

Innovations

Assessment of Practices, Trends and Health Consequences of Using Performance-Enhancing Drugs and Doping Among Athletes of Various Sports -- The case of Sports Clubs, southern and Sidama Regions, Ethiopia

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Abstract

The objective of this study was to assess Practices, Trends, and Health Consequences of Using Performance-Enhancing Drugs and doping among Athletes of various sports. For this study the target population was fourteen sports clubs in selected zones, South Nations and Nationalities People and Sidama Regions. Thus, primary data were collected using self-made questionnaire from football, athletics, and volleyball clubs participating in premier league and national athletics clubs championship. All athletes (N=303) were included in the study as samples, hence census sampling technique was applied. Data were analyzed using SPSS 20.0 Statistics Software (descriptive statistic). Results were expressed in terms of percentages, graphs, means, and standard deviations. Finally, the findings of this study indicated majority 177 (58.4%) of the respondents had not experienced any health problem associated with prohibited drugs. But 48 reported health related problem. Majority (42.6%) of respondents didn't know the type of drug they had been using while 75 (24.8%) of Athletes used social drugs; Unlike social drugs, 49.5% and 31.6% Athletes had been using supplements either when needed or on regular basis. Of these supplements: Vitamin C (26.3%), Whey Protein (15.2%) and Multivitamins (13.2%) were frequently used supplements; Lack of knowledge about banned substances was main factor for 46.6% respondents; respondents (36.63%) preferred Media as a main source of information; male participants had better knowledge level about performance enhancing drugs and doping than female. Finally, less involvement of athletes in drug abuse observed except for some supplements. But further investigation needed.

Key words: Performance-Enhancing Drugs, Doping, Practices, Trends

Introduction

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 years (Insel and Roth, 2002; Lubna, Noor, Almuthana, Iman, Maher, and Saler, 2008; Lubna et al., 2008) cited in (Kamenju, mwisukha and Elijah, 2009). Use of these drugs, to a greater or lesser degree, bears the possibility of developing substance use disorders or dependency, which carry social and psychological consequences independent of the physiological effects caused by the ingestion of each of these chemicals. The patterns and

locations of use, dosages and physiological effects all differ significantly between these classes. As a result, in order to achieve success in preventing and combating drug use, all public policy in this area must be reflective of these variances (Irish Medical Organization, 2015).

The endangerment of the health of the athletes is of major concern, especially as the athlete is pushed towards ever-higher levels of achievement. Many documented and anecdotal cases of death due to performance-enhancing drugs are found (Colmain, 2010). The concerns of WADA in defending the spirit of free and fair competition, awareness is also raised when there are known health consequences of drug abuse. The use of performance-enhancing and social drugs by athletes raises a number of ethical and health concerns. The World Anti-Doping Agency was constituted to address both of these issues as well as publishing a list of, and testing for, banned substances in athletes. Despite continuing methodological developments to detect drug use and associated punishments for positive dope tests, there are still many athletes who choose to use performance and image enhancing drugs, try and gain an unfair advantage in sport by taking drugs (Angell et. al., 2012).

According to some studies indicated the main reasons athletes gave for doping were desire for money prize and lack of knowledge of banned substances. Others were influence by friends or trainers, ignorance of side effects and easy access to drugs (Boit et. al., 2012). Virtually, all substances that produce dependence can cause varying degree of health, social and economic problems (Yigzaw et. al., 2005). Therefore, the purpose of this study is to assess the causes, practices, trends, and Health Consequences of using Performance-Enhancing Drugs and doping among athletes/ players of various sports in southern and Sidama regions in particular.

Purpose of the study

Specifically the paper sought to:

1. find out the opinion of athletes/players regarding the side effect (health consequences) of performance enhancing drugs and doping
2. identify the type of performance enhancing drugs frequently used by the athletes/players in terms of sports and league level
3. determine the factors that may influence doping amongst players/ athletes.
4. compare the trends and use of performance enhancing drugs and doping between athletes/players in terms of types of sports and sex

Research Questions

This paper answered the following research questions:

1. Do athletes have good understanding regarding the side effect (health consequences) of performance enhancing drugs and doping?
2. What types of performance enhancing drugs are frequently used by the athletes/players in terms of sports and league level?
3. What factors are influencing doping amongst players/ athletes?
4. In which sports and sexes is the trends and use of performance enhancing drugs and doping most practiced?

Methodology

Design of the Study: This study employed a descriptive survey design. According to Gay, Mills and Airasian (2009), descriptive survey design is used to obtain relevant and precise information concerning the current status and phenomena of the population in the study.

Population of the Study: Sports clubs such as football, athletics, and volleyball participating in Ethiopian premier league and national athletics championship representing southern region were included under the study. Accordingly, as the number of team members in each sport is fixed and predetermined, the total population of this study was 328 from which Football= 200, Volleyball= 26, and Athletics= 87. Due to exclusion of some athletes/ players from their team, absence of participants at the time of questionnaire administration, lack of willingness to participate, and other reasons the total samples participated were 303 respondents.

Instrument for Data Collection: In this study, a self-made questionnaire was used as the main tool of data collection from all samples. The questionnaire was chosen because it allows the researchers to use the same question items to all respondents and also minimize the role and influence of the data collectors. There were only one type of questionnaires for athletes/ players.

Data Collection Techniques: To collect the primary information /data/ from the respondents, the researchers recruited data collectors and given them a training regarding the overall objective and significance of the study, how to collect the necessary data and get informed consent from the participants to participate in the study. Then after, the researcher got a letter of introduction from Wachemo University to collect data which was used to get permission from all coaching staffs of the clubs. After permission was obtained from coaching staffs of each clubs, the data collectors informed all participants about the purpose and significance of the study and got their consent to be the participants of this study. After the data collectors got the oral consent from all participants, they administered the questionnaire for the representative samples and then collected it back.

Data Analysis Techniques: To analyze the quantitative data, Statistical Programs for Social Science for Window version twenty (SPSS 20.0 Statistics Software) was employed. After the data had been entered into the computer, based on the nature of the variables and research questions, different statistical analysis made for different purposes. Accordingly, descriptive statistics in the vein of percentage, mean, graph and standard deviation were used to express the proportion, average, and variability of certain characteristics of the variables.

Demographic Characteristics of Athletes/Players

From a total of 303 samples, one hundred thirty-one (65.5%) Male respondents were football players. Among 103 female participants, 36 (35%) respondents were athletes. Concerning respondents academic status, among 95 athletes 22(23.2%) of them had tertiary academic level. Nearly half89(48.4%) of the football players had secondary academic level. See table 1.

		Type of sport			Total
		Athletics	Football	Volleyball	
sex of respondents Count (%)	Male	59(29.5%)	131(65.5%)	10(5.0%)	200
	Female	36(35.0%)	53(51.5%)	14(13.6%)	103
Academic level Count (%)	Elementary	17(48.6%)	16(45.7%)	2(5.7%)	35
	High School	56(36.1%)	89(57.4%)	10(6.5%)	155
	College	22(19.5%)	79(69.9%)	12(10.6%)	113

Regarding their age, the mean age of all participants was 22.42 ±3.968. Specifically, the mean age of female respondents was 21.48 years and the average variation of female respondent age from their mean was 3.83 years. Relatively volleyball players had the highest average age (23.29) and the lowest standard deviation (2.84) than athletes and football players.

The Health Effects and Consequences of Using Performance Enhancing Drugs

As it has been seen from the table 2, 48respondents had some health problems related to using prohibited substances and among them 23(47.9%)had a medical checkup. But majority 177 (58.4%) of them had not

Table 2: Concerning prohibited drugs and health consequences

		Medical checkup related with the use of prohibited drugs			Total
		Yes	No	Not sure	
Health problems related to using performance enhancing drugs Count (%)	Yes	23(47.9%)	16(33.3%)	9(18.8%)	48
	No	—	177(100%)	—	177
	Not sure	—	29(37.2%)	49(62.8%)	78

experienced any health problem associated with prohibited drugs.

The Type of Drugs Frequently Used By Players/Athletes

Some social and Performance enhancing substances /drugs on the WADA list are prohibited at all times (both in- and out-of-competition), while others are prohibited in-competition only.However,75(24.8) of the participants used social drugs whereas majority (42.6%) of the respondents didn't know the type of drug they had been using. Table 3 presents the type of supplements that are frequently used by the respondents. From the listed supplements Players/athletes primarily used Vitamin C (26.3%), Whey Protein (15.2%) and Multivitamins (13.2%). Contrarily, Echinacea and Khat were less used by respondents whereas 15.0%respondentswere non-users.

Table 3: Type of supplements frequently used by players/athletes

		Responses		Percent of Cases
		N	Percent	
Type of Supplement	Non-users	66	15.0%	21.8%
	Creatine	25	5.7%	8.3%
	Iron	39	8.8%	12.9%
	Ginseng	15	3.4%	5.0%
	Multivitamins	58	13.2%	19.1%
	Vitamin C	116	26.3%	38.3%
	Caffeine	12	2.7%	4.0%
	Magnesium	24	5.4%	7.9%
	Whey Protein	67	15.2%	22.1%
	Echinacea	3	0.7%	1.0%
	Khat	7	1.6%	2.3%
Others	9	2.0%	3.0%	
Total		441	100.0%	145.5%

Results from the table 4 about herbal usage in terms of sex, as shown below, indicated that among 303 participants, only 22% of male and 21.4% female players or athletes were not using herbal and nutritional supplements. Regarding herbal usage in terms of types of sports, from football 53 players were using it when needed whereas 15 were using on the regular basis. On the other hand, 49.5% and 31.6% of the total Athletes were using supplements when needed and on regular basis respectively. From this one can conclude that majority of the respondents especially athletes were using different type of supplements when calculating the ratio of supplement users in comparison to other sports (Table: 4).

Table 4: Players or athletes status regarding on the extent of using herbal & nutritional supplements

		The extent of using herbal and nutritional supplements				Total
		Not at all	Rarely	When needed	Regularly	
sex of respondents	Male	44(22.0%)	82(41.0%)	59(29.5%)	15(7.5%)	200
	Female	22(21.4%)	40(38.8%)	31(30.1%)	10(9.7%)	103
Type of sport	Volleyball	—	17(70.8%)	7(29.2%)	—	24
	Football	58(31.5%)	58(31.5%)	53(28.8%)	15(8.2%)	184
	Athletics	8(8.4%)	47(49.5%)	30(31.6%)	10(10.5%)	95

Players/Athletes Reasons and Factors for Taking Prohibited Drugs and Supplements

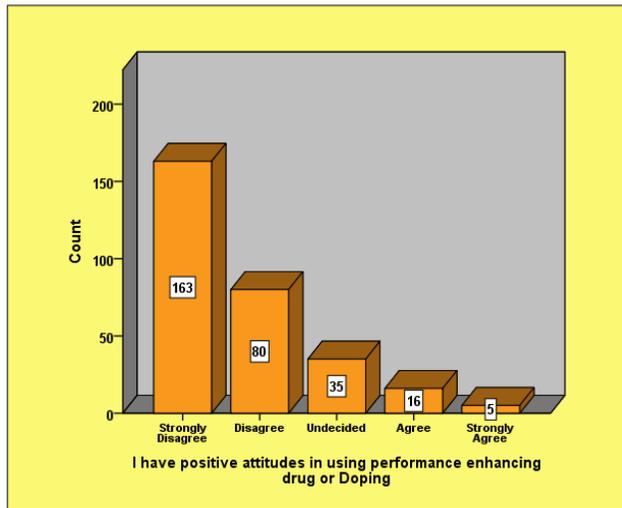
It is clear that the goal of taking supplements is to boost athletic performance during both training and competition. Considering this fact, Players/ Athletes may take different types of supplements for several reasons. Among them, to maintain strength (16.6%) and practitioner’s advice (12.1%) were the main factors. In addition, the concern to save time (10.4% of the respondents) was also another main factor forced athletes/ players to use supplements. On the other hand, other than mentioned, among several factors that leads players/athletes to use prohibited drugs, Lack of knowledge of banned substances was main factor for 46.6% respondents. To some extent Ignorance of health effects, Money prize, and external pressure were the main factor for (17.5%), 14.2%, and (11.6%) respondents respectively.

The study also tried to explore the relationship between athletes and drug sellers where the association between them could be another factor for the use of performance enhancing drugs/ substances. Accordingly, few number of participants (2.97%) had association with performance enhancing drug sellers. However, several players/athletes (79.89%) hadn’t any association with those drug sellers.

Trends and Attitudes of Athletes towards Performance Enhancing Drug/Doping

Regarding the trends and attitudes of athletes towards performance enhancing drug/ doping, majority of respondents (54.52%) strongly disagreed with the idea that they have positive attitudes in using performance enhancing drug or Doping. But, still less than 10%of respondents retained the idea that they have positive attitudes as they responded “Agree”. Figure 1 illustrates respondents responses supported with statistics. Similarly, majority respondents (168) had not been satisfied with dugs taking but few number of them were satisfied.

A



B

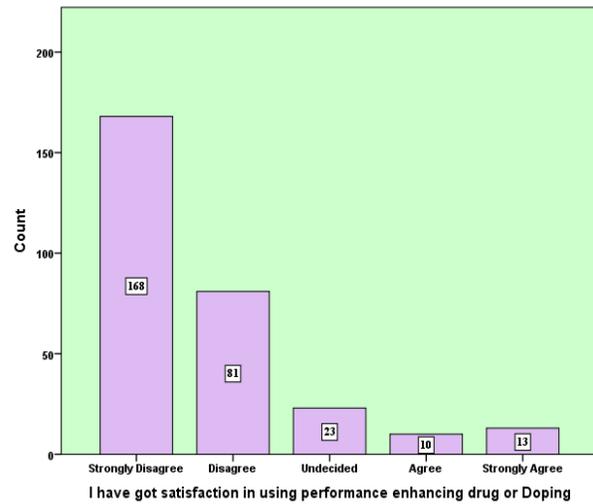


Fig. 1: Trends and attitudes of athletes towards performance enhancing drug/ doping

In order to describe variation about desire of athletes towards performance enhancing drugs, mean and standard deviation were also calculated.

In this study (table 5), the mean level of attitude of male Athletes/players towards performance enhancing drugs was 1.71, which is virtually equal with female participants. Briefly, there is no difference between male and female players/athletes attitude towards performance enhancing drugs.

	sex respondents	of	N	Mean	Std. Deviation	Std. Error Mean
Attitudetowards Doping	male		200	1.7125	0.84538	0.05978
	female		103	1.7524	0.84562	0.08332

Information Sources about Prohibited Drugs And Doping

Regarding the main source of information for athletes/players regarding on doping, Media (36.63%), Internet (social media (24.75%)) and Coaches (15.84%) were the most useful source of information. In addition, 44.5% and 30.4%athletes/players would you like Social media and Coachas a means to receive information respectively while less than 10% respondents like SMS, Tel, Post and Agents through which they want to receive information about Prohibited Drugs and doping (see table 9). Using various information sources based on their preferences, majority respondents (48.8%) preferred to have information about prohibited substance whereas 19.1% and 17.3% of respondents want to receive information about Testing procedure and WADA code respectively.

Athletes Knowledge about Performance Enhancing Drugs /Doping

Even if respondents chose Media, Internet (social media and Coaches as most useful source of information, knowledge gap between groups/ athletes in terms of sex and sports was assessed to make sure whether they had knowledge on doping and performance enhancing substances.

Table 6: Mean on Knowledge of players/athletes about performance enhancing drugs by sex category

	Sex of respondents	N	Mean	Std. Deviation	Std. Error Mean
Knowledge about Doping	Male	200	3.0860	0.92807	0.06562
	Female	103	2.4175	0.91998	0.09065
Report					
Knowledge on Doping					
Sport Type	Mean	N	Std. Deviation		
Volleyball	2.8750	24	1.49993		
Football	2.8446	184	.92823		
Athletics	2.8821	95	.91442		
Total	2.8587	303	.97674		

In this study, the mean level of knowledge for male participants was 3.1 and 2.4 for female. The result indicated that male participants with mean value 3.1 ± 0.92807 had better knowledge level about performance enhancing drugs and doping than female with mean value 2.4 ± 0.91998 . That means there was a gap of knowledge about performance enhancing drugs /doping between male and female players/athletes. But in terms of sports, the mean values calculated for all sports were almost same as indicated on table 6.

Discussion of the Findings

Drug use in sport is often most associated with a variety of substances designed to improve athletic performance (e.g., anabolic steroids, human growth hormone). Many of these substances are illegal without a prescription and/or banned by sporting agencies. Several high-profile incidents have involved athletes being punished for the use of the substances, such as Ben Johnson losing the 100-meter track gold medal in the 1988 Olympics for steroid use, Lance Armstrong being stripped of seven Tour de France cycling titles for performance-enhancing drug use, and a number of top athletes in United States receiving suspensions for steroid or other performance-enhancing drug use(Martens, 2018).

In this part results concerning prohibited drugs and its health consequences, type of drugs and supplements frequently used by players/athletes, reasons and factors for taking prohibited drugs and supplements, trends

and attitudes of athletes towards performance enhancing drug/ doping, information sources, and athletes knowledge about performance enhancing drugs /doping, etc.discussed according to the aim of the study.

In this current study,48 athletes /players reported Health problems related to using performance enhancing drugs while 47.9% of the total respondents had medical checkup related with the use of prohibited drugs. Literatures from previous studies has shown that for some substances, particularly alcohol, athletes have higher levels of at-risk use than individuals not participating in athletics. Conversely, rates of use for many other types of drugs are lower among athletes than non-athletes. Nonetheless, it is important to focus on understanding and limiting drug use among athletes, considering the myriad negative effects of such use on this population at all competitive levels (Martens, 2018).

Some social and Performance enhancing substances /drugs on the WADA list are prohibited at all times (both in- and out-of-competition), while others are prohibited in-competition only. Majority (42.6%) of them didn't know the type of drug they were using while significant number 75(24.8%) of Athletes/ players from this study, even if less than fifty percent, still used social drugs. Literally, these social drugs such as IOC banned drugs (a) Stimulants • Amphetamines (including meth-amphetamine) • Cocaine • MDMA, MDA and MDEA (ecstasy-like drugs) (b) Narcotic analgesics • Opiates (heroin, morphine, pethi-dine) (2) IOC monitored (not generally prohibited) drugs • Cannabinoids • Alcohol prohibited drugs by sports organization (Turner and McCrory, 2014).

Unlike social drugs, 49.5% and 31.6% of the total Athletes were using supplements when needed and on regular basis respectively. Of these supplements: Vitamin C (26.3%), Whey Protein (15.2%) and Multivitamins (13.2%) were frequently used supplements by Athletes/ players. According to some studies products present in nutritional supplements are contaminated with prohibited substances, including anabolic steroids and stimulants. The ingredient lists on most supplements rarely indicate that they contain prohibited substances. In other way some prohibited substances have several different names. For example, there have been many cases in recent years of athletes from several sports, including football, testing positive for the banned stimulant methylhexaneamine, which is commonly found in supplements. Methylhexaneamine is also known as dimethylamylamine, geranamine, Forthane, 2-amino-4- methylhexane, geranium root extract and geranium oil. Although one of these names may be listed in the ingredients of a supplement, the official name of methylhexaneamine will almost certainly not be(UEFA, 2016).It is clear that the goal of taking supplements is to boost athletic performance during both training and competition. From this study, of many reasons and factors, Lack of knowledge of banned substances was main factor for 46.6% respondents which is in line with previous study done among Kenyan athletes(Boit et. al., 2012). But to maintain strength/ sort performance was another cause for 59(16.6%)athletes/ players in our study. Of these athletes/ players, in terms of sex and types of sports, male and athletes (athletics sport) more users than others respectively.

Regarding the trends and attitudes of athletes towards performance enhancing drug/ doping, majority of respondents (54.52%) strongly disagreed with the idea that they have positive attitudes in using performance enhancing drug or Doping with no gender influence (no difference between sex). But, still less than 10%of respondents retained the idea that they have positive attitudes while majority respondents (168) had not been satisfied with dugs taking. This is in contrast with results obtained (Boit et. al., 2012) where Kenyan athletes have the attitude that doping leads to better performance in sport, that doping is not cheating.

Dissemination and flow of information is an important aspect and primary responsibility of sports organizations to create awareness among players/ athletes in order to avoid the negative effect of doping and

prohibited drugs use and maintain the true spirit of sport and Olympic principles. For most athletes in this study, Media (36.63%), Internet (social media (24.75%)) and Coaches (15.84%) were the most useful source of information. Researchers concluded that information and research-supported feedback should be reached to athletes electronically (Martens, 2018;Boit et. al., 2012) confirming the present study result while majority respondents (48.8%) preferred to have information about prohibited substance. Even if respondents chose Media, Internet (social media and Coaches as most useful source of information, knowledge gap between groups/ athletes in terms of sex and sports was assessed to make sure whether they had knowledge on doping and performance enhancing substances.

Regarding knowledge gap in terms of sex, male participants with mean value 3.1 ± 0.92807 had better knowledge level about performance enhancing drugs and doping than female with mean value 2.4 ± 0.91998 which is supported with the similar study where (Boit et. al., 2012) Kenyan athletes have an average knowledge level of prohibited substances that enhance performance in sport. But in terms of sports, the mean values calculated for all sports were almost same (football, Athletics, & volleyball).

Conclusion

Since the purpose of this study was to assess practices, trends, and Health Consequences of using Performance-Enhancing Drugs and doping among athletes/ players of various sports in southern nations, nationalities and people region and Sidama region. Based on the results obtained, conclusions have been drawn as follows:

- Forty-eight athletes/ players reported Health problems related to using performance enhancing drugs and low trends of medical checkup
- Most athletes /players had not been involved in prohibited drugs use but practiced more supplements. However, some athletes still using Social drugs.
- Vitamin C and Whey Protein were frequently used supplements
- For most of the athletes Lack of knowledge about the use of banned substances was main reason and they have knowledge gap on the prohibited drugs where male athletes had better understanding than females.
- Most athletes demanding information on about prohibited substance through media and internet

Recommendation

Based on the findings of the study, the following recommendations were forwarded:

- Primarily measures that should be taken by respective stakeholders are evidence-based education through various and applicable methods must be given not only on the side effects but also the breach of rules and regulations made by national and international Anti-Doping Agencies on prohibited drugs use in an effort to create awareness among athletes.
- Early and periodic checkup about banned substances/ performance enhancing substances can help athletes/ players who are involved in the use of such drugs in an effort to maintain the true spirit of sport and Olympic principles.

Interest conflict

We, both the Author and the Co-author do not have interest conflict in case on our authorship and correspondence.

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References

1. Aidan Colmain (2010) *Drugs and doping in sport- guideline for general practitioners, Irish Sport Council and Irish College of General Practitioners*
2. Janet Kamenju Andage, Mwisukha and Rintaugu Elijah (2009). *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*
3. Matthew P. Martens, 2018 *Alcohol Abuse and Drug Use in Sport and Performance, Oxford Research Encyclopedia of Psychology*:
4. Michael Boit, Danielle Stewart, Paul Dimeo, Vincent Onywera, and Lorcan Cronin (2012) *Doping Education Status In Kenya: Evaluation Of Knowledge, Attitudes And Practice Of Doping Among Elite Kenyan Athletes, Kenya World Anti-Doping Agency Survey*
5. Peter J Angell, Neil Chester, Nick Sculthorpe, Greg Whyte, Keith George, John Somauroo, 2012 *Performance enhancing drug abuse and cardiovascular risk in athletes: implications for the clinician, Br J Sports Med, 46(Suppl 1):i78-i84.*
6. Yigzaw Kebede, Tefera Abula, Belete Ayele, Amsalu Feleke, Getu Degu, Abera Kifle, Zeleke Alebachew, Endris Mekonnen, and Belay Tessema (2005). *For the Ethiopian Health Center Team*