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**Awareness, Perception and Attitude to Performance-enhancing drugs and
Substance use Among Athletes in Teacher Training Colleges in Kenya.**

A Report compiled for the World Anti-Doping Agency

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EXECUTIVE SUMMARY

This study set out to establish the awareness, perception and attitude to doping and performance- enhancing substance (PES) use in sports among Kenya teachers colleges athletes participating in national ballgames and track and field athletics organized by Kenya Teachers Colleges Sports Association (KTCSA). After graduating from college the teacher trainee athletes are employed to teach physical education and sports coaching in primary and secondary schools besides teaching other subject areas of curriculum. Physical education is also a compulsory subject in the teacher education curriculum hence every teacher employed in schools is a potential PE and sports coach. The bulk of junior athletes who represent Kenya at regional and international sports competitions especially in track athletics and cross country are students in primary and secondary schools. It is therefore necessary that teachers be well versed with anti-doping regulations to be able to guide the young athletes towards participation in sports without resulting to PES use. Besides, sports having been accepted as a lucrative career by athlete's world over most junior athletes in Kenya are taking up sports as a career. However the junior athletes should graduate to senior competitions being fully aware of anti-doping regulations and their repercussions should one fail a dope test.

Currently there are no studies done on doping among teacher trainee athletes in Kenya while a study by Dimeo et al, 2014 has focused on knowledge, attitudes and doping practices among elite athletes in Kenya. There is need to establish whether teachers who coach elite athletes at junior level had been educated on PES use in sports. By so doing it may be possible to create awareness as well as change perception and attitudes towards drugs and substance use in sports

The purpose of this study was to establish the awareness, perception and attitude to doping and performance enhancing substance use in sports among teacher trainee athletes participating in national ballgames and track and field athletics competitions. Target population comprised of male and female athletes in ballgames and track and field athletics. The sample comprised of 696 participants drawn from western (Nzoia) and Eastern (Highlands) and Nairobi (Metropolitan) with male and female athletes being equally represented. The sample was derived from three competition regions/zones that were randomly sampled out of the seven zones. All athletes in the randomly selected zones comprised the sample. At the end of data collection 422 collegiate athletes had voluntarily completed self report questionnaire, thus a good response rate standing at 70%. Data was coded and analysed using the SPSS statistical package. The mean and standard deviation were used to organize the data while t-test and ANOVA applied in comparing the means of the samples. Study findings are in tables, charts. Discussion, conclusions and recommendations are guided by reviewed literature and finding of this study.

This study findings show 49.3% of athletes knew of the WADA code while 43.3% were not aware of its existence. About 48.0% knew of the regulation as stipulated in the code but 42.7% did not know. Further athletes are not fully aware of effects of selected substances with 67.8%, 47.0%, 51.9%, 43.6% and 51.5% reporting that miraa (khat), marijuana, caffeine, anabolic steroids, and cocaine respectively do not enhance sports performance. Athletes had learnt about PES from TV (79.0%), radio, (76.0%),

newspapers (77.0%), magazines (70.0%), friends (70.0%), tutors (74.0%), college/school (69.0%), seminars, (48.0%), and parents (50 %). However 82.0% noted that athletes should be tested for drugs at all levels competition. Those aware of the effects of PES are 72.5% while those who noted their friends do not use enhancing- substances stood at 80.0%. About 67.0% did not know of athletes using PES. On the question of whether they had learnt about doping 58.0% reported they had learnt but only 41.0% noted they were adequately educated while 50.0% said they were not regularly given information on banned substances. There are significant differences in awareness of doping amongst athletes with varying competition experiences $F(389) = 6.928$, $p = 0.0001$. Post hoc test indicated differences between players who had participated once and four times $p = 0.0001$, twice and four times $p = 0.0001$, three and four times $p = 0.015$, four and above four times $p = 0.006$. There were differences in awareness of PES between male and female athletes $t(406) = 5.718$, $p = 0.005$.

Awareness of PES was equally significantly different among athletes participating in various ballgames $F(314) = 4.179$, $p = 0.0001$. Post hoc test revealed difference between players in volleyball and basketball $p = 0.023$, and between volleyball and hockey $p = 0.018$.

On athletes perception of doping and PES 51.0% felt one would not get away with doping while 40.0% were of the opinion that it is easy to dope and get away with it, 71.4% would not dope, 82.4% were of the perceived that enhancing substances have health risks, 82.6% would be worried of health risks, 68.2 % would be worried of losing friends as a result of doping, 78.0 % would be ashamed if tested positive for PES, and 81.0% would be guilty if they were discovered to have doped. Significant differences are indicated among athletes in ballgames and those in track and field athletics $F(397) = 7.318$, $p = 0.001$. Post hoc test revealed differences between ballgames players and track athletics participants, $p = 0.002$.

Concerning attitude to doping and PES a combination majority 69.3% were against the statements supporting doping compared to 10.3% who supported. Significant differences in attitude to doping were found between participants in various ballgames $F(312) = 5.18$, $p = 0.0001$, with post hoc test revealing differences specifically between players in handball and hockey, $p = 0.027$, and between handball and basketball, $p = 0.007$.

The researcher recommended that a comprehensive anti-doping strategy at primary, secondary and, colleges be adopted where anti-doping education can be given beyond classroom.

Investigation should be done on the level of awareness of doping/PES by coaches, trainers and team managers of collegiate teams. Research should be carried out to establish the effectiveness of the doping content taught to the teacher trainees.

LITERATURE REVIEW

Background

Sports have become a booming career for Kenyan athletes who have raked huge prize money at various local and international marathons as well as in athletics grand prix competitions. Recently Kenya emerged top of the overall medal table at the world athletics championships in Beijing with a total of 16 medals, 7 gold, 6 silver and 3 bronze ahead of the United States of America and Jamaica. However, the games ended on a sad note with two Kenyan athletes suspended for failing drugs tests. Still, literature indicates Kenyan athletes have in the past failed dope tests and either suspended/banned from international sports competitions. This is despite Kenya being a signatory to Africa Zone V Regional anti-Doping Organization (RADO), which clearly stipulates that it is the duty of national federations to educate athletes on doping issues (RADO, 2007). During the 2004 Athens Olympic Games, a Kenyan boxer tested positive for cathinone, a chemical substance found in “miraa”. He confessed lack of awareness about *miraa’s* (khat) performance-enhancing effects. Another Kenyan female athlete as reported by Republic of Kenya (2014) tested positive for nandrolone during the 2008, Beijing Olympic trials. She was supposedly treating a condition of low hemoglobin though she had not acquired Therapeutic Use Exemption (TUE) as outlined in the World anti-Doping Code (WADC). Further, a five-time world cross-country champion Kenyan male athlete was in 1993 suspended from international competitions for four years after refusing an out-of-competition dope test. His suspension was later reduced to two years after it was judged he was of little education and that the Kenya Amateur Athletics Association (currently Athletics Kenya) had not educated the athlete on the issue of out-of-competition testing (Republic of Kenya, 2014).

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The National Agency for the Campaign against Alcohol and Drugs Abuse (NACADA), a national body established by the Kenya government to fight against drugs abuse has reported rising cases of drugs abuse amongst school students and the youth (NACADA,

2014). Although most of the abused substances such as *miraa*, alcohol, tobacco, bhang are used for recreational/socialization purpose, some contain chemicals listed as banned substances in the World Anti-Doping Code (WADC).

An important aspect of doping prevention is the assessment of athletes' awareness, perception and attitude towards doping, so as to influence their orientation to PES in sports. An athlete who is aware of the negative effects of drugs is likely to have his/her perception and attitude towards PES changed for the better. College teacher trainee athletes on becoming teachers would be in a better position to influence students against use of PES in sports hence the need to establish whether they are well informed on of PES issues, what opinions they hold as well as their attitude towards the vice. Since development of values, character and ethical decision-making skills are primary purpose of sports programs as noted by Bonney, Ireland, Miller, Maclareth, Thomas and Wely, (2001), there is no acceptable means to better performance apart from through hard work and dedication. Butcher and Wuest, (1999) have suggested that sports professionals such as graduates from teacher training colleges employed to teach in schools should promote programs that develop commendable values such as co-operation, self-discipline, hard work, fair play, emotional control and teamwork, among others. Similar sentiments are expressed by Ama, Betnga, Moor Ama and Kamga, (2003) that teachers should take advantage of teachable moments such as physical education lessons and sports training to promote desirable sporting behavior, including abstinence from doping.

As pointed by Butcher and Wuest (1999), youth participation in organized sport activities in and out of school setting under guidance of public and private agencies has grown tremendously. Likewise, enrollment in commercial sports is on the rise especially in urban settings while specialization has allowed many individuals who excel at amateur level to participate as professionals. Furthermore, salaries of professional participants have increased drastically turning sport into a multi- million dollar industry, causing athlete a lot of pressure from self and from other interested parties such as family, sports federations, athletes' managers, and citizens (Butcher and Wuest, 1999). Such pressure

may be the driving force leading some athletes to use performance- enhancing substances (PES).

Use of performance- enhancing drugs can be traced back to ancient Greece. Athletes are said to have used special diets and stimulating substances to enhance performance. Cyclists and endurance athletes used substances such as caffeine, cocaine and alcohol in the nineteenth century (Graf-Baumann, 2006). Effects of the use of drugs were felt as early as 1886, when Arthur Linton a cyclist died after taking an overdose of Tri-methyl. By 1904 the modern sport was already experiencing the effects of doping when, Thomas Hicks an Olympic athlete won with assistance of raw eggs, injections of strychnine, and doses of brandy administered into his body. Danish cyclist, Knud Enermark Jensen died during the 1960 Olympic Games in Rome and subsequent autopsy revealed traces of amphetamine (Graf-Baumann, 2006).

However records indicate that ‘clean’ sports competitions have been desired dating back many centuries. The ancient Greeks for example set strict rules that had to be met before anyone could participate as a competitor in the ancient Olympic Games (Graf-Baumann, (2006), Butcher and Wuest, 1999). Such rules required that the contestants train for not less than ten months because physical unfitness was not an excuse, the competitor and the family had to swear an oath that they would not use illegal tactics to win. It is in support of this spirit that a call to eliminate the use of performance- enhancing drugs by sports organizations such as International Olympic Committee (IOC), International Association of Athletics Federations (IAAF) and by World-Anti Doping Agency (WADA) aims at ensuring the restoration of respect for sports ethics, protect the health of the athlete and to allow level playing field. Tougher measures are taken against the PES users, ranging from suspension from participation for a certain period of time to a life ban (WADA, 2015).

The PES use situation is not very different in Kenya given the National Agency for the Campaign Against Drug Abuse (NACADA 2012) report that drug abuse has risen rapidly. NACADA (2012) purports that the greatest victims are the youth who are

deliberately and tactically recruited into drug culture through personal factors such as poverty and family dysfunction, uncontrolled media influences and social exposure. NACADA (2012) identifies ignorance/lack of awareness, denial and greed as the major contributors to the prevalence of substance abuse. Previously, NACADA (2006) recommended that working closely with teachers by conducting nation-wide public awareness campaign aimed at empowering the youth and their custodians with information on the harmful effects of drugs and substances abuse to an individual, family and community would reduce the impact of abuse. Indeed, a campaign by NACADA aims at curbing drug abuse among the youth in learning institutions not only hopes to make them role models but also to adequately respond to challenges posed by drug abuse. The campaign by NACADA (2012) has revealed that drugs abuse is a real problem among the youth in Kenya and there is need for investigations to determine the causes of doping behavior and how to curb the problem.

NACADA (2006) further notes that there has been many laws such as Narcotics Drugs and Psychotropic Substances Control Act, Act no. 12 of 1994 which addressed the majority of harmful drugs such as bhang and opiates, Pharmacy and poisons act cap 224 Laws of Kenya, Penal Code cap 63 law of Kenya. However, their poor enforcement allowed unregistered chemists and pharmacies continue to operate without registration, thus resulting to increase in persons accessing and abusing drugs. Elsewhere medical practitioners are reported to assist athletes' access to drugs for purpose of enhancing performance, either by explaining how to use them or by prescribing them (Laure, Binsinger, and Lecerf, 2002). NACADA (2006) expresses the need for the medical practitioners to use information on the effects of drugs/substance use to influence awareness, perception and attitude of those athletes who may seek their assistance. These sentiments by NACADA are varied considering that Republic of Kenya (2014) report indicates 37.10% of Kenyan athletes sources of supplements are chemists. Some of the supplements may contain banned substances.

Use of performance-enhancing substances is a problem that affects male and female athletes in ball games and track and field athletics as well as active individuals in

amateur and professional sports. A survey of USA college athletes as reported by Corbin, Welk and Lindsey (2004) indicated that 29% of American football players, 21% of men and 16% of women track athletes voluntarily admitted to having used performance-enhancing substances. A survey of USA college athletes as reported by Corbin, Welk and Lindsey (2004) indicate that 29% of American football players, 21% of men and 16% of women track athletes voluntarily admitted to having used performance- enhancing substances. A significant positive attitude towards doping by male athletes than their female counterparts have been reported in different studies by Peretti-Watel, Guagliardo, Vreger, Mignon, Pruvost and Obadia (2004), Alaranta et al., (2006), Kirby, Moran, Gueri & McIntyre (2008) and Lucid Zelli, Mallia, Grano, Russo, and Violan (2008).

Drugs and substance abuse starts as early as 12 years of age as reported by Insel and Roth (2002) and young participants at this age graduate from drugs such as tobacco and alcohol to hard drugs such as cocaine or heroin. Insel and Roth (2002) further note that the younger a person is at starting to use the drugs, the more likely that person is to use illegal drugs and the higher the likelihood to become addicted. They emphasize that about a third of college students used non illegal drugs, tobacco and alcohol being the most abused by students who later graduate to using illegal drugs.

Sports participants are also reported to start using performance- enhancing substances (PES) at varying ages as observed by Lubna, Noor, Almuthana, Iman, Maher, and Saler (2008) where Jordanian college students and athletes attitude, access, and exposure to performance-enhancing drugs is described as having drastically changed between ages 12 and 13 years. Athletes of age 13 years are reported to be three times more likely to know teenagers who use or sell drugs, and also know how to access banned drugs. Lubna et al., (2008) have further noted that a third of athletes have used drugs before age 15 years.

The question that needs to be addressed is the reasons that make talented athletes resort to doping and how their awareness, perception and attitude towards doping can be influenced so as to aspire for fair play in competition. As reported by Lubna et al.,

(2008) and, Nowesielski, and Swistkowska, (2007) even after education on anti-doping, some athletes are still not fully prepared to avoid accidental and deliberate doping behavior, hence the need for a more proactive approach to doping prevention by all stakeholders such as teachers, coaches, sports federations and national governments

Purpose of the research project

While the aforementioned indicate doping is a problem amongst Kenyan athletes, there are no studies that have investigated the problem among collegiate teacher trainee athletes. This study therefore assessed Kenya teachers colleges athletes' awareness, perception and attitude to doping in relation to their gender, competition experience, type of sport and various ball games.

Objectives of the study

The study was guided by following objectives

- Find out whether athletes' awareness, perception and attitude to doping and PES use in sports differed based on competition experience.
- Determine whether there were differences between athletes' awareness, perception and attitude to doping and PES use based on gender.
- Find out if there were differences in awareness, perception, and attitude to doping and PES use in sports amongst athletes participating in different sports (ballgames, track and field athletics).
- Establish whether there were significant differences in awareness, perception and attitude to doping/ PES among athletes participating in various ballgames.

Theoretical Framework

There is no theory specifically developed for application in exercise and sport hence researchers have adapted the existing theories models to predict behavior in sport. For example Theory of Planned Behavior (TPB) model by Ajzen (1991) has often been relied on to assess athletes' attitude to doping. The TPB specifies the nature of relationships

between beliefs and attitudes. The theory impresses that attitudes towards behaviors are determined by the belief that certain behavior such as PES use would produce certain outcome. The TPB is reported to be a very powerful and predictive model for explaining human behavior and predicts deliberate behavior. Use of PES can be deliberate and planned hence TPB applicability in determining college athletes' attitudes to banned substances use.

Borrowing from deterrence theory in criminology, Strelan and Boeckman (2003) developed Drugs in Sports Deterrence Model (DSDM) which has factored in cost and benefits that an athlete makes a conscious decision to attain or avoid when they plan to dope. The DSDM explains that individuals make decisions based on extensive information, planning and justification to optimize their best interest. An athlete will thus think about health concerns, guilt, and satisfaction from sport achievement. An athlete will be in a dilemma to choose between improved performance, huge income from winning, fame, satisfaction, meeting expectations of others against costs such as being detected and banned from competitions, guilt, ostracism by friend, and loss of respect from significant others (Strelan & Boeckman, 2003).

Another theory that has been applied to assess athletes' behavior in sports is Drugs Compliance in Sports Model (DCSM) by Donovan, Egger, Kapernick and Medoza, (2002) who factored in consequences of doping such as health and guilt concerns, which may deter an athlete from doping.

The above three models have explained the reasons why some athletes may dope while others may restrain. This study adapted ideas from the DSDM by Strelan & Boeckman, (2003) DSCM by Donovan et al, (2002), and TPB by Ajzen, (1991) to investigate the extent of awareness, perception and attitude to doping among Kenya teachers colleges athletes. This is because the Theory of planned behavior predicts deliberate behavior and doping can be deliberate and planned by an athlete or team managers, coaches and trainers. The DSCM and DSDM factors in the costs and benefits that an athlete may be willing to take after deliberately planning to use PES in sports competition. Figure 1 shows the interrelations between the factors that come into play before an athlete decides to use PES or to refrain from the act.

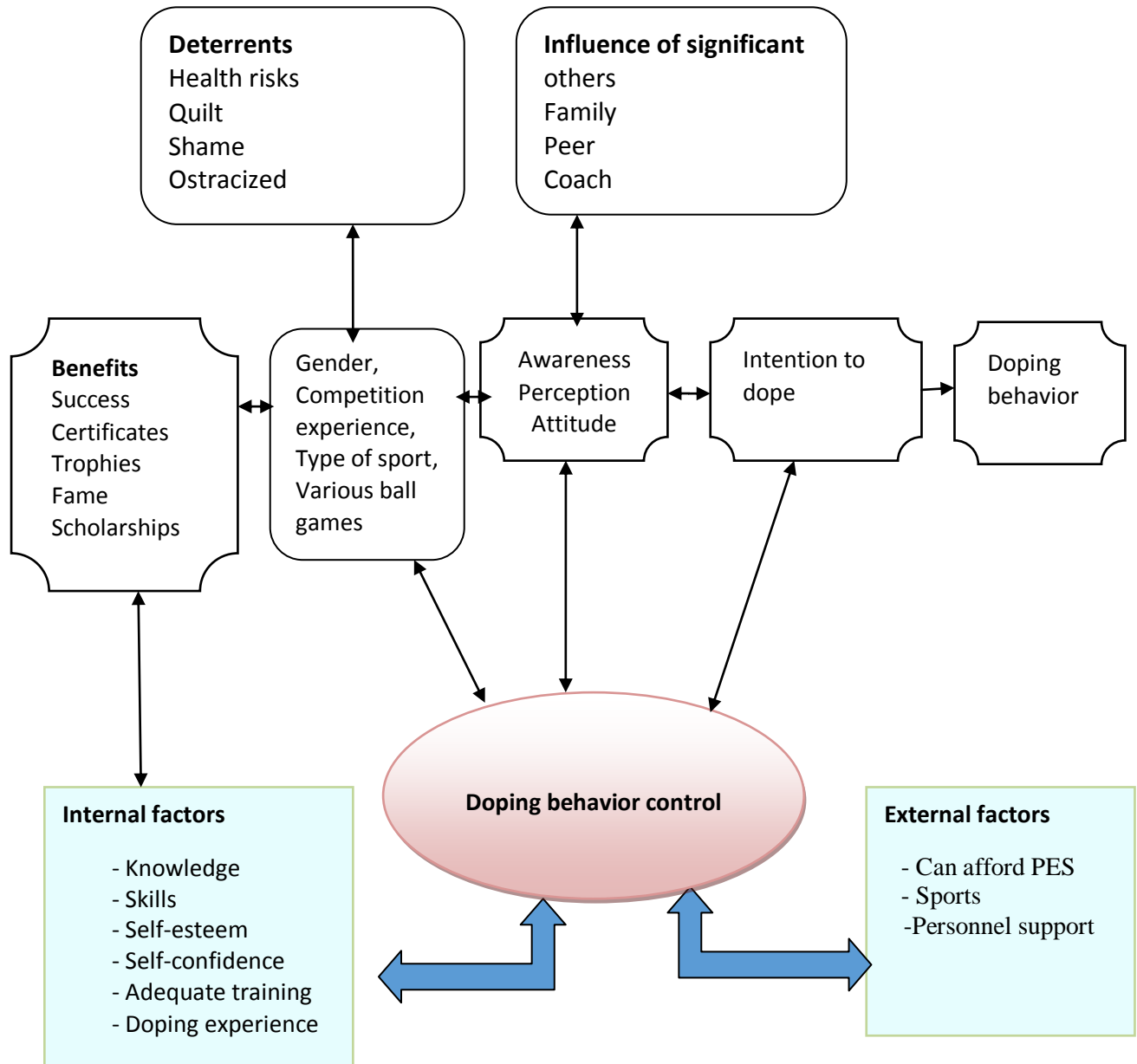


Figure1. Drugs/Substance use in Sports Model: Adapted From TPB by Ajzen (1991), DCSM by Donovan et al., (2002), and DSDM by Strelan and Boeckman (2003).

As shown in figure 1 an athlete will weigh the deterrents and benefits first, reflect on his/her ability to engage in the behavior (internal and external factors) and consider the influence of significant others before decisions to use PES. An athlete who has adequately trained and is highly skilled is likely to be confident and has positive self-esteem hence may not lean towards doping. On the other hand an athlete who may have doping experience and has not been detected and can access and afford PES may be drawn to dope. This is more likely if the coach and athlete personnel are in the support of the vice. If the benefits, that is, winning or desire for trophies outweigh the deterrents and the influence of the significant others such as the coach, friends and family support the intentions, then the athlete will engage in the vice. In all, the deterrents, the benefits, the significant others and the doping behavior control factors will impact on athletes' awareness, perception and attitude to doping thereby determining the intention and finally the decision to use PES or to refrain.

Review of Related Literature

Basis for Doping

Varying reasons have been fronted as the driving force that causes athletes to use PES in sports. When some athletes feel inadequately prepared for a competition they may seek for a quick fix and resort to doping (Insel & Roth, 2002). Corbin *et al.*, (2004) observe that some athletes use drugs to take their performance beyond that which their bodies can optimally attain when properly trained. To attain optimal performance and avoid temptation to dope, Powers and Howley (2001) advise that training should start early in a competition season. Anspaugh, Hamrick and Rosato (1991) have noted that to cope with stress from the high - pressure demands of a competition, a competitor may resort to the use of illegal substances. There is therefore, need for the trainers and coaches to enlighten the athlete into seeing the event as a responsibility and situations as challenges rather than stressors. Insel and Roth (2002) suggest that athletes should equally be enlightened on the appropriate methods of coping with stress. Bucher and Wuest (1999) have identified the huge salaries paid to athletes by event organizers and sports clubs

owners as a temptation that leads athletes into doping habit as a short-cut to win the huge prices.

Equally, Ehrnborg and Rosen (2009) express the fact that athletes dope due to societal pressure, financial stress, desire to improve physical appearance, to win, perform better and look 'ideal'. Similarly, Yesalis and Bahrke (2000) have cautioned that the importance attached to winning and perception towards improving physical appearance may cause athletes to resort to doping. Some athletes are also reported to use PES if it guarantees them finances to pursue their college studies (Albrecht, Anderson and Mckeag, (1992). Laure, Bansinger and Lercerf (2002) expound that substance abuse in sports have increased as the pharmacy drug industry has grown. They state that this has made the drugs readily available where an individual can even purchase online. Laure et al., (2003) further report that some medical practitioners offer medically assisted doping and supply elite and amateur athletes with doping agents either deliberately or through carelessness. Findings by Laure et al., (2003) also indicate that some doctors do not appear to have much knowledge of the subject of doping as 85% of the respondents admitted that they were not familiar with banned drugs or their side effects. But what was unsporting conduct is the revelation that professional team sports personnel were routinely supplying PES to athletes during training (Koch, 2002; Lubna et al., 2008).

As reported by Moran, Guerin, Kirby & Macintyre (2008) athletes are reported to be drawn to doping where the training environment encourages or even supplies the doping substance/drugs. They have noted that athletes confessed to have found it very difficult to resist the temptation to dope when some of their training peers are using PES. Desire to dope also makes an individual susceptible to doping especially if confounded by personal and situational factors, Personal factors such as low self-esteem/confidence has been seen to correlate positively with doping and intention to dope (Lubna et al., 2008; Laure & Bansinger((2007); Koch, (2002)). Jendrek, (1992) concurs that situational factors may influence an athletes' decision to dope depending on how one is related to the cheater and the need that drives one to use PES.

Drugs and Substance use by Athletes in Sports

Koch (2002) has reported increased use of steroids among young athletes with 5 to 11 % of high school males admitting use of anabolic and androgenic steroids by the time they finished high school. These findings agree with observations by Insel and Roth (2002) that the younger a person is when he/she starts to use the drugs the more likely the individual is to use illegal drugs and the more likely to become physically dependent on drugs.

A study of 503 Jordanian College students and athletes by Lubna et al., (2008) using a self-report questionnaire studied the extent of abuse of androgenic steroids and the risk factors associated with the abuse. The findings revealed that students start to use performance-enhancing substances before the age of 15 years. It was further revealed that Jordanian body building athletes and college athletes knowingly used PES with the intention of improving performance. Furthermore, although androgenic substances could only be obtained through a doctor's prescription, athletes could still acquire them since coaches supplied them. About 45.6% of the non-using athletes reported that they would use PES if they were provided with free drugs. The study recommended the Jordanian Ministry of Education and the Higher Council for Youth to conduct a more comprehensive survey to measure the prevalence of anabolic-androgenic Steroid (AAS) abuse. However the study was confined only to the body builders and did not include participants in other sports.

An investigation of the attitudes of 856 Japanese physical education university students towards doping in sports by Masato, Yukitoshi and Tosihiko, (2013) indicated that they were not aware of the kind of drugs they were using. This was despite the fact that the students had attended lectures on illegal drugs an indication that they had not studied the doping control systems. Masato et al., (2013) recommended prevention of growth of the prevalence of illicit or performance enhancing drugs.

Performance-Enhancing Substance use Amongst College Athletes

Studies on college athletes show that this category of sportsmen and women is not exempt from variety of PES use. A study was carried out by Schneider and Morris (1993) using a self report questionnaire to gather doping information from 554 USA college athletes' attitude and behavior towards a mandatory drugs education programming mandatory testing. The study covered athletes in basketball, American football, baseball, track and field athletics, and hockey. Out of 197 athletes who responded, 57% of them had used PES in college and 10% noted that PES use had enhanced sports performance. The study also revealed that male athletes were more likely than female athletes to know teammates using illegal substances. However the study did not compare attitude to PES by gender or by competition experience.

An evaluation by Peters (2005) of college athletes' beliefs and social norms about ephedra onset and perceived addiction, focused on feelings towards users, how long the drug had been used, indications of addiction, health risks involved and what prevents athletes from stopping the use of ephedra. Male athletes noted reasons for the use was to enhance performance and due to the coach and peers encouragement. Weight loss and need to increase energy levels were the reasons cited by the female athletes. Athletes also reported that they would use the drug if winning the sport was guaranteed. Routine use of the drug was due to addiction while health risks resulting from use of ephedra included 'shaking', and weird behavior. Female athletes indicated that the reasons they could not manage to stop PES use was due to appearance concerns. Both male and female athletes noted that performance enhancing and lack of education were the main barriers in quitting the habit.

Using an anonymous self- report questionnaire, Buckman, Yusko, Helene, Robert, & Pandina (2009) investigated 234 male college student athletes aged 18-26 years on whether they were involved in high- risk patterns of alcohol and other drugs use as well as establish risk behaviors associated with problematic substance use. Buckman et al., (2009) reported PES users (those who had reported past year use of broad array of PES)

displayed more problematic alcohol-use behavior and drugs-use-related problems. They concluded that the male athletes who reported PES use also participated in substance use behaviors that could have profound negative effects on sports performance. Athletes who used alcohol in sensation seeking were reported to also use steroids. The athletes who were using PES were reported to have limited awareness of drugs they used. The study recommended more research on the use of PES.

Whitaker (2012) study of 729 athletes in team and individual sports found out that athletes competing at national level displayed a strong inclination towards doping than those competing at lower and at international levels. Further, Whitaker (2012) has observed that athletes were willing to use performance enhancers if and when they experience declined performance, if they were to suffer injury before a major competition, if funding for their education was threatened and, if they suspected that others were likely to be using illegal substances. The study recommended the need to support athletes who suffer injuries as well as educate them. Whitaker (2012) also reports that significant others especially exerted great influence over athlete behavior towards banned substances in that some reported they would dope if the coach (87%) and fellow athletes (88%), doctor (71%) and, family (71%) approved of the behavior. The study recognized the need for the coaches to be educated in order to understand the extent to which their behavior and perceptions can influence athlete's behavior on matters relating to banned substances. Whitaker (2012) also reported that (37%) athletes suspected their colleague would use PES if they would not be detected and if they were sure they would win in their sports but the number of athletes went down to 9% if the drug was to lead to death after five years. About 41% also noted that they suspected others to be using banned substances to enhance performance. Whitaker, (2012) concluded that prevalence estimates of doping can be used to target athletes perception change through education as it has been revealed that athletes who suspect others to be doping are more likely to engage in the behavior.

Cases of Kenyan Athletes Implicated with Doping

Although Kenyan athletes have tried staying clear of doping, there have been cases of suspended individuals. John Ngugi, the five- time world cross-country champion was banned from participating in any IAAF recognized competition in 1993 for objecting to an out of competition dope test due to ignorance of such a test submission requirement (Republic of Kenya (2014) and John Ngugi Foundation (2014)). Anti-doping taskforce (Republic of Kenya, 2014) has reported many Kenyan athletes including the sprinter Simon Kemboi who was suspended for two years after testing positive during the 2000 Sydney Olympic Games, in 2003 Pamela Chepchumba was banned from sports competitions for two years by IAAF. And in 2004 Athens Olympic Games, a Kenyan boxer, David Munyasia who tested positive for banned substance cathine, a chemical substance found in *miraa*. The boxer reported lack of knowledge or awareness that *miraa* contains chemicals in the list of banned substances of the WADC. In 2005, a professional footballer on assignment with a South Africa soccer club tested positive on banned substance leading to the termination of his career with the club (Wekesa, 2009). Gaffney, 2008 cites Elizabeth Muthoka, a Kenyan 400 meters sprinter who tested positive for nandrolone (a banned substance) in July 2008 during the Beijing Olympic trials. The athlete claimed she was treating anemia without having acquired Therapeutic Use Exemption. According to Gaffney (2008), although nandrolone treats anemia and boosts the hemoglobin levels, it should not be the first line of treatment an athlete should take. Other Kenyan athletes who have tested positive on banned substances according to the Republic of Kenya, (2014) include, Salome Jerono in 2012 for norandrosterone norandrosterone, Jepkorir Peris in 2013 for norandrosterone, Lydia Cheromei in 2006 for clomiphene, Susan Chepkemei for salbutamol in 2007 and Simon Kemboi in 2000 for anabolic steroid. In the case of Chepkemei she should have obtained a Therapeutic Use Exemption for salbutamol since there is that provision by the WADC. These cases of doping indicate ignorance as the main cause of athletes, thus contravening the world anti-doping regulations. The world anti-doping agency expects the respective national sports federations to educate its bona fide athletes hoping that those who are already doping or

planning to, could have their attitudes towards doping changed for the better (WADA, 2015; RADO, 2007).

Performance Enhancing Substance use by Gender

The problem of performance-enhancing substance use affects male and female athlete alike. Research findings have tried to explore the reasons why male and female athletes resort to doping and reasons they advance for engaging in the vice. Investigation of male and female participants in collegiate sports by Corbin et al, (2004) found out that 21% and 16% male and female respectively admitted to having used sports performance enhancers. Similarly Peretti-Watel (2004) has reported male athletes having more positive attitude to PES than the female counterparts

In a study of British male athletes Petroczi, (2007) reports that male athletes tend to attach a lot of importance to winning and that may incline them to desire to use doping substance. Their orientation to win in a competition was seen to affect their attitude to PES. Petroczi (2007) notes that though athletes were fearful of being detected for using illegal means in competitions, male athlete respondents were more likely than the female to lean towards opinion statements that presented doping substances as good to use.

Some athletes are reported to have a tendency to think that doping is only prevalent among athletes in other countries but not among them. For example, Bloodworth & Mcnamee (2009) study findings on 40 British male and female athletes show that doping among British athletes as insignificant but very prevalent in other nations. Schneider & Morris (1993) have observed that male athletes are more likely than the female counterparts to know members of their teams who ingest illegal substances for the sole purpose of enhancing performance

In an assessment by Peters (2005) of various factors regarding ephedra use in sports such as what an athlete feels about others who dope, length of PES use, health risks as well as indications of addiction, male athlete cited peer and coach influence as the main reason for not quitting the illegal habit. On the other hand, female athletes noted the need to increase energy levels and weight loss as the reasons they couldn't stop using ephedra.

However both male and female athletes blamed lack of education about PES and the need to enhance performance as the reasons for persistent use.

Reporting on a sample of 234 athletes, Buckman et al., (2009) indicates 73 male PES users and 160 non users to have experienced more problematic alcohol use behaviors and more alcohol-and drug-use-related problems. Male PES users demonstrated higher sensational seeking and grater coping and sports motivations as reasons for taking alcohol and use of marijuana. Buckman et al., (2009) concluded that although PESs may not be viewed as addictive the users are more likely to engage in substance use behaviors that are likely to have serious negative effects on athletics performance.

Athletes should have other activities to engage in when they are not training or competing in a sport of their choice. This is because as reported by Brenner, Metz, & Brenner (2009), competitive athletes who participate in other activities outside sports in campus are less likely to pursue patterns of high risk alcohol drinking than athletes who are not involved in other activities when they are not in their sport. Brenner et al., (2009) observes that female athletes are more likely to be involved in other activities than male athletes and therefore are less likely to engage in risky alcohol behaviors. Brenner & Swanik (2007) posits that male athletes are more likely to engage in heavy drinking episodes than non-athlete males. Similar observations are made by Yusko, Buckman, White& Pandina, (2008) that male athletes engage more in substance use than non-athletes. The female athlete is likely to consume less alcohol, less frequently than non-athlete females but they portray higher rate of PES usage and less prevalence of social drug usage when compared to non-athlete female.

As reported by Buckman at al., (2009) male athlete using PES had an inclination to heavy alcohol consumption and used other social drugs frequently hence incurred more negative consequences than college athletes who did not use illegal substances. This view is supported by Yusko et al., (2008) that male athletes have a higher rate of tobacco consumption in all forms during the off season. On the other hand the female athlete was seen to have higher rate of usage of recreation drugs during the off-season but used

weight loss drugs throughout the year despite the fact that they may contain chemicals listed in the WADA code as a banned substance.

Even as use of performance enhancers continues to be felt in sport, there are athletes who purpose to participate in drug free sports competitions. Study findings by Collins et al., (2012) indicate female athletes have explained that feelings of shame and guilt in the event of being caught was more influential in staying clear of the enhancers but it wasn't influential to male athletes. Collins et al., (2012) further points that 29% of male athletes compared to 35 % of females did not consider personal ethical standards as influential in decision not to engage in PES in competitions. However more male athletes (17%) were more concerned of their health with regard to use of enhancers than (11%) female athletes.

According to the report by Higher Education Center (2010), female athletes are more likely to use and abuse weight loss aids and energy supplements especially in sports such as cross-country, gymnastics, and dance, figure skating where physical appearance and certain weight are considered important to performance. But the problem arises because the weight loss drugs are not controlled and are likely to contain chemicals among the list of banned substances by WADA.

Male athletes participating at national level competitions are reported to have wrong perception of banned substance use in sports. (Whitaker 2012), for example reports that of the 729 athlete from both team and individual sports 37% reported that other participants would dope if they would not be detected and if they were sure ingesting of enhancers would result to winning. About 9% of the sample also noted that other athletes would still dope even though winning would eventually lead to death after five years. Athletes in this study were also of the opinion that their colleagues were doping. Whitaker (2012) suggested that this wrong perception need to be changed by educating athletes because athletes who suspect others to be doping are highly likely to dope in future.

Performance-Enhancing Substance use by Type of Sport

Research findings have reported varying dispositions towards use of sports performance enhancers by athletes in different sports. While some athletes have reported deliberate use of enhancers others have expressed their reasons not to engage in the vice. For example Collins et al., (2012) study indicates 32% of team athletes reported that decision not to engage in doping behavior was influenced by fear of getting banned from competitions compared to 25% of athletes in individual sport. The differences were however not statistically significant.

Certain types of male athletes are also reported to have more tendencies to use illegal substance. Men who played hockey as reported by Ford, (2007) demonstrated increased rate of binge drinking and marijuana usage, while track athletes were less likely to engage in binge drinking. Yusko et al., (2008) further observes that male athletes who had strong cohesion to their teammates tended to ingest drugs such as marijuana at lower rate than male athletes who display less team cohesion. This view is in concurrence with Grossbard et al., (2008) that athletes with strong bond to their teams showed fewer incidences of alcohol-related consequences.

Reporting on 197 collegiate athletes in team sports, basketball, American football, baseball, and track and field events, Schneider Morris, (1993), 57% acknowledged to have ingested sports performance enhancers while in college and 10% went on to say that ingesting banned substances enhanced their sports performance. Further, study observations by Ford (2007) are that female soccer players had high tendency to engage in binge alcohol drinking, marijuana usage and use illicit drugs. In the same study female track athletes, swimmers and divers are portrayed as the least likely to get involved in banned substance use. College athletes in individual sports who also get involved in other activities when they are not playing are reported by Brenner, Metz & Brenner (2009) to be less likely to take alcohol and they are also least likely to engage in risky alcohol behaviors.

Team sports athletes desire to remain in the group is explained by Kirby et al., (2008) as having an influence on their inclination to dope even though the pressure from the teammates was not a direct one. Team cohesion however disintegrates the moment an individual tests positive for banned substances. Kirby et al., (2008) view is however contradicted by findings of a study by Dimeo et al., (2013) where team athletes were found to be less likely to dope because team environment cushions them from pressure to win since good performance is seen as a team effort and not an individual's responsibility. Dimeo et al., (2013) explains that athletes in individual sports inclination to use PES is because the coach is likely to have more influence or exert pressure over the athlete. In Dimeo et al., (2013) study, athletes in team sports observed that their counterparts in endurance and power sports may be drawn to use PES than participants in sports requiring display of tactics. Similarly a study Alaranta et al., (2006) points that 21% of athletes in speed and power sports portrayed attitudes inclined to doping compared to 14% and 10 % of athletes in team and endurance sports respectively. Equally, Nowesielski & Swistkowska, (2007) has observed that athletes in soccer, volleyball and handball demonstrated more awareness, right perception and negative attitude to doping than participants in track and field athletics. The anti-doping task force final report by Republic of Kenya, (2014) indicates that cannabis sativa (*bhang*) is prevalent and widely used among soccer players and other sports. And while participants noted lack of knowledge and awareness, some reported deliberate use of banned substances. Republic of Kenya (2014) further observes that team sports are using variety of drugs including cannabis sativa; Khat (*mira*) and stimulants (kuber). Anabolic steroids and Erythropoietin are also prevalent among track and field athletes

Athletes Competition Experience and Substance use in Sports

With consequences of doping being outlined in the WADA code, one would expect athletes especially who aspire to enter competitions and particularly athletes who have competed for a longer time to be better informed on issues to do with doping as well as to desire to compete drug free. However research findings are to the contrary. Athletes who have been in sports competition longer are reported to be more inclined to doping than participants who have competed for a few years. Athletes have also been found to be

lacking in vital information on doping related issues while others have portrayed carefree attitude. But some have been reported to have the desire to engage in 'clean' sports competitions. Feinberg (2009) for example has reported athletes with few years of competition as lacking awareness but displayed negative attitude to banned substances.

Seeking to establish whether athletes with varying competition experience view PES differently taking into account values that a doped athlete was likely to lose if detected, Mroczkowaska, (2010) reports that no differences towards doping consequences between athletes who had competed for 4-8years and the one who had a long 8-18 years of competition experience. All athletes observed that they valued health, medals, ranking position and sports-related values and they would stay clear of the banned substances so as not to lose them. However athletes with less competition experience showed less value for health and respect and displayed high value for bonuses. Mroczkowaska, (2010) explained that probably the longer years in sports competition had a bearing in the senior athletes becoming more cautious about their health and the risk they were willing to take. Levent et al., (2005) have also reported prevalence of doping substances among male athletes aged 20- 25years with the ratio of users increasing with the level of competitions especially as athletes graduate to high levels of sports competitions

An evaluation of college athletes' use of banned substances in sports by NCAA, (2006) found out that sports competitors with least experience in competitions were portrayed to be pronounced alcohol users. The habit was not directed at enhancing performance but for recreational purposes. But NCAA, (2006) notes that alcohol users are more likely to be drawn to the use of other drugs that may be in the WADA code of banned enhancers. Reporting on the reasons student athletes used PES among French students aged between 16-24 years, Peretti-watel (2004) documented that older experienced athletes who also had a sporting history in the family were of the opinion that banned substances were acceptable and beneficial to sports performance.

Doping Awareness

A study by Ama et al., (2003) on African amateur footballers in Yaoundé, Cameroon investigated athletes' use and awareness of lawful and unlawful substances. The results revealed that the footballers' knowledge of doping was vague. They recommended that preventive activities and an epidemiological study on doping among the footballers be carried out. The study was restricted to only footballers and did not factor in athletes in other games and track and field events participants. The study by Koch (2002) presents athletes as knowingly participating in doping regardless of being aware of the drugs' negative effects on health. In a self-report study on athletes' attitude towards doping involving 446 athletes by Alaranta et al., (2006), 9% of the respondents believed that banned substances have performance effects while 30% of athletes agreed to have personally known an athlete who had doped and 35% of males and 25% of the females reported to personally know an athlete who was using banned drugs at the time of the study. Furthermore, 15% of the athletes noted they had been offered banned substances. A survey by Anshel and Russell (1997) of Australian athletes' knowledge on PES reports that majority of respondents were of the opinion that use of PES is unethical and immoral hence unacceptable as a means of gaining a competitive advantage over opponents.

A survey of 503 collegiate athletes and 154 body building athletes that aimed at measuring the extent of androgenic steroids (AS) abuse by Lubna et al., (2008) revealed that college athletes had no problems acquiring performance enhancing drugs as they knew where and how to get them. Both students and athletes noted that their friends and coaches were the major sources whereas the main reason for the use of PES was to improve performance and physical appearance. The study recommended the need to implement educational programmes to create awareness and enlighten students and mentors about the negative side effects of ASS on the health of the user as the drugs were increasingly becoming a public health concern.

Lack of awareness of anti-doping issues by athletes is equally presented in a study by Levent et al. (2005) where 54 % of respondents acknowledged they were not fully aware

of the full doping drug potential and effects. The study concluded that young athletes are likely to suffer most from health problems associated with the drugs as well as chances of being suspended from sports.

A survey of 200 Scottish athletes by Dimeo et al., (2013) established that majority of athletes were not aware of the current WADA legislation where article eleven of the WADC states that sanctions such as loss of points and disqualification can be meted on a team if three or more teammates are proven to have violated anti-doping regulations. To this effect Dimeo et al., (2013) recommended that awareness creation on the said legislation was needed because team sport athletes not aware of the consequences might promote anti-doping within their own team and since clean athletes would not want to feel cheated if they lose to a team found to have a number of doped participants. The study also showed that fear of being caught and shame that may befall the victim was the strongest factor preventing team athletes from considering use of PES.

Perception of Doping Behavior

Bucher and Wuest (1999) emphasize that the competitive nature of sport today has resulted in fostering of extremely dubious values and practices on the part of the coach and the competitor. An athlete guilty of doping robs sport its noble task of perpetuating positive values. Values such as integrity and honesty are overshadowed by greed and self-centeredness (Bucher & Wuest, 1999). Socially an athlete guilty of doping undergoes a psychological torture and feelings of shame and isolation (Kayser et al., 2007).

Petroczi (2007) studied 199 USA male college athletes and concluded that the importance an athlete attaches to winning may strongly influence their perception of doping. He reckons that athletes' personal trait may also have an influence on PES use and that it is equally likely to be influenced by beliefs about sports models. A study by Peretti-Watel et al., (2004) reported that approximately 90% of athletes believed that PES use was not only dishonest but also unhealthy. Majority of the respondent in the study also noted that they were fearful of getting caught and of possible sanctions. Male respondents were shown to be more likely to accept the opinion statements portraying

PES as beneficial to the user more than the female counterparts. Peretti-Watel et al., (2004) further posits that athletes from low socio-economic background perceived PES to be acceptable and beneficial to performance hence the study concluded that such athletes are more likely to dope as a means to an end such as improving their financial and social standings.

A survey by Anshel and Russell (1997) of Australian elite athletes presents majority of respondents as having the opinion that use of PES is unethical and immoral hence unacceptable as a means of gaining a competitive edge over opponents. A study by Bloodworth and McNamee (2009) on attitude towards doping among 40 male and female athletes in United Kingdom (UK) reports participants to have been of the opinion that use of PES in UK was insignificant but was of the view that it was common in other nations. Similarly a survey of 832 British elite athletes by Mazazov et al., (2008) concluded that athletes who were likely to use PES were of the opinion that use of the same was prevalent in their sport but the same respondents were familiar with various dope testing procedures. Petroczi (2007) notes that athletes' perception of PES can also be influenced by athletes' personal trainer opinion of doping and that of the role models. Another study by Petroczi, Aidman and Nepusz (2008) of 111 college students' perception to doping established that 66% of athletes were of the opinion that doping is useful for ones athletics performance.

An investigation of 50 university students perception of doping by Kumar and Jyoti (2013) using a self-report questionnaire found out that majority of students believed that doping is cheating; only the quality of performance should matter, but the way athletes achieve success in sports performance is also important; health problems related to hard training and injuries are just as doping side effects; doping is a real threat to fair sports participation and majority of respondents were in agreement that a complete ban of doping in sports is necessary. Kumar and Joyti (2013) recommended that WADA and government bodies should step up strict measures to ban doping and that every sports participant should be educated on the need for honesty and hard work that would lead to success in performance.

A survey by Dimeo, Allen, Taylor, et al., (2013) of 200 Scottish athletes drawn from team sports and individual sports set out to investigate whether team sport environment protects team players from the risk of doping compared with athletes pursuing participation in individual sport. The study established that team environment enjoyed by participants gives a sense of belonging which tends to protect the athlete from doping as they fear the shame of being caught and banned as well as the likely social marginalization that would follow. The study also indicated that team athletes did not feel pressured to dope as the athlete in individual sport, especially the pressure coming from the coach. Athletes in team sport felt that the coach-athlete relationship may have a slightly different emphasis in individual sport as a result of greater one-on-one contact time whereby the coach may exercise more control over the athlete. Dimeo et al., (2013) further report that athletes in team sports perceive that participants in endurance and power-based sports are more likely to benefit from doping activities than those in sports demanding tactical involvement.

A comparison of perception of doping related risks by junior (9 players) and senior athlete (13 players) participating in football and volleyball was conducted by Mroczkowska (2010) using a self-report questionnaire. The junior players were 16-18 years old with a sporting experience of 4-8 years while the senior players were 20-32 years old with sporting experience of 8-18 years. The study set out to identify values that may be lost due to doping. These included health, medals, ranking position, physical attractiveness, psycho-emotional balance, bonuses and respect of personages. Findings indicated no significant differences in ranking values to possible doping related losses despite marked differences in sporting experience. Both experienced and non-experienced players indicated they valued respect, health and psycho-emotional balance than medals, bonuses and physical attractiveness. However, the less experienced players underrated the risk of losing health and respect and overrated that of likely bonuses. Higher real doping-related risk score reflected knowledge of the modes of action and of negative effects of doping. Mroczkowska (2010) concluded that experience of senior

players made them very cautious and the risk they were willing to accept was significantly lower compared to junior athletes.

Whitaker (2012), study of athletes competing at national and international competitions revealed that athletes competing at national level reported themselves to be more similar to athletes who dope hence she concluded that such athletes are likely to engage in doping than those who identify with individuals engaging in 'clean' sport. Athletes also perceived the image of dopers favorably hence Whitaker (2012) concluded that the more favorable an athlete perceives another who uses PES the more likely they are to use banned substances in future. Male athletes identified themselves more with the image of banned substance users. This means role model sports persons are important figures to upcoming athletes. Whitaker (2012) recommended athletes perceptions be targeted through doping education so that their view of those who dope can be made negative hence they will be less likely to use PES in future.

Attitude to Doping

A study by Petroczi (2007) focused on relationship between athletes' attitude, sports orientation and doping behavior among the competitive USA male college athletes. The findings of the study indicated that athletes' win and goal orientation and competitiveness did not play a statistically significant role in doping behavior. However, win orientation was found to have an effect on doping attitude. A considerable proportion of doping behavior was however unexplained hence the researcher concluded that other factors played an influential role in athletes' decision regarding prohibited methods. The study recommended that sports governing bodies and anti-doping organizations should appreciate the fact that use of performance-enhancing substances by athletes may be more a rational outcome optimizing behavior than deviance. The study, however, only dealt with male college athletes and did not incorporate female athletes yet doping is a vice that cut across gender. A survey by Alaranta et al., (2006) also reported positive attitude to doping by 21% of athletes in speed and power sports compared to 14% athletes in team sports and 10% in endurance sports. The study however did not factor in athletes' competition experience as a factor that can influence doping behavior.

Lucidi et al., (2008) self-report study on use of doping substances and supplements among 1232 Italian students reported that intention to use performance-enhancing substances increased with stronger attitudes about doping and a lowered capacity to resist situational pressure or personal desires. Stronger intentions and moral disengagement were also found to contribute to a greater use of doping substances. A similar study amongst 458 French elite student athletes' relating to their attitude towards doping by Perretti-Watel et al., (2004), found out that athletes who dope pursue legitimate goals with illegitimate means but justify their behavior with illegitimate rationale. The study participants indicated that they were also fearful of getting caught and possible sanctions. Kirby et al., (2008) also reports a high significant positive attitude towards doping by male athletes than their female counterparts.

Situational factors as reported by Jendrek (1992), are likely to affect an athlete attitude towards those who dope depending on how a person is related to the cheater and the need that drives the cheater to the vice thus an individual is more likely to be sympathetic with the cheater in his/her attitude towards the teammate or towards an athlete who cheats out of desperation. Jendrek (1992) further points that when asked to rate people who cheat (a hypothetical situation) there was a tendency by raters to be more lenient to a friend who cheats than to those they were not acquainted with. This observation agree with those of Feinberg (2009) that athletes who cheat would be more lenient in attitude towards other athletes who cheat thereby recommended that cheaters should be judged by their intention and not by the consequences of their behavior. The WADC (2015) has outlined that an athlete who is detected as having intentions to dope is judged to have doped because he/she would have made the intention good were it not for the fact that they are discovered before they carry out the heinous act.

A survey of 856 Japanese university students attitudes to doping by Masato *et al.* (2013) indicate that 79.1% of the participants had negative attitude towards doping while 20% approved of the drug's use in sports and a further 10% were reported to have used drugs to enhance sports performance. Masato et al., (2013) therefore recommended the need to curb the prevalence of illicit use of PES. Similarly, Whitaker,(2012) assessment of

athletes' attitudes, perceptions and inclinations towards legal and illegal enhancing substances found out that out of 729 athletes competing at either national or international levels 17(2%) were already using banned substance and 33 (5%) had previously used banned PES with the aim of improving their performance despite the existence of the anti-doping regulations. Whitaker (2012) concluded that drug testing alone was not sufficient deterrent and therefore recommended prevention measures and changing athletes' attitudes as well as helping athletes develop decision-making skills and adopting suitable coping skills in sporting environment. The study further revealed that athletes were in full knowledge of the negative outcomes emanating from use of banned substances hence it is possible that those who confessed use of PES may have weighed the positive and negative outcomes before doping.

Whitaker (2012) reports that generally athletes demonstrated a negative attitude to doping but male athletes portrayed more positive attitude to banned substances more than female athletes. Equally, athletes who competed at club/university and national levels displayed more positive attitude than those competing at any other level. Since attitudes correlates with behavior Whitaker (2012) concluded that athletes who displayed positive attitude to banned substances are more likely to use PES hence the study recommended prevention programs to correct athletes' negative attitudes targeting mostly male athletes and those competing at national levels.

Effects of PES Use to an Athlete

The broad objectives of the World Anti-Doping Agency is to protect the health of the athlete, ensure fairness in sports competition by ensuring level playing ground and safeguard the image of sport (WADA, 2015). However, despite the existing anti- doping regulations, cheating is still prevalent and increased fan violence has to some extent been attributed to the sale of alcohol and other recreational drugs at sports events (Insel & Roth, 2002). As noted by Bucher and Weust (1999) well-intentioned, but overly involved parents, community, institutions and nations have exerted a lot of pressure on athletes to win and this over- emphasis on winning have detracted the value of sport and drawn many competitors to using illegal means of securing a trophy/medal or monetary rewards

oblivion of effects of banned drugs on the athletes health and likely hood of getting banned from participation in competitions. In response to this declining sports ethics, sports governing bodies have sought to rectify the problem by imposing strict regulations (WADA, 2015).

Doping effects are as complex as the methods of doping and no benefits of winning a competition would be worth to justify risks associated with the vice (Somerville & Lewis, 2005). Apart from the danger of being suspended or getting a life ban from sports competitions, other implications include physiological, psychological, social and ethical /moral effects. To ensure level playing ground, protect health of athlete and preserve the dignity of the sport, sports organizations such as IAAF, IOC, and WADA have listed banned substances and placed the onus of educating competitors on the implications of doping to local sports federations. However, despite the good intentions by WADA and sports organizations, PES use still exists in sports. Athletes are reported to use PES as they perceived the illicit drugs have positive impacts on athletics performance more than non-athletes. Such PES include anabolic androgenic steroids, amphetamines, human growth hormone/erythropoietin which they perceive would combat fatigue, relieve pain, and enhance injury recovery, increase strength and endurance among other perceived benefits. As reported by David, McDuff & David, (2005) athletes have also explained that they have used substances such as alcohol, cocaine, marijuana to ‘fit in’, boost self-confidence, and escape problems and to have fun.

Physiological Effects of Doping

Although substance use in sports may enhance performance, they can also lead to short term and long term effects. However effects vary with different drugs/substances abused. NACADA (2006) outlined khat (*miraa*) use as a cause of spermatorrhea in men, a condition where the user experiences uncontrolled sperm production and release causing the affected individual to use diapers to deal with the situation. Khat (*Miraa*) may also lead to impotence since chemical substances found in Khat (*miraa*) affects the quality of the sperm. Other effects of khat (*miraa*) include gum disease and addiction.

Creatine, which is widely used by athletes in anaerobic activities, is said to lead to muscle cramping, intestinal discomfort, dyspnea, vomiting, diarrhea, arrhythmias, anxiety, and even seizures. Adrostenedione use can result in premature puberty or induce premature closure of long bones growth plates. Most of the drugs used to stimulate the central nervous system are associated with hypertension, angina, cerebral hemorrhage, dependence and even death (Lubna et al., 2008). Hartgens and Kuipers (2004) further observe that, though under medical prescription steroids are useful in treatment of muscle diseases, breast cancer, severe burns and kidney disease among others, they can be addictive and produce more than 70 other side effects (Corbin et al, 2004). While some side effects of anabolic adrenergic steroid are quite visible and apparent, a majority of effects on cardiovascular system often go unnoticed until a serious medical complications arises (Warpeha, 2006). Warpeha (2006) further reports that left ventricular hypertrophy is said to be a common finding in heavy resistance trained athletes. Long term use , overuse and abuse of anabolic adrenergic steroid is cited by Brooks, Fahey and Baldwin (2005) to be a major cause of heart damage. Other side effects as reported by Warpeha (2006) include diastolic dysfunction, arrhythmias, myocardial infarction, stroke and sudden cardiac death. A report on two separate case studies by Alarah, Chamoun, Dahdalel, et al. (2005) indicates that young healthy male athletes who admitted to have used high doses of AAS had suffered subdural hematoma (bleeding in/on the brain) which is a rare occurrence in healthy young individuals. Liver toxicity is also a common finding in AAS users as exhibited by increased liver enzymes and jaundice as a side effect (Trenton & Currier, 2005).

David and David (2005) have noted that alcohol leads to dehydration, hangover, insomnia, fights and weight gain all of which affect the athlete negatively. Insel and Roth (2002) have observed that during a hangover, heart rate and blood pressure increase making some individuals more vulnerable to heart attack. Specifically, alcohol affects aerobic and psychomotor skills due to its slow/ fixed rate of metabolic and toxic interference with energy and carbohydrate metabolism. Alcohol is said to cross the brain barrier affecting brain centers for balance, coordination, judgment and reasoning, emotional control, level of alertness and socialization, sensory motor dysfunction and

mood instability. None of these side effects are beneficial to athletics performance. David and David (2005) have reported that rate of alcohol consumption by athletes is higher than that of general public with rates for men at 75-95% and for women at 71-93%. High rate of alcohol consumption is likely to suppress endurance performance significantly when consumed before athletics activity (Kirby et al. 2008).

David and David, (2005) further reports consumption of alcohol being high among soccer players, swimmers, baseball/softball than in basketball, volleyball, and track and field athletics. Their study goes on to show that alcohol consumed 24 hours before athletics activity significantly reduces aerobic performance by 11.4%. Furthermore, rate of consumption of alcohol a day before training and competition was too high at 18-84% in basketball, soccer, rugby and football sports. Male athletes who have demonstrated high doses of AAS have suffered subdural hematoma not likely to occur to a healthy young person.

Caffeine is reported to cause insomnia when used in high doses greater than 500mg per day and can lead to dehydration both of which add no value to athletics performance. However caffeine is known to increase the rate of fat metabolism and sparing glycogen depletion both of which gives the consumer an added advantage in sports performance. It is considered as a banned substance by WADA when blood level goes beyond 12 mg/ml accepted level (Graham, 2001). Caffeine produces alertness and a sense of well-being, decreases feelings of fatigue and may enable a person to keep up with physically exhausting task longer (Insel & Roth, 2002). Marijuana is a psychoactive substance in which even a low dose causes euphoria, a heightening of subjective sensory experiences, a slowing of the perception of passing time and a relaxed attitude. With time the effects become stronger and may lead to impaired memory function, disturbed thought pattern, and lapses of attention. These effects do not positively affect sports performance while long term use may cause respiratory damage including chronic bronchial irritation and precancerous changes in the lungs (Insel & Roth, 2002).

Ethical and Social effects of Doping

Laure et al, (2002) regards use of banned substances in sports unethical since those medical professionals involved in prescribing drugs to the athletes are not doing so for therapeutic purpose. They point that particular doping practice has not been approved for use with health athletes and therefore have not benefited from extensive clinical trials necessary before a therapeutic substance can be used. It is on this basis that WADA allows therapeutic use exemption in sports.

Bucher and Weust (1999) emphasize that doping, sports, and ethics are not compatible. They reckon that sports should help the youth and children to win and loose with self-control, become effective team members, obey rules and play according to the code. Doping therefore is seen to rob sport the ethical/moral benefit. Bucher and Weust (1999) also emphasize that the competitive nature of sport today has resulted in fostering of extremely dubious values and practices on the part of the coach and the competitor. An athlete guilty of doping robs sport its noble task of perpetuating positive values hence doping is considered unethical such that integrity and honesty are overshadowed by greed and self-centeredness (Bucher and Weust, (1999). Socially an athlete guilty of doping undergoes a psychological torture and feelings of shame and isolation besides doping compromising the image and respect for the sport and that of innocent athletes who might be held in suspicion as cheats. The guilty athlete no longer can serve as a role model and may often find it difficult to regain the self-esteem, (Kayser et al, 2007). Findings of a study by Collins, MacNamara, Collins & Bailey (2012) alludes that personal ethical standards and morals play an important role in decision making on matters related to doping. Athletes training environment which includes the significant others such as family and coaches was portrayed to exert influence on athletes decisions to doping

Psychological Effects of Doping

Apart from their effects on the user's body, banned substances are also linked to dangerous and unhealthy psychological behavior. These includes hostility and

aggression, violent behavior, sexual crimes, inability to accept defeat, apathy, depression and wide mood swings among others (Gaffney, 2008 and NACADA, 2012). Insel and Roth, (2002) emphasize that sensations of enhanced energy and vitality, euphoria, with a sense of heightened function and perception have been reported by athletes who have used banned substances even though the intention was for recreation purpose. They have also reported the following effects among chronic substance users; irritability, aggression combined with violence, low self-esteem, sleep disorders, severe depression which may lead to suicide, anxiety disorders, paranoid ideas and hallucinations. Hartgens and Kuipers (2004) have reported that psyche and behavior seem to be strongly affected by Androgenic-anabolic steroid use, as the drug seems to induce increments of aggression and hostility both in and outside the sporting environment.

Information from reviewed literature indicates doping as a persistent problem that has affected sports competition for a long time despite efforts to curb the problem. For sports lovers to get the playing ground level and for the sake of athletes health as emphasized by WADA the effort to clean up PES use in sports this should continue through research and good practice.

MATERIALS AND METHODS

Research Design

This study adopted the cross-sectional survey design. This design is suitable when gathering information about present practices, opinions and attitudes whereby a phenomenon is evaluated spatially at a point in time involving a cross-section of the population (Kamlesh, 2006).

Research Variables

In this study, the independent variables included gender, type of sport, experience in competition and various ballgames. The dependent variables were awareness, perception and attitude to doping and use of performance-enhancing substance.

Location of the Study and Target Population

The Kenya Teachers Colleges Sports Association (KTCSA) games are organized in seven zones namely Nyanza, Nzoia (western), and Rift valley, Central, Nairobi, Eastern and Coast. Each of the competition zones is made up of a number of teacher training colleges. This study was therefore carried in three of these zones including Nairobi, Nzoia (western) and, Eastern. The target population comprised all male and female teacher trainee athletes participating in 2014 national ball games and track and field athletics. All participants were above 18 years. This ensured they made informed decision to participate in the study voluntarily. The participants were either in first, second or third year of teacher education course. Being potential primary and secondary school teachers and sports coaches, and by extensions stakeholders in sports, athletes understood the need to participate in the study regarding PES in sports. Their level of education was equally favorable to the understanding of the questionnaire items. Since physical education is a compulsory subject of study in teacher education course, doping content is taught to college students hence athletes were expected to understand and appreciate their participation in the study. Only athletes who represented their zones at national competition were included in the study. Each zone consists of all teacher

training colleges in that zone that are registered under the Kenya Teachers Colleges Sports Association. Each of the seven competition zones presents equal number of teams/participants to the national competitions in six ballgame disciplines (160 players) and track and field athletics (72 athletes) drawn from 24 disciplines in track (15) and field (9) events, therefore the target population was 1624.

The Study Sample and Sampling Procedure

Simple random sampling technique was used to select three competition zones out of the seven regions. All athletes from the three randomly selected competition zones namely, Eastern (Highlands) Nairobi (Metropolitan) and Western (Nzoia) formed the sample of the study. The number of male and female players in the six ballgame disciplines per zone were as follows; soccer (36), hockey (32), volleyball (24), basketball (20), handball (24) and netball (24), hence the total was 160 (80 male and 80 female). On the other hand, each zone presented 72 track and field athletes (36 male and 36 female). These were drawn from 24 disciplines in track (15) and field (9) events. With each zone constituting 160 ball games players and 72 track and field athletes, the sample size from the three randomly selected zones was 480 ball games players and 216 track and field athletes. The total sample was therefore 696 participants. This accounted for 42.9 % of the total target population. It has been noted that in survey studies, the sample has to be sufficiently large and not less than 20 percent in a large population (Kamlesh, 2006) as was the case in this study. However at the end of data collection only 422 athletes completed the questionnaire which was 70% of the total sample.

Research Instruments

The instrument for data collection was a self-report questionnaire (Appendix B) comprising four sections namely, bio data, awareness, perception, and attitude. Section 'A' on bio data comprised 8 items and was intended to capture the demographic characteristics of the participants. Section 'B' on awareness had 13 items and hoped to measure athletes' information and understanding of doping issues, section's' on perception with 9 items purposed to assess athletes opinions on the use and effects of

PES in sports. Section D on attitude comprising 17 items was used to evaluate extent to which college athletes agreed or disagreed with various beliefs and opinions about use of sports performance-enhancers. Section A, B,C were constructed by the researcher using information from the reviewed literature while the items on the attitude section were adapted and modified from Performance Enhancement Attitude Scale (PEAS), a test tool developed by Petroczi and Aidman (2009). The tool comprises 17-standard attitude statements measured on a seven point Likert-type scale ranging from ‘strongly disagree (1), to strongly agree (7). For this study the scale was adjusted to five points to make it clear for the respondents. A higher score on the attitude scale is considered to reflect positive attitude to doping.

Pre-Testing of Research Instrument

Pre-testing of the instrument was done to ascertain its validity and reliability as well as train the research assistants on administering the questionnaire to the targeted athletes. A pretest sample between 1 % and 10 % of the total sample is considered suitable and the larger the sample the smaller the percentage should be (Mugenda & Mugenda, 2003). For this study pre-testing of the instrument was done using 74 subjects drawn from Central zone who were subsequently not included in the final study. This was equivalent to 10% of the total study sample of 696. Pre-testing assisted in establishing whether the respondents would interpret the questionnaire items the same way and ensured that all the appropriate variables of the study were represented. The researcher, together with a panel of lecturers from the Department of Recreation Management and Exercise Science of the Kenyatta University assessed the doping concepts that the questionnaire intended to measure to establish that the items accurately represented the concepts. Validation equally helped in detecting any flaws in language, directions and item difficulty and how much time it would take to answer the questionnaire. The results of the pre-test were used to amend the questionnaire by adding and discarding the items not found appropriate thereby ensuring the suitability of the questionnaire in measuring the dependent variables.

Reliability of the Instrument

To establish whether the research instrument would measure the research constructs consistently, reliability was estimated using Cronbach's alpha reliability method. This involved correlating each item score with the total questionnaire score. As Neil (2004) has noted Cronbach's alpha reliability is an important method to estimate the reliability of an instrument in a study like this one in order to establish whether the items on the self-report questionnaire were consistent with one another as they represented the same dimension of the area of interest that is awareness, perception and attitude to doping. The reliability test was carried out using 74 athletes of KTCSA Central competition zone. The test yielded a score of 0.83 for the performance enhancement attitude scale. This was comparable to the previous reliability score of 0.82 achieved using the same tool on a study of 73 USA college footballers and a score of 0.85 on track athletes. The awareness questionnaire section returned a reliability of 0.70 and the perception section had 0.72. This indicated a reliability index for each section of the questionnaire thus making it an acceptable tool for use in carrying out this study.

Data Collection Procedures

Distribution of the research instrument to the participants was carried out by the researcher with the assistance of the six research assistants. The researcher and assistants first would explain all the study objectives and ethical considerations before athletes could be handed over a consent form. After reading and signing the consent form a participant could be issued with a self-report questionnaire and a pencil. This was done in the sports field about 30 minutes before the commencement of an event or game. Each participant took about 10 minutes to complete the questionnaire. The researcher did the overall supervision of the data collection. Completed questionnaires were collected immediately after a participant had finished.

Data Analysis

All data was entered and coded using SPSS version 20 for organization and analysis. Descriptive statistics including percentages, means and standard deviations were used to organize and summarize the data. Comparison of the means for group samples was done using t-test and ANOVA. The significance threshold was set at 0.05.

Ethical Considerations

A research permit was obtained from the National Council of Science and Technology (NCST). Further, the respondents were informed that participation in the study was voluntary with no monetary rewards and that an individual was allowed to withdraw from participating in the study without consequences (Appendix A). The nature and purpose of the research was fully disclosed and respondents were guaranteed confidentiality on all the information they provided. Furthermore the participants were neither required to disclose their names nor were they assigned any identification numbers for any purpose during the entire period of the study.

RESULTS AND FINDINGS

Demographic characteristics

The table 1 illustrates the demographic data of the collegiate athletes who participated in the study. There was an equal distribution between female and male athletes who came from varied parts of the country where most represented public institutions 98.3%. A majority were between the ages 22-26 years (54.5%) whereas a relatively small portion was above 26 years (6.4%). In terms of participation in sports, most of the athletes in the competition were fielded for ball games (79.2%) whereas those taking part in athletics, track and field were a relatively smaller percentage (20.8%). For those competing in ball games, there was a fairly equal distribution of athletes in soccer (11.3%), volleyball (11.6%), hockey (23.5%), netball (14.4%), handball (22.6%) and basketball (16.5%). The majority of respondents (42.8) also reported that the event was their first one at a national level whereas only a small percentage had been to national competitions four times and more. The number of athletes participation at national competitions indicates an upward trend from 161 to 372 at collegiate level, this however is not unusual since sports facilities are scanty at primary or level compared to the number of student population. Sports facilities at secondary school level are better compared to student population

Table 1: Athletes demographics

Variable		Frequency	Percentage
Gender	Female	211	50
	Male	211	50
Area	Eastern (Highlands)	111	26.1
	Nairobi (Metropolitan)	166	39.1
	Western (Nzoia)	148	34.8
Age	18-21	164	39.0
	22-26	229	54.5
	Above 26	27	6.4
Type of College	Private	7	1.7
	Public	407	98.3
Type of Sport Discipline	Ball game	323	79.2
	Track event	64	15.7
	Field event	21	5.1
Type of Ball Game	Soccer	37	11.3
	Volleyball	38	11.6
	Hockey	77	23.5
	Netball	47	14.4
	Handball	74	22.6
	Basketball	54	16.5
Participated in Primary Schools NSC	No	150	48.2
	Yes	161	51.8
Participated in Secondary Schools NSC	No	105	30.9
	Yes	235	69.1
Participated in TTC NC	No	41	9.9
	Yes	372	90.1
Times Participated in National Competitions	once	172	42.8
	twice	133	33.1
	thrice	48	11.9
	four times	24	6.0
	more than four times	25	6.2
Participation in Out-of-School Competitions	No	116	28.9
	Yes	286	71.1

Awareness of PES among College Athletes

As to the question on whether selected substances could enhance performance in sports, there were mixed reactions from respondents. According to a majority, alcohol was deemed as not enhancing performance (81.8%) so was miraa (khat), caffeine and cocaine. Only marijuana and anabolic were deemed to have performance enhancing abilities by more than half the respondents.

Table 2: Selected substances effect to performance in sports

Substances	No	Yes
Alcohol	81.8	18.2
Miraa	67.6	32.4
Marijuana	47.0	53.0
Caffeine	51.9	48.1
Anabolic Steroids	43.6	56.4
Cocaine	55.5	44.5

The awareness of use of PES among the athletes was also assessed with items revolving around familiarity with the WADA anti-doping code, use of PES and the extent of the knowledge on use of PES as well as anti-doping code.

As indicated in figure 2 combined majority (49.3%) of the college athletes agreed to have knowledge of the WADA anti-doping code compared to almost equal the number (43.3%) who disagreed or strongly disagreed to having any knowledge of the anti-doping code.

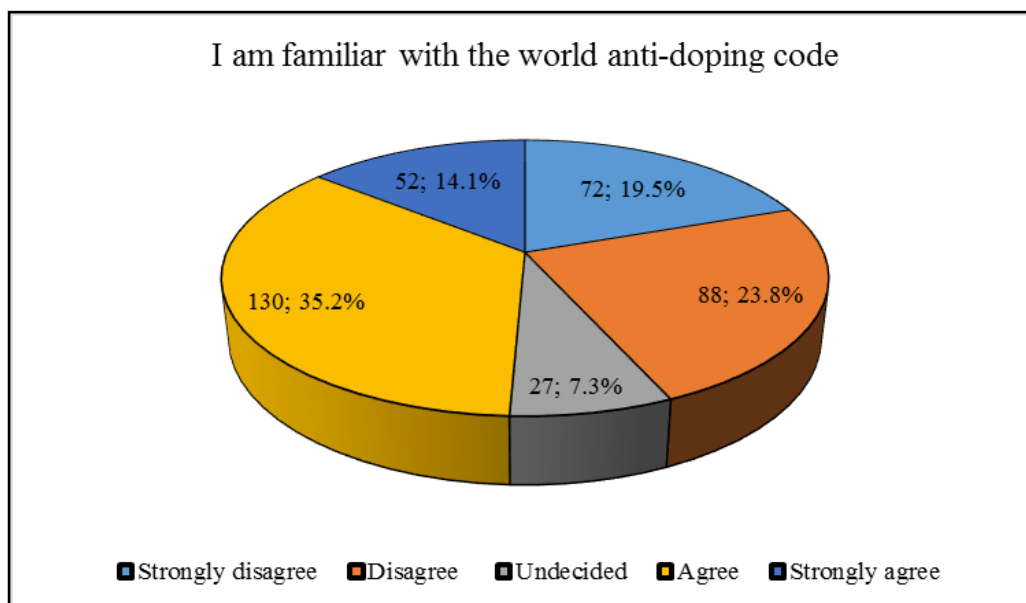


Figure 2: Familiarity with WADA code

Further, the level of knowledge of the regulations outlined in the WADA code was ascertained with almost repeated frequencies with reference to the regulations of the code. As shown in figure 3, 48.1% agreed in various levels to have known the regulations whereas 42.7 did not have knowledge of the regulations of the code.

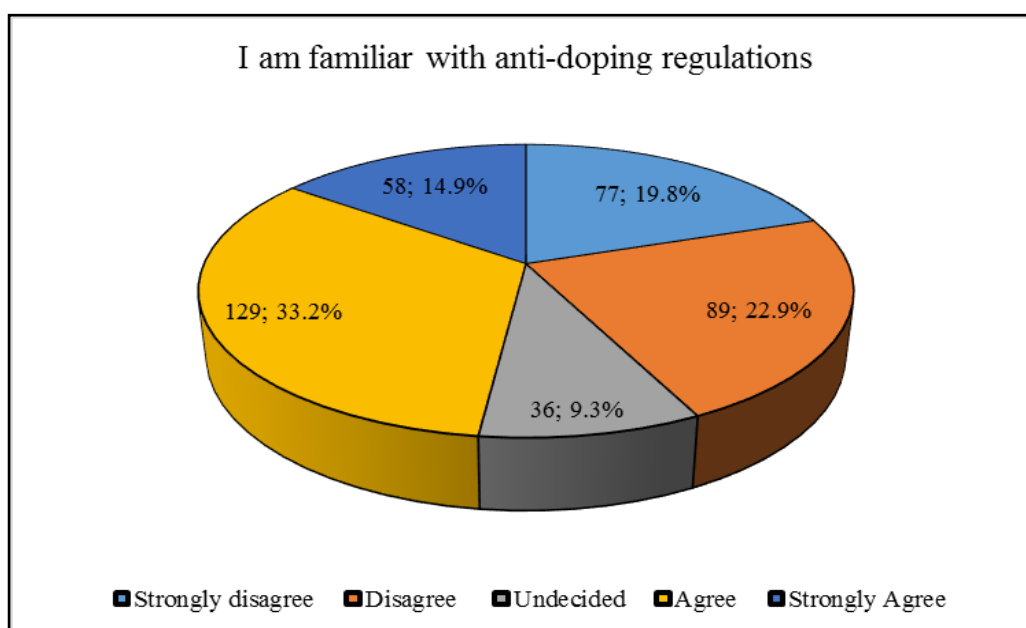


Figure 3: Familiarity with WADA Regulations

As shown in figure 4 there was a generally high level of agreement among the combined respondents (82%) that athletes should be tested for use of PES and drugs at all levels of competition. A similarly high number of the respondents (72.0%) were aware of the effects of use of PES and drugs while 80.0% noted their friends do not use enhancing substances and drugs. About 67.0 % of respondents did not know athletes using PES but about 20.0% knew athletes who dope.

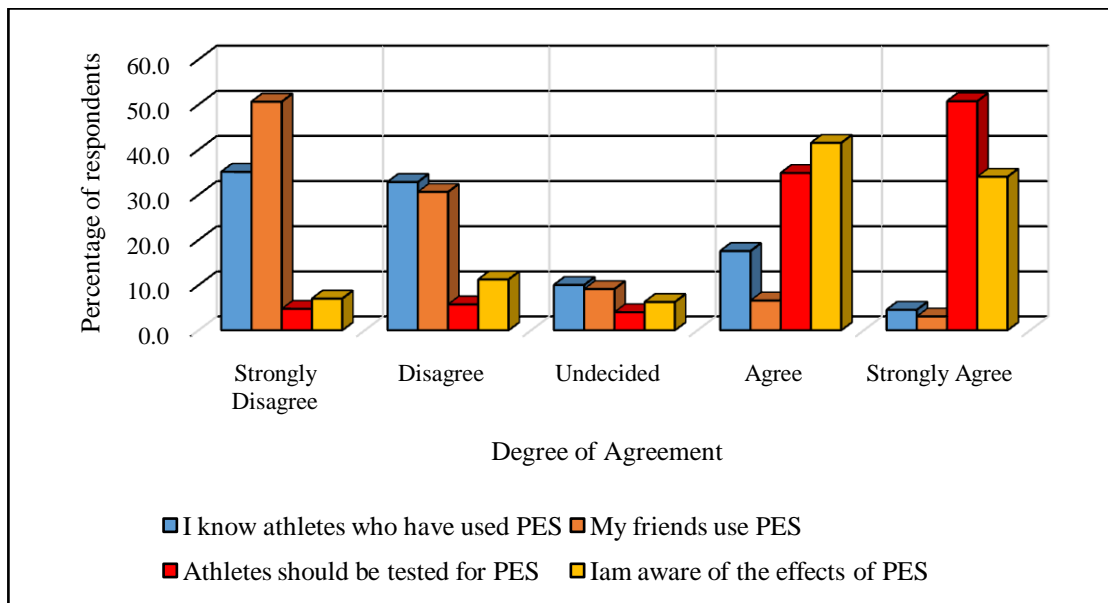


Figure 4: Athletes awareness of testing, effects and, use of PES

A combined majority (58.0%) agreed to having learnt about PES and drugs as shown in figure 5. However, much as a majority agreed to having learnt about PES and drugs, less than half (36%) the respondents considered their knowledge PES use to be adequate. This was further reflected by the more than half (50.0 %) who alluded that they did not have regular education on anti-doping regulations.

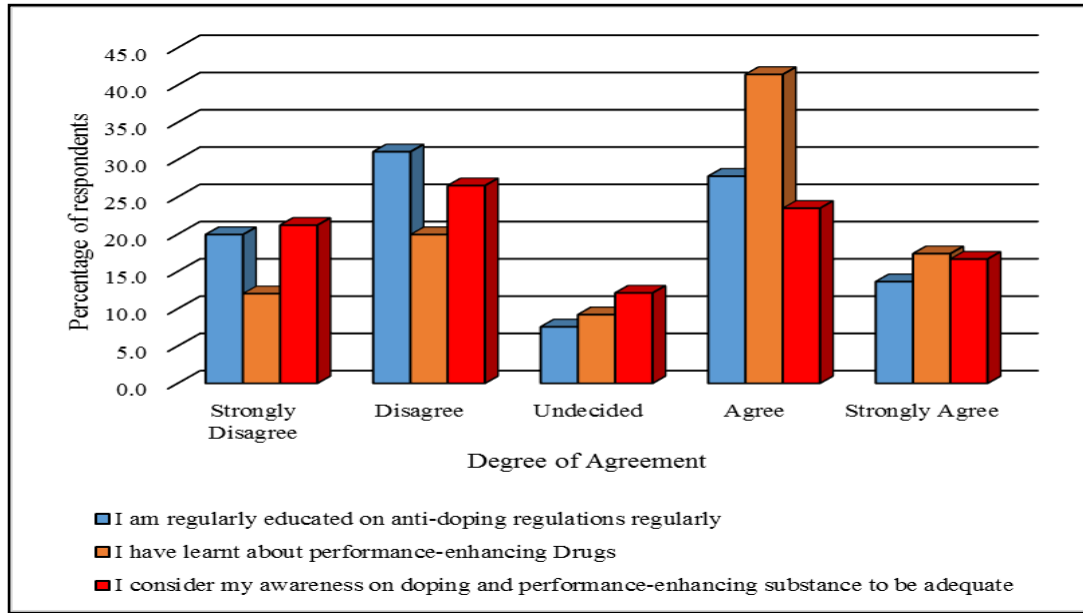


Figure 5: Athletes awareness/Anti-Doping Education

Figure 6 indicate the knowledge teacher trainee athletes had about doping and use of PES was sourced by the majority from broadcast media such as Television (79.4%), radio (76.0%), newspapers (77.0%) and magazines (70.0%). The other important sources as indicated were friends (70.0%) and teachers or tutors (74.0%) at school or college (69.0%), seminars 48.0% and parents 50.0%. As also captured in figure 6 less than half of the athletes reported having received information from seminars whereas a sheer half had known about doping and PES from parents yet these two sources could be the most credible source of such critical information.

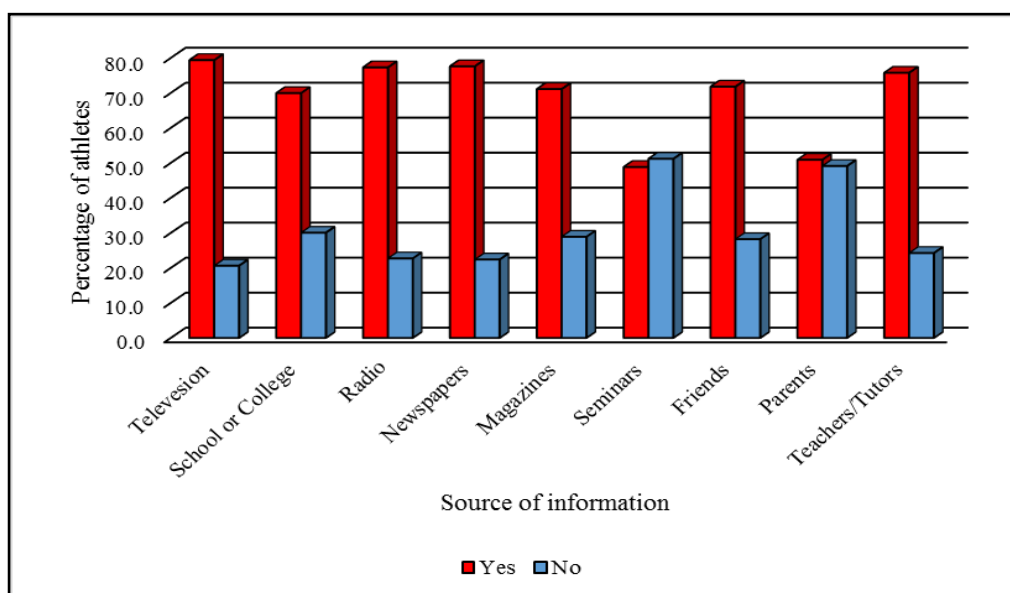


Figure 6: Sources of awareness about use of PES

Table 3: Awareness of PES among College Athletes

Statement	Mean	Std. Deviation
I am familiar with the world anti-doping code	3.01	1.393
I personally know athletes/players who have used performance-enhancing substances/drugs	2.24	1.228
My friends use performance enhancing-substances/drugs	1.81	1.049
I am familiar with anti-doping regulations	3.01	1.398
I am regularly educated on anti-doping regulations regularly	2.84	1.383
Athletes should be tested for performance enhancing-substances/drugs at all levels of competition	4.21	1.077
I am aware of the effects of performance enhancing-substances	3.84	1.209

Composite means were computed for the purpose of further statistical analysis and testing for differences between various groups. As indicated by an ANOVA test conducted, there were statistically significant differences of awareness on the use of PES and drugs according to competitive experience, $F(389) = 6.928$, $p = 0.0001$. Further, a Scheffe post-hoc test was conducted to establish the source of difference. These differences were specifically between athletes who had been at national competition once and those who had four times ($p = 0.0001$); twice and four times ($p = 0.0001$); thrice and four times ($p = 0.015$), and four times and more than four times ($p = 0.006$).

ANOVA test also revealed statistically significant differences in awareness of PES among athletes playing different ballgames at $F(314) = 4.179$, $p = 0.001$. The difference was between those playing volleyball and basketball ($p = 0.023$); volleyball and hockey ($p = 0.018$).

In addition, there were statistically significant mean awareness differences between male and female athletes, the latter having a higher mean ($t(406) = 5.718$, $p = 0.005$). By virtue of this indication, male athletes were more aware of use of PES/ drugs and the anti-doping regulations.

Perception to Doping and PES

The perception of the athletes to doping and use of PES captured three key areas – perception to risks of doping and use of PES, athletes propensity to doping and use of PES and their guilt over doping and use of PES. In a nutshell, the perception to doping and use of PES can be described as right with majority of the athletes indicating a general dislike for doping and use of PES as indicated in table 4. Almost half the respondents (40%) agreed or strongly agreed that it would be easy to get away with doping compared to a bigger portion (51.8%) who disagreed they would easily get away the use of PES. In addition, most of the athletes (71.4%) denied that they would dope if they had a chance. The results also showed that majority of the athletes (82.4%) were aware of the doping risks. Similarly, a greater percentage (82.6%) indicated they would be worried about the health risks of doping and use of PES. The use of PES and subsequent testing positive would cause guilt (81.0 %) and shame (78.1%) to the majority of the athletes who

responded. The percentage of athletes who felt discussions on doping issues would curtail the usage was 78% and those who disagreed 15.5%. Those who felt PES would improve confidence were 38.5% against 49.5% who noted drugs can't improve confidence, with 12.1% who were undecided. There was also reported the worry from social implications of testing positive for banned substances as indicated by a combined majority (68.2%) worried they would lose friends while 24.6% reported they would not be worried.

Table 4: Respondent perception of doping

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
It is easy to dope and get away with it	116 28.0%	99 23.9%	34 8.2%	88 21.2%	78 18.8%
I would dope if I got an opportunity	225 54.3%	71 17.1%	31 7.5%	45 10.9%	42 10.1%
The use of performance-enhancing substance/drugs have health risks	26 6.3%	28 6.8%	19 4.6%	113 27.3%	228 55.1%
I am worried about the health risks of doping	25 6.1%	27 6.6%	19 4.6%	140 34.2%	198 48.4%
I'd feel guilt if I used PES/ drugs to perform better in my sport	30 7.4%	25 6.2%	22 5.4%	135 33.3%	193 47.7%
Discussing use of performance-enhancing substance/drugs in sports would prevent doping amongst athletes	22 5.4%	41 10.1%	26 6.4%	146 36.0%	170 42.0%
I'd feel ashamed if I tested positive on a banned substance/drug	28 6.9%	34 8.4%	27 6.7%	107 26.4%	210 51.7%
Doping in sports improves players' confidence	139 34.2%	62 15.3%	49 12.1%	75 18.5%	81 20.0%
I'd worry to lose friends if I doped in sports	61 15.0%	39 9.6%	29 7.1%	127 31.3%	150 36.9%

There were statistically significant differences in perception of PES among athletes participating in various ballgames, track events and field events. This was according to an ANOVA testing differences of composite means derived from the statements $F(397) = 7.318, p=0.001$. Further, a Scheffe post-hoc revealed that the differences of perception of doping and use of PES between those participating ballgames and those in track events $p=0.002$.

Attitude toward doping and use of PES

Athletes' attitude toward doping and use of PES was assessed using negative statements each with a likert scale measuring the extent to which the respondents agreed to the statements. The lesser the degree of agreement to the statements, the higher the score awarded. As indicated in the computed composite means per item in the table 5, all the athletes' scores averaged above a mean of 3.0. The range composite score was between 3.26 and 4.16 pointing to a relatively anti-doping attitude among the athletes.

Table 5: Attitude toward use of PES

Statement	N	Mean	SD
Use of enhancing-substances is necessary to be competitive	407	4.05	1.224
Doping is not cheating since everybody is doing it	407	4.16	1.160
Athletes often lose time due to injuries and drugs can help make up for lost time	407	4.04	1.202
Only the quality of performance should matter	395	3.26	1.469
Athletes in my sport are pressured to take performance enhancing drugs	400	4.14	1.089
Athletes who take social/recreational substances/drugs use them because they help in sports situations	400	3.54	1.315
Athletes who take social/recreational substances/drugs should not feel guilty about breaking the rules and taking drugs	400	3.89	1.276
The risks are related to doping are exaggerated	403	3.77	1.236
Athletes have no alternative career choices, except sport	395	4.15	1.085
Recreational substances/drugs boost and athlete's morale to train and compete at the highest level	404	3.62	1.353
Doping is an unavoidable part of the competitive sport	401	4.04	1.174
Recreational substances/drugs help to overcome boredom during training	404	3.96	1.228
There is no difference between drugs and fiberglass poles, and speedy swim suit that are all used to better performance	397	3.66	1.247
Media should talk less about performance enhancing substances/drugs	397	4.00	1.227
The media exaggerates the doping issues out of proportion	396	3.76	1.265
Health problems and injuries sustained during training are just as bad as those incurred from doping	399	3.42	1.413
Legalizing performance enhancements would be beneficial for sports	397	3.59	1.539

The frequencies showed that a majority of 69.3% either strongly disagreed or disagreed with doping tendencies compared to just 20.5 % who agreed or strongly agreed with the tendencies. This is indicated in table 6.

Table 6: Range of agreement with statements on doping attitude

<i>Extent of agreement</i>	<i>Count</i>	<i>Frequency</i>
<i>Strongly agree</i>	30	7.5
<i>Agree</i>	52	13
<i>Undecided</i>	52	10.1
<i>Disagree</i>	41	27.9
<i>Strongly disagree</i>	112	41.4

Comparative analysis revealed that there were statistically significant differences among athletes competing in various ballgames. An ANOVA testing for attitude differences among athletes playing soccer, volleyball, hockey, netball, handball and basketball was conducted showed significantly different $F(3,12) = 5.18, p=0.0001$. A Scheffe post hoc test showed the difference to be specifically between athletes playing handball and hockey ($p=0.027$) and handball and basketball ($p=0.007$).

Discussion

Awareness of Doping and PES use in Sport

Almost half of the collegiate athletes (43.3%) were not aware of the existence of a WADC against 49.3% who knew about the existence of the same. Further, 42.7% were not aware of the regulations stipulated in the WADC regarding doping issues against 48.1 % who knew of the regulations. An ignorant teacher cannot be trusted to guide young athletes to participate in ‘clean’ sports competition. But, as reported by Morente-Sanchez & Zabala, (2013) it is not unusual for an athlete to be familiar with anti-doping rules but still display lack of knowledge.

Collegiate athletes displayed lack of awareness of the positive effect of miraa (khat) (67.6%) cocaine (55.5%), Marijuana (47%) caffeine (51.9%) to sports performance.

Table 2 shows the distribution of doping substances that may be abused by collegiate athletes. With a majority of athletes observing that khat (*miraa*) could not enhance performance it is indication that teacher trainee athletes lack awareness of doping and may be at risk of using PES unknowingly. This is even as the world anti doping code stipulates that an athlete who unknowingly tests positive for banned substance shall be guilty of the offense. Though majority of athletes (81.8%) knew alcohol is not an enhancer there were still 19.2 % who thought it could improve performance yet it can only impair performance. Although alcohol is not listed as banned substance by WADA, higher content levels in an athlete’s blood than the 0.10 g/l quantity allowed could lead to a ban. If an athlete involved in competition is under the influence of alcohol, safety of other participants is at risk. Kenya colleges’ athletes who reported alcohol as an enhancer probably were not aware that WADA has prohibited use of alcohol for particular sports including archery, air sports, automobile, karate, motorcycling, and power boating.

Considering that a Kenyan boxer was banned during 2004 Athens Olympics for testing positive to cathinone, teacher trainees need to be educated on doping issues so that they become informed PE and sports coaches to student athletes in both primary and secondary schools after graduating from college. This level of ignorance should be a

wakeup call for the Kenyas' specific sports federations, AK and, NOCK to enhance anti-doping campaign to athletes at all levels of competition.

Even though more than half the respondents knew marijuana and steroids could enhance performance, a large number still were of the view that they had no effects. This is a worrying situation considering that Physical Education is a compulsory area of study where curriculum has anti-doping content outlined for teaching yet some teacher trainees would display ignorance when they ought to have learnt of various substances effects.

Athletes had acquired anti-doping information from various sources including television 79.0%, newspapers 77.0%, radio 76.0%, magazines 70.0%, friends 70.0%, tutors/teachers 74.0%, and college/school 69.0%, seminars 48.0% parents 50.0%. These findings indicate that not much had been learnt through seminars where anti-doping experts can be source of information. Parents were not rated highly yet some athletes are in age bracket whereby the influence of the parent could still be valuable and they may be termed a more credible source of information. Perhaps teacher trainee athletes being adult no longer consider parents as a source of information and prefer seeking information from friends. This may also explain the peer influence since at college level students mix freely and are bound to share information regardless of whether it is correct or incorrect. Some sources of anti-doping knowledge such as television are questionable as noted by Nowosielki and Swiatkowaska, (2007) since as they have noted, media sometimes broadcasts more for- than against doping in sports. Likewise Morrison, Karin and Morrison (2004) have reported that print media and television have been used to portray 'ideal' male body, which in turn may encourage use of PES by young athletes in order to get the 'ideal' body. A large and positive coverage of high profile athletes who have used PES may encourage young athletes into the behavior. Research studies by Yesalis & Barhke, (2000), Caffee & Fadale, (2006) have observed that high profile athletes act as role models and may be used to shape athletes ideas and attitudes.

It is imperative to underline that raising awareness has not always translated to change in behavior. In this study athletes (58.0%) observed they had learnt about PES yet their awareness of effects of substance use in sport isn't reflecting the same. This study also

demonstrates that some college athletes had not received doping education since 40 % observed they had not learnt about PES use hence to entrust such a teacher to young primary or secondary school athletes as a PE teacher or coach would not benefit the athletes as far as PES issues in sports performance is concerned. Athletes handled by a coach ignorant regarding anti-doping regulations/substances may unknowingly ingest banned substances and as a coach may provide young athletes with banned substances to ingest. Though majority of respondents noted that their awareness of PES was sufficient there was a contradiction in that a large number reckoned they lacked adequate knowledge on anti-doping issues despite being consumers of teacher education curriculum. Further contradiction is noted in that majority cited they were not regularly educated on anti-doping. Similar contradictions are reported by Whitaker (2012) where majority of athletes noted they had been educated on banned substances yet they also admitted they would dope given an opportunity.

Recently a number of upcoming young Kenyan athletes failed dope test and was banned from sports competitions for a period between 2- 4 years (Ayumba A, 2015). Probably if these athletes had been educated on anti-doping while in school, they would not have been caught up in the vice. However unless the teachers are better informed on anti-doping regulations young potential athletes might continue to engage in doping vice either knowingly or unknowingly because they will leave school and probably get recruited into sports by local and foreign coaches and managers who may expose them to banned substances. Education on drugs and substance use in sports should therefore start early before the teacher trainee is enrolled in college.

Although a combined minority (8.0 %) knew friends who were using PES. This may point to the probability of peer influence to use PES. Similar observation is made in the anti doping report (Republic of Kenya, 2012) where 17.9% of 357 respondents said they were using PES due to peer pressure. This is an indication that doping may be going on amongst college athletes. This could have a bearing on the study report by NACADA, (2012) whereby respondents from post secondary institutions were using narcotics such as bhang and cocaine. NACADA, (2012) reports 9.3 % respondent in 18- 24 years and

24-35 years age categories were using Khat (*miraa*). Kenya teachers colleges athletes fall under these age categories. The NACADA (2012) report further indicates that 2.0% of students were consuming khat (*miraa*). This is an indication that both teacher trainee and students may be in danger of using PES in sporting situations.

Majority of college athletes (82.0%) noted that athletes should be tested for performance enhancing substance. A large number of athletes (94.3%) further concurred that testing for banned substances should be done at all levels of competitions. These positive responses indicate the willingness by athletes to embrace clean sports and desire for awareness on doping issues. The need to test athletes for banned substances is emphasized in the anti-doping task force report (Republic of Kenya, 2014) where it is noted that education and awareness on anti-doping regulations should be cascaded to the grass roots.

Findings of this study tend to be in agreement with Lubna et al., (2008) where Jordanian students and college athletes lacked awareness on doping , Feinberg (2009) reports on lack of awareness by polish athletes and Ama et al., (2003) reporting doping awareness by Cameroonian soccer players being vague and insufficient. It was hoped that since Physical Education in Kenya Teacher trainee education course is a compulsory subject where the content on doping and substance use is outlined in the curriculum, there would be significant awareness on doping among the collegiate-athletes.

This study findings indicated differences in doping awareness between gender ($t(406) = 5.718, p = 0.005$). Some possible explanation for male athletes being more aware could be that as reported by Kenya anti-doping taskforce (Republic of Kenya 2014), more male teams receive some doping information occasionally in seminars especially in soccer. Male athletes are probably more open in sharing information hence more male reported to be aware of doping issues. Female athletes lacked awareness compared to male athletes similar to Corbin et al., (2004) findings of USA College where male athletes were better informed than female athletes. Significant differences in doping awareness between male and female athletes have also been reported by Green and Uryasz (2001).

But Crabbe (2001) posits that although male athletes had received more education on doping in sports they were still five times more likely to drink alcohol than their female counterparts despite its negative effects on sports performance. This seems to point that awareness of banned substances may not necessarily translate to good practice.

This study findings indicate significant differences in awareness among athletes with varying experience in national sports competitions $F(389) = 6.928$, $p = 0.0001$. The longer the athletes had participated in national competitions the higher the awareness. Differences were between athletes who had played for once and athletes who had played four times $p = 0.0001$, twice and four times $p = 0.0001$, thrice and four years $p = 0.015$ and tour and more than four times in competition $p = 0.006$. This may be an indication that an athlete who may not have been educated on anti-doping at primary and secondary school level was likely to gain some level of awareness over time as they get exposed to competitions at higher levels. Since coaches and sports federations rarely hold seminars to discuss doping with athletes (Republic of Kenya, 2014) it is possible for college athletes to have participated for some years without receiving any information regarding banned substances. After all majority of athletes (71.1%) reported to have participated in out-of-school sports competitions before collegiate sports, suggesting they may not have received anti-doping information even then. Generally this study findings show that the longer an athlete had participated at national competitions the more informed they were regarding PES. However this awareness may have been received from friends and/or through the media (fig. 6).

This notwithstanding, the large number of athletes not fully informed on performance enhancing substance use in sports calls for an urgent need for collaboration by all stakeholders on the necessity to educate athletes on performance-enhancing use in sports as most participants may be developing skills in readiness to taking sport as a career. The KTCSA would be expected to have instituted some form of forum where all participating athletes and sports personnel are inducted on the anti-doping code requirements and regulations well before the national competitions. After all WADA expects that sports federations/associations would raise athletes' awareness on anti-doping regulations.

As Republic of Kenya report (2014) explains, there are athletes who are supplied with doping substances by the coaches, athlete-team staff and their friends. These sentiments are expressed in other studies by and Lubna et al., (2008) Alaranta et al., (2006) where coaches supplied athletes with PES. A member of the USA Olympic team is reported to have been doped by the coach with steroids without consent thus destroying his immune system and eventually stopping his career (Haley, 2003), and so were the Russian Olympic athletes doped unknowingly Corbin et al., (2004). There is a call for strict measures to ban doping and to avail doping education to every sports participant regarding the need for honesty and hard work that would lead to success in performance without putting an individual at risk (Kumar & Joyti, 2013). Findings of this study seem to suggest that without proper information Kenya Teachers Colleges athletes on becoming PE and sports coaches may misguide or probably supply school with doping substances. Teacher trainee athletes are expected/should graduate from college to be coaches of integrity responsible in guiding and protecting young athletes from the negative effects of doping drugs and substances.

There were significant differences in awareness among competitors in various ball games, $F(314) = 4.179$, $p = 0.001$. Differences were specifically between athletes in volleyball and basketball $p = 0.023$, and between volleyball and hockey $p = 0.018$. According to the anti-doping task force report Republic of Kenya, (2014), hockey and volleyball players have reported use of banned substances while none is reported by basketball players. Players in the two games used miraa, bhang, alcohol which are mostly purchased from the open market. Players noted that no doping education or testing is done to players. For basketball the players noted that there is a clause in their constitution on anti-doping but no education structures to execute it. However some studies by Corbin et al., (2004), Nowesielski and Swistkowska, (2007) and Feinberg (2009), portray team sports players having more awareness of PES.

Overall, findings of this study indicate Kenya teachers colleges athletes in 2015 KTCSA national sports competitions lacked awareness of banned substances in sports and may be at risk of contravening the anti-doping regulations in future.

Perception of Doping

The perception a team or an individual holds regarding doping in sports determines the kind of risk likely to be undertaken. Results show a majority of collegiate 71.4% reported they would not dope even if they got an opportunity. This right perception should be upheld through regular and sustained doping education. Majority (82.6%) indicated they would be worried about health risks of doping against 12.7% athletes who would not care about their health risks. An athlete who would not mind health risks of doping may be acting on ignorance regarding the magnitude of the real damage to one's health and sporting career that may result from using variety of doping substances. Athletes with similar opinions are reported in research studies by Feinberg (2009), and Whitaker (2012) where athletes observed that if doping would guarantee a win they would go ahead and dope even though they would die after due to effects of substances. If the 13.4% who indicated they would not feel guilty using performance-enhancing substances were members of a sports team and were detected to have ingested banned substances or having the intention to dope, it would lead to disqualification of the whole team, loss of medals and tainting the reputation of the team and the country represented. It would be very difficult to regain lost reputation and future athletes would most likely be viewed or judged on the past doping breaches committed by others. The 81.0% who reported that they would feel guilty if they doped even though they were not caught should be nurtured to hold the right perception and be role models to young athletes. Such trainee teacher would probably make better coaches for junior athletes in schools.

A combined majority, 78.0% reported that discussing PES in sports would be beneficial. Perhaps involving athletes in discussing issues that affect them might yield positive results toward eradication of banned performance-enhancers in sports rather than coming up with programs and imposing them. They should give their contributions towards anti-doping education programs. The anti doping taskforce report (republic of Kenya, 2014)

indicate that athletes in various sports including athletics observed they had never discussed doping issues with the coach or their respective federations. Discussions might reveal how much athletes know or don't know and whether the information they have on PES is correct.

Even though majority of college athletes reported right perception of doping (table 4) some trainee athletes were of the opinion that it is easy to dope (40%) without getting detected and 31% further expressed that they would dope if they got an opportunity. Wrong perception of doping displayed by some Kenya college athletes should be a cause for concern since it may be an indication of athletes who would probably engage in doping behavior in future. Teacher trainee athletes with inclination to dope are likely to be role models who may assist athletes under their management into using performance enhancers. After all republic of Kenya (2014) has reported that Kenyan athletes have been assisted in acquiring and using PES by coaches and federation officials concurring with Lubna et al., (2008) reports where some students and athletes were supplied with AAS by coaches. When an athlete recognizes that the role model is breaching regulation on anti-doping they are bound to hold wrong perception on banned substances and demonstrate lack of respect for laid down rules of sports competition. Athletes need to be informed that competition is not all about medals, and positions. As noted by Butcher & weust (1999) sports participation first and foremost is for developing character and good values, beside fun and enjoyment. Participation for enjoyment and socialization with the team members should be appreciated. Attaching very strong importance to winning could strongly influence perception to doping as asserted by petroczi (2007) study on male athletes.

Considering the respondent is likely to be a PE teacher/ coach/role model to the upcoming athletes' wrong perception should be nabbed early. Teachers are identified as important in guiding high school athletes Zelli et al., (2010) especially because boys may be concerned with muscularity and girls by thinness. Such student are said to be vulnerable to banned substance use because most likely they would be tempted or enticed easily to use PES to achieve the kind of body image they desire.

Studies elsewhere have reported athletes who noted their fellow athletes would influence their opinion on banned substances. Whitaker (2012) reported 88% of athletes in the study citing that their colleagues were likely to exert influence about whether they would dope or not. Discussion of negative influence may be one avenue of not only changing opinions but also fighting the vice. Since testing and sanctions have not substantially deterred athletes from doping, other strategies such as athletes being engaged in discussions with fellow athletes might bear fruit. This study observes athletes having learnt about doping yet some still reported they would dope if they got an opportunity. Perhaps the method used to educate athletes on doping need to be relooked by all stakeholders including anti-doping seminar/workshop organizers and college lecturers. However educators need to bear in mind that even athletes knowledgeable on banned substances may still (82.0% observed they had learnt about PES) express desire to dope. Whitaker (2012) indicates majority of athletes had been educated on banned substances yet they would still dope given an opportunity.

A proportion of teacher trainee athletes (24.6%) were of the opinion that PES can be used even though an individual is ostracized by friends and (13.6%) would not feel guilty. Further, 68.2 % would avoid doping for the fear of losing friends concurring with Dimeo 2013 reports some players refrain from drugs for fear of reprimand from the teammates. This kind perception is similar to the opinion held in the findings of Kumar and Jyoti (2013) study where athletes reported that only the quality of work should matter; how one does it should not be an issue.

This study show significant difference $F(397) = 7.318, p = 0.001$ in athletes' perception of doping/PES, and type of sport. The differences ($p = 0.002$) were specifically between ball games players and track athletes. These findings seem to confirm the findings by the Kenya anti-doping task force report where majority of athletes who have tested positive on banned substances are in track athletics. Teacher trainee athletes who perceive doping to be good for sports are likely to support young athletes in engaging in doping behavior. Nowesielski and Swiatkowska, (2007) have reported players in handball, soccer and

basketball having right perception to doping. Petroczi (2007) reckons that wrong perception of doping may lead to non cooperation by an athlete when it comes to doping control measures because of the values an individual attaches to winning.

The WADA (2014) emphasizes the importance of doping prevention and intends to make value-based prevention programmes a must in the updated 2015 version of the code. The new code intends to shift the anti-doping education through school curriculum. This will mean that Kenyan college athletes being potential teachers will need to be properly versed with the anti-doping regulations in order to lead, guide and, teach school athletes and students in general the anti-doping regulations in sports.

The current anti-doping policy focuses mainly on testing the elite athletes even though the sub-elite athletes such as the college athletes are reported to use PES to improve performance hence they should be discouraged from using illegal substances before they graduate to elite level competitions.

Overall this study findings show Kenyan collegiate athletes having right perception of performance-enhancing substances in sports but some athletes do not have a firm stand regarding use of illegal methods to improve performance and has thus displayed tendency to dope hence the need for intervention.

Attitude to Doping

Athletes mean scores on attitude statements to doping shown in table 5 indicate college athletes had negative attitude leaning on the items that touched on banned substances specifically on competition. They particularly disagreed with the statement that portrayed quality of performance as the only thing that should matter (3.26 ± 1.469). In other words they did not agree that banned substances should be used for one to get to the medal bracket/podium. They seemed to suggest winning should just be justified by hard work through training. That is, an athlete should put in a lot of effort in training in order to improve their game or race time.

Athletes equally disagreed that 'healthy problems and injuries sustained during training are just as bad as those incurred from doping' (3.42 ± 1.413), an indication of right attitude supporting winning through training to avoid some health problems that may arise from use of performance-enhancers, some of which are irreversible and sometimes fatal. Some teacher trainee athletes however portrayed inclination to doping by agreeing with the statements that encourage doping i.e. 'athletes dope because they have no career choices except sport' (4.15 ± 1.085) and that 'athletes are pressured to take performance enhancing drugs' (4.14 ± 1.089). When this positive attitude is held by a senior athlete such as the teacher trainee it is likely to influence the junior athlete as well who may be looking up to them as sports teachers, coach and, role models.

Kenya Teachers Colleges athletes' attitude to doping and PES was not statistically significant between males and female ($t(405) = 0.704$, $p = 0.500$). This may be attributed to the fact that participants were drawn from the same college environment and trainees experience similar curriculum on doping issues. College athletes get enrolled to teacher training college soon after secondary school therefore they hardly get opportunities to interact with senior athletes competing at national and international sports events. After all secondary school students are not educated on doping/ PES since this the content is not offered in the syllabus therefore teacher trainee attitude to doping may not have been influenced before enrolling in college. Studies in other countries have however observed differences in attitude between gender. Corbin et al., (2004) have reported male athletes (21%) with positive attitude compared to female (16%). Similarly, Peretti-watel et al., (2004) has documented significant positive attitude to PES by male athletes than female.

This study found no significant difference in attitude to PES by college athletes in relation to competition experience $F(389) = 1.330$, $p = 0.288$). This implies that Kenya colleges' athletes' attitude to doping and PES was the same irrespective of the number of times an athlete had competed at national competitions. This means college athletes' attitude to performance enhancer was the same and could also be either positive or negative. These findings differ with findings by Feinberg (2009) reporting negative attitude to doping by athletes with shorter competition experience and positive attitude

by those with longer competition experience. Similarly Labre, (2002) has reported that usage of doping substances increases with increased competition experience. However Mroczkowaska (2009) have reported experienced players as being more cautious on PES use and the risk they were willing to accept was significantly lower compared to athletes who had competed for few years.

This study did not find attitude towards enhancing substances to be statistically significant among athletes in ball games and track and field athletics $F(391) = 0.370$, $p = 0.691$). This may be explained by the fact that competitors in ballgames and track and field events are drawn from the same population and boarding environment and similar physical education curriculum trainees are taught.

Findings of this study however differ from those reported by Alaranta et al., (2006) and Nowosielski & Swiatkowska (2007) where athletes in power and speed sports (such as shot put, hammer, discus, javelin and sprint events in track and field athletics) showed positive attitude to doping than in ballgames and endurance events. Team events athletes as noted by (Dimeo et al., (2013) are less likely to dope because winning is dependent on team-effort, therefore individuals feel shielded from the pressure to win. This understanding may prevent the players from having an inclination to PES and athletes may not get influenced easily to dope either by the coach or friends.

However, significant differences in attitude were found among Kenya colleges athletes participating in soccer, volleyball, hockey, netball and, basketball ($F(312) = 5.18$, $p = 0.0001$). Specifically differences were between players in handball and basketball $p = 0.007$ and handball and hockey $p = 0.027$. These sports have become very competitive at collegiate sports and perhaps this explains the differences in attitude to doping. It is not unusual to have athletes in secondary schools that have excelled in sports being awarded scholarships on the strength of their good performance. Republic of Kenya, (2014) has reported banned substance use being prevalent among ballgames players and mostly among soccer and rugby players. The anti-doping task force attributes this to the

fact that Kenyan athletes are able to purchase banned substances easily from certain commercial outlets as well as from the neighboring countries.

Athletes in team sports of soccer, basketball and volleyball have equally been reported by David et al., (2005) to portray positive attitude to alcohol use than track athletes perhaps for recreation purpose after the game or to celebrate good performance. This explanation could also hold true for Kenyan collegiate athletes, that they may be inclined to consume recreational substances after sport competitions not necessarily for performance enhancing.

Difference in attitudes may also be explained from the moral and ethical point of view of the athletes. It could be that the athletes who have displayed positive attitude do not view doping as immoral and unethical while those who see doping as unethical and immoral display negative attitude (Anshel & Roth, 2002). However positive attitudes to PES may be counteracted by influencing athletes' moral and ethical stand. As reported by Lucidi et al., (2008) stronger intentions and moral disengagement by an athlete contribute to greater use of doping substances. Lubna et al., (2008) advocates that when athletes have very strong religious beliefs (moral/ethical) they are likely to keep off the drugs

In this study athletes have generally displayed a mixture of attitudes towards doping but they would be more inclined to support drug free competitions rather than use performance-enhancers.

Summary of the Findings

The study had set out to determine college athletes' awareness, perception and attitude to doping and performance-enhancing substances in sports. It was hypothesized that there would be no significant differences in awareness, perception and attitude to doping among Kenya teachers college athletes in relation to their gender, experience in competition, type of sport and, participation in various ball games. A self-report questionnaire was used to collect data from competitors in three randomly selected competition zones namely, Eastern (Highlands), Western (Nzoia), and Nairobi

(Metropolitan). Equal number of male (211) and female (211) athletes participated in the study 98.3% were from public colleges and 1.7 % from private teacher training colleges. The response rate was 70% of the sample. This was attributed to the sensitive nature of the problem under investigation and the fact that it was the first study on doping among teacher training colleges athletes in Kenya. However the response rate met the threshold to warrant making certain conclusions and recommendations on the findings.

Conclusion

It was concluded that Kenya teachers colleges athlete's had awareness of doping and PES use but it was not sufficient because some athletes were not aware of the existence of the WADC including what the code outlines. Furthermore, athletes' responses showed that they were not fully aware of the effects of the drugs/substances. There was contradiction where athletes noted they have learnt about doping yet they also posit that they were not regularly educated on anti-doping. However, majority of them would like sports participants to be tested for performance- enhancing substance use in sports. There were differences in awareness among athletes in different ballgames specifically between volleyball and basketball and volleyball and hockey. Differences in awareness were found among athletes with varying competition experiences, those who had competed many times being more aware of PES issues.

The study likewise concluded that most Kenya teachers colleges athletes' had right perception of doping and PES. However some displayed wrong perception and would dope if they got an opportunity and if guaranteed they would not be detected. Some felt they would be more confident competing when doped. Majority demonstrated that doping has healthy risks and they worried about them. There were statically significant differences in perception of doping among athletes in ballgames and athletes in track athletics. Perceptions of doping /PES by athletes in different sports varied and this may be due to the fact that track athletes perceive their athletics career may be short lived and feeling the pressure of competing as individuals.

Regarding attitude to banned drugs/substances, Kenya teachers colleges male and female athletes displayed similar attitude to PES use. This was attributed to the fact that athletes learn and interact in the same boarding college environment where they are able to receive and exchange doping information freely. Athletes' attitude to doping was the same regardless of the number of years they participated at the national level competitions. This was also attributed to the fact that they train in the same environment and similar curriculum taught to teacher trainees. However athletes' attitudes varied among athletes in ballgames and track and field athletics. This was explained by the fact that ballgames players feel confident in competition because of the teamwork environment hence they do not view drugs/PES as a means to accomplish sports competition goals. Track athletes on the other hand may view competition as individuals' task, may have no confidence and therefore view PES as method to take them closer to their win/medal acquisition. Track careers do not last as long as ballgames careers. Thus, a track and field event participant may feel the time/age clock ticking hence may feel the pressure to achieve sporting career objectives.

Recommendations for Practice

As a result of the aforementioned, Kenya colleges' athletes knowledge on PES use in sports should be enhanced so that their wrong perception and positive attitudes towards illegal methods in sports competitions may be changed for the better. It is necessary for college athletes to be well informed of the WADC and guidelines there in. This is to equip them for teaching and sports coaching at primary and secondary schools upon employment after graduating from college. College athletes should be educated on repercussions of doping so that they will be better informed to advise young athletes at school level since they represent Kenya at world junior sport competitions especially in track athletics and cross-country. In collaboration with Athletics Kenya, National Olympics committee of Kenya (NOCK), sports federations, KTCSA, College administrators/principals should organize anti-doping awareness education for the athletes via various forums such as workshops and seminars.

KTCSA should also embark on testing athletes for substance and drugs use during competitions at all levels of competitions.

Sports governing organizations such as NOCK and AK should endorse and foster research aimed at understanding what drives athletes to use PES/dope. Kenyan elite athletes who have participated and excelled in sports at local, regional and international levels and have not been incriminated in PES may be used as role models as ‘clean’ sports ambassadors to impress upon upcoming athletes on the importance of drug free sports participation.

Athletics Kenya, NOCK and other sports federations/associations should start anti-doping programs that include education and testing of athletes. Such anti-doping programs should be carried out from grassroots to national levels, in order to curtail the use of PES. This is by empowering athletes with correct information, skills and right attitudes to make responsible and healthful decisions/choices when confronted by doping issues.

The scope of athletes tested for PES in Kenya should be widened to include college athletes rather than the current situation where only elite athletes are tested. In addition to focusing on college athletes, resources to facilitate dope tests need be channeled to primary and secondary schools so that college athletes will have been educated on doping issues before enrolling in colleges.

Channels of education such as internet that are popular with young athletes should be provided and used to create awareness among athletes in colleges and schools on anti-doping regulations.

Recommendations for policy

It is necessary for policy organs such as NOCK, AK and MoE in collaboration to lead in the development of a comprehensive policy framework that will provide for:

- A comprehensive anti-doping strategy at primary, secondary and, colleges where anti-doping education can provided beyond classroom where expertise from anti-doping organization such as RADO and WADA can educate collegiate athletes.

- Testing of all athletes for doping and use of PES at all levels of competition, and according to WADA standards.
- Comprehensive legal deterrents for both athletes and trainers in relation to doping and banned PES should be constituted by specific sports federations.
- Media regulations on advertisements of drugs and substances such as alcohol should be established by NACADA in collaboration with other government agencies to curtail use of substances for recreational purposes during and after sport competitions.
- Athletics Kenya and NOCK in corroboration with Kenya national sports council should set up regulations to govern how medical drugs are dispensed to athletes.

Recommendations for further research

This study only investigated the college athletes who were participating at the national ballgames and athletics competitions. There is a gap in research concerning the whole teachers' college's student population. The participants in the colleges' national competition are only a small portion, whose responses may not suffice for all students who consume sports competitively or as a recreation. There is therefore the need to investigate awareness, perception and attitude to PES use in sport by teacher trainees in general in order to establish whether findings of this study apply to them. This may also inform wider and far reaching strategies for the whole student population.

It is necessary to establish primary and secondary schools athletes' awareness, and attitude to doping because they usually form the junior teams that represent Kenya at regional and international sports competitions. Some of them may find their way to teachers colleges as trainees and may be participating in sports competitions hence the need for their awareness to be raised early. They may also have opportunities to grow in career as teachers and coaches in sports.

Other factors that may lead athletes to use performance enhancing substance to improve performance such as athletes' win orientation and competitiveness should be investigated because such factors could be the ones that eventually influence athletes' perception and attitude to doping.

Coaches, trainers and team managers' at the teacher-college level should be investigated for their level of doping knowledge and attitude. They play a crucial role in teaching, and coaching athletes for competitions and future careers in sports.

Research should be conducted on the effectiveness of teaching doping curriculum/content in teacher training colleges in order to establish the college lecturers' competence in imparting college trainees with knowledge and right attitudes on doping and find out whether the content is sufficiently taught.

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APPENDIX A: INFORMED CONSENT FORM

Questionnaire on Awareness, Perception and attitude to Doping amongst Collegiate athletes in Kenya

Informed consent form

Dear Respondent

You are invited to participate in this 2015 WADA survey on study which is intend to assess awareness, perception and attitudes towards doping and performance- enhancing substances use amongst collegiate athletes in Kenya. You were selected as a possible participant in this study because you are a competitor in KTCSA National sports competitions

You are informed that participation in this study is purely voluntary i.e. without any possible consequences. You will be asked to fill a self-report Questionnaire which will take approximately 10 minutes to complete. Your participation and responses are both anonymous and confidential. Information gathered will be very valuable and will be used for academic purposes only.

If you have any questions regarding the questionnaire, I will be glad to answer them. You may contact me at the following address.

Kamenju Janet Wanjira

Department of Physical Education and Sports

University of Nairobi

You will need to make a decision whether or not to participate in this study. Your signature indicates that you have read the information provided above and have decided to participate in this study. However you may withdraw from the study at any time if you feel uncomfortable. If you want a copy of this form, please let me know and one will be given to you.

Signature of the investigator_____ Date_____

Signature of Participant _____ Date _____

Appendix B: Athletes Questionnaire

Instructions

- a) Kindly fill the questionnaire with whatever information is required as sincerely and accurately as possible.
- b) The information given is confidential and will not in any way be used otherwise than for this study.
- c) Your truthful and unbiased answers will give accurate findings for the study on doping amongst college athletes.

SECTION A: PERSONAL DATA (Please fill in or tick [√])

- 1 Gender. Male ☐ Female ☐
- 2 Age (yrs) Under 15 ☐ 18-21 ☐ 22-26 ☐ Above 26 ☐
- 3 Type of college: Private ☐ public ☐
- 4 Sport you are now participating: ball game ☐ Track event ☐
Field event ☐
- 5 Name of the ball game i.e. soccer _____
- 6 Tick against the national sports competitions below in which you have participated in as an athlete:

Tick as many as you have participated in.

Primary school National sports competition ☐

Secondary schools national sports competition ☐

Teacher's Colleges national competitions ☐

- 6 Number of times you have competed at national level competitions.
Once ☐ Twice ☐ Thrice ☐ Four times ☐ More than Four Times ☐
- 7 Indicate whether you have participated in any of out-of-School/College sport competitions.
YES ☐ NO ☐

SECTION B: DOPING AND PERFORMANCE –ENHANCING SUBSTANCE AWARENESS

This section aims to gather information on awareness of doping among the college athletes. Kindly respond to each of the following items as it applies to you as an individual. Use the following Key: Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A) and Strongly Agree (SA)

Statement	SD	D	U	A	SA
1. I am familiar with the world anti-doping code					
2. I personally know athletes/players who have used performance-enhancing substances/drugs					
3. My friends use performance enhancing-substances/drugs					
4. I am familiar with anti-doping regulations					
5. I am regularly educated on anti-doping regulations regularly					
6. Athletes should be tested for performance enhancing-substances/drugs at all levels of competition					
7. I am aware of the effects of performance enhancing-substances					
8. I have learnt about performance-enhancing Drugs					
9. I consider my awareness on doping and performance- enhancing substance to be adequate.					

10. Put a tick against the substances/drugs that can enhance sports performance.

Alcohol Yes [] No []

Miraa Yes [] No []

Marijuana Yes [] No []

Caffeine Yes [] No []

Anabolic steroid Yes [] No []

Cocaine Yes [] No []

11. Indicate the source of information/knowledge where you have learnt about doping and performance-enhancing substances/drugs

Source	Yes	No
Television		
School/college		
Radio		
Newspapers		
Magazines		
Seminars		
Friends		
Parents		
Teachers/Tutors		

SECTION C: PERCEPTION TO DOPING AND PERFORMANCE-ENHANCING SUBSTANCE

This section aims to gather information on college athletes' perception on doping and performance-enhancing substance use in sports. Indicate the extent of your perception on doping and performance-enhancing substance by ticking in the appropriate box. Use the following key: **Strongly Agree (SA)**, **Agree (A)**, **Undecided (U)**, **Disagree (D)** and **Strongly Disagree (SD)**

	Statement	SA	A	U	D	SD
1	It is easy to dope and get away with it					
2	I would dope if I got an opportunity					
3	The use of performance- enhancing substance/drugs in sports has health risks					
4	I am worried about health risks of doping					
5	I would feel guilty if I used performance-enhancing substance/drugs to perform better in my sport					
6	Discussing use of performance-enhancing substances/drugs in sports would prevent doping amongst athletes					
7	I would feel ashamed if I tested positive on a banned substance/drug in sports					
8	Doping in sports improves players performance					
9	I would worry to lose friends if I doped in sports					

SECTION D: ATTITUDE TO DOPING

This section aims to gather information on college athletes' attitude to doping and performance-enhancing substances. The following statements show what many people think and feel about sports and performance –enhancing substances/drugs. Please indicate the extent to which you agree or disagree with each of the following statements by ticking the most appropriate number after each statement. The numbers stand for:

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

No	Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	Use of enhancing-substance/drugs in sports is necessary to be competitive.	1	2	3	4	5
2	Doping is not cheating since everybody does it.	1	2	3	4	5
3	Athletes often lose time due to injuries and drugs can help make up the lost time.	1	2	3	4	5
4	Only the quality of performance that should matter	1	2	3	4	5
5	Athletes in my sport are pressured to take performance enhancing substances/ drugs.	1	2	3	4	5
6	Athletes who take Social/recreational substance/drugs use them because they help them in sports situations.	1	2	3	4	5
7	Athletes who take recreation substances /drugs should not feel guilty about breaking the rules and taking performance-enhancing substances/drugs.	1	2	3	4	5
8	The risks related to doping are exaggerated.	1	2	3	4	5
9	Athletes have no alternative career choices, except sport.	1	2	3	4	5
10	Recreational substances/drugs boost an athlete's morale to train and compete at the highest level.	1	2	3	4	5
11	Doping is an unavoidable part of the competitive sport.	1	2	3	4	5
12	Recreational substances/drugs help to overcome boredom during training.	1	2	3	4	5
13	There is no difference between drugs and fibreglass poles, and speedy swim suit that are all used to better performance.	1	2	3	4	5
14	Media should talk less about performance-enhancing substances/drugs.	1	2	3	4	5
15	The media exaggerates the doping issues out of proportion.	1	2	3	4	5
16	Health problems and injuries sustained during to training are just as bad as those incurred from doping.	1	2	3	4	5
17	Legalizing performance enhancements would be beneficial for sports.	1	2	3	4	5

Thank you for your cooperation

