then he too would have a lot of friends. Attitude toward behavior was based more on the positive or negative belief by the individual that they would reach the desired outcome. Normative beliefs look at the social pressures an individual faced when performing an action, whereas subjective norms related to pressures faced from family members and significant others. Perceived behavioral control was an individual's view of how easy or hard a behavior was to perform, similarly, control beliefs looked at the factors that may speed up or slow down performance (Ajzen, 1991). Using this theory was helpful in understanding how adolescent behavior was

influenced by what they saw professional athletes doing; performance enhancing drugs, prescription pain killer use, playing through pain, etc.

Backhouse, Whitaker, and Petroczi (2011), looked at how users of nutritional supplements (NS), also known as performance enhancing substances (PES), may be a gateway to using performance enhancing drugs (PEDs) that were banned by most professional sports leagues. The authors believed that when athletes used legal over the counter supplements and gained positive results, they were more likely to use illegal substances or viewed them in a positive light as a way to attain greater success (Backhouse et. al, 2011). The sample for the study consisted of 212 competitive athletes with an average age of about 21-years old; 65% being males and 35% females from over 32 different sports. They were also from varying competition levels, club/university, regional, and national/international; online surveys were given and all results were taken anonymously with confidentiality assured. The survey involved questions about; demographics, doping and NS scenarios, preferred competitive situation, the Performance Enhancement Attitude Scale (PEAS), and willingness to use substances to change appearance (Backhouse et. al, 2011).

What the Backhouse, Whitaker and Petroczi (2011) study discovered was that nearly half of the athletes surveyed, reported that they already used some form of PES, and 76% said that they would take a NS if it were going to guarantee a win. When participants were asked questions about doping attitudes and beliefs, NS users had a significantly greater positive attitude towards PED use than non-NS users, expressing beliefs that doping was effective (Backhouse et. al, 2011). These NS users were also greatly more willing to take a substance to give them a more athletic body, change

weight, muscle definition, etc. Doping use was three-and-a-half times more prevalent in NS users than non-users in this sample and started a discussion about how safe these legal over the counter substances truly were for young athletes. Nutritional supplement use was very common among college and even high school athletes, and may have led to a greater willingness to engage in doping behavior if athletes found that the benefits of these NS had been maximized (Backhouse et. al, 2011). Young athletes did not usually consider the long-term risks of their health, and the authors noted that targeted education was important for these athletes. The supplement industry was largely unregulated, and contamination with substances, leading to positive dope tests, had been repeatedly reported (Backhouse et. al, 2011). This study could be beneficial when looking at why athletes participated in PED use, taking a deeper look into how this desire to use may have been enhanced by NS usage during adolescents.

Morente-Sanchez and Zabala (2013) also researched how the TPB had been used in determining athletes' attitudes, beliefs, and knowledge towards doping in sports. The authors gathered the findings from 33 studies related to sports, doping, attitudes, beliefs, and elite athletes between 2000 and 2011. What they found was that the initial reasons for using banned substances were; achievement of athletic success, financial gain, improving recovery, prevention of nutritional deficiencies, and also the idea that others were using them too or what was known as the *false consensus effect*. The False consensus effect was a bias that a person had where they assumed that more people agreed with their beliefs or actions than actually did (Sanchez & Zabala, 2013).

All of these reasons for using fit into the structure of the variables within the TPB. Coaches' and family members also were found to be a major influence for an athlete to

use PEDs, noting that they may add pressure to an athlete by requiring them to perform at a higher level; this related back to the idea of subjective norms within the TPB (Ajzen, 1991). Due to the secretive nature of PEDs and fear of getting caught, many users who purchased these substances reported that supplements were often used without the full understanding of potential benefits and risks associated with their use, and usually users had not consulted a sports nutrition professional to learn more about them (Sanchez & Zabala, 2013).

A study of 253 Iranian male body builders, aged 15 to 28, was conducted by Allahverdipour, Jililian and Shaghaghi (2012), looking at what the attitudes of the athletes were towards anabolic-androgenic steroid (AAS) use. Through several surveys, the researchers discovered how rampant the usage was; about 25% were current AAS users, almost 40% had used in the past, and 82% said they used supplements during gym workouts (Allahverdipour et. al, 2012). What was more intriguing was that many of the participants said they started using AAS at sixteen, and dramatically increased usage after the age of twenty. Many of these athletes had come from of these lower economic status, they had not received proper education about the substances being put in their bodies (Allahverdipour et. al, 2012). They were not being told of the side effects or consequences of using AAS so their attitudes towards this behavior were greatly positive.

Murray, Van de Rijt and Shandra (2013), looked at how social forces impacted PED use among professional athletes. They studied how PED use affected not just an individual athlete, but his teammates as well, specifically in Major League Baseball. With the help of the Mitchell Report, and past cases of MLB players getting caught with PEDs, the authors were able to sort the data and noticed a pattern. What they found was that

PED use was not sporadic, but rather was found to have spread based on closeness, interpersonal communication, and peer influence (Murray et. al, 2013). This was due to the fact that people were cautious about new and unknown things, so familiarity with a teammate who had taken a product seemed to justify the use. The data showed concentrations of PED users on the same teams, showing us how much peer influence played a role in drug use (Murray et. al, 2013). These findings could be very helpful for the MLB when trying to catch PED users; stricter drug policies could one day exist that required several team members to be tested if one player in the organization had been caught using a banned substance.

Conceptual Framework

Drug use in professional sports had become increasingly popular over the years and now some of the biggest stars in the leagues' were being suspended for taking banned substances. What was still unknown was how athletes, at any level, viewed the use of performance enhancing drugs (PEDs). The drugs most well-known as being PEDs included anabolic steroids and human growth hormone (HGH), both of which enhanced cell regeneration, increased testosterone levels and helped to build and grow muscle (Healey, 2008). When looking at drug use, both PED and prescription, there were serious side effects that an athlete may experience during use, or long after they had retired. Some side effects include; kidney failure, gastrointestinal bleeding, brain damage, ulcerative colitis, liver damage, risk of building up a tolerance, addiction, and many more that can have a serious effect on long term health (MedlinePlus, 2010). Often times athletes part-take in 'stacking' drugs; this involved taking different narcotic painkillers with other drugs such as acetaminophen or nonsteroidal anti-inflammatory drugs

(NSAIDs) which helped to block or numb pain receptors in the brain in order to play through injuries (Jenkins & Maese, 2013).

Sports media was another contributing factor for building this research. Society relied so heavily on the media to receive news about sports teams or players, and want to know what happened to these athletes when they are accused of PED use. In the research, people such as Lance Armstrong, Roger Clemens, Alex Rodriguez, Barry Bonds, and a number of other high profile athletes were scrutinized for various involvements in PED usage. The evidence against them was sometimes staggering, but a pattern developed of these athletes adamantly denying any known usage of banned substances. Several of the athletes claimed that they had not willingly taken any substances or had not known the substances were banned (Healey, 2008). With only a few random tests done monthly in most cases, the amount of players in these leagues made it difficult to test a significant amount of athletes each year, therefore, many PED users go unnoticed for many years if not their whole career (Fishman, 2013). This impacts young athletes who want to make it professionally because they know that they may be able to use PEDs in order to get them prepared for the professional level. When weighing the pros and cons, the money gained from signing a contract far exceeds the risks of getting caught, therefore athletes continue to take the chance in order to achieve success (Schmaltz, 2013).

Theoretical Framework

The Theory of Planned Behavior (TPB) was used in this study to determine how athletes perceived others who had used PEDs and prescriptions drugs, and to see if connections between behavior and action were made. Athlete attitudes on drug use had to be assessed and a number of surveys involved high school and college athletes to

establish their thoughts on professional athlete behavior. The TPB allowed for an assessment of how one's behavior was influenced as a result of several factors; behavioral beliefs and attitude toward behavior, normative beliefs and subjective norms, as well as control beliefs and perceived behavioral control (Ajzen, 1991). These factors helped understand the motivation, perception, attitude, and satisfaction with the outcomes athletes had experienced through the use of prescription drugs and PEDs.

Summary

Overall, the literature presented several examples of how drug use was an ongoing problem, not only in professional sport, but also at the high school and collegiate levels. Not much legislation was in place to deter adolescence from taking part in drug use, and very little education was provided to athletes at any level to inform them of the serious health risks that were associated with these drugs. The Theory of Planned Behavior gave researchers a glimpse into athletic decision making, attitudes, and beliefs about PED and prescription drug use, and may be useful in further research; perhaps determining athlete motivation for using. Athletes' have been caught using banned substances throughout history and have been punished because of it; these punishments have not always been severe enough though, as seen from repeat offenders and extensive cheating by entire sports teams (Pells, 2012).

Methods

Research Question

This research set out to determine, to what degree do NCAA football players view the use of prescription and performance enhancing drugs as necessary to obtain and sustain a career in the NFL?

Design

Participants for this study were collected through the use of primary data from Division I and III college football players, through the use of an online survey. This method of collecting data provided useful information about what current collegiate athletes attitudes and beliefs were, pertaining to performance enhancing and prescription drug use in order to advance their career opportunities in professional football. By asking the appropriate questions, quantitative data was utilized in order to obtain information about player behavior as well as information about drug usage that can then configure into measurable data when the results were presented.

Procedure

A random sampling method was utilized to select both Division I and III schools that were to be used for the study, 75 from each division. In total, 150 schools were asked to participate and the schools were located throughout the U.S. This provided the opportunity to access a large and diverse sample of football players from all over the country, and in varying conferences. To access participants, an email had been distributed to the athletic directors of all 150 schools, in which contained an overview of the study and a link to the survey. The administrator was then asked if they could forward the link to the players on their respective football teams.

Data Collection

After allowing around three weeks for response time, collected results were then uploaded to statistical software, SPSS, to be further analyzed. Correlations between the given responses and division of college football were then done to determine if a relationship existed. In order to determine if beliefs surrounding performance enhancing

and prescription drug use were similar throughout the population of college football players, a sample size of around 500 participants was needed. From these results, an answer to the research question could be achieved.

Results

The sample gathered for this study was collegiate football players from both the Division I and III levels. Participants from colleges and universities across the country were given the opportunity to take part in the study, and the majority of responses came from the Division III athletes. The participants used in this study were football players, freshman through senior in class status; some attended large universities with over 25,000 students, while others attended smaller private or state colleges of only a few thousand students. Due to the low number of participants that had taken part in the study, the data collected was not representative of the overall population and culture within college football.

After looking at the data that had been gathered, there were some interesting results. For example, when asked, "*What percentage of NFL players do you believe use performance enhancing drugs,*" the majority of responses falling between 11-20% of players, which equated to about 200-350 players in the league. Also, questions related to prescription drug use in college athletics saw that many young athletes were in fact abusing painkillers in order to continue playing; 48% (n=10) of participants said they had taken prescription drugs or painkillers to play through injuries. When asked about performance enhancing drugs amongst teammates, 33% (n=7) of participants knew of between 4-7 teammates that were users. Some expected results were also found; family

members were the most influential impact on a player's career, 57% (n=12), while 48% (n=10) of participants placed significant others in the least influential column.

The statistic that related closely to the research question was that about 48% (n=10) of participants said that they would likely use performance enhancing drugs if it could help them to attain financial success. When participants were asked if they felt it was necessary to take performance enhancing drugs to sustain a career in the NFL, responses varied, however over 30% (n=6) said they thought it was necessary or very necessary. A favorable result found by the study was that the majority of respondents said that they would not risk health side-effects to increase playing time in college, 57% (n=12), while only a few said they were willing to put their health in jeopardy, 14% (n=3).

Discussion/Conclusions

To what degree do NCAA football players view the use of prescription and performance enhancing drugs as necessary to obtain and sustain a career in the NFL? This was the ultimate research question, and based on the results, can begin to formulate an answer. Overall, due to the lack of participations, an assumption could not have been made about the overall population of college football players. The results were too evenly distributed to say that players believed PEDs were necessary or if they were against them.

Extensive research has been found on performance enhancing and prescription drug usage within the NFL, however, not many researchers have analyzed college football as a breeding ground for this behavior (Alaranta et. al, 2008). Many young athletes did not know what effects those drugs were having on their bodies and were possibly developing damages internally that were going unchecked (Alaranta et. al,

2008). This tied in with current research as many participants responded that they usually took a higher dosage of medication than recommended, and would often take prescription drugs in order to play through injury.

Morente-Sanchez and Zabala (2013) based their research on the Theory of Planned Behavior (Ajzen, 1991), which determined athletes' attitudes, beliefs, and knowledge towards doping in sports. What these authors found was that the initial reasons for using banned substance were; achievement of athletic success, financial gain, and improving recovery time. This was similar to the research findings in this study as nearly 50% of participants said they would use a performance-enhancing drug if it could lead to financial success. One study that contradicted the results was that of Murray, Van de Rijt and Shandra (2013), which looked at how social forces impacted PED use among professional athletes. Meaning that if an athlete had seen a teammate have success do to PED use, then they too would be more willing to try. What was actually found with this group of participants was that the overwhelming majority said that they would not use a PED if they knew or had seen a teammate have success from them.

Drug use in the media was a section of the literature review that was not addressed in depth; however, influences by coaches, family members, friends, and others were looked at briefly. Researchers had found that coaches and family members had the greatest influence on an athlete, and added extra pressure to succeed (Diacin, Parks and Allison (2003). This extra pressure to satisfy family members and coaches by solidifying playing time was what the researchers believed drove athletes to use PEDs. The results gathered from the participants in this study agreed with the previous research that family

members and coaches had the greatest influence on the athletes. However, a correlation between this influence and desire to use PEDs could not be established.

Limitations & Delimitations

Drug use in professional sports had become increasingly popular over the years and society had seen some of the biggest stars in professional sports being suspended for taking banned substances. What was not known was how athletes, at any level, viewed the usage of performance enhancing drugs. To find out more on this topic, a survey was developed that assessed how Division I and Division III college football players viewed the use of PEDs as well as prescription drugs in order to achieve success in college and at the next level. The main limitation in the study was the gathering of email addresses; once collecting emails was out of the question, due to colleges' policies, the next step was to supply a link to the survey to administrators and coaches and asked if they could distribute them to the players. Although over 150 schools were contacted, little feedback was given and only 21 total participants completed the survey. The lack of responses made finding an answer to the research question difficult, as the overall population of football players may have had different beliefs.

Gathering an appropriate sample for this study meant that only college football players were given the opportunity to respond to the survey. Restricting to Division I and Division III football players, meant that Division II as well as I-AA were excluded from this study. This was done intentionally because the separation of talent was believed to offer different opinions and perceptions about drug use and the NFL. Another delimitation that was initially in place was the selection of the schools. At first, eight schools in each division from each part of the country (East, Central, West) were

randomly selected to be part of the study, however, once responses were not being received, the study was expanded to an additional randomly selected group of 30 schools in each division, no matter location.

Recommendations

There were several recommendations to be given to future researchers of this topic. First, when developing the ultimate research question, restricting the study only to Division III may have made data collection easier, because DIII administration was much more responsive to emails than DI. Second, beginning to collect data at least 3 months prior to the due date would have allowed more time to account for lack of data and make adjustments to the research that could then be carried out over the remaining time. By only allowing about a month and a half of collection time for this study, it made obtaining enough respondents more difficult. Also, if asked to participate in the survey at the beginning of the college football season rather than towards the end, schools would have been more likely to respond. The final recommendation was to possibly change the scope of the study all together so that it analyzed how any college athlete felt about drugs in professional sports, rather than limiting it to college football and the NFL.

Overall, results about the research question could not be developed enough with the number of responses received but perhaps if the sample was large enough, some generalizations about college football player perceptions could help to shed some light on the performance enhancing and prescription drug abuse problems that the NFL faced. Past research discussed in the literature reviews does show examples of studies that had success when surveying college athletes and presented strong arguments about their behavior and beliefs about PEDs. This study could be successful if the proper sample was

accessed, and could have provided insight to collegiate athletic departments about the pressure the players face to perform, and what lengths they would go to in order to achieve success.

Past research had shown signs that performance enhancing as well as prescription drug use had become increasingly popular at the collegiate level and this behavior potentially was being carried over into professional sports (Diacin et. al, 2003). Given the results obtained from this study, an answer to the research question could not be formulated, and therefore did not provide evidence of behavioral tendencies of college football players. Responses did not favor or denounce PED use but future research with a larger sample could answer the question and link behaviors at the collegiate level with the carryover into the NFL.

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Appendices

[A] Consent Letter

Project Title: NCAA Division I & III Football Players, Perceptions of Drug Use and Abuse by NFL Athletes

Researcher: Michael Moran

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Email: kburakowski@sjfc.edu

Phone: 585-385-7389

Purpose and Description: The purpose of the study is to understand what perceptions college football players have about the various prescription and performance enhancing drugs used by some NFL athletes, in order to sustain a career in such a highly competitive environment. Participation in this study will ask you to complete a survey that looks into questions about these professional athletes behaviors, while also seeing if you as a participant, have a first-hand knowledge of drugs that have been used while taking part in your collegiate football programs. For example, you may be asked a question about taking medication in order to play through an injury. This survey will take about 10-15 minutes to complete.

The information you provide for this study may be able to build a foundation for future research about drug use at the collegiate level, and also help to see if there is a connection between behavior at the professional and college football levels. Most college athletes are not aware of all the risks associated with taking performance-enhancing drugs and with abusing prescription medication. One risk that may occur from taking this survey are that others may view you responding to the given questions, however, your identity will be kept confidential. At no time will names, email, or other contact information be used when representing the response data.

Benefits gained through this study are that, on a larger scale, college athletic departments as well as drug testing policies in the NFL could be altered in order to keep player safety as a primary concern. Your results can help to better understand player decision-making and perceptions of various drugs used by football players, both professionally and at the college level.

Participation in this study is voluntary, and you may choose to withdraw during the survey at any time. At no time will your identity be used or associated with any responses given while completing this survey. Upon completion, you will give me permission to use the responses for my research. If there are concerns regarding your selection or about the questions being asked of you, please contact my research advisor, Katharine Burakowski, via phone, 585-385-7389 or by email, kburakowski@sjfc.edu.

[B] Invitation to Participate

Drug Use in College Athletics

Dear Administrator,

I am contacting you in order to gather participants for my senior research thesis proposal about perceptions of drug use by college and professional football players. By participating in this study, you contribute valuable information about the use of performance enhancing drugs and other medications at the collegiate level, as well as how these behaviors carry over into the NFL.

If you would like to assist me with my study, could you please distribute the link below to the players on the football team.

https://sjfc.co1.qualtrics.com/SE/?SID=SV_eXTwxpjhJWB8Ybr

Your name, email, as well as the athletes' names and any other personal information will not be shared when presenting this data and in no way will be linked to the responses.

Thank you,

Mike Moran
St. John Fisher College '15
Sport Management

[C] Survey Questions

1.) Project Title: NCAA Division I & III Football Players, Perceptions of Drug Use and Abuse by NFL Athletes

Researcher: Michael Moran

Email: mem04243@sjfc.edu

Advisor: Katharine Burakowski

Email: kburakowski@sjfc.edu

Phone: 585-385-7389

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Do you agree to participate?

Yes

No

2.) Which Division of football do you participate in?

Division I

Division III

3.) What percentage of professional football players do you believe use performance enhancing drugs (PED)? (Steroids, Human Growth Hormone, Testosterone supplements)

0-10%

11-20%

21-30%

31-40%

41% or higher

4.) How often do you take a higher dosage of medicine than is recommended, whether prescription or over the counter? (Ibuprofen, Tylenol, etc.)

Never

Rarely

Sometimes

Often

All of the Time

5.) If a teammate on your football team began using a PED like human growth hormone for example, and saw significant changes in physical appearance and athletic ability, effectively allowing him to become a starter at his given position, how likely would it be for you to begin using?

- Very Unlikely
- Unlikely
- Undecided
- Likely
- Very Likely

6.) How many current or former teammates in football do you know that use, or have used, a PED such as; steroids, human growth hormones, or testosterone supplements?

- 0-3
- 4-7
- 8-11
- 12 or more

7.) On a scale of 1 to 5, please rate each of the following responses to assess which have had the strongest impact on your athletic career. 1 being the most influential, and 5 being the least.

	1	2	3	4	5
Family (parent/guardian, siblings)					
Friends					
Coaches					
Professional Athletes					
Significant other					

8.) What is the likelihood that you would use performance-enhancing drugs if it could lead to financial success in the NFL?

Likely	Unlikely	Undecided	Likely	Very Likely
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9.) How likely are you to take medication, over the counter or prescription painkillers, in order to play through an injury?

Very Unlikely	Unlikely	Undecided	Likely	Very Likely
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10.) Knowing that the average NFL career is only 3 years, in your opinion, do you believe it is necessary to take PEDs, prescription drugs, and other medications in order to sustain a longer career in the NFL?

Very Unnecessary	Unnecessary	Undecided	Necessary	Very Necessary
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11.) How willing are you to risk long-term health side effects, in order to increase your potential for playing time in college?

Very Unwilling Unwilling Undecided Willing Very Willing

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