

ORIGINAL ARTICLE

Football and doping: study of African amateur footballers

P F M Ama, B Betnga, V J Ama Moor, J P Kamga

Br J Sports Med 2003;**37**:307–310

Objective: To investigate use and awareness of lawful and unlawful substances by amateur footballers in Yaounde, Cameroon.

Methods: A total of 1116 amateur footballers (1037 male and 79 female) out of 1500 contacted participated in this study. They were divided into three groups: elite players (n = 314); local players (n = 723); female players (n = 79). They answered a questionnaire of 30 items grouped under six main topics: identification of players; use of lawful substances subject to certain restrictions on the International Olympic Committee (IOC) list; use of IOC banned substances; doping behaviour; awareness of doping; food supplements. The results of the questionnaire were scrutinised using Microstat software, and the level of significance was $p < 0.05$.

Results: (a) Use by our footballers of a banned substance (cocaine) and substances subject to certain restrictions (alcoholic drinks, methylated spirits, and banga (marijuana)). (b) Doping behaviour: use by our footballers of substances with similar effects to some IOC banned substances but not listed as such: tobacco, liboga, wie-wie (narcotic), bilibili (locally made alcohol drink). (c) A large intake of vitamin C (food supplements) in all three groups. In contrast, the footballers' knowledge of doping was vague.

Conclusion: Preventive actions and an epidemiological study of doping among footballers are urgently required.

See end of article for authors' affiliations

Correspondence to: Professor Ama, BP 2787, Yaounde, Cameroon; Pierre.ama@prc.cm or pierreama@yahoo.fr

Accepted 14 August 2002

It is well known that doping behaviour affects European¹ and Australian² amateur sportsmen as well as African³ and European⁴ professional sportsmen. It is also notable that over the past two decades some sub-Saharan African countries have been competing on a par with their European and South American counterparts at World and Olympic levels. In view of the requirements of high level competition, we would expect some African footballers to use lawful or unlawful substances to meet those requirements. The lack of data on the use and awareness of drugs by Black African footballers prevents us from knowing the reality. It is necessary to collect such data before preventive measures can be implemented, as appropriate. The aim of this study is to investigate the use and awareness of drugs by Cameroonian amateur footballers in Yaounde, the capital city of Cameroon with 1 000 000 residents.

METHODS

A total of 1116 amateur footballers (1037 men and 79 women) of Yaounde out of the 1500 contacted participated in this study after giving their written consent. The approval of the National Football Federation and the various district championship organising structures was requested and obtained. Of the 1037 men, 723 play in the various football championships organised in the districts of Yaounde. They are considered as "local players" because they have no licence issued by the National Football Federation. The remaining 314 players have licences and are considered as "elite players". The 79 women play in the various female football clubs affiliated to the National Football Federation. Table 1 gives their ages.

The footballers answered an anonymous questionnaire of 30 items (fig 1) grouped under six main topics: identification of player (questions 1–5); use of drugs subject to certain restrictions (questions 9, 10, 11, 12, 15, 16); use of banned substances (questions 24, 25, 29); awareness of doping (questions 14, 17, 20, 23, 30); doping behaviour (questions 6, 7, 8, 13, 18, 19, 21, 22); food supplements (questions 26, 27, 28).

Table 1 Identification of groups of footballers

	Elites	Locals	Women	Total
Number of clubs	19	12	5	36
Number	314	723	79	1116
Age (years)	20.4 (3.2)	21.8 (4.3)	21.2 (3.3)	21 (1)

Age is given as mean (SD).

The questionnaire was endorsed by experts. A beverage named bilibili and a powdered substance named wie-wie are both locally made products. They were included in the questionnaire because bilibili is a locally made alcoholic drink distilled from maize or soya bean or even rice or millet, and wie-wie is a mixture of leaves from plants with stimulating effects, reduced to powder and inhaled; it is a mood elevator and reinforces self confidence. Banga is the local name given to marijuana.

The questionnaire was answered either on the training fields of the various clubs or in the stadiums before the matches and was returned to us immediately. The results were assessed using Microstat software. Analysis of variance was used for comparison by age and extent of drug use and awareness. The level of significance was $p < 0.05$.

RESULTS

The participation rate was 74.4%. No significant age difference was observed between the three groups.

Use of substances subject to certain restrictions

Alcoholic drinks

Some 41% of all players admitted drinking alcohol in general. Sixteen percent said that they drink before matches, and 22% said that they drink immediately after matches. In descending order of frequency, local players (47%), elite players (34%), and female players (22%) admitted drinking alcohol in

- 1 Initials 2 Age (day-month-year) 3 Sex F/M 4 Championship..... 5 Club
- 6 Do you smoke? Yes-No; How many cigarettes/day?
- 7 Do you smoke before matches? Yes-No
- 8 Do you smoke right after matches? Yes-No
- 9 Do you take alcoholic drinks? Yes-No
- 10 Do you take alcoholic drinks before matches? Yes-No
- 11 Do you take alcoholic drinks right after matches? Yes-No
- 12 Do you drink methylated spirits? Yes-No
- 13 Do you drink Bilibili? Yes-No
- 14 Do you know Banga? Yes-No (Marijuana)
- 15 Do you use Banga? Yes-No
- 16 Do you use Banga before matches? Yes-No
- 17 Do you know Wie-Wie? Yes-No
- 18 Do you use Wie-Wie? Yes-No
- 19 Do you use Wie-Wie before matches? Yes-No
- 20 Do you know Liboga? Yes-No
- 21 Do you use Liboga? Yes-No
- 22 Do you use Liboga before matches? Yes-No
- 23 Do you know cocaine? Yes-No
- 24 Do you use cocaine? Yes-No
- 25 Do you use cocaine before matches? Yes-No
- 26 Do you use vitamin C? Yes-No
- 27 Do you use vitamin C before matches? Yes-No
- 28 Do you use vitamin C right after matches? Yes-No
- 29 Have you ever used other drugs? Yes-No Which?
- 30 Have you ever heard about: Anabolic steroids? Yes-No; Amphetamines? Yes-No; Cannabis? Yes-No; EPO? Yes-No

Figure 1 Questionnaire on football and doping

general. This order also applies with respect to intake before (19%, 12%, and 4% respectively) and after (25%, 21%, and 9% respectively) matches.

Methylated spirits

A quarter of all players admitted drinking methylated spirits in general. Local players (29%) seemed to drink more methylated spirits than female players (20%) and elite players (17%).

Banga

Some 10% of all players admitted using this drug in general. Only 8% used it before matches. In descending order of frequency, local players (12%), female players (8%), and elite players (7%) admitted using it in general, 10% of local players, 7% of elite players, and 3% of female players said that they used it before matches.

Use of banned substances

Some 8% of all players admitted using cocaine in general, and 7% admitted using it before matches. In descending order of frequency, local players (9%), elite players (5%), and female players (4%) said that they use cocaine in general, and 8% of local players, 5% of elite players, and 3% of female players said that they use it before matches.

The other banned substances used by players are stimulants (ephedrine), anxiolytics, psychotropes, analgics, iron, analgesics, and non steroid anti-inflammatory drugs.

Doping behaviour

Tobacco

Almost a quarter (24%) of all players declared that they smoke in general, and 18% and 16% said that they smoke before and after matches respectively. Local players (28%) generally seem to smoke more than elite players (19%) and female players (13%). This trend was maintained for smoking before matches (19%, 16%, and 8% respectively). After match smoking was similar in local (17%) and elite (16%) players but more prevalent than in female players (4%).

Bilibili

Most (89%) players said that in general they did not take bilibili. More local players (12%) seemed to take it than elite (9.2%) and female (2.5%) players.

Liboga

Only 6.4% of players said that they take liboga in general, and 6.4% also declared using it before matches. Consumption in local (8%) and elite (4%) players was similar, but female players did not take it at all.

Wie-Wie

A small number of players (7%) said that they take it in general. In descending order of frequency, female players (99%), elite players (96%) and local (91%) players said that they do not use it in general. All female players, 96% of elite players, and 92% of local players declared not using it before matches.

Doping awareness

Banned substances

Cocaine

More than half (60%) of the total number of players declared not knowing about this substance. In the various groups, 45% of local players, 30% of female players, and 30% of elite players said that they knew of cocaine.

Anabolic steroids

Some 68% of the total number of players declared that they had never heard of anabolic steroids. In the various groups, 34% of elite players, 33% of local players, and 18% of female players declared they had heard of this drug.

Amphetamines

Almost three quarters (74%) of the players said that they had not heard of amphetamines. In the groups, 27% of local players, 25% of elite players, and 15% of female players said that they had heard of these drugs.

Erythropoietin

Overall, 15% said that they knew about erythropoietin. In the various groups, 17% of elite players, 15% of local players, and 10% of female players said that they knew about erythropoietin.

Substances submitted to certain restrictions

Banga

About half (52%) of the whole study group said that they knew of this drug. In the various player groups, 54% of female players, 54% of local players, and 46% of elite players said that they knew of it.

Cannabis

Some 36% of the total number of players said that they had heard of cannabis. In descending order of frequency, 38% of local players, 36% of elite players, and 22% of female players admitted they had heard of cannabis.

Local substances

Liboga

Only a few (8%) of the players said that they knew of this drug. All the female players said that they did not know of it, whereas 10% of the local players and 6% of the elite players said that they did.

Wie-Wie

Most (89%) of the players said that they did not know of this drug. In descending order of frequency, local players (14%), elite players (6%), and female players (3%) said they did know about this drug.

Food supplements

Vitamin C

Some 79% of the players said that they use vitamin C frequently. In the various groups, 82% of local players, 74% of elite players, and 68% of female players said that they take vitamin C frequently. This supplement was taken by 52% and 64% of all players before and after matches respectively. In descending order of frequency, elite players (55%), local players (52%), and female players (47%) admitted taking vitamin C before matches. Intake after matches was admitted to by 65% of local players, 65% of elite players, and 47% of female players.

DISCUSSION

The list of substances in the IOC antidoping code does not include tobacco or alcohol among the substances submitted to certain restrictions. We have included tobacco in this study because it is considered a lawful drug in Cameroon and because of the well known adverse effects of tobacco on various variables associated with physical performance. For more details, see Shephard,⁵ Rode and Shephard,⁶ Sepponen,⁷ Klausen *et al.*,⁸ and Jacques *et al.*⁹

The results of this study were obtained from a questionnaire and therefore should be considered with some reservation in view of the fact that some footballers probably gave wrong answers to avoid disclosing their use of drugs, whereas others might have said that they use drugs for bravado.

Use of substances submitted to certain restrictions and doping behaviour

The number of footballers who claim to drink or smoke frequently (for social purposes) and those who claim to do so before matches (for doping purposes) suggest that intake of certain substances in our football circles is quite high and that women are not excluded. The lack of epidemiological data on smoking and drinking in Cameroon limits interpretation of our results. However, according to WHO,¹⁰ the prevalence of smoking in 1990 among women in Africa was about 10%. The increasing number of female smokers over the years, thanks to aggressive advertising by tobacco companies and global population growth, suggests an increase in the percentage of women who smoke in Africa. The percentage of women who admitted to smoking in this study (13%) may reflect the reality in Africa. Also, in the three groups, smoking before matches is more common than after matches. Local players seem to smoke more than players in the two other groups. Consumption of alcohol in general, and methylated spirits and bilibili in particular, is higher after matches than before, which suggests "the third half-time" phenomenon. According to Bailly *et al.*,¹¹ 34.9% of sportsmen admit to drinking alcohol after physical activity. However, intake before matches suggests the need to implement preventive measures. The results of this study also suggest that being part of an elite group (male and female) may reduce alcoholic intake in general, and methylated spirits and bilibili in particular (see intake by local players). Alcohol consumption and tobacco use by sportsmen has been the subject of previous scientific literature.¹²⁻¹³ It is notable that the use of banga and wie-wie is common in our three groups, although women do not use wie-wie and liboga before matches. In contrast, the same proportions of female and elite players use banga.

Use of banned substances

The results of this study suggest use of cocaine (a narcotic drug) by our players, and female players are not excluded, using it as frequently as male elite players. It is well known that sportsmen are not excluded from the use of psychoactive drugs such as cocaine and marijuana.¹²⁻¹⁴ However, these studies do not tell us if the players use such drugs before competition as is the case in this study.

Whatever the drug considered, drug use by local players seems to be higher than that of the two other groups. As tobacco, alcohol, and prohibited drugs have adverse effects on some physiological variables associated with physical performance, it is important to implement preventive actions to help these players.

Doping awareness

Our results suggest that all drugs listed in this study are known about in various degrees, by players of the three groups. Thus, female players declare no knowledge of liboga whereas 54% of them say that they know about banga; this is a higher percentage than of elite and local male players.

Take home message

This study looks at doping and doping behaviour in amateur football in Africa. Local doping substances with unknown active principle are commonly used.

Definitions

- Liboga or iboga: a plant the roots of which contain substances with stimulating effects (P Laure. *Dopage et société*. Paris: Les Ateliers de Normandie, 2000:199).
- Bilibili: a locally made alcoholic drink, distilled from maize or soya bean and even rice.
- Wie-wie: a mixture of leaves from some plants with stimulating effects, reduced to powder and inhaled.

These terms are local names given to these doping substances, the active principle of which is not yet known. We suggest that they be used until scientific names have been determined.

According to local hairdressers, women use banga as a capillary stimulant. This could explain why sportswomen know about this drug.

Once again, the group with highest percentage of players with knowledge of banned substances was the local players, and furthermore their intake was higher than that of the two other groups. Therefore, knowledge of a given product does not inevitably imply less use.

Anabolic steroids and cannabis are substances that our three groups had heard much about, compared with amphetamines and erythropoietin. It is well known that cannabis and banga (marijuana) are two different names for the same substance. The different percentages registered in the various groups about knowledge of the same substance (but under two different names) show a vague awareness of this doping substance. Such vague awareness of doping by high level sportsmen has been reported in other studies.¹⁵

Food supplements

The intake of vitamin C is high in all three groups whatever the period (before or after matches). Herbert¹⁶ observed that daily intake of large quantities of vitamin C, niacin, vitamin B6, folic acid, and vitamin B12 could cause hepatic lesions (steatosis), nausea, dermatoses, muscle weakness, and fatigue in sportsmen. Transmission of hepatitis C virus was recorded in Brazil after injections of vitamins to sportsmen.¹⁷ All these findings emphasise the need for food education, especially concerning vitamin intake.

Conclusion

The results of this study show use of unlawful and lawful drugs both for social and doping purposes in our three groups. The type of drugs used (stimulants, narcotics, iron, etc) and the vague awareness of doping emphasise the importance of implementing preventive measures together with an epidemiological study on doping in football circles.

ACKNOWLEDGEMENTS

We thank Dr Patrick Laure and the various presidents of district football associations for their great contribution.

Authors' affiliations

P F M Ama, B Betnga, National Institute of Youth and Sports, Yaounde, Cameroon

V J Ama Moor, Faculty of Medicine and Biomedical Sciences, Yaounde University I

J P Kamga, Yaounde University Teaching Hospital

REFERENCES

- 1 **Laure P**. Doping in amateur adult athletes aged 15 or over. *Journal of Performance Enhancing Drugs* 1998;**2**:16–21.
- 2 **Hardy J**, McNeil JJ, Capes AG. Drug doping in senior Australian rules football: a survey for frequency. *Br J Sports Med* 1997;**31**:126–8.
- 3 **Ohaeiri J**, Ikpeme E, Ikwuagwu U, et al. Use and awareness of effects of anabolic steroids and psychoactive substances among a cohort of Nigerian professional sport men and women. *Hum Psychopharmacol* 1993;**8**:429–32.
- 4 **Guillon N**, Quenet JF. *Le dopage: Oui ça continue*. Paris: Bussière Comedon Imprimeries, 2000:121–30.
- 5 **Shephard R**. The oxygen cost of breathing during vigorous exercise *Q J Exp Physiol* 1966;**51**:336–50.
- 6 **Rode A**, Shephard R. The influence of cigarette smoking upon the oxygen cost of breathing in near maximal exercise. *Med Sci Sports* 1971;**3**:51–5.
- 7 **Sepponen A**. Physical work capacity in relation to carbon monoxide inhalation and tobacco smoking. *Ann Clin Res* 1977;**9**:269–74.
- 8 **Klausen K**, Andersen S, Nandrup S. Acute effects of cigarette smoking and inhalation of carbon monoxide during maximal exercise. *Eur J Appl Physiol* 1983;**51**:371–9.
- 9 **Jacques D**, Dumont Y, Fournier A, et al. Characterization of neuropeptide Y receptor subtype in the normal human brain, including the hypothalamus. *Neuroscience* 1997;**79**:129–48.
- 10 **Organisation Mondiale de la Santé (OMS)**. *Les femmes et le tabac*. Geneva: OMS, 1992:25.
- 11 **Bailly D**, Beuscart R, Leignel C, et al. Alcool et sport. Etude des attitudes et des motivations des sujets sportifs vis-à-vis des boissons alcoolisées. *Sem Hôp Paris* 1993;**69**:113–20.
- 12 **Toohy JV**, Corde BW. Intercollegiate sports participation and non-medical drug use. *Bull Narc* 1981;**33**:23–7.
- 13 **Spence JC**, Gauvin L. Drug and alcohol use by Canadian university athletes: a national survey. *J Drug Educ* 1996;**26**:275–87.
- 14 **Anderson WA**, Albrecht RR, Mckeag DB, et al. A national survey of alcohol and drug use by college athletes. *Physician and Sports Medicine* 1991;**19**:91–104.
- 15 **Huguet J**, Bégué J. Les sportifs de haut niveau confirment la réalité du dopage. *Médecins Sport* 1998;**18**:8–10.
- 16 **Herbert V**. *Nutrition cultism: fact and fiction*. Philadelphia: GF Strickley Company, 1980.
- 17 **Parana R**, Lyra L, Trepo C. Intravenous vitamin complexes used in sporting activities and transmission of HCV in Brazil. *Am J Gastroenterol* 1999;**94**:857–8.