

## Drug use in Ghana: knowledge, perceptions, and attitudes in a small group of elite student sportspersons

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### Summary

*Study aim:* This study assessed the level of knowledge, perceptions, and attitudes of tertiary student athletes on doping issues. Emphasis was placed on the knowledge of substances found on the prohibited list of the World Anti-Doping Agency (WADA) as well as the potential effects and side effects of the drugs when consumed.

*Material and methods:* The study was conducted in elite tertiary student sportspersons who had qualified in their various disciplines to represent Ghana at the 2011 World University Games in Shenzhen, China.

*Results:* The study found that these sportspersons had significantly higher levels of knowledge of socially abused drugs that also appeared on the WADA prohibited list, such as cocaine (90.9%,  $p < 0.01$ ), heroine (90.9%,  $p < 0.01$ ), cannabis (87.9%,  $p < 0.01$ ) and steroids (72.7%,  $p < 0.05$ ), as compared to drugs that are not socially abused. There was also a large gap in knowledge among respondents with regard to specific knowledge about the possible effects and side effects of banned substance. Of these sportspersons, 30% had received some form of education on doping agents; however, there was no significant statistical difference in knowledge between respondents that had received some form of education and those that had not.

*Conclusions:* The findings of this study suggest that sporting authorities would have to intensify their efforts to provide tertiary school athletes with credible and up-to-date information on doping issues. These interventions may also need to be extended to the wider sporting populace.

**Key words:** Drugs – Attitudes – Academic athletes – Ghana

### Introduction

According to Article 2 of the World Anti-Doping Code (WADC) [9], “Athletes or other Persons shall be responsible for knowing what constitutes an anti-doping rule violation and the substances and methods which have been included on the Prohibited List”.

Article 2.1.1 of the code [9] further states, “It is each Athlete’s personal duty to ensure that no Prohibited Substance enters his or her body. Athletes are responsible for any Prohibited Substance or its Metabolites or Markers found to be present in their Samples. Accordingly, it is not necessary that intent, fault, negligence or knowing use on the Athlete’s part be demonstrated in order to establish an anti-doping violation”. This, therefore, places greater responsibility on all sportspersons to have adequate information about substances and methods that are on the World Anti-Doping Agency (WADA) prohibited list [13].

There have been many studies conducted on the prevalence, beliefs, and attitudes of sportspersons in terms of doping [2,4-6,8,11]. However, few studies have investigated the knowledge of sportspersons on the substances on the

prohibited list and the potential effects and side effects of these substances. A study conducted by Wanjek *et al.* [12] in the state of Thuringia (Germany) regarding specific knowledge of doping demonstrated “a poor state of awareness in Thuringian youths in general, and specifically pertaining to potential effects and side effects of individual substances, as well as their existence on the prohibited list”. Ama *et al.* [3] also found a poor state of awareness of doping among Cameroonian football players.

The WADC prevails on all member organizations to organize educational programs and to provide athletes with updated and accurate information with regard to doping issues so that athletes will always be kept abreast with current accepted standards and practises. There seems to be no information on whether sportspersons in Ghana benefit from such programs.

The aim of this study, therefore, was to assess the level of knowledge, perceptions, and attitudes of tertiary student athletes about doping issues. The study emphasised levels of knowledge of substances found on the WADA prohibited list, as well as their potential effects and side effects when consumed.

## Material and Methods

The study was conducted with elite tertiary student sportspersons who had qualified in their various disciplines to represent Ghana at the 2011 World University Games in Shenzhen. The questionnaire, which was self-administered, was developed by adapting and modifying those of previous studies [2,6,12]. They were administered to the consenting sportspersons during their 3-week camping period in preparation for the games. All participants were assured of anonymity and confidentiality.

The questionnaires were personally given to the athletes after training, and they were returned after completion. From among the 43 sportspersons, 33 of them completed and returned the questionnaires. The return rate was therefore 76.7%: 25 (75.8%) respondents were male and 8 were (24.2%) female. The ages of participants ranged from 19-27 years old with a mean age of  $22.5 \pm 2.53$  years; 26 (78.8%) of the sportspersons had been involved in sports for more than 5 years; 29 (87.9%) of the respondents hoped to continue in sports to the international level.

Out of the 33 sportspersons, 2 (6.1%) played table tennis, 14 (42.4%) participated in track and field, and 17 (51.5%) of them played football.

The sportspersons answered a 22-item questionnaire that was categorised as follows: Background information on athletes; Knowledge of banned substances and their possible effects and side effects; Education of doping agents; Perceptions of sportspersons of doping issues; Attitudes of sportspersons toward doping.

In assessing the knowledge of sportspersons on the side effects and possible effects of the drugs, respondents were asked to match possible effects and side effects to any given drug. Because some drugs had more than one correct effect or side effect that could be matched to it, respondents were therefore asked to match as many correct answers as possible. Athletes were deemed to have demonstrated adequate knowledge and scored as such if, for any particular drug, they were able to correctly match 50% or more of the possible effects or side effects of that drug. For drugs with only one correct match, a correct match was deemed adequate knowledge and an incorrect match was classified as inadequate.

Analysis was conducted using IBM SPSS version 19.0 and StatsDirect version 2.7.8. Descriptive statistics (frequencies and proportions) were presented for all categorical variables. A test of association was performed for prior introduction to doping education and knowledge of banned doping agents. Using the exact Clopper-Pearson single proportion test, p-values and confidence intervals were calculated for respondents' knowledge of the prohibited and non-prohibited drugs.

## Results

Table 1 indicates the source of information for the respondents who declared prior education on prohibited substances. Table 2 shows no significant association in knowledge of substance on the prohibited list and prior education received on doping substances.

**Table 1.** Sources of information on doping among those who declared prior education on prohibited substances (n=10)

Source of information	Number of respondents
Coaches	3
Fellow Sportspersons	1
Magazines	2
TV or Radio	4

**Table 2.** Percentages of correct answers among student sportspersons with prior education (PE; n=10) and those without (NPE; n=23)

Prohibited Substances	PE	NPE
Steroids	27.3	45.5
Ephedrine	15.6	31.3
Cannabis	27.3	60.6
Cocaine	30.3	60.6
Heroin	30.3	60.6
Testosterone	15.2	21.2
Salbutamol	12.5	15.6
Erythropoietin (EPO)	12.1	18.2
Morphine	12.5	5.6
Non-prohibited substances		
Alcohol	6.1	15.2
Caffeine	0	9.1
Oral Contraceptives (for female use)	3.0	12.1
Antibiotics	12.1	30.3

Concerning knowledge of substances on the prohibited list as indicated in Table 3, a significant majority of the respondents knew that drugs such as cocaine, heroine, cannabis, and steroids were banned by WADA. A small percentage of respondents attained an adequate knowledge score when tested on possible effects and side effects of the prohibited substances. For drugs such as steroids, heroine, testosterone and morphine, none of the respondents received an adequate knowledge score. Tables 4 and 5 summarise these findings. The responses of respondents regarding attitudes and perceptions towards drug issues are captured in Figure 1 and Table 6, respectively.

**Table 3.** Knowledge of sportspersons on World Anti-Doping Agency (WADA) Prohibited List (n=33)

Prohibited Substances	Correct Responses (%)
Steroids	24 (72.7)*
Ephedrine	15 (46.9)
Cannabis	29(87.9)*
Cocaine	30 (90.9)*
Heroin	30 (90.9)*
Testosterone	12 (36.4)
Salbutamol	9 (28.1)*
Erythropoietin (EPO)	10 (30.3)*
Morphine	9 (28.1)*
<b>Non-prohibited substances</b>	
Alcohol	21 (63.6)
Caffeine	24 (72.7)
Oral Contraceptives (for female use)	13 (39.4)
Antibiotics	9 (27.3)

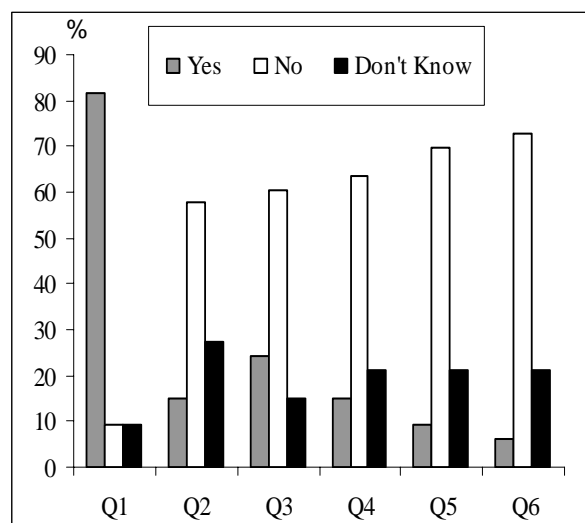
\*p&lt;0.05

**Table 4.** Knowledge of the tested sportspersons on side effects of drugs (n=33)

Drug (Number of Possible Matches)	Adequate Knowledge (%)	Inadequate Knowledge (%)
Steroids (6)	0 (0)	33 (100)
Ephedrine (4)	1 (3.0)	32 (97.0)
Cannabis (2)	14 (42.4)	19 (57.6)
Cocaine (5)	4 (12.1)	29 (87.9)
Heroin (3)	0 (0)	33 (100)
Testosterone (6)	0 (0)	33 (100)
Salbutamol (1)	3 (9.1)	30 (90.9)
Morphine (2)	3 (9.1)	30 (90.9)

**Table 5.** Knowledge of the tested sportspersons on possible effects of drugs (n=33)

Drug (Number of Possible Matches)	Adequate Knowledge (%)	Inadequate Knowledge (%)
Steroids (2)	8 (24.2)	25 (75.8)
Ephedrine (2)	9 (27.3)	24 (72.7)
Cocaine (1)	8 (24.2)	25 (75.8)
Heroin (1)	1 (3.0)	32 (97.0)
Testosterone (2)	8 (24.2)	25 (75.8)
Salbutamol (2)	4 (12.1)	29 (87.9)
Erythropoietin [EPO] (2)	8 (24.2)	25 (75.8)
Morphine (1)	0 (0)	33 (100)

**Figure 1.** Attitudes of sportspersons toward doping (%)

Legend: Q1--Do you think it is possible for anyone to become an international champion without doping?; Q2--Would you take a substance that is now banned if it were allowed?; Q3--Would you take a prohibited substance if you could earn EUR 1 million in a sporting competition?; Q4--Would you take a prohibited substance if you knew all other athletes had used them?; Q5--Would you take a prohibited substance if there were no risk of getting caught?; Q6--Would you take a prohibited substance if you were assured of winning all competition?

## Discussion

With regard to drugs on the prohibited list, there were 4 drugs that respondents appeared to be most knowledgeable about: cocaine (90.9%,  $p<0.01$ ), heroin (90.9%,  $p<0.01$ ), cannabis (87.9%,  $p<0.01$ ), and steroids (72.7%,  $p<0.05$ ). All 4 of these drugs are socially abused in Ghana. The first 3 are recreational drugs, while in recent times the latter (especially in topical form) have been abused by women to change their appearance and make them fit into society's idea of beauty [11]. The social awareness generated by media-led discussions on these drugs may have contributed to the knowledge of these sportspersons about these substances. The knowledge of respondents about drugs that were not in this category was significantly low ( $p$  value ranging from 0.08 to  $<0.01$ ). The only exceptions were antibiotics (42.4%) and ephedrine (46.9%).

Out of all the respondents, 10 (30.3%) had prior education with regard to prohibited substances; of these, 60% received their information from the print or electronic media, 30% of them got their information from their coaches, while none of the athletes received their information from a health practitioner. These findings agree with those of Thomas *et al.*, [12] who found that among elite Australian athletes, 64% received information from the Internet; only 9.9% received information from their coaches.

**Table 6.** Perceptions of sportspersons on doping issues (n=33)

	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
Doping increases performance	9.1%	42.4%	15.2%	12.1%	21.2%
All Doping agents are dangerous	33.3%	30.3%	21.2%	12.1%	3.0%
Authorities doing enough to reduce doping in Ghana	3.0%	33.3%	12.1%	33.3%	18.2%
Formation of WADA has helped reduced doping	6.1%	66.7%	6.1%	9.1%	12.1%

Lentillon-Kaestner and Carstairs [7] also found that among elite young cyclists the main sources of information on doping was from the media, books, and the Internet.

The sportspersons in this study were not asked why they did not go to their coaches or health practitioner for drug information. It is believed that there may be a stigma associated with seeking information about doping agents, as asking about them may be misconstrued as using them, which may in turn negatively affect the sportsperson when it comes to team selection [10]. There was no significant association in knowledge of respondents and prior education received on doping. This finding raises questions as to the accuracy and credibility of information that sportspersons receive from these sources. For example, only 3 (9.1%,  $p < 0.01$ ) of respondents in this study knew that caffeine was not a banned substance even though it has been off the WADA prohibited list since 2004, giving further credence to the fact that the knowledge of Ghanaian sportspersons may not be up to date.

There appears to be a large gap in knowledge when it comes to effects and side effects of drugs among the respondents. More than 87% of the respondents recorded an inadequate knowledge score when tested on the potential side effects of any particular drug. The exception was cannabis, for which 42% of the respondents attained an adequate knowledge score. Similar results were obtained when the potential effects of the drug on an athlete's performance was assessed, with more than 72% of respondents exhibiting inadequate knowledge for any particular substance tested. These results among such highly educated sportspersons are quite alarming, as this may indicate that the larger sporting community, which from anecdotal evidence is believed to be less educated, may be even less knowledgeable about doping issues. Even though the respondents appeared to have limited knowledge about the side effects of doping substances, most of the athletes believed that the use of banned substances has serious adverse effects: 63.3% of the respondents believed that all doping agents are dangerous.

In all, 36.3% of the sportspersons were of the opinion that sports authorities in Ghana were doing enough to help stop doping in Ghana sports, whereas 72.8% believed that WADA had put measures in place to tackle doping in sports worldwide. This sharp contrast suggests that various sports associations in the country, especially those responsible for tertiary school sports, may not be seen by their respective sportspersons as doing enough to bring doping issues to the fore.

In this study, 51.5% of the sportspersons believed that doping agents enhanced performance as compared to over 90% in a study by Alaranta *et al.* [2] and 68% in Laure *et al.* [6].

Generally, most respondents had an anti-doping attitude: 81.8% believed that it was possible to become an international champion without doping. This result compares favourably with the findings of Alaranta *et al.* [2] The percentage of respondents who were inclined to dope was always less than 16%. It was only when respondents were assured of EUR 1 million in prize money that 24.2% of them said they would dope. Immediate monetary gain may therefore be an important factor in influencing sportspersons in Ghana to dope. However, due to the small sample size, the results from this study may have to be cautiously extended to the larger sporting population. Also, sportspersons in this sample were highly educated individuals and their views may therefore not reflect those of the general sporting populace, which is believed to have a lower level of education.

Summing up, the findings in this study suggest that the knowledge of tertiary student sportspersons on doping substances is poor, and this may be a reflection of the knowledge of sportspersons nationwide. The various sports associations in Ghana, and in particular those that oversee tertiary education sports, must intensify older programs and develop new ones that will help educate their members. It is recommended that any intervention that is initiated to address this issue must be regular, as the WADA prohibited list is updated every year. With more sports-

persons in different disciplines from Ghana now participating at the international level, it would be in everybody's best interest to ensure that all sportspersons get regular, accurate, and up-to-date information on doping issue to forestall athletes from unknowingly violating the World Anti-Doping Code.

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## Acknowledgements

Special thanks go to Mr. Daniel Apaak of the University of Cape Coast Sports Section for his invaluable help during the administration of the questionnaire.

Received 6.08.2012

Accepted 9.01.2013

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