

PERFORMANCE-ENHANCING DRUG - USE AMONG AMATEUR SPORTSMEN AND WOMEN IN CAMEROON: A STUDY OF KNOWLEDGE, ATTITUDES AND PRACTICES

Report prepared by:

Emmanuel Chia KIAWI

African Research Institute for Development (AFRID)

Joseph Kemmegne

African Research Institute for Development (AFRID)

Félicien Fomekong

African Research Institute for Development (AFRID)

Tohmuntain Peter Munteh

African Research Institute for Development (AFRID)

Blaise Omgba

Ministry of Sports and Physical Education, Cameroon

Project funded by:

World Anti-Doping Agency (WADA)

TABLE OF CONTENTS

ACKNOWLEDGEMENT	5
ACRONYMS AND ABBREVIATIONS	6
BACKGROUND	11
OBJECTIVES	15
METHODS	15
<i>Study design</i>	15
<i>Questionnaire</i>	15
<i>In-depth interviews</i>	15
<i>Sampling of athletes</i>	16
<i>Procedure for selecting the sample</i>	16
Organization of the field work.....	17
<i>Selection and training of the field team</i>	17
<i>Sensitization</i>	18
<i>Data collection</i>	18
<i>Quality assurance and quality control (QA/QC)</i>	18
<i>Processing and construction of data</i>	19
<i>Statistical methods</i>	19
<i>Qualitative interpretation methods</i>	19
<i>Ethical issues and protections</i>	19
<i>Study setting and target population</i>	20
<i>Limitations</i>	22
RESULTS	23
I. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF ATHLETES	24
Distribution of respondents by site	24
Distribution of respondents according to family background (living with parents) ..	26
II. SPORTING ACTIVITIES	28
Distribution of respondents by discipline and frequency of sport practice	28
Distribution of respondents by longevity of involvement in competitive sports	29
Distribution of respondents by practice of a second sporting activity	29
Distribution of respondents by highest level of competition attained.....	30
III. KNOWLEDGE OF LAWFUL AND UNLAWFUL SUBSTANCES, AND FOOD SUPPLEMENTS	31

Anti-doping sensitization in sports milieu	36
IV- ATTITUDES OF ATHLETES TO PERFORMANCE ENHANCING DRUG USE	45
V- ACQUISITION-NETWORK	61
<i>Banga and other unlawful natural substances</i>	<i>61</i>
<i>Anabolic steroids and other chemical substances</i>	<i>63</i>
<i>Involuntary drug use/acquisition.....</i>	<i>65</i>
<i>Those who encourage athletes to use drugs</i>	<i>66</i>
<i>Acquiring natural unlawful doping substances</i>	<i>67</i>
<i>Easy access to drugs.....</i>	<i>68</i>
VI –DOPING PREVENTION IN CAMEROON	69
PERCEPTION OF CAMEROON’S ANTI-DOPING MEASURES: VIEWS FROM SOME MAJOR STAKEHOLDERS	76
a) Informants’ perception of the magnitude of doping among Cameroonian athletes	77
<i>Lack of testing facilities</i>	<i>77</i>
<i>The influence of wrong beliefs and misperceptions</i>	<i>77</i>
<i>Conspiracy of silence.....</i>	<i>78</i>
<i>Impunity</i>	<i>78</i>
<i>Poor knowledge of lawful and unlawful substances</i>	<i>78</i>
<i>Poor control of drug acquisition channels</i>	<i>78</i>
<i>Voodoo beliefs and practices</i>	<i>79</i>
<i>Drugging versus doping</i>	<i>79</i>
b) Motivations for taking drugs in sports	79
<i>Performance-enhancing objective.....</i>	<i>79</i>
<i>Imitation of peers</i>	<i>80</i>
<i>Poverty.....</i>	<i>80</i>
<i>The influence of elite athlete</i>	<i>80</i>
<i>The influence of the urban environment.....</i>	<i>80</i>
<i>The influence of trainers</i>	<i>80</i>
c) Doping and the future of sports in Cameroon	81
<i>Doping and corruption.....</i>	<i>81</i>
<i>The dependency syndrome.....</i>	<i>81</i>
<i>Multiple adverse events from doping</i>	<i>81</i>
<i>Policy lapses.....</i>	<i>82</i>
d) The demand and supply of doping substances.....	82

e) Potential complicity of resource persons in doping	83
<i>Complicity of trainers and medical personnel</i>	83
<i>Influence of parents</i>	84
<i>The short-sightedness of sports organisers</i>	84
<i>The contribution of untrained trainers</i>	85
EVALUATING EXISTING ANTI-DOPING STRATEGIES	85
a) <i>Key informants' views on existing anti-doping regulations/policy</i>	85
b) <i>Informants' evaluation of anti-doping measures</i>	86
c) <i>Successes and failures in the anti-doping campaign</i>	87
<i>Barriers to the implementation of anti-doping measures</i>	88
REINFORCING DOPING PREVENTION MEASURES: POTENTIAL SECTORIAL CONTRIBUTION	89
a) <i>Family</i>	89
b) <i>Sports federations</i>	89
c) <i>Athletes</i>	89
d) <i>Sponsors</i>	90
e) <i>The Ministry of Health</i>	90
f) <i>The Ministry of Education</i>	91
g) <i>The Ministry of Sports and Physical Education</i>	91
h) <i>The police and the judiciary</i>	91
i) <i>Media</i>	92
DISCUSSION.....	93
CONCLUSIONS AND RECOMMENDATIONS	98
REFERENCES	100
APPENDICES.....	101

Acknowledgement

The project team would like to thank officials at the central services and Provincial Delegations of the Ministry of Sports and Physical Education for the Center, Littoral, Northwest and North Provinces, Cameroon. They provided invaluable assistance during training for field assistants and implementation of field data collection. Their support was crucial particularly in establishing contact with sport federations and laying the groundwork for the recruitment of study participants.

We are also grateful to the sportsmen and women, coaches, presidents of clubs, sports medics, president of federations, provincial delegates, who graciously volunteered to participate in this study.

Finally, it is worthy to note that this project has been carried out with the financial support of WADA (World Anti-Doping Agency).

Acronyms and abbreviations

CAMSHIP : Cameroon Shipping Lines

MOH : Ministry of Health

MOE : Ministry of Education

MINISEP : Ministry of Sports and Physical Education

SODECOTON : Cameroon Cotton Company

PMUC : Cameroon Lottery Corporation

FENASCO: School and College Games

OCCALUDS: Cameroon Anti-Doping Agency

MTN : Mobile Telephone Network

Orange Cameroon : Mobile Telephone Company

EPO : Erythropoietin

EXECUTIVE SUMMARY

Background

The use of doping drugs in Cameroon is common. Even more common is drug-use among amateur sportsmen and women. Despite this bleak picture, little if anything at all, is being done to educate, raise awareness and sensitize sportsmen and women in the country about the negative health effects and criminal consequences of drug use in sports. Evidence on the current situation would be useful in informing ongoing and future programs and providing compelling arguments for increased attention to the problem.

Objectives

This study sought to accomplish the following objectives:

1. To investigate awareness and use of lawful and unlawful substances by young athletes,
2. To identify athletes' sources of knowledge about lawful and unlawful substances,
3. To study young athletes' doping behavior and their determinants, including voluntary and involuntary doping,
4. To identify circuits of acquisition of drugs available to young athletes and,
5. To study perceptions regarding Cameroon's anti-doping measures, including their weaknesses and strengths.

Methods

The study was cross-sectional in design and utilized a multi-method data gathering strategy that combined quantitative and qualitative techniques. A face-to-face questionnaire was administered to 1,600 randomly selected young athletes from 7 major sport federations in Cameroon drawn from four study sites: Yaounde, Douala, Bamenda and Garoua. Questionnaire items addressed the following themes: Knowledge, perceptions of doping, and doping experiences. In addition, an interview guide was used to collect complementary qualitative data from key informants on the following: reasons for doping; strengths and weaknesses of current anti-doping measures; and the role each sector they represent could play to enhance doping prevention. Quantitative data was analysed using EPI Info and SPSS. Quantitative analyses reported in this write-up are mainly descriptive. Qualitative analyses were conducted using AnSWR (Analysis Software for Word-based Records). A content analysis of text based qualitative data allowed for deductive conclusions to be drawn.

Key findings

Knowledge of lawful and unlawful drugs including food complements

Knowledge of lawful drugs (55%), unlawful drugs (93%), and food complements (84%) associated with sports was common. Study participants cited a wide range of performance enhancing substances but most notably, Banga (74%) and Cocaine (54%) as unlawful. Although there appeared to be an upsurge in doping drug use, doping prevention measures were not rigorously implemented. Only 11% of athletes had read about the country's anti-doping regulation. In the absence of formal sensitization, athletes were informed about drugs mainly through friends and the media. In addition, they were informed about the negative side effects of doping drugs principally through some of their technical staff like the coaches.

Attitudes of athletes towards drug-use

Six percents of athletes believed that athletes dope out of necessity, while close to 19% of them thought that doping is essential for success in sports. More than half (54%) of the study participants declared that doping use is common within their respective federations. Disciplines most affected by doping were cited to be football, athletics, boxing and cycling. Close to 34% of study participants said they were aware of colleagues who use drugs, while 41% of them knew of opponents who took doping drugs to improve their performances. Banga (44%), Guronsan (16%), and Cocaine (8%), were the most common doping substances used by athletes. Drug-use in sports appeared to be approved by many coaches and encouraged by friends. The motives for drug-use were: to enhance performance, to fight against fatigue, and to enhance physical appearance. Athletes who avoided drug-use did so mainly because they feared their negative side effects and not because they saw drug use in sports as unethical and punishable/illegal.

Circuits of acquisition of drugs

Sources of acquisition of doping substances include mainly, friends, dealers, the market and the pharmacies. More than half of the study participants admitted to involuntarily using doping drugs. Managers, coaches, sports medics, as well as relatives were reported to be the main drivers behind the supply of doping substances to athletes. Nearly half of the athletes (50%) acquired unlawful natural substances and 30% unlawful chemical substances easily.

Implementation of anti-doping measures

More than half of the respondents said there were no anti-doping measures implemented within their federations of affiliation. For those who claimed that anti-doping measures were enforced by their federations, 60% of them mentioned education, 19%, surveillance, and 11%, repressive measures. Drug testing was not a common, let alone, routine practice in sports. Only 17% of the respondents had undergone a drug test before in their sports career. Official doping controls were not conducted during local and national competitions and doping surveillance was neither routinely nor intermittently conducted.

Knowledge of anti-doping regulation

Knowledge of anti-doping regulation and what constitutes doping was notoriously limited and frequently distorted among study participants. The absence of testing programs made the violation of anti-doping regulation more of a norm than an exception. Additionally, the distinction between lawful and unlawful substances seemed blurred and confusing for most athletes. Increase in drug-use in sports was attributed to the non-implementation of an anti-doping regulation. Because of the gap between policy and implementation, all sportsmen and women were perceived to be using substances, be they lawful or unlawful, to enhance their physical performance.

External and internal pressures to use doping substances

Athletes reportedly faced external and internal pressures to use doping substances. Many doping offences were said to occur due to ignorance of what constitutes lawful and unlawful substances. Key informants said they were able to identify substances athletes often use, by sight and not by name, and were even less likely to categorize them either as lawful or unlawful. Key informants stated that growing popularity and increasing commercialisation of sports was pushing young athletes to dope in order to succeed. The general perception by athletes that their rivals were already taking drugs and also that drug offenders were not penalised, appeared to encourage doping initiation. Additionally, poor knowledge of what constitutes doping appeared to render athletes susceptible to the negative manipulations of influential peers, trainers, managers and parents.

Conclusion

There is evidence that the practice of doping is growing uncontained among sportsmen and women in Cameroon. Moreover, anti-doping measures exist mainly in theory as they are seldom implemented in practice. The evidence suggests an urgent need for measures to rescue the situation before doping becomes an institutionalized practice in Cameroon sports. For any initiatives to have an impact in the country, the gap between anti-doping policies and implementation would need to be closed. Rigorous implementation of preventive and repressive measures, e.g. education and sensitization, doping tests, penalties for doping offences, etc, is critically needed. A fair amount of evidence-based advocacy targeting policy makers could bring about the desired changes to both policy and implementation and ensure that an impending doping explosion is avoided in the country.

BACKGROUND

Performance-enhancing drugs have been recognised as a serious health and ethical problem among athletes for several decades. In spite of the associated health risk and ethical dilemmas, the search for improved athletic performance continues to push many athletes to use performance-enhancing substances in competitive sports (Lippi & Guidi, 2003). Doping or the use of drugs especially those taken purposely to enhance the performance of athletes, such as anabolic steroids or other substances that are forbidden by the organisations that regulate competitions, has evolved over time. This has given rise to novel and intriguing challenges to the organisation of major sporting events (Ambrose, 1997). Also considered doping is the use of substances that mask other forms of doping (Meldrum & Feinberg, 2002;). In addition, recreational athletes also use steroids to enhance performance and to improve personal appearance (Mendoza, 2002). Formerly, sport organisers and federations relied mainly on education, sensitisation and the honesty of athletes as measures for prevention of doping in sport competitions (Campos et al, 2003). Fortunately, advances in laboratory technology have allowed the introduction of efficient anti-doping strategies. However, although drug testing can be effective in detecting use of performance-enhancing drugs and thus, serve as a major deterrent to doping, testing alone may not eliminate drug use among athletes especially in Cameroon where such is not a routine practice in sporting events (Fraser, 2004).

Three reasons have been advanced as compelling arguments for checking doping in sports. The first is the need to ensure fair competition and prevent cheating among competing athletes, secondly, the need to uphold the ethics of sports and thirdly, the need to protect the health of athletes (Oseid, 1984; Laure, 1997). According to published data, young people who use anabolic steroids are more likely to exhibit other high-risk behaviours such as multiple illicit drug use, unprotected sex, deviant and illegal behaviours (Oseid, 1984; Ambrose, 1997). Despite the ill effects of drug-use in sports, not so much has been achieved in terms of anti-doping education, awareness raising and sensitisation and the building of drug-use prevention skills especially within the Cameroon setting. Consequently, there is an upsurge in the desire to and actual use of performance-enhancing substances both among elite and amateur athletes particularly in Cameroon.

This situation has been exacerbated in Cameroon by the very lack of education, information and counselling services for young athletes and non-athletes alike. In one study, Ama et al (2003), found that amateur footballers in Cameroon lack information about doping from legitimate sources and commonly use assorted local doping substances whose active principles are unknown or are yet to be established. Meanwhile, the consumption of drugs in the general population of young people is generally very high with some regions reaching 19% of drug consumption prevalence among the youth (CRETES, 2002). In an environmental context of high drug use among the youth, there is a significant chance that athletes will tend to use drugs if appropriate measures are not taken. But in the absence of information as it is in Cameroon, young athletes are left to compile information on drugs from inappropriate sources and so do not fully understand the effects associated with the taking of these drugs. Young people are more likely to experiment with something that they don't understand as opposed to a subject about which they have sufficient knowledge (Randall, 2002; Mendoza, 2002).

A review of relevant literature

In a study in the United States, Randal et all (2002) found that college athletes overwhelmingly used anabolic steroids to increase their strength, to increase their size, to improve their physical appearance. This behaviour is strongly associated with peer pressure. Meanwhile, in yet another study, knowledge and attitudes about anabolic steroids especially their side effects was poor, as 43% felt that steroids would probably not harm them if used carefully, 55% thought that steroid use would improve muscle size and strength, and only 50% had ever had the side effects of steroids explained to them. Meanwhile in a study conducted in Cameroon by Ama et al (2003), 8% of young footballers (football being the most popular sport in the country), admitted using cocaine before and after matches. Surprisingly, the group of sportsmen who had the most knowledge of banned substances was incidentally the group with the biggest number of users meaning that knowledge of these substances alone may not inevitably translate into less use.

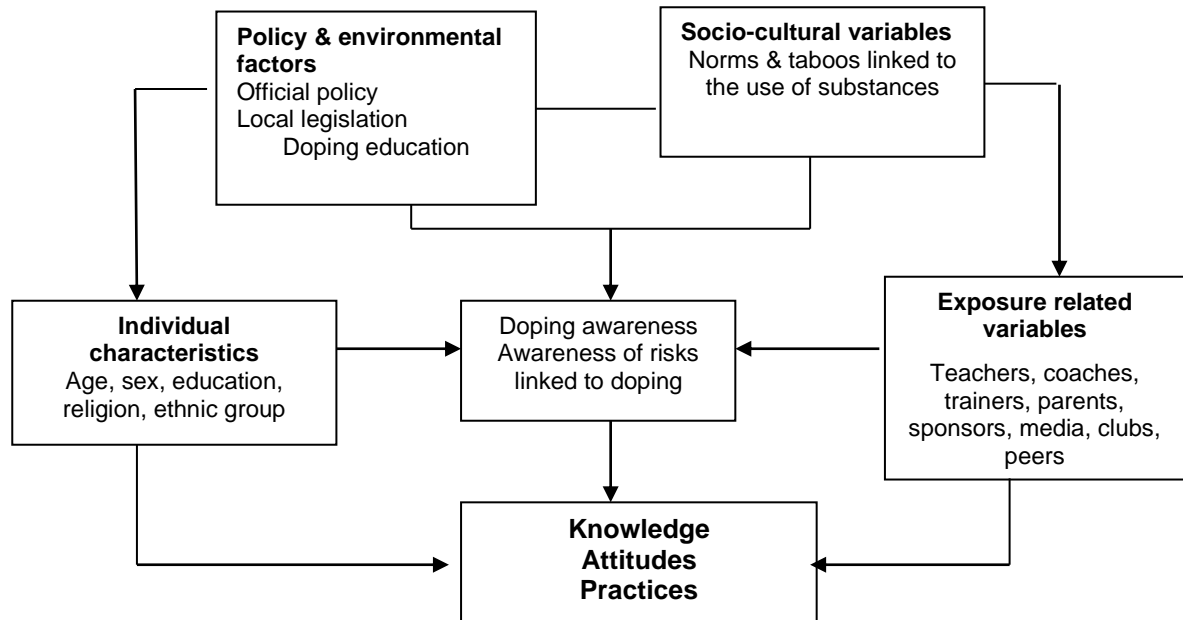
In another study, CRETES (2002) identified a variable prevalence of drug use of between 2% to 19% in regions of high consumption in the country. The vast majority of consumers were found in the age-group 15-25 which incidentally is the group from which most of the young athletes are drawn. In a national response to this worsening situation, decree No.97/019 of 07/08/97 was promulgated in 1997 relative to the control of drugs and substance abuse. Despite the repressive nature of this law, the consumption of drugs among young people

including athletes only seems to have increased. This suggests that winning the battle against doping would need more than just a repressive policy environment.

Unfortunately most research on the effectiveness of anti-doping campaign strategies comes from developed countries, particularly the US. Reviews from a range of topic areas suggest the following: most experts agree that simple information giving is not sufficient, and that successful anti-doping education would need to be characterized by efforts to increase self-efficacy; promoting self-reflection, self-awareness and autonomy; improve decision-making skills; and provide training in personal skills.

The lack of data on awareness and use of performance-enhancing drugs by athletes in Cameroon prevents us from having a good understanding of the reality and thus, from acting appropriately. Collecting data on knowledge, attitudes and practices of young Cameroonian athletes relative to performance-enhancing drug use will therefore be critical to introducing appropriate doping preventive measures and policies in the country and which could serve as a model to other countries in the central African sub-region. Working with young athletes (adolescents and young adults) has the theoretical advantage of influencing perceptions, beliefs and behaviors early in the sport career of the athletes before they are established as adult patterns. Influencing athletes in their formative years is a potential mechanism for influencing an emerging culture of fair competition, equity and healthy development within the athletic community.

A theoretical framework for understanding the inter-relationships between key variables



Relations between the variables

The diagram above shows the potential relationship between variables that are likely to determine knowledge, attitudes and practices of doping behaviour. Policy and environmental determinants, individual characteristics, socio-cultural factors and exposure related factors serve as independent and/or explanatory variables. Awareness of doping and risks linked to doping practices are intermediate variables and tell us about young athletes awareness or what they are exposed to prior to the initiation of doping and whether such exposure has an effect on their current behaviour, risk perceptions and prevention. The latter three are the outcome or dependent variables of the study.

OBJECTIVES

This study sought to accomplish the following objectives:

1. To investigate awareness and use of lawful and unlawful substances by young athletes,
2. To identify athletes' sources of knowledge about lawful and unlawful substances,
3. To study young athletes' doping behavior and their determinants, including voluntary and involuntary doping,
4. To identify circuits of acquisition of drugs available to young athletes and,
5. To study perceptions regarding Cameroon's anti-doping measures, including their weaknesses and strengths.

METHODS

Study design

This is a multi-method cross-sectional study based on a questionnaire and an open-ended interview guide. Knowledge, attitudes and practices of young athletes regarding performance-enhancing drug-use is observed across several variables including region, level of education, sport discipline, and sex. Interview items targeted key informants' perceptions of Cameroon's anti-doping measures.

Questionnaire

An 81 item close-ended questionnaire was administered to young athletes on a one-to-one basis. Questionnaire sought to characterize study participants using the following: knowledge of doping including side effects, frequency of drug use, longevity of drug use, sources of substance acquisition, perceptions of doping, doping initiation, doping experience, doping locations, motives for doping, doping before and after a sport event, voluntary and involuntary doping, external pressure to use doping substances; sources of information; preferred source of information about risks and side effects. Knowledge of risk, attitude towards cheating, unlawfulness of doping, perception of those who engage in doping and willingness to publicly condemn the practice of doping, were also assessed.

In-depth interviews

Although athletes constitute the primary source of information concerning their situation, some individuals (coaches, team managers, executives of sport federations, sport medics, teachers, parents, sponsors), because of their influential positions and proximity to athletes, are likely to have relevant views on factors that determine knowledge, attitudes and behaviours of this group regarding drug use. Key informant interviews were conducted from

a sample of 33 individuals recruited from among these categories. Interviews addressed the following themes: the problem of doping among young Cameroonian athletes; strengths and weaknesses of current anti-doping measures; potential sectorial contribution to doping prevention; enhancing anti-doping awareness; preventive education and sensitisation. Key informants were purposively selected where gatekeepers were asked to nominate individuals suitable for participation in the study.

Sampling of athletes

An exhaustive list of licensed athletes registered in the different national sport federations was used to constitute the sampling unit for this study. Cameroon has an estimated 43 sport federations and of these, seven federations were included in the sample because of their numerical strength and activeness (MINISEP, 2005). These were federations of football, handball, basketball, volleyball, cycling, athletics and boxing.

We applied the simple random sampling formula to determine the sample size for this study. An application of these parameters on Epi Info 6.0 for sample calculation gave a sample size of 1534 subjects. Of this, was added a 3% non-response rate, which gave a sample of 1580 respondents which we rounded up to 1600.

Procedure for selecting the sample

A multilevel sampling procedure was used to select study participants.

First level

Cameroon has 4 main socio-cultural and geographic zones. These are the sahelian zones that make up the three Northern provinces of the country with a largely Muslim population; the forest zone inhabited mainly by the Beti population; the coastal population otherwise called the Sawas; and then the savannah region which is occupied by the so-called grass fielders. Amateur sports is predominantly an urban activity in Cameroon and so participants were identified and randomly recruited from the cities of Yaounde, Douala, Bamenda and Garoua representing the four socio-cultural and geographic zones of the country.

Second level

A data base for amateur sportsmen and women of the 7 disciplines chosen for the study was constituted by summing up the lists from the provincial offices of the concerned federations. After doing this, a random selection of individuals to be interviewed was done. To ensure proportional representation, the sample of 1600 persons was proportionally adjusted to the

number of sportsmen and women for the different towns chosen. Following this adjustment, 600 athletes each were recruited from Yaounde and Douala and 200 athletes each recruited from Bamenda and Garoua, making a total of 1600 athletes recruited.

Organization of the field work

Selection and training of the field team

A field team of 3 researchers, 1 assistant researcher and 25 enumerators were involved in field data collection. The data collection team received theoretical and practical training covering the objectives and methodology of the study. The team was also trained on how to conduct interviews and to safeguard privacy and confidentiality and all other ethical issues related to the study. Training lasted for 5 days. The two principal objectives of the training were:

1. To acquaint enumerators with the techniques of fieldwork, and
2. To equip them with the necessary skills capable of making them collect data in a systematic manner.

Training consisted of three parts. Part one provided an opportunity for enumerators and the technical team to know each other, followed by an orientation to fieldwork and data collection techniques. Training involved icebreaking exercises based on enumerators' individual stories and drug related issues. This was followed by nine modules: gaining consent, approaching the public, contact procedure, language issues, handling refusals, interviewing techniques, techniques of recording information, characteristics of a good enumerator and above all, quality control. All these modules were presented to trainees in plenary sessions. Trainees/enumerators and facilitators exchanged their views on various subjects related to the training.

The second part of the training was dedicated to the study of the data collection instruments. Various parts of the questionnaire were read out to the enumerators and explanations and discussions made. This was also an occasion for enumerators to express their worries about the items that were not very clear to them. Facilitators clarified points of concern raised by the enumerators. After discussions on the subjects of the questionnaire, enumerators were given the training manuals which had to serve as their field guides. Enumerators reviewed the document at home and asked questions during training the following day (See appendix III: field and training manual).

Part three involved practical field exercises. As part of the training, enumerators went out on day four to test their new skills in the administration of the questionnaire. This had to do with approaching potential study participants, obtaining their consent and each enumerator administering three questionnaires. This also served as a pre-test exercise for the questionnaire. The last day of training was devoted to sharing the data collection experiences of each enumerator and drawing lessons from these experiences that could be helpful in the field. In addition, following the pre-test exercise the questionnaire was revised to maximize comprehension, consistency, reliability, and validity of the data collection tools.

Sensitization

Administrative and technical personnel of the Ministry of Sports and Physical Education including Provincial Delegates were informed about the study and their cooperation in the collection of data sought. In addition, local authorities, the presidents of sport federations sampled for the study were sensitized about the study and their collaboration was enlisted.

Data collection

Data collection occurred during the period June 3rd – July 15th, 2006 and was done by a field team of researchers and data enumerators. In each site, quantitative and qualitative data were collected simultaneously. In depth qualitative interviews were tape-recorded and transcribed immediately in the field, meanwhile completed questionnaires were returned to AFRID's secretariat in Yaounde for cleaning and punching by data entry clerks. To facilitate movement of the field team, a car was hired at each site for the duration of the data collection.

Quality assurance and quality control (QA/QC)

Quality control and quality assurance were conducted at two levels: enumerators worked in teams of four with one controller per team and one supervisor per site. Following the completion of questionnaires, same team members exchanged questionnaires and reviewed them to ensure that they were filled out correctly. A second level of control was provided by controllers of each team who cross-checked each questionnaire and ensured that they were appropriately filled out. All of these were done under the general supervision of the site supervisor. Worthy to note is that all data collection instruments including the consent procedures were prepared in both English and French. Cameroon being a bilingual country, people speak either both or only one of these official languages. To ensure that language did

not become a problem for data quality, all tools had to be made bilingual and enumerators, as well, were tested for their bilingualism during recruitment.

Processing and construction of data

Statistical methods

Two separate and independent entries of quantitative data were performed by two trained data entry clerks. This strategy allowed for data entry errors to be identified and necessary corrections made. Data entry was done in Epi Info 6.02. Quantitative data was analyzed using STATA 7.0. All quantitative variables were given a statistical description. As part of this analysis, ordinary contingency tables were created to provide an initial overview of association between the key variables. Differences between proportions were determined using the chi-square test where the threshold for significance was $P < 0.05$. Results are presented in tabular and graphic forms using tables, charts and summary indices. Overall, the analysis of the data is both descriptive and explanatory.

Qualitative interpretation methods

All qualitative data were transcribed verbatim and edited prior to entry, coding and analysis in AnSWR (Analysis Software for Word-based Records). A coding scheme was drawn up where key variables and concepts were identified and defined. In addition to computer analysis, manual analyses were conducted where binary and domain valued matrices were generated for all questions and domains. Patterns of co-occurrence, and saliency in text based qualitative data were analyzed to capture key perceptions and the distribution of views regarding the magnitude of doping, application of anti-doping measures, strengths and weaknesses of current efforts and the potential for a stricter implementation of preventive and control measures.

Ethical issues and protections

Although the methods that were used were non-invasive, informed consent was obtained from each potential participant prior to inclusion in the study. Consent was expressed in writing although this was waived if respondent did not wish to be linked to the study by any documentation. For consenting legal minors (below 18 years), additional informed consent from either a parent, guardian or custodian was done to comply with consent requirements as stated in the study protocol. Participating subjects were given full assurance that information provided by them shall be kept securely and confidentially. In addition, all data

including audiotapes were stored securely with identifier information removed. Tapes were destroyed as soon as transcriptions and cross-verifications had been completed. The study received ethical approval from the Cameroon's National Ethics Committee and also from the WADA Institutional Review Board (IRB).

Study setting and target population

The setting of this study is Cameroon and the target population is amateur sportsmen and women registered in the 7 major sports federations of the country. These federations bring together sportsmen and women schooling and non-schooling. The map in the following page shows the geographical location of the four study sites.



502437 2-75

Limitations

Since drug use for doping purposes is illegal in Cameroon, it is likely that study participants might have as a result been sceptical reporting doping behaviour and it would not be surprising if some participants withheld information about their drug use behaviour. However, we believed that since participation was voluntary, anonymous and confidential, people who chose to participate in the study were likely to provide truthful responses.

Only licensed athletes were included in the study since the study was designed to recruit from among teams and individual athletes affiliated to sport federations. Athletes who were not registered with any of the teams or federations were therefore not included in the study sample. The data therefore excludes the views from the category of amateur sportsmen and women who were not currently registered with any of the country's sport federations. It is not certain how this might have biased the results of the study.

The disproportionate representation of the male stratum in the study sample where more than three quarters of the respondents were men makes comparative analysis by sex less significant than it would otherwise have been. However, this is unlikely to affect the robustness of the study given that fewer women than men are affiliated to the various national sport federations. This representation seems to be just a reflection of the level of formal involvement in sports by individuals of the different sexes.

The quantitative data reported in this write-up are derived mainly from univariate and bivariate analysis. Multivariate analysis will be reported in manuscripts which will be submitted for publication in scientific journals

RESULTS

I. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF ATHLETES

Distribution of respondents by site

The study was conducted in four sites evaluated to be representative of Cameroon. Active sportsmen and women and holders of valid licences issued by their respective sport federations were interviewed as well as some resource persons in the cities of Douala, Yaounde, Garoua and Bamenda. These localities are found respectively in the Littoral, Center, North and Northwest provinces of Cameroon. Out of the 1600 respondents, 40% were recruited from Yaounde, 32% from Douala, 16% from Garoua and 13% from Bamenda.

Distribution of the respondents according to sex

Eighty four per cent of the athletes interviewed were males and 16% were females. Meanwhile, there was disproportional enrolment of participants by sex across the sites with female respondents representing just about 16% of the sample as can be seen in table 1 below. Like for male participation, the highest female participation was recorded in Yaounde and Douala (53% and 23% respectively).

Distribution of respondents by age group

The distribution of respondents by age reveals four main age-groups: 11-19, 20-24, 25-29, and 30+. This distribution also shows the youthfulness of the respondents, by reason of the fact that 90% of the sample fall in the less than 30 year-old category. The most representative age group was the 20-24 year-olds, representing 43% of the total sample, followed by the 25-29 year-olds, 11-19 and the 30 years and above age category. The proportions of the last three groups were evaluated at 26%, 21% and 10% respectively. When we consider the sample distribution by age and sex, we notice that the concentration of athletes both male and female is in the two middle age-groups 20-24 and 25-29. We notice also that for the first two age groups (11-19 and 20-24), the age gap between the male and female athletes is narrow. However, this gap becomes wider for the older age groups. The sex difference in the 30+ age group could be explained by the fact that many female athletes drop out of sporting activity in their thirties when they get married or when they begin having children.

Table 1: Demographics characteristics of respondents

Sex	male		Female		All	
	N	%	n	%	n	%
Study site						
Yaounde	502	37.2	133	53.0	635	39.7
Douala	453	33.6	58	23.1	511	31.9
Garoua	217	16.1	35	13.9	252	15.8
Bamenda	177	13.1	25	10.0	202	12.6
Age group						
11 – 19 yrs	282	20.9	54	21.5	336	21.0
20 – 24 yrs	587	43.5	106	42.2	693	43.3
25 – 29 yrs	332	24.6	77	30.7	409	25.6
30 & +	148	11.0	14	5.6	162	10.1
Level of education						
Never been to school	30	2.2	2	0.8	32	2.0
Primary	64	4.7	10	4.0	74	4.6
Secondary	893	66.2	160	63.7	1053	65.8
Post secondary	362	26.8	79	31.5	441	27.6
Family background (living with parents)						
Yes	734	54.4	141	56.2	875	54.7
No	332	24.6	68	27.1	400	25.0
Others	283	21.0	42	16.7	325	20.3
Ethnic group						
Bamileke	502	37.2	90	35.9	592	37.0
Beti	253	18.7	65	25.9	318	19.9
Sawa	214	15.9	42	16.7	256	16.0
Hausa	146	10.8	13	5.2	159	9.9
Others	234	17.4	41	16.3	275	17.2
Religion						
Catholic	765	56.7	139	55.4	904	56.5
Protestants	338	25.1	89	35.5	427	26.7
Muslim	127	9.4	6	2.4	133	8.3
Animists	20	1.5	3	1.2	23	1.4
Others	99	7.3	14	5.6	113	7.1
Sport federation						
Football	614	45.5	11	4.4	625	39.0
Handball	131	9.7	125	49.8	256	16.0
Basketball	209	15.5	23	9.2	232	14.5
Volleyball	100	7.4	27	10.8	127	7.9
Cycling	21	1.6	1	0.4	22	1.3
Athletics	145	10.7	53	21.1	198	12.4
Boxing	129	9.6	11	4.4	140	8.8
Economic activity						
Commerce	111	8.2	27	10.8	138	8.6
Agriculture	21	1.6	0	0.0	21	1.3
Sawing/embroidery	6	0.4	7	2.8	13	0.8
Building/carpentry/mechanic	49	3.6	1	0.4	50	3.1
No remunerative activity	90	6.7	18	7.2	108	6.7
None	614	45.5	121	48.2	735	45.9
Others	458	33.9	77	30.7	535	33.4
All	1349	100.0	251	100.0	1600	100.0

Distribution of respondents by level of education

Majority of the respondents have had secondary education as shown in table 1 below. About 66% of the respondents have had secondary and 27%, post secondary education. An insignificant minority (2%) of respondents have not had formal education.

Sixty six percents of male and 64% of female athletes have had secondary education. More female (32%) than male (27%) athletes have had post secondary education. This may perhaps be explained by the fact that more boys than girls are likely to abandon the pursuit for higher education in favour of work related demands thus leading to higher dropouts among boys in higher education than girls.

Distribution of respondents by ethnic origin

Analysis by ethnic origin shows the following distribution: 37% Bamileke, 20% Beti, 16% Sawa, 9% Hausa and 17% of respondents belong to various ethnic groups. This distribution also shows a balance between Bamileke sportsmen and women in terms of proportions. Noteworthy is the bigger proportional representation of Beti women than men and also the under representation of the Hausa ethnic group in all gender categories.

Distribution of respondents by religion

An analysis of the religious background of respondents gives a distribution that roughly reflects the religious configuration of the Cameroonian society. Majority of the study participants were Roman Catholics (57%), followed by Protestants (27%) and Muslims (8%). Animists and the faithful of other religions represented 7% of the sample. An analysis by sex and religion indicates that female Muslim athletes were heavily under represented relative to the female Catholic and Protestant athletes. Meanwhile, the proportion of female Protestant athletes (36%) was higher than that of male athletes (21%).

Distribution of respondents according to family background (living with parents)

More than half of the respondents (54%) live with both of their parents. Twenty five per cent live in single parent families, and 21% live alone or have lost both parents.

Distribution of respondents by economic activity

Forty six per cent of the respondents do not have any economic activity. They are mainly secondary school and university students. In addition to their studies, they practice sporting activities. About 33% are into different professions, e.g. military, taxi drivers, teachers, etc. Of

the remaining categories, about 9% are involved in business and 7% have no particular engagement or income generating activity.

II. SPORTING ACTIVITIES

Distribution of respondents by discipline and site

A total of seven sporting disciplines were targeted for the study. These are: football, handball, basketball, volleyball, cycling, athletics and boxing. In some of these disciplines, the respondents were unequally distributed both at national and site levels. For instance, on the overall, enrolment and participation by football athletes (39%) is the highest. This is expected since football constitutes the major sport in Cameroon. Football is followed by handball (16%), basketball (15%) and boxing (12%). Athletics (8%), volleyball (8%) and cycling (1%), have the least enrolment and participation in the study.

Distribution of respondents by discipline and sex

The distribution of respondents by discipline and sex indicates a significant difference between male and female athletes in terms of discipline practised. A significant proportion of male athletes are football players (46%) and female athletes, handball players (49%). The other discipline with a high proportion of male respondents is basketball (16%), while athletics (21%) is the second discipline with a significant representation of female athletes. Male athletes are less represented in athletics (11%), boxing (10%), handball (10%), volleyball (7%) and cycling (2%). Female athletes are less represented in disciplines such as cycling (0.4%), football (4%), boxing (4%), basketball (9%) and volleyball (11%).

Distribution of respondents by discipline and frequency of sport practice

A frequency distribution of athletes by practice of sports indicates that among those doing sports on a regular basis, football is the first discipline (41%). This is due perhaps to the fact that football appears to hold a promising future for young Cameroonian athletes, is more organised and less demanding in equipment and infrastructure. In addition, football competitions are organised more regularly than competitions in the other disciplines. It is worth noting that competitions in disciplines such as handball and basketball are organised sometimes for just 2 to 3 months annually as opposed to year round competitions for football. Consequently, athletes involved in these sports are by virtue of that fact not given to regular or frequent practice. Volleyball (7%) and cycling (1%) athletes were the disciplines with the lowest regular frequency of practice (see table 2).

Table 2: Distribution of respondents by discipline and frequency of sport practice

Discipline	Regularly		Often		Sometimes	
	n	%	N	%	n	%
Football	602	41.1	19	19.8	4	10.3
Handball	218	14.9	27	28.1	11	28.2
Basketball	203	13.9	21	21.9	8	20.5
Volleyball	105	7.2	12	12.5	10	25.6
Cycling	17	1.2	4	4.2	1	2.6
Athletics	190	13.0	6	6.2	2	5.1
Boxing	130	8.9	7	7.3	3	7.7
total	1465	100	96	100	39	100

Distribution of respondents by longevity of involvement in competitive sports

Majority of athletes (54%) in the four sites had at least 5 years of experience in the practice of competitive sports while, 13% had four years of experience, and 12% had 3 years, 11% 2 years and 10% maximum 1 year of experience. The distribution by discipline indicates that with the exception of boxing where a considerable proportion of athletes were newcomers (28%), athletes of the other disciplines were significantly long time competitors. The percentage of long time competitive experience (5 years and more) was noted as follows: volleyball (66%), football (62%), handball (57%), basketball (50%), cycling (46%), and athletics (44%).

Table 3: Distribution of respondents by longevity in the practice of competitive sports

Discipline	Maximum 1year		2 years		3 years		4 years		≥ 5	
	n	%	n	%	N	%	N	%	n	%
Football	50	8.0	58	9.3	62	9.9	69	11.0	386	61.8
Handball	23	9.0	22	8.6	33	12.9	33	12.9	145	56.6
Basketball	13	5.6	19	8.2	43	18.5	40	17.2	117	50.4
Volleyball	7	5.5	15	11.8	13	10.2	8	6.3	84	66.1
Cycling	1	4.6	6	27.3	4	18.2	1	4.6	10	45.5
Athletics	23	11.6	29	14.6	22	11.1	36	18.2	88	44.4
Boxing	39	27.9	33	23.6	18	12.9	14	10.0	36	25.7
Total	156	9.7	182	11.4	195	12.2	201	12.6	866	54.1

Distribution of respondents by practice of a second sporting activity

The distribution of athletes by practice of a second discipline shows that the majority of athletes (67%) practice only one discipline. Nevertheless, it should be noted that the highest proportion of athletes who practice a second discipline are footballers (32%), followed by

handball players (19%), basketball players (17%) and volleyball athletes (13%). The data indicate that athletes who practice collective sports are more likely than those who practise individual sports to engage in a second sporting discipline.

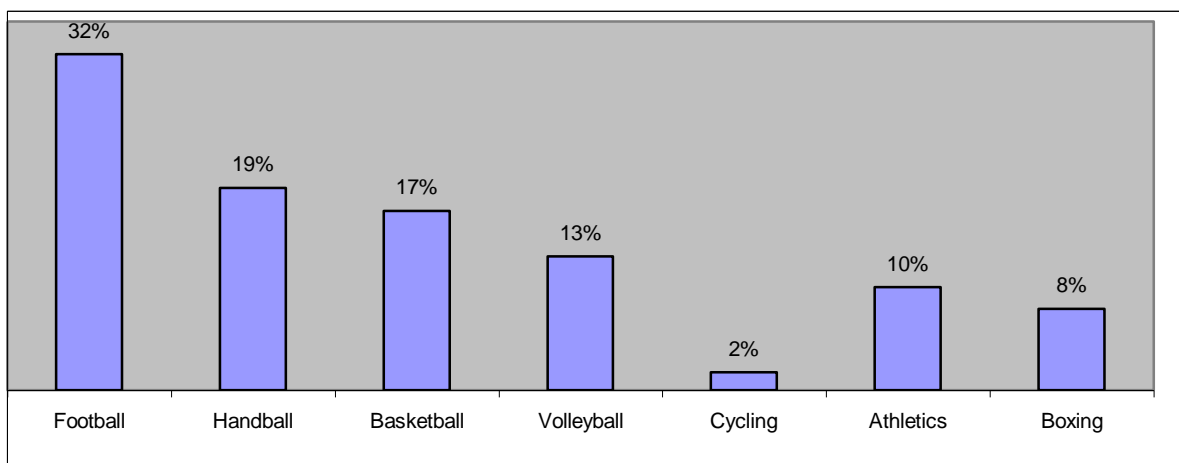


Figure 1 Athletes who practice a second sporting activity

Distribution of respondents by highest level of competition attained

The distribution of athletes according to highest level of competition ever attained shows that the majority of respondents (58%) had never gone beyond provincial competitions. About 34% of athletes have been involved in national competitions and only 8% have participated in international competitions. Disciplines whose athletes were engaged in mainly provincial or local competitions, included football (68%), basketball (63%), and boxing (65%), and those whose athletes have been involved in national level competitions were volleyball (51%), cycling (50%) and athletics (45%).

Table 4: Distribution of respondents by highest level of competition attained

Discipline	Local/provincial		National		International	
	n	%	n	%	n	%
Football	423	67.7	164	26.2	38	6.1
Handball	135	52.7	92	35.9	29	11.3
Basketball	145	62.5	80	34.5	7	3.0
Volleyball	55	43.3	65	51.2	7	5.5
Cycling	9	40.9	11	50.0	2	9.1
Athletics	70	35.4	90	45.4	38	19.2
Boxing	91	65.0	40	28.6	9	6.4
Total	928	58.0	542	33.9	130	8.1

III. KNOWLEDGE OF LAWFUL AND UNLAWFUL SUBSTANCES, AND FOOD SUPPLEMENTS

Distribution of respondents by knowledge of drugs and food supplements

Majority of athletes acknowledged the prevalence of legal and illegal substances, as well as food supplements in their milieu . Nine out of 10 athletes recognised the existence of illegal substances, whereas, 8 out of 10 knew about the existence of food supplements. Barely 5 out of 10 athletes were aware of the existence of lawful substances for sports. The results suggest that most athletes in Cameroon perceive the use of substances as illegal.

When respondent characteristics are considered, athletes from the Yaounde site were significantly less aware of the existence of legal drugs ($p = 0.00$). Less than 45% of athletes from this site acknowledged the existence of these substances. In the other sites, practically more than 55% of athletes declared that they knew about the existence of legally allowed substances in sports. However, athletes in the Yaounde site were more likely to be aware of the existence of food supplements and unlawful substances than those of the other sites ($p = 0.00$).

By federation of affiliation, athletes affiliated to the cycling federation were more likely to be informed about the existence of lawful drugs than athletes of the other federations. Athletes of the athletics and boxing federations were less likely to be informed about the existence of lawful drugs for sports than athletes from the other federations. However, the differences in the levels of awareness between the various federations was not statistically significant ($p=0.06$).

Table 5: Distribution of respondents by awareness of lawful and unlawful drugs and food supplements in sports

	Lawful drugs		Unlawful drugs		Food supplements	
	n	%	n	%	N	%
Site						
Yaounde	281	44.3	624	98.3	567	89.3
Douala	338	66.1	484	94.7	437	85.5
Garoua	147	57.9	214	84.1	176	69.1
Bamenda	120	60.0	169	84.6	161	80.7
Level of education						
None	23	71.9	25	78.1	20	62.5
Primary	38	51.4	58	78.4	60	81.1
Secondary	571	54.2	985	93.5	886	84.1

Post secondary	254	57.6	423	95.9	375	85.0
Federation of affiliation						
Football	372	59.5	587	93.9	519	83.0
Handball	145	56.6	236	92.2	207	80.9
Basketball	122	52.6	214	92.2	194	83.6
Volleyball	67	52.8	122	96.1	110	86.6
Cycling	14	63.6	20	90.9	18	81.8
Athletics	95	48.0	185	93.4	179	90.4
Boxing	71	50.7	127	90.7	114	81.4
Total	886	55,4	1491	93,2	1341	83,8

Distribution of respondents by knowledge of lawful substances

Many substances were cited by respondents as being capable of stimulating the body before or during competitions. Alcohol and cigarettes were the most cited substances (23% and 33% respectively). Thirty seven per cent of athletes mentioned a myriad of other substances said to serve as body stimulants before or during competitions.

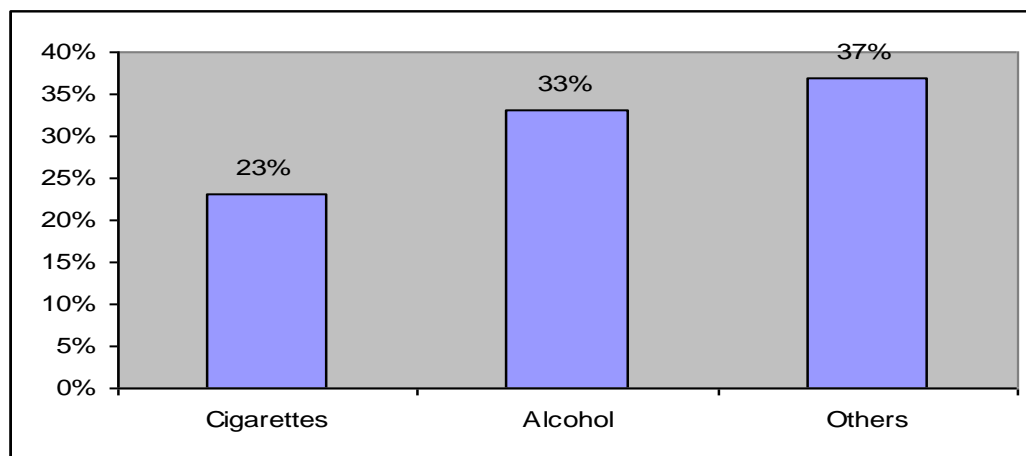


Figure 2. Knowledge of lawful substances

The proportion of those who cited cigarettes as known lawful substance in sports decreased with increased educational level ($p=0.006$). Fifty seven percents of athletes without education vs less than 34% of athletes with educational levels that varied from primary to post secondary, cited cigarettes. Awareness of alcohol as lawful substance varied according to study sites ($p=0.000$): 45% in Garoua, 15% in Bamenda. For those who cited substances other than cigarettes and alcohol, the group without formal education represented 9%, as against 50% for those with secondary and post secondary education.

	Cigarettes	Alcohol	Others
Site			
Yaounde	18.4	27.1	47.3
Douala	27.8	38.5	18.3
Garoua	32.0	45.6	39.5
Bamenda	15.0	15.0	62.5
Level of education			
None	57.2	52.2	8.7
Primary	26.3	28.9	50.0
Secondary	23.1	33.3	37.1
Post secondary	20.1	30.7	37.4
Federation			
Football	24.2	34.1	38.7
Handball	22.8	35.9	38.6
Basketball	18.0	32.0	23.8
Volleyball	23.9	25.4	41.8
Cycling	14.3	14.3	57.1
Athletics	20.0	29.5	43.2
Boxing	32.4	36.6	31.0
Total	23.0	32.8	37.0

Taking into consideration federation of affiliation, the highest proportions of those who cited cigarettes and alcohol came mainly from the boxing federation (32% cigarettes; 37% alcohol) ($p > 0.05$). Athletes from the cycling federation mentioned a substance different from cigarettes and alcohol.

III.3 Knowledge of unlawful substances

Respondents demonstrated awareness of the existence of a great deal of performance enhancing substances frequently used in sports circles in Cameroon. Banga and Cocaine seemed to be the most widely recognised. Both substances were cited by 74% and 54% of athletes respectively. Cannabis which was cited by 1 out of 5 athletes was also more or less recognised, followed by Guronsan, D10 and anabolic steroids cited by close to 10% of respondents.

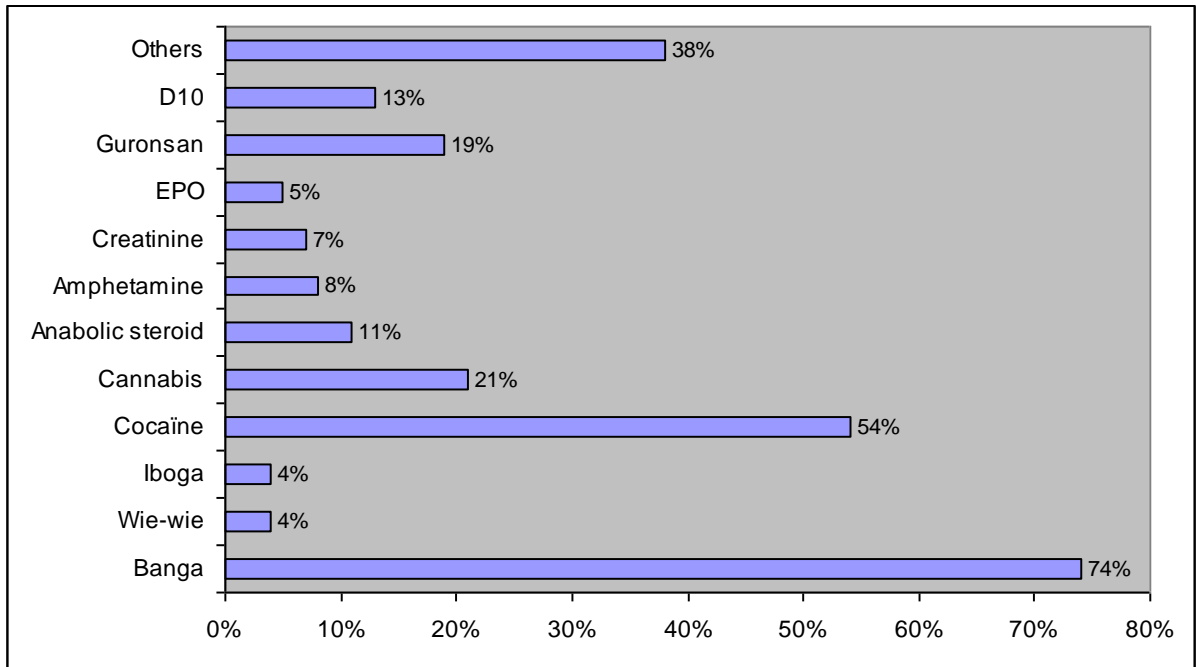


Figure 3: Distribution of respondents by knowledge of illegal substances.

Statistical analysis shows that except for EPO, knowledge of unlawful substances varied significantly according to study site ($p < 0.05$). Athletes from the Yaounde site appeared more likely to know about illicit substances in sports than athletes from the rest of the sites. This was particularly true for substances such as Cocaine, Cannabis, Anabolic steroids, Amphetamine, Creatinine, Epo and Guronsan which were mostly cited in the Yaounde site than in the other sites. Wie Wie¹, Iboga² and D10 were recognised in Garoua more than anywhere else. Banga was less known in Garoua than in the other sites. However, more than half of the athletes from Garoua mentioned a large variety of substances which were recorded as 'others'. Except for Wie-wie, and Iboga, awareness of unlawful substances tends to increase with level of education. Forty eight percent of respondents without formal education cited Banga and 70% of those with a higher educational background cited the same substance ($p = 0.001$). Cocaine was cited least by athletes with primary education (45%), as against 52% for those with post secondary education. The proportion of athletes with primary education who cited Cannabis was twice less than that of athletes with post secondary education. Substances such as anabolic steroids, Guronsan, Amphetamine and

¹ Wie-Wie – a mixture of leaves from some plants with stimulating effects, reduced to powder and inhaled (Ama et al, 2002, Bsjm)

² Iboga – is a plant the roots of which contain substances with stimulating effects (P Laure. Dopage et Societé. Paris: Les Ateliers de Normandie, 2000: 199)

Creatinine were mostly cited by athletes with post secondary education. Amphetamine and Creatinine were only cited by athletes who had at least primary level education.

Analyses by federation of affiliation indicate that for all federations, 7 out of 10 athletes knew about Banga ($p = 0.27$). Wie-Wie was cited mainly by athletes of the cycling federation ($p=0.00$). Level of knowledge of amphetamine, anabolic steroids, creatinine and epo also varied significantly according to federation ($p < 0.05$). For cocaine and cannabis, the levels of knowledge of these substances varied less from one federation to another ($p > 0.05$).

Table 7: Proportion of respondents who are aware of unlawful substances used in sports

	Banga	Wie-wie	Iboga	Cocaine	Cannabis	Anabolic steroids	Amphetamine	Creatinine	Epo	Guronsan ³	D10 ⁴	Others
Site												
Yaounde	80.0	2.7	2.9	61.5	25.0	15.2	11.9	11.1	6.7	33.5	11.9	41.2
Douala	76.9	1.6	2.3	52.3	20.3	8.5	6.6	3.1	4.1	14.1	10.9	30.0
Garoua	42.5	11.7	7.5	31.3	16.8	4.7	3.7	3.7	3.7	0.5	24.3	55.1
Bamenda	81.7	6.5	7.1	59.8	13.6	7.1	5.3	5.3	5.3	4.7	14.2	30.2
Level of education												
None	48.0	8.0	4.0	52.0	20.0	4.0	0.0	0.0	12.0	12.0	12.0	40.0
Primary	79.3	6.9	5.2	44.8	10.3	3.4	3.4	1.7	3.5	12.1	24.1	34.5
Secondary	75.9	4.6	3.9	52.5	20.7	6.8	7.3	5.3	3.3	16.6	14.3	36.0
Post secondary	69.5	2.4	3.6	58.9	23.2	20.8	11.6	11.4	9.9	26.7	10.6	44.0
Federation												
Football	75.0	4.8	3.9	54.5	20.3	5.3	4.4	4.8	3.2	16.0	17.6	40.0
Handball	68.6	0.9	2.5	48.3	16.1	8.5	6.8	3.0	3.8	20.3	7.6	44.1
Basketball	72.0	4.2	4.7	59.8	24.8	15.4	15.9	7.9	7.0	26.6	8.9	35.1
Volleyball	75.4	4.9	5.7	59.8	25.4	23.0	13.1	8.2	12.3	39.3	11.5	35.3
Cycling	80.0	25.0	10.0	40.0	25.0	20.0	20.0	20.0	20.0	25.0	15.0	50.0
Athletics	72.4	3.9	1.6	55.1	22.7	19.5	12.4	16.2	7.6	14.6	15.7	33.5
Boxing	80.3	3.2	4.7	47.2	19.7	4.7	3.2	3.9	2.4	5.5	13.4	31.5
All	73.8	4.1	3.8	54.0	21.0	10.6	8.3	6.8	5.3	19.2	13.4	38.3

Knowledge of food supplements

Vitamin C topped the list of food supplements used by athletes. This substance was mentioned by 49% of respondents, followed by iron (15%) and magnesium (5%). The category “others” was frequently cited (53%) which included various fruits and vegetables, etc.

³Guronsan is a pharmaceutical product that contains vitamin C. Athletes report that when taken in heavy dose, this drug becomes a stimulant capable of enhancing athletic performance

⁴ D10 is a tablet sold in pharmacies. Athletes report that when taken in heavy dose, this drug becomes a stimulant capable of enhancing athletic performance

Yaounde site athletes (60%), were more likely to mention Vitamin C than athletes from the other sites ($p = 0.00$). In the other 3 sites, this proportion was below the total average. In the Bamenda site for example, only 27% of participants mentioned Vitamin C. No significant difference was shown in knowledge of supplement and level of education ($p > 0.05$). Meanwhile, neither iron nor magnesium was mentioned by athletes without formal schooling. However, about 45% of the latter mentioned Vitamin C and others supplements such as vegetables, fruits, etc. The proportion of athletes who mentioned Vitamin C was 33% for those with primary, 49% for secondary and 50% for post secondary education. By federation of affiliation, majority of athletes mentioned Vitamins C except for athletes of football, handball and the boxing federations ($p = 0.00$). For those who mentioned iron, the proportions did not vary significantly from one federation to the other.

Table 8: Percentage distribution of respondents aware of food supplements used in sports

	Vitamin C	Iron	Magnesium	Others
Site				
Yaounde	63.0	15.3	5.6	57.7
Douala	46.2	18.3	4.8	31.8
Garoua	30.7	6.8	0.6	67.6
Bamenda	26.7	11.2	8.7	78.3
Level of education				
None	45.0	0.0	0.0	45.0
Primary	33.3	13.3	6.7	66.7
Secondary	49.4	15.6	4.6	51.2
Post secondary	50.4	13.6	6.1	55.5
Federation				
Football	42.4	15.0	3.1	52.6
Handball	45.9	14.5	5.3	60.9
Basketball	56.2	13.4	4.1	43.8
Volleyball	51.8	14.6	3.6	52.7
Cycling	61.1	11.1	5.6	72.2
Athletics	62.6	15.6	11.2	50.8
Boxing	45.9	14.9	7.0	57.0
Total	48.9	14.7	5.1	53.0

III.5 Anti-doping sensitization in sports milieu

Even though doping does not appear to have been addressed by sports authorities in Cameroon, about 48% of the study participants declared having been sensitised about the problem. However, this was not in formal or well organised situations. Respondents acknowledged receiving information and pieces of advice from relatives, brothers/sisters, coaches, friends, media, etc. By site, athletes from Bamenda were more likely to have been

sensitized on the side effects of doping than those of the other sites. About 72% of athletes from Bamenda declared having been sensitised on the side effects of doping at least once, as against 48% of their counterparts from the other sites. Athletes from Douala were the least likely to have been sensitized (40%).

By educational background, 31% of athletes who had never been to school declared having been sensitized. This low proportion could be explained by the fact that they had less exposure to sensitization from the print media compared to the other groups. On the contrary, athletes who had post secondary education seemed more likely to be sensitised (57%), followed by those with primary (51%) and secondary education (44%). By federation, athletes of the cycling federation were more likely to be sensitised than those of the other federations and were about twice more likely to be sensitized than football athletes (82% vs. 44%) ($p = 0.00$).

Table 9: Proportion of respondents who have been sensitized against doping before

	N	%
Site		
Yaounde	302	47.6
Douala	204	39.9
Garoua	114	45.2
Bamenda	145	71.8
Level of education		
None	10	31.3
Primary	38	51.4
Secondary	468	44.4
Post secondary	249	56.5
Federation of affiliation		
Football	273	43.7
Handball	118	46.1
Basketball	108	46.6
Volleyball	66	52.0
Cycling	18	81.8
Athletics	120	60.6
Boxing	62	44.3
Total	765	47.8

Knowledge of anti-doping regulation in Cameroon

Close to 11% of study participants admitted they were aware of the Cameroon anti-doping regulation. By site, few athletes from Yaounde and Douala had knowledge of the country's anti-doping regulation. In fact, the proportion of those from the Garoua and Bamenda sites was respectively 3 and 4 times more likely to know about anti-doping regulation than those from Yaounde and Douala. By educational background, athletes who had never been to

school were more likely to acknowledge the existence of anti-doping laws than those who had had a post secondary education (22% vs. 12%). Athletes from the volleyball federation seemed more informed on the existence of these laws than those from other federations (11% vs. 12%).

Table 10: Proportion of respondents who had knowledge of anti-doping regulation

	N	%
Site		
Yaounde	38	6.0
Douala	28	5.5
Garoua	46	18.3
Bamenda	56	27.7
Level of education		
None	7	21.9
Primary	4	5.4
Secondary	106	10.1
Post secondary	51	11.6
Federation		
Football	66	10.6
Handball	15	5.9
Basketball	22	9.5
Volleyball	27	21.3
Cycling	3	13.6
Athletics	19	9.6
Boxing	16	11.4
Total	168	10.5

III 7 Sources of information on Banga, Wie Wie, Iboga and Cannabis

This study sought to identify information channels on unlawful substances such as Banga, Wie-Wie, Iboga and Cannabis opened to athletes. The data indicate that friends and the media were the main sources of information. Thus, among the athletes who knew about Banga, Wie-wie, Iboga and Cannabis, friends was cited as the main source of information (50%), followed by the media (46%), coaches (14%), books and magazines (7%). Other sources such as parents, brothers/sisters and teachers, were the less frequently cited sources of information about substances by athletes (<5% for each of the sources).

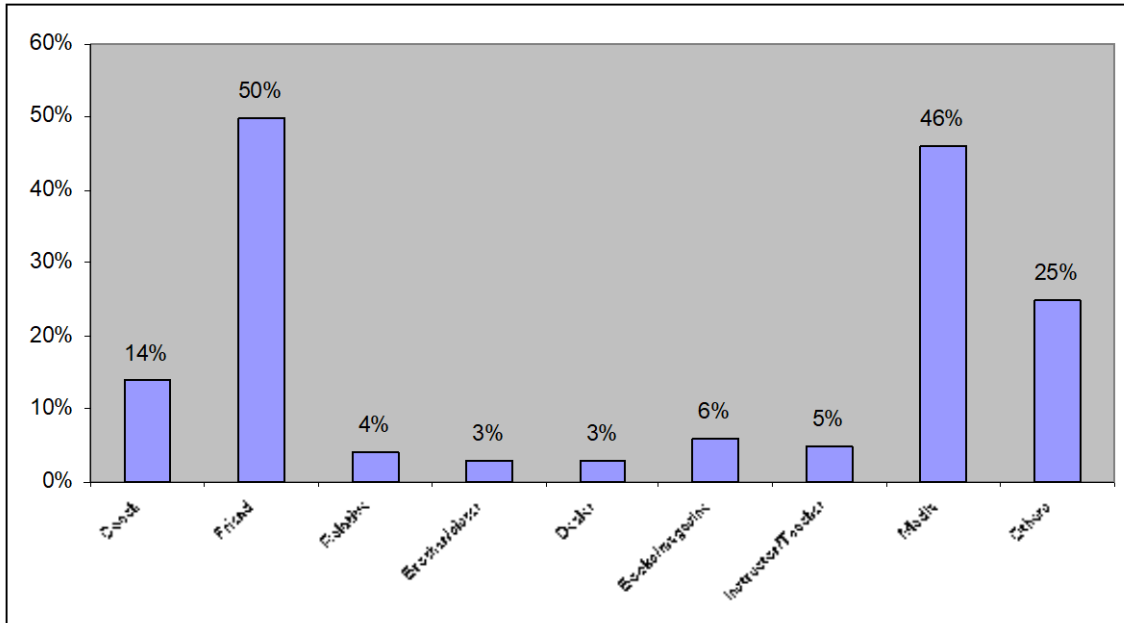


Figure 4: Distribution of respondents according to sources of information on Banga, Wie-wie, Iboga and Cannabis.

In all the sites (tables 13), friends (50%) and the media (46%) were consistently cited as the main information sources. However, these proportions decreased substantially in the Garoua (35% and 41%) and Bamenda (44% and 33%) sites. Meanwhile, the role of coaches as an information source in these two sites increased quite noticeably (24% against 19% respectively). Apart from brother/sister and books/magazine, others sources of information varied significantly according to site ($p < 0.05$).

By educational level, the role of the media ($p = 0.00$), book/magazine ($p = 0.00$) and instructors ($p = 0.01$) as sources of knowledge about Banga, Wie-wie, Iboga and Cannabis increased with level of education. No non-educated athlete was informed by either an instructor or a relative. By federation of affiliation, more than half of football and track and field athletes were informed by friends ($p = 0.01$) on the existence of these substances. Athletes of the volleyball and cycling federations were mostly informed by the media ($p = 0.01$).

Table 11: Distribution of respondents according to sources of information on Banga, Wie-wie, Iboga and Cannabis

	Coach	Friend	Relative	Brother/sister	Dealer	Books/magazine	Instructor/Teacher	Media	Others
Site									
Yaounde	13.9	56.4	3.0	3.9	0.8	6.6	4.9	52.4	30.1
Douala	12.3	51.9	4.5	4.1	2.7	6.8	2.9	47.0	19.2
Garoua	9.1	35.4	1.2	0.8	2.4	3.5	5.9	40.6	31.9
Bamenda	23.5	43.5	11.0	2.5	8.0	6.5	8.0	33.0	15.0
Level of education									
None	6.3	56.3	0.0	3.1	6.3	3.1	0.0	28.1	34.4
Primary	17.6	47.3	5.4	1.4	5.4	1.4	0.0	27.0	18.9
Secondary	13.2	50.6	4.4	3.8	2.4	5.3	4.4	45.8	24.4
Post secondary	15.2	48.5	3.8	2.3	2.3	9.3	7.0	52.4	26.8
Federation									
Football	14.4	53.6	4.2	4.8	2.7	5.8	2.4	43.2	28.0
Handball	11.3	41.0	3.5	4.7	1.2	5.9	8.6	49.2	25.9
Basketball	9.5	54.3	5.2	0.4	1.7	5.6	6.9	48.3	21.1
Volleyball	15.7	44.9	1.6	0.8	0.8	8.7	7.9	55.9	21.3
Cycling	13.6	40.9	9.1	0.0	4.6	18.2	13.6	54.6	40.9
Athletics	15.7	52.0	3.0	2.5	2.5	6.1	4.6	50.5	22.7
Boxing	18.6	46.4	7.1	2.1	7.1	5.7	1.4	36.4	20.7
Total	13.8	50.0	4.2	3.3	2.6	6.2	4.8	46.4	25.0

Sources of information on Cocaine, Steroids, Amphetamine and Epo

The data reveals that the main channels of information on Cocaine, Steroids, Amphetamine and Epo were the same as for Banga, Wie-wie, Iboga and Cannabis, namely: the media (54%), friends (31%), coaches (12%), books/magazines (9%). Other sources such as parents, teachers, brothers, sisters and dealers were cited by less than 4% of the sample.

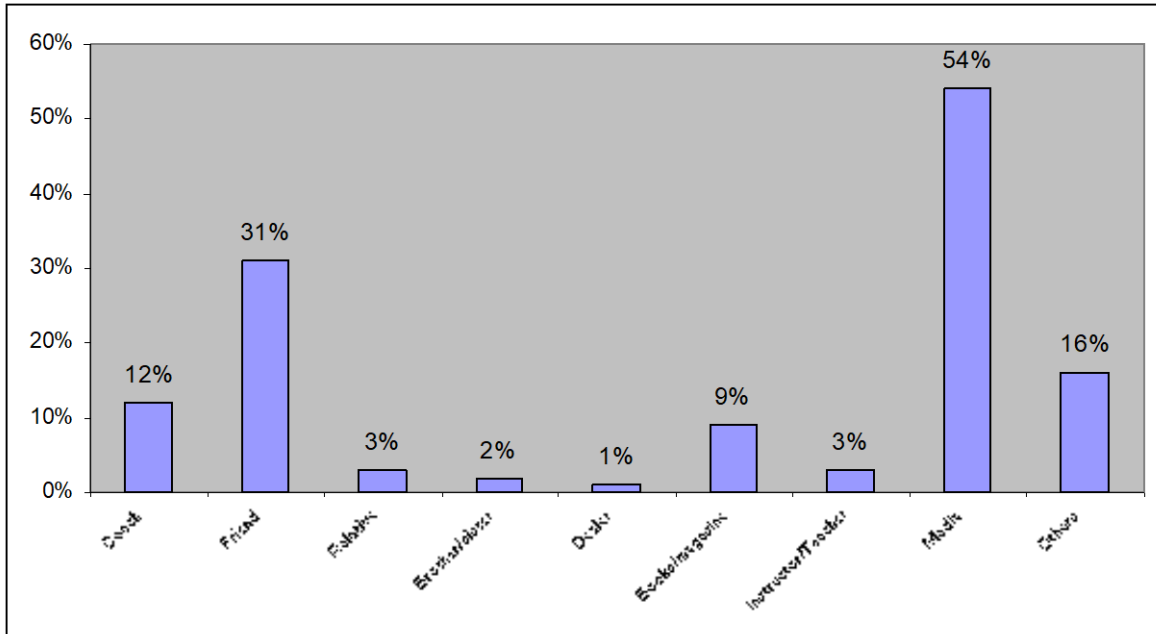


Figure 5: Distribution of respondents by source of information on Cocaine, Steroids, Amphetamine and Epo

Statistical analysis showed that sources of information varied according to study site ($p < 0.05$). Meanwhile, the media and friends contributed more in informing athletes of the Yaounde and Douala sites about these substances than they did for Garoua and Bamenda sites. However, in the Bamenda site the contribution of coaches, relatives and dealers was higher. Considering educational background, the role of the media ($p = 0.00$), teachers ($p = 0.00$), books and magazines ($p = 0.01$) increased with educational levels of the respondents. As a matter of fact, the results showed that the more athletes were educated, the more likely they were to have access to these sources and the more likely they were to be aware of the existence of these substances. Hence, the proportion of athletes who declared that their source of information on these substances was the media was twice higher for those with post secondary education than for those with primary school education. Those who had never been to any school were informed mostly by friends and dealers. By federation of affiliation, majority of athletes were informed by the media, except those of football and boxing.. Volleyball and cycling athletes were never informed by either a relative or a brother/sister.

Table 12: Distribution of respondents by source of information on Cocaine, Steroids, Amphetamine and Epo

	Coach	Friend	Relative	Brother/ Sister	Dealer	Book magazine	Instructor/T eachers	Media	Others
Site									
Yaounde	13.5	40.2	2.1	1.4	0.5	9.3	3.6	68.7	22.5
Douala	10.4	28.6	2.7	3.3	1.4	8.6	1.8	51.1	11.6
Garoua	6.7	22.1	1.2	0.4	1.2	3.5	5.5	40.9	16.9
Bamenda	20.0	22.0	7.5	1.0	2.5	12.5	3.5	30.5	4.0
Level of education									
None	12.5	40.6	0.0	3.1	6.3	3.1	0.0	31.3	21.9
Primary	16.2	32.4	5.4	0.0	4.1	4.1	0.0	31.1	14.9
Secondary	11.1	30.4	2.9	2.5	1.0	8.3	2.5	53.6	15.1
Post secondary	14.3	32.6	2.3	0.5	0.7	10.4	6.1	60.1	17.2
Federation									
Football	11.8	30.7	2.9	3.4	0.8	8.0	1.9	49.0	17.8
Handball	9.0	28.9	1.2	0.8	0.8	9.8	7.0	55.1	13.7
Basketball	9.9	31.9	5.2	0.9	1.7	9.0	4.3	60.3	10.8
Volleyball	15.6	33.1	0.0	0.0	0.8	10.2	3.9	62.2	11.8
Cycling	13.6	27.3	0.0	0.0	0.0	13.6	9.1	68.2	27.3
Athletics	15.7	34.3	2.0	0.5	0.5	8.6	2.5	58.6	18.2
Boxing	15.7	32.1	5.7	2.1	3.6	5.7	0.7	46.4	17.9
All	13.3	31.3	2.8	1.8	1.1	8.6	3.3	53.9	15.8

Education sources on the side effects of performance enhancing substances

The study also assessed sources of information about the side effects of performance enhancing substances available for athletes. Coaches and the media seemed to be the two main sources of information (40% and 43% respectively) for athletes, followed by relatives (14), friends (14%) and teachers (12%). Brothers/sisters, books/magazines and drug dealers were also variously cited as sources of information. These three sources were mentioned by less than 7% of athletes who were sensitised.

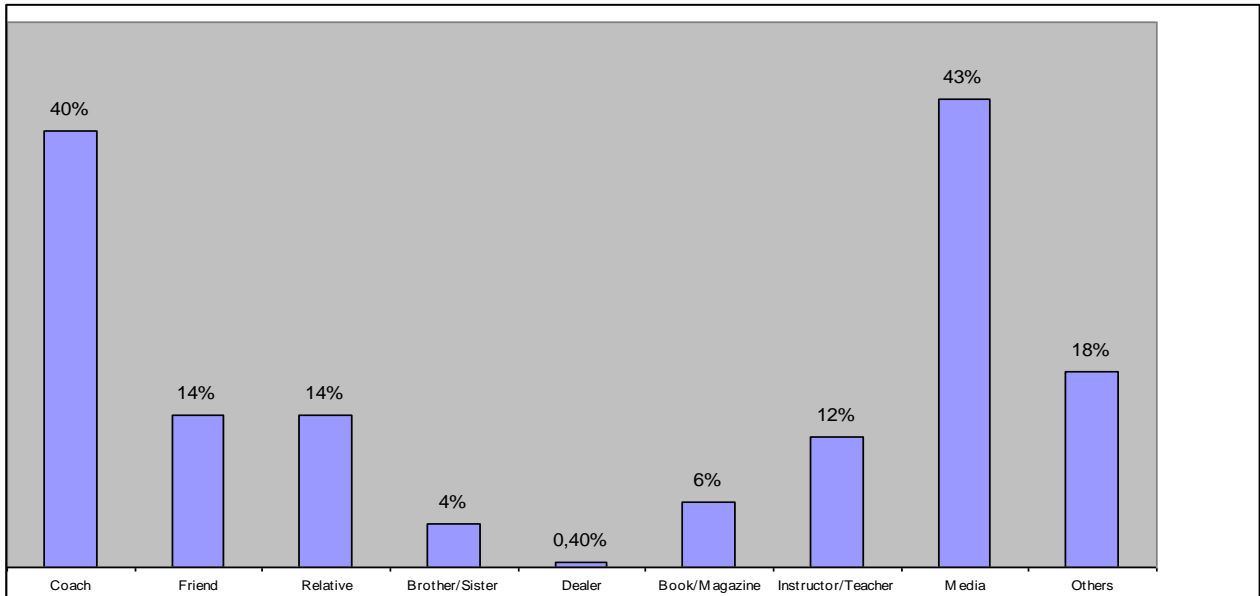


Figure 6: Distribution of respondents by source of information on the side effects of performance enhancing substances

Statistical analysis revealed that all the sources of education in the table below varied in relation with the study site ($p < 0.05$), except for book/magazine ($p = 0.3$). Athletes in Yaounde were mostly informed on the side effects of substances through the media, while those from the Bamenda site were informed by their coaches. In addition, it was in Bamenda that the contribution of the media scored its lowest percentage (28%), and where the proportion of athletes informed by drug dealers was the highest (2%). In Bamenda also, the proportion of athletes who were sensitized by relatives and friends on the side effects of performance enhancing substances was higher than for any other site.

Considering educational background, the proportion of respondents that was sensitized through books and magazines increased with level of education ($p = 0.00$). The proportion of those informed by teachers ($p = 0.00$) and the media ($p = 0.00$) also increased with level of education, with respectively 0% for athletes who had only been to primary school, up to 11% for those with post secondary education. For those who were sensitised by the media, about 16% of them had attained secondary education, and 49%, post secondary education. Athletes with a post secondary education were least likely to have been sensitized by relatives, friends or coaches.

Considering federation of affiliation, athletes of handball, volleyball and cycling were the most sensitized about the negative side effects of drugs. Coaches were the least important source of information about the negative side effects of drugs. Cycling athletes received no sensitization from either a friend or a brother/sister.

Table 13: Distribution of respondents by source of education on the side effects of performance enhancing substances

	Coach	Friend	Relative	Brother/ Sister	Dealer	Book/ magazine	Instructor/T each	Media	Others
Site									
Yaounde	30.5	11.9	9.3	3.0	0.0	7.3	12.9	53.6	18.9
Douala	39.7	13.7	17.2	9.3	0.0	3.9	7.4	45.6	16.7
Garoua	45.6	5.3	10.5	0.0	0.0	4.4	18.4	30.7	28.9
Bamenda	53.1	27.6	20.0	2.1	2.1	7.6	13.1	28.3	7.6
Level of education									
None	40.0	20.0	10.0	10.0	0.0	0.0	20.0	50.0	30.0
Primary	55.3	36.8	23.7	2.6	0.0	2.6	0.0	15.8	10.5
Secondary	41.0	13.5	16.0	5.1	0.6	3.6	10.5	42.1	16.5
Post secondary	34.1	12.5	7.6	2.0	0.0	11.2	11.3	49.4	20.5
Federation									
Football	44.7	17.2	17.6	7.0	1.1	2.6	10.6	37.4	20.9
Handball	28.0	15.3	9.3	1.7	0.0	7.6	15.3	50.8	18.6
Basketball	26.8	10.2	16.7	3.7	0.0	12.0	14.8	45.4	13.0
Volleyball	37.9	10.6	7.6	1.5	0.0	9.1	18.2	59.1	6.1
Cycling	27.8	0.0	11.1	0.0	0.0	16.7	27.8	61.1	16.7
Athletics	45.0	10.0	8.3	2.5	0.0	4.2	10.0	44.2	21.7
Boxing	54.8	24.2	16.1	3.2	0.0	4.8	3.2	27.4	14.5
Total	39.5	14.4	13.6	4.1	0.4	6.0	12.3	43.3	17.6

IV- ATTITUDES OF ATHLETES TO PERFORMANCE ENHANCING DRUG USE

IV.1 Perception of doping as necessary or unnecessary for success in sports

Most respondents (94%) thought doping is unnecessary for success. In all, 6% reported that doping was necessary in sports. This proportion varied significantly by study site. In the Bamenda site, 1 athlete out of 10 thought that doping was necessary for success in sports meanwhile, 1 athlete out of 20 had a positive opinion about doping in the Garoua site. When educational background is considered, respondents who had never been to school and those who had attained secondary school had the highest proportions (6.3% and 6.1% respectively) of those who believed doping is necessary for success in sports. By federation of affiliation, no cycling athlete believed on the necessity of using performance enhancing substances. Seven per cent of athletes from the athletics federation believed the use of performance enhancing substances is necessary for success in sports. However, for athletes belonging to the other federations this proportion varied from 3 to 6% of the respondents.

Table 14: Proportion of respondents who believe doping is necessary in sports

	n=	%
Site		
Yaounde	34	5.4
Douala	26	5.1
Garoua	10	3.9
Bamenda	20	10.0
Level of education		
None	2	6.3
Primary	3	4.1
Secondary	64	6.1
Post secondary	21	4.8
Federation		
Football	37	5.9
Handball	15	5.9
Basketball	13	5.6
Volleyball	5	3.9
Cycling	0	0.0
Athletics	14	7.1
Boxing	6	4.3
Total	90	5.6

IV.2 Perception of doping prevalence within the different sport federations

More than half of the respondents of each of the federations believed that drug use was a frequent practice in their discipline. This proportion however, varied largely by site, federation of affiliation and level of education. In the Douala and Garoua sites, the proportion was 5 out

of 10 athletes, 6 out of every 10 athletes in Yaounde and >4 out of every 10 athletes in Bamenda. By level of education, opinions varied less; ranging between 49 and 60%. By federation of affiliation, results indicate that athletes belonging to the handball, basketball and volleyball extractions believed less on the prevalence of performance enhancing substances within their discipline than those belonging to the other federations where the majority of athletes believed on the existence of doping practices.

Table 15: Proportion of athletes who believe doping is common in their federation of affiliation

	n	%
Site		
Yaounde	384	60.5
Douala	267	52.3
Garoua	132	52.4
Bamenda	75	37.1
Level of education		
None	18	59.4
Primary	36	48.6
Secondary	587	55.8
Post secondary	216	49.0
Federation		
Football	435	69.6
Handball	81	31.6
Basketball	95	40.9
Volleyball	48	37.8
Cycling	13	59.1
Athletics	116	58.6
Boxing	70	50.0
Total	858	53.6

IV.3 Proportion of respondents who believe doping is necessary for success in sports

Overall, 19% of the study participants thought that doping is necessary for success in sports. This percentage was however lower in Douala (18%) and in Garoua (14%) than in the other sites. The highest percentage was registered in Bamenda where about 1 out of every 4 athletes appeared to approve of doping as necessary for success in sports. By level of education, close to 15% of those with primary level education saw doping as necessary for success in sports. About 19% of respondents in the other educational categories felt that doping is necessary for success in sports. By federation of affiliation, athletes of handball, volleyball and basketball were less likely to believe in the use of doping as a means to success in sports. The proportion of athletes from the cycling federation who believed drug

use is necessary for success in sports was particularly high (41%). This proportion was four times higher for athletes affiliated to the boxing federation. For those of the other federations this proportion varied between 17 and 23%.

Table 16: Proportion of respondents who believe drug use is necessary for success in sports

	n	%
Site		
Yaounde	121	19.1
Douala	90	17.6
Garoua	36	14.3
Bamenda	50	24.7
Level of education		
None	6	18.7
Primary	11	14.9
Secondary	197	18.7
Post secondary	83	18.8
Federation		
Football	111	17.8
Handball	44	17.2
Basketball	49	21.1
Volleyball	29	22.8
Cycling	9	40.9
Athletics	42	21.2
Boxing	13	9.3
Total	297	18.6

IV.4 Distribution of respondents by opinion about doping prevalence in the various sport federations

The study permitted us to record the opinions of athletes regarding the extent of drug use in the different sport federations. Football (61%) and athletics (67%) were most frequently cited as disciplines affected by doping. More than 50% of athletes belonging to both federations were affirmative about this. Cycling and boxing were the second most affected disciplines and about 37% of their athletes were affirmative to this opinion. On the contrary, less than 13% of handball, basketball and volleyball athletes, believed drug use in their discipline is common.

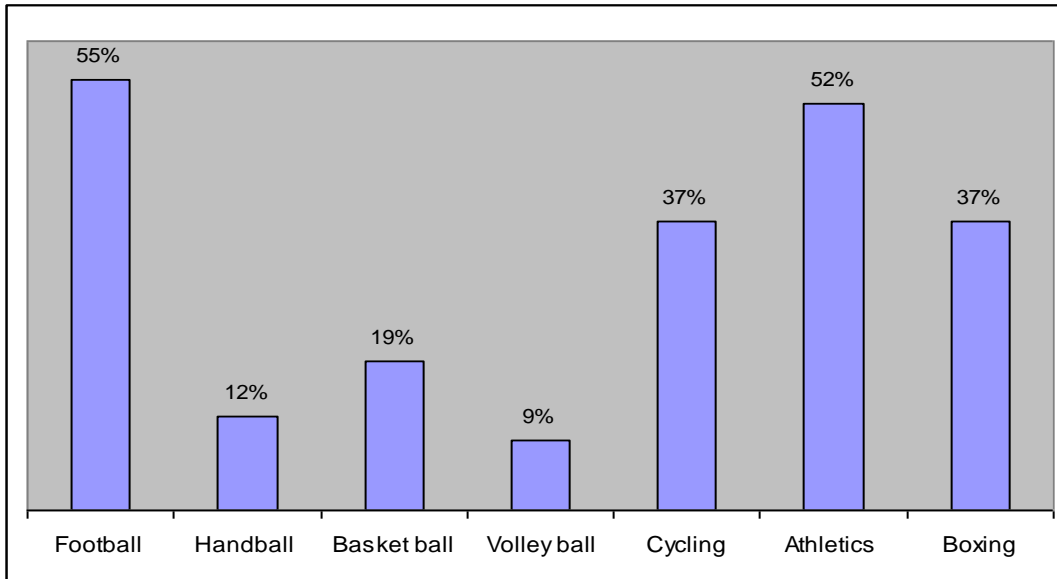


Figure 7: Distribution of respondents by opinion about use of doping within various sport federations

Statistical analysis revealed that regardless of site, drug use was practised by athletes of all the disciplines ($p = 0.00$). More than 6 athletes out of 10 in Yaounde thought that doping is common in football and athletics. In this same site, this rate stood at 4 out of 10 for boxing and cycling and 3 out of 10 for athletes of the other federations. The pattern in Douala was similar to that in Yaounde. In Garoua, <5 out of 10 athletes believed in this practice within the 7 federations. Finally, in Bamenda, doping was more commonly cited for football (50%), followed by boxing (31%) and athletics (19%), and less than 10% of the other federations.

Table 17: Proportion of respondents who believe the use of performance-enhancing substances in various sports is common in Cameroon

	Football	Handball	Basketball	Volleyball	Cycling	Athletics	Boxing
Yaounde	60.8	17.3	24.1	13.4	49.1	67.2	42.1
Douala	55.6	13.5	20.0	8.8	39.9	50.3	40.1
Garoua	41.7	5.1	12.6	2.8	23.2	45.3	22.8
Bamenda	55.0	3.0	10.0	2.5	7.0	19.0	30.0

IV.5 Proportion of respondents aware of doping use by team mates

About 34% of the respondents answered on the affirmative when asked if they knew of team mates who take drugs to enhance their performances. This proportion was higher in Yaounde (43%) and Bamenda (40%) than in Douala (26%) and in Garoua (21%). By educational background, this proportion increased with level of education (19%, 26%, 34% and 36% for none, primary, secondary, and post secondary education, respectively). By federation of affiliation, low percentages were recorded in the handball and basket ball federations. Athletes belonging to these federations were least likely to acknowledge the involvement of their team mates in the use of doping substances.

Table 18: Proportion of respondents aware of team mates who take drugs to enhance their performance

	n	%
Site		
Yaounde	270	42.5
Douala	135	26.4
Garoua	52	20.6
Bamenda	81	40.0
Level of education		
None	6	18.8
Primary	19	25.7
Secondary	355	33.7
Post secondary	158	35.8
Federation		
Football	240	38.4
Handball	65	25.4
Basketball	62	26.7
Volleyball	53	41.7
Cycling	7	31.8
Athletics	64	32.3
Boxing	47	33.6
Total	538	33.6

IV.6 Distribution of respondents by opinion about doping by their opponents

While 34% of respondents said they were aware of team mates who use doping drugs, a larger proportion (41%) believed that their opponents use drugs to enhance their physical capacities. In the Yaounde and Bamenda sites, athletes were more likely to believe their opponents were using doping drugs (40 and 45% respectively), than athletes in Garoua and Douala (37% and 33% respectively). The more an athlete was educated, the more likely he was to believe that his opponent is using performance enhancing substances. This proportion moved from 31% for those who had never been to school to 40% for those with secondary and 45% for those with post secondary education. Football, volleyball, cycling and

boxing athletes were more likely to believe that their opponents were taking doping drugs (>40%). Taking cycling alone, this proportion was >50% and this perception could have been influenced by the frequent doping scandals involving cyclists especially in international competitions.

Table 19: Percentage of respondents who were convinced their opponents use drugs to enhance their physical performance

	n	%
Site		
Yaounde	311	49.0
Douala	168	32.9
Garoua	92	36.5
Bamenda	80	39.6
Level of education		
None	10	31.3
Primary	24	32.4
Secondary	419	39.8
Post secondary	198	44.9
Federation		
Football	282	45.1
Handball	79	30.9
Basketball	89	38.4
Volleyball	53	41.7
Cycling	12	54.6
Athletics	79	39.9
Boxing	57	40.7
Total	651	40.7

IV.7 - Distribution of respondents by opinion about drug use among young people

The study looked at participants' opinion about drug use among young people. Respondents mentioned the following substances as common among young athletes: Banga (44%), Guronsan (16%), Cocaine (8%) and D10 (16%). All other drugs were much less frequently cited.

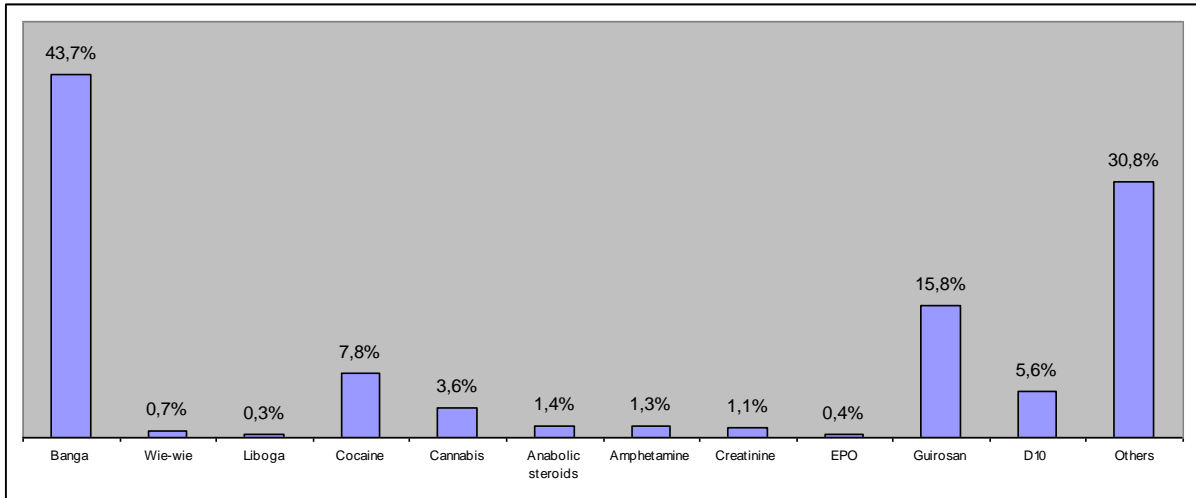


Figure 8: Performance enhancing substances commonly used by young athletes

Banga appeared to be the most commonly used substance (44%) in sports. However, in the Garoua site the proportion of participants who cited this product was just about 18%. In contrast to this, this proportion was very high in the Bamenda site (65%) ($p = 0.00$). The proportion that mentioned Guronsan also varied highly from one site to the other ($p = 0.00$), with 1% in Bamenda as against 12% in Douala and 29% in Yaounde. The proportion that cited D10 was twice higher in Garoua than in the other sites ($p = 0.00$). It was also noticed that more than half of athletes from the Garoua site mentioned others substances whose performance enhancing capacity could not and has not been evaluated. Cocaine was mostly mentioned by athletes in the Bamenda site (18%), against less than 4% in the other sites ($p = 0.00$). More than half of the respondents who had been to primary school mentioned Banga. As for those who had never been to school, only 25% of them knew about this substance and this proportion went up to 45% for those who had been to secondary school and 40% for those with post secondary education ($p = 0.00$).

Banga was cited mostly by athletes of football, basketball and boxing (>50%) ($p = 0.00$). The proportion varied from 22 to 37% for athletes of other federations. Similarly, the proportion of respondents having mentioned D10 varied from 1.3 to 9% according to federation of affiliation ($p = 0.03$). For Guronsan, the proportion of those who mentioned this substance was the lowest among the boxing federation athletes, 1.4% as against more than 9% for athletes of the other federations ($p = 0.00$). Athletes of the athletic federation (7%) mentioned Creatinine as against less than 2% for athletes of the other federations ($p = 0.00$).

Table 20: Proportion of respondents who believe in the use of performance enhancing substances by young athletes

	Banga	Wie-wie	Iboga	Cocaine	Cannabis	Anabolic Steroids	Amphetamine	Creatinine	Epo	Guronsan	D10	Others
Site												
Yaounde	43.6	0.2	0.0	5.4	2.7	1.7	2.1	2.4	0.3	29.3	4.1	31.2
Douala	48.3	0.8	0.4	9.2	5.5	2.0	1.2	0.2	0.8	11.6	5.3	25.1
Garoua	17.7	2.4	0.0	3.5	3.5	0.0	0.4	0.0	0.0	2.0	11.0	52.4
Bamenda	65.0	0.5	1.5	17.5	2.0	0.5	0.0	0.5	0.0	1.0	4.0	16.5
Level of education												
None	25.0	3.1	0.0	12.5	3.1	0.0	0.0	0.0	0.0	15.6	3.1	37.5
Primary	54.1	1.4	0.0	12.2	2.7	0.0	0.0	0.0	0.0	1.4	6.8	17.6
Secondary	45.2	0.8	0.4	7.3	3.3	0.3	1.2	0.8	0.4	13.7	6.7	31.4
Post secondary	39.7	0.5	0.2	7.9	4.5	4.3	1.6	1.8	0.5	23.1	2.9	30.8
Federation												
Football	52.6	0.5	0.3	9.3	4.3	0.2	0.3	0.3	0.2	14.9	8.5	39.2
Handball	22.7	0.4	0.8	6.6	1.2	1.2	1.6	0.0	0.0	16.8	4.3	34.4
Basketball	50.4	1.7	0.0	6.0	4.3	1.3	2.6	0.0	0.4	17.7	1.3	22.0
Volleyball	36.2	0.8	0.0	7.1	4.7	5.5	0.0	0.0	1.6	32.3	1.6	18.1
Cycling	27.3	0.0	0.0	4.6	0.0	0.0	0.0	0.0	4.6	9.1	4.6	40.9
Athletics	28.8	1.0	0.5	7.1	2.0	3.0	3.0	6.6	0.5	15.2	5.6	24.2
Boxing	61.4	0.7	0.0	8.6	5.7	1.4	1.4	1.4	0.0	1.4	5.7	20.0
Total	43.7	0.7	0.3	7.8	3.6	1.4	1.3	1.1	0.4	15.8	5.6	30.8

IV.8 Proportion of respondents who used performance-enhancing drugs during the last twelve months

Athletes who admitted using doping drugs in the preceding 12 months cited Guronsan, Banga, D10, Cocaine and Creatinine. Guronsan was the most used substance with 1 out of every 4 athletes admitting to its use. Banga was the second most used substance with 6% of users, followed by D10 (1%). Guronsan was used mostly in the Yaounde and Douala sites ($p = 0.00$). In these sites respectively 34% and 23% of athletes declared having used this drug during the last twelve months. Banga was mostly used in the Bamenda site (29%) as against less than 10% for the other sites ($p = 0.00$). In the Garoua site, 8 out of 10 athletes mentioned other substances. Yaounde and Douala sites were similar to Garoua where more than 24% of athletes mentioned other substances used.

Considering level of education, among athletes with primary education none admittedly used Guronsan during the past twelve months. Although Guronsan appeared to be the substance of choice for others ($p = 0.18$), Banga seemed to be the preference for this category of athletes ($p = 0.02$). Athletes of the boxing and cycling federations did not use Guronsan. Nevertheless, this substance seemed to be widely used in other federations. The proportion of those who admittedly used this substance varied slightly from 22 to 37% across different federations ($p = 0.4$). Fifty percents of athletes affiliated to the boxing federation used Banga during the last twelve months, while no athlete belonging to the handball, cycling and volleyball federations used this substance during the same period ($p = 0.00$).

Table 21: Proportion of respondents who used performance-enhancing drugs during the last twelve months by type of substance

	Banga	Wie-wie	Iboga	Cocaine	Cannabis	Anabolic steroids	Amphetamine	Creatinine	Epo	Guronsan	D10	Others
Site												
Yaounde	1.8	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	33.6	0.0	35.7
Douala	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.1	3.1	24.6
Garoua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	81.3
Bamenda	29.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8
Level of education												
None	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	0.0	42.9
Primary	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
Secondary	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	23.8	1.6	36.5
Post secondary	2.9	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	30.0	0.0	29.0
Federation												
Football	4.9	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	24.8	2.0	41.6
Handball	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.9	0.0	34.3
Basketball	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8	0.0	9.1
Volleyball	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.4	0.0	22.7
Cycling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Athletics	10.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	36.8	0.0	26.3
Boxing	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
Total	6.2	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	25.6	1.0	33.8

IV. 9 Distribution of athletes having used drugs at least once during the past three months

The following substances were cited as having been used during the past three months: Banga, Amphetamines, Creatinine, Guronsan, D10 and the other substances. Guronsan that was mentioned by 14% of the respondents was the most used drug during the period of reference, followed by Banga 4%. The other substances were rarely mentioned. Considering site of study, Banga was reported to be highly used in Bamenda (22%) ($p = 0.00$), while Guronsan topped the list in Yaounde (21%) ($p = 0.00$). Both substances were less used in the other provinces; less than 10% in Douala and Garoua. By level of education, Banga was most used by those with primary education (27%), against less than 5% for those with post secondary education.

Meanwhile Guronsan was most used by athletes with no educational background (29%), against 14% for those who had at least been to secondary school ($p = 0.02$). Taking into account federation of affiliation, close to 40% of boxers declared having taken Banga during the last three months, while less than 10% of the other federation athletes admitted to its use ($p = 0.00$). As for Guronsan, track and field athletes were the highest users (26%), followed by basketball players and football players (16%) ($p = 0.03$). Finally, more than 67% of cyclists admitted having used a variety of substances different from those recorded.

Table 22: Proportion of respondents who used performance-enhancing substances during the past 3 months

	Banga	Wie-wie	Iboga	Cocaine	Cannabis	Anabolic steroids	Amphetamine	Creatinine	Epo	Guronsan	D10	Others
Site												
Yaounde	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	20.5	0.0	34.8
Douala	6.2	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	9.2	3.1	18.5
Garoua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	62.5
Bamenda	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6
Level of education												
None	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	42.9
Primary	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
Secondary	4.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	14.3	1.6	31.0
Post secondary	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	27.1
Federations												
Football	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8	2.0	33.7
Handball	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	20.6

Basketball	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	9.1
Volleyball	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	33.3
Cycling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7
Athletics	5.3	0.0	0.0	0.0	0.0	0.0	5.3	5.3	0.0	26.3	0.0	36.8
Boxing	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
Total	4.3	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	14.2	1.0	29.4

IV-: Awareness of use of performance-enhancing substances by respondents' peers

Among athletes who used doping substances, more than half of them declared that their friends were aware that they are taking doping substances. This proportion was equally high with those who declared that their coaches were informed about their use of doping substances. Evidence from the data suggests that this practice is supported and even encouraged by trainers of athletes. Meanwhile, the data also reveals that family members of athletes were least aware of the fact that they used drugs.

Considering characteristics of respondents, trainers in Douala and Yaounde were more likely to be aware of the fact that their trainees used drugs than trainers in Bamenda and Garoua. In all sites, more than 50% of respondents who took drugs declared that their friends were informed about their behaviours ($p = 0.3$). By level of education, close to 6 out of 10 athletes who had never been to school declared that their coaches were aware of this practice. Their educated counterparts had rates that were lower: 4 out of 10 athletes. By federation of affiliation, cyclists were the only athletes who did not mention their coaches as being aware of this practice. Athletes of volleyball, handball and football federation appeared to take doping substances with the complicity of their trainers owing to the fact that >32% of them declared that their coaches were aware that they use doping drugs during competitions. The results also revealed that only 29% of track and field athletes revealed that their friends were aware of the fact that they use drugs, against 50% for the other athletes ($p = 0.08$).

Table 23: Distribution of respondents by knowledge of those who are aware they use performance-enhancing substances

	Coach	Friend	Parent/re lative	Brother /sister	Dealer	Teacher	Self	Others
Site								
Yaounde	27,1	54,1	1,8	1,8	0,0	0,0	10,1	35,8
Douala	37,9	51,7	3,3	6,7	3,3	0,0	8,3	24,6
Garoua	25,0	58,3	0,0	8,3	0,0	0,0	0,0	8,3
Bamenda	15,4	50,0	7,1	0,0	0,0	0,0	0,0	7,1

Level of education								
None	60,0	66,7	0,0	16,7	0,0	0,0	33,3	33,3
Primary	14,3	25,0	0,0	12,5	0,0	0,0	12,5	0,0
Secondary	23,9	53,5	2,6	3,5	1,7	0,0	8,6	29,1
Post secondary	38,5	55,2	3,1	1,5	0,0	0,0	4,6	30,7
Federation								
Football	32,2	52,7	4,3	2,2	2,2	0,0	5,4	30,8
Handball	35,5	54,6	0,0	6,5	0,0	0,0	3,2	38,7
Basketball	4,8	76,2	4,8	4,8	0,0	0,0	4,8	9,5
Volleyball	43,5	52,2	0,0	4,4	0,0	0,0	0,0	39,1
Cycling	0,0	50,0	0,0	0,0	0,0	0,0	50,0	0,0
Athletics	25,0	29,4	0,0	5,9	0,0	0,0	41,2	17,6
Boxing	14,3	50,0	0,0	0,0	0,0	0,0	12,5	12,5
Total	29,5	53,3	2,6	3,6	1,0	0,0	8,2	28,6

IV-: Individuals who influence athletes' use of doping substances

The data indicate that the immediate entourage of athletes highly influence their use of doping substances. The data suggest that many athletes (38%) took drugs to enhance their performance following advice from their friends. About 20% were influenced by their coaches. However, about 21% were not influenced by anybody. By site of study, athletes from Bamenda had less influenced from friends and coaches than those from the other sites. In this site, parental influence in doping use was relatively important (7%) compared to the other sites (0%). It is also here that athletes used drugs without influence from anyone (44% vs. 26% for other sites). In Yaounde and Douala, the influence of coaches and friends in the use of doping substances was the strongest, though the difference with other sites was not statistically demonstrated ($p = 0.88$). It is also in these sites that very few athletes took the decision to use drugs without influence from others.

The more athletes were educated, the more they were susceptible to influence from friends to use performance-enhancing substances. The proportions of those who were influenced by friends to use drugs ranged from 17% for those without any educational background to 29% for those with primary education and about 39% for both those with secondary and post secondary education, although this difference is not statistically confirmed ($p = 0.68$). The influence of coaches (29%) was higher for those with primary education. It is also worth noting that the influence of sibling (brother/sister) appeared strongest among athletes with primary education.

Considering federation of affiliation, no athlete from the cycling federation was influenced by friends and 50% of them were advised by their coaches, while the other 50% made the

decision to use drugs by themselves ($p = 0.02$). Of athletes affiliated to the boxing federation, 63% made the decision by themselves, 38% were influenced by friends and 13% by coaches. It was in the basketball federation that the influence of friends seemed to be highest.

Table 24: Distribution of respondents according to individuals who advised on the use of performance-enhancing substances

	Coach	Friends	Parents	Brother/ sisters	Dealer	Teachers	Self	Others
Site								
Yaounde	19.6	38.4	0.0	0.9	0.0	0.9	18.7	34.8
Douala	21.9	38.5	0.0	4.6	0.0	3.1	18.5	15.4
Garoua	16.7	41.7	0.0	8.3	0.0	0.0	25.0	16.7
Bamenda	13.3	31.3	6.7	0.0	6.7	0.0	43.7	20.0
Level of education								
None	16.7	16.7	0.0	0.0	0.0	0.0	16.7	50.0
Primary	28.6	28.6	0.0	14.3	0.0	0.0	37.5	0.0
Secondary	17.2	39.0	0.8	2.4	0.8	0.8	23.6	24.4
Post secondary	23.5	39.1	0.0	1.5	0.0	2.8	14.7	30.9
Federation								
Football	17.7	37.1	1.0	4.1	1.0	1.0	16.3	27.8
Handball	28.1	30.3	0.0	3.1	0.0	3.1	25.0	37.5
Basketball	4.6	59.1	0.0	0.0	0.0	4.6	27.3	13.6
Volleyball	29.2	33.3	0.0	0.0	0.0	0.0	12.5	33.3
Cycling	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0
Athletics	21.1	42.1	0.0	0.0	0.0	0.0	21.1	21.1
Boxing	12.5	37.5	0.0	0.0	0.0	0.0	62.5	0.0
Total	19.7	38.1	0.5	2.5	0.5	1.5	21.0	26.5

The results shown in figure 9 once more confirm the strong influence of friends in the decision to take doping drugs. Further still, 7 out of 10 athletes who were not involved in drug use declared that they resisted the advice of friends to use drugs, while, 11% of them resisted the advice of their coaches to use performance-enhancing drugs.

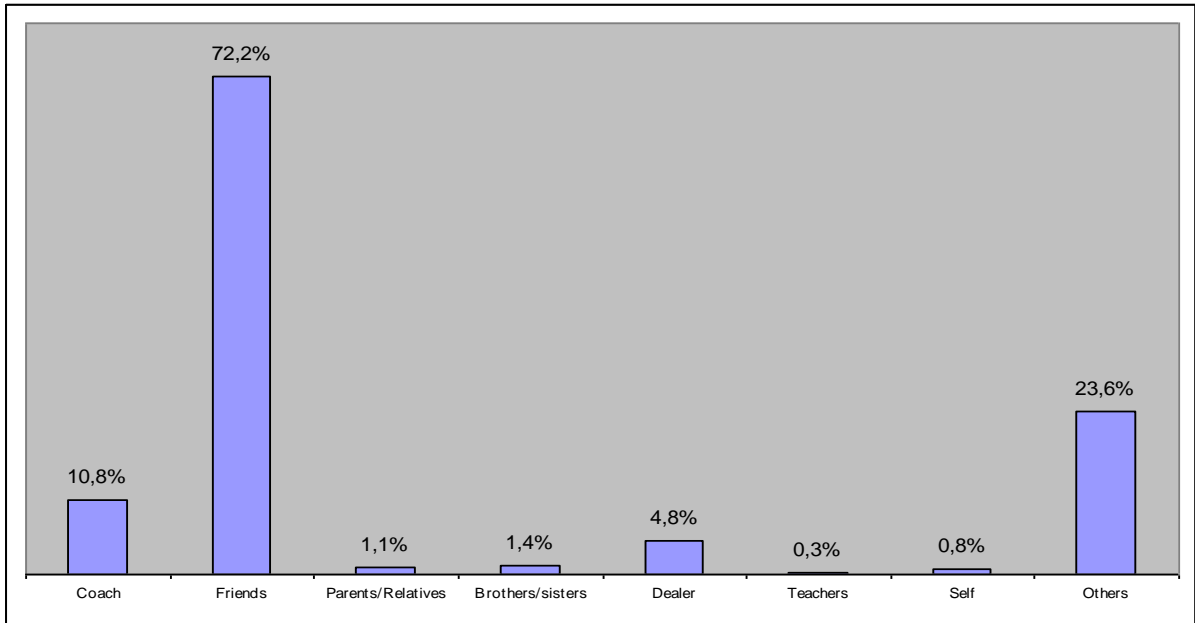


Figure 9: Proportion of athletes who admitted non-use of performance-enhancing substances but acknowledged having been proposed them before

IV. Why athletes use performance-enhancing substances

Study participants gave many reasons to rationalize the use of performance enhancing substances. About 42% of them used drugs to improve their performance, 21% to fight against fatigue and 17% and 13% to improve physical appearance and build their muscles, respectively.

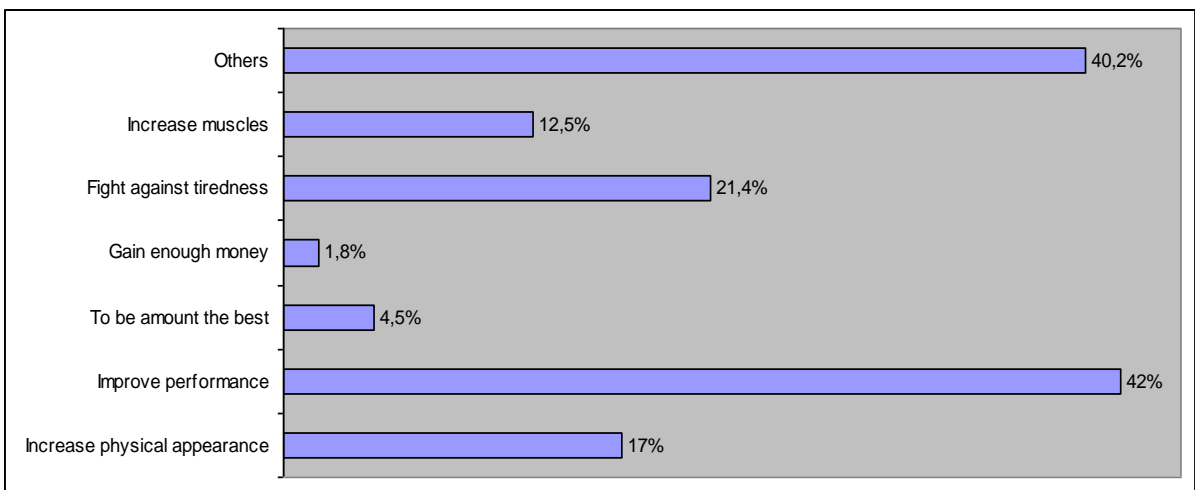


Figure 10: Distribution of respondents according to reasons for drug use in sports

IV. Place where athletes often take drugs

In most of the cases, respondents admitted taking the drugs at home. Performance-enhancing substances were taken in 50% of cases at athletes' home or at their coach's or mentor's residence (5%). A relatively high proportion of athletes took substances in the vicinity of the play or training ground.

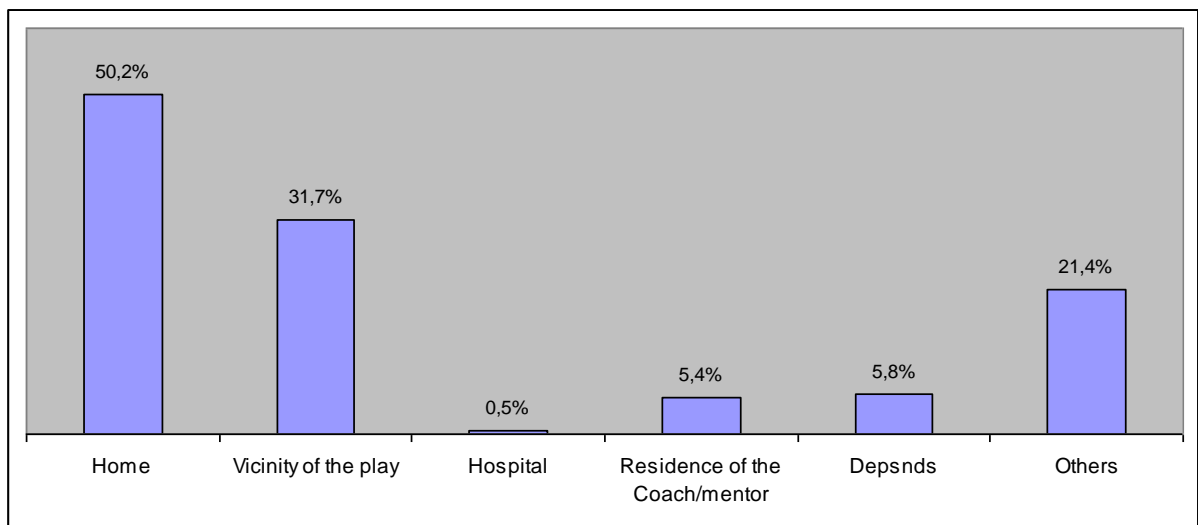


Figure 11: Distribution of respondents according to locale where performance-enhancing substances are taken

IV. Reasons why some athletes avoid drugs

In the absence of repressive measures or a formal policy to fight against drug use in sports, only knowledge of the side effects of available substances could account for reasons why some athletes avoid them. The study sought to know reasons why respondents would refuse to use substances. Close to 55% of respondents declared that doping substances were dangerous for their health. About 61% of them thought that doping drugs are ineffective, while 5% would not take drugs because their parents advised against taking them.

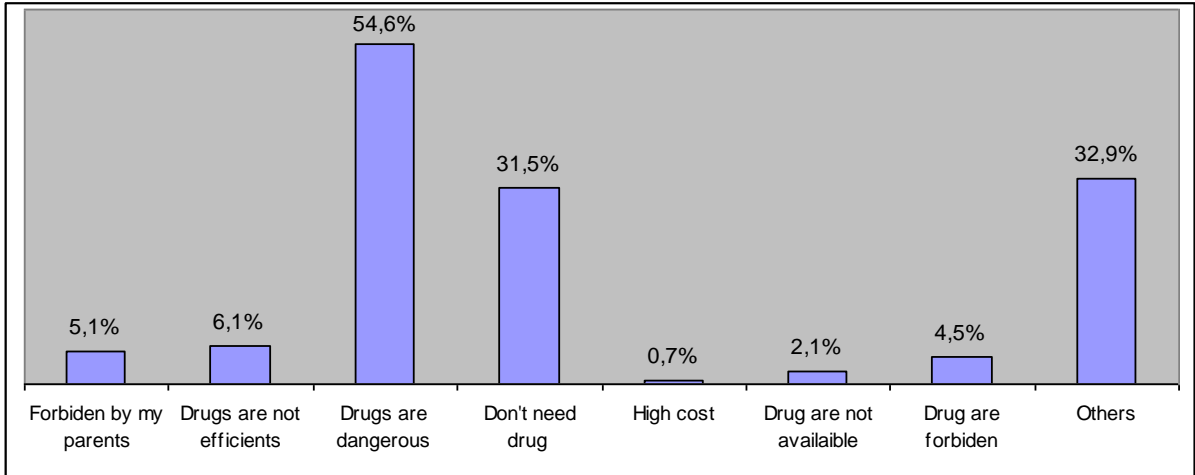


Figure 12 : Distribution of respondents according to reasons why they refuse to use doping drugs

V- ACQUISITION-NETWORK

The objective of this section is to determine the means by which unlawful substances are acquired, their costs and the channels of acquisition of these substances by drug taking athletes.

V.I Main sources of supply of doping substances

Banga and other unlawful natural substances

The survey explore sources of supply of unlawful natural substances by Cameroonian athletes (Table 30). Thirty five percents declared that they didn't know where unlawful natural drugs could be acquired. However, the larger proportion (65%) knew the sources of supply of these substances. These substances were acquired mostly though dealers (21%), the market (17%), friends (17%) and parents (0.8%). A variety of other alternative sources were also cited by respondents (14%).

Table 25: Distribution of respondents according to sources of supply of Banga, Wie-wie, Iboga

	Friend	Parent/Relative	Dealer	Manager/coach	Market	Pharmacy	Doctor	Don't know	Others
Site									
Yaounde	15.3	0.5	20.2	2.1	17.2	5.0	2.2	41.3	15.6
Douala	18.8	0.2	16.1	2.0	17.8	5.9	2.7	37.6	11.7
Garoua	5.1	0.8	22.1	0.4	22.8	13.4	1.6	34.4	16.1
Bamenda	30.0	3.5	32.5	2.5	9.0	4.0	0.5	10.5	12.5
Level of education									
None	12.5	0.0	25.0	0.0	15.6	12.5	0.0	40.6	9.4
Primary	25.7	2.7	20.3	0.0	14.9	2.7	0.0	27.0	12.2
Secondary	16.5	0.8	19.5	1.0	16.1	6.0	2.3	37.3	13.9
Post secondary	15.7	0.6	23.4	4.1	20.4	7.9	2.0	30.8	15.4
Federation									
Football	18.6	1.1	21.6	1.8	18.7	7.0	2.7	33.3	14.6
Handball	14.1	1.6	16.8	3.9	15.2	7.4	2.7	38.3	12.9
Basketball	15.5	0.4	23.7	0.0	17.7	3.4	2.2	33.6	13.8
Volleyball	21.3	0.0	20.5	1.6	11.0	12.6	0.8	36.2	11.0
Cycling	4.6	0.0	9.1	0.0	18.2	13.6	4.6	36.4	27.3
Athletics	13.1	0.5	17.7	2.0	16.7	6.1	1.0	40.9	16.7
Boxing	17.1	0.0	25.0	1.4	20.0	0.7	0.0	30.7	12.1

Total	16.6	0.8	20.7	1.8	17.3	6.5	2.1	35.1	14.1
--------------	-------------	------------	-------------	------------	-------------	------------	------------	-------------	-------------

Ignorance of sources of supply of substances was more commonly reported in Yaounde (41%), Douala (38%), and Garoua (34%) than it was in Bamenda (11%). In this site only a few athletes didn't know where to get these substances. The main channels here were drug dealers (33%), friends (30%), the market and relatives (9% and 4% respectively). In the Yaounde site, dealers constituted the main source of supply of unlawful substances (20%), followed by the market (17%) and friends (15%). Relatives, sports medics and agents with respectively 0.5 %, 2% and 2% constituted less frequent supply channels. In Douala, friends constituted the main source (19%), followed by the market (18%), dealers (16%), sports medics (3%), agents (2%) and relatives (0.2%). Unlike in the other sites, market supply (23%) and dealers (22%) were the predominant sources of substance supply in Garoua. Supply through friends, sports medics, agents and relatives was less important here than in the other sites. The means of acquisition of unlawful substances therefore varied by site.

Sources of supply of doping substances also varied according by level of education. The main source of acquisition of unlawful substances was drug dealers, with the following distribution, 25% for respondents who had never been to school, 19% for secondary and 23% for post secondary education. The main source of supply for athletes with primary level education was friends (25%). For those who had never been to school and those who had had post secondary education, the second most important source of acquiring natural substances was the market with respectively 16 and 20%. A considerable proportion of respondents knew nothing about sources of acquisition of unlawful natural substances. However, athletes with primary and post secondary education seem to have better knowledge of acquisition of natural doping substances. Those in these two levels of education who knew nothing about the sources of supply of these substances represented only 27% and 31% of the respondents respectively. This percentage increased for athletes with the secondary level education (37%), and the primary level (41%).

When federation of affiliation is considered, athletes belonging to the boxing federation had better knowledge of sources of supply of unlawful natural substances. In fact, only 31% of them declared that they were unaware of sources of acquisition of such substances. Following the boxing federation was football (33%), basketball (34%), volleyball (36%), cycling (36%), handball (34%) and athletics (41%) where athletes were the most poorly

informed about sources of acquisition of natural doping substances. Overall, drug dealers represented the main source of acquisition of such substances. They were equally the main channel of acquisition of substances by athletes of football (22%), handball (17%), basketball (24%), athletics (18%), and boxing federation (24%). The market constituted a secondary source of acquisition. Close to 19% of football players cited the market as a source of supply of natural substances. Athletes of the other federations also cited the market as follows: 15% of handball players, 18% of basketball players, 17% of athletes and 20% of boxers. Friends constituted the third most important source of supply for athletes as follows: 19% for football, 14% for handball, 16% for basketball, 13% for athletics and 17% for boxing. Cycling and volleyball federations were the exception. In both federations, the main source of supply was different from those cited by athletes of the other federations.

Volleyball players mainly acquired natural doping substances through friends (21%), dealers (21%), and the market (11%), whereas cyclists acquired theirs mainly through the market (18%), dealers and friends, 9% and 5% respectively. The percentage of those who acquired natural doping substances through sports agents and sport medics was relatively unimportant, if not, insignificant. However, exceptionally it stood at 4% for agents in handball and 5% for medics in cycling.

Anabolic steroids and other chemical substances

Taking into consideration unlawful chemical and consequently artificial substances, 51% of respondents didn't know where to acquire them. For athletes who knew where to get these substances, their main source of supply was the pharmacy (23%). Other sources such as sport medics (7%), dealers (7%), friends (5%), and the market (5%) were also used by study participants. Parents (0.5%) and coaches (2%) were the least cited channels of acquisition of chemical doping substances.

Considering site of study, the Bamenda site was once more the site where athletes were most certain about where to go to acquire unlawful chemical substances. As a matter of fact, only 33% of respondents in this site did not have any idea about where they could go to obtain these substances. This statistic contrast highly with that recorded for the other sites where more than half of the respondents have no idea about where to go to get chemical substances for doping use. In Garoua for instance, 6 respondents out of 10 did not have knowledge of where and how to get these substances.

Table 26: Distribution of respondents according to sources of supply of chemical substances

	Friend	Parent	Dealer	Manager/ coach	Market	Pharmacy	Doctor	Don' t know	Others
Site									
Yaounde	2.4	0.0	4.4	1.7	5.8	34.2	9.6	52.1	4.3
Douala	6.8	0.6	2.7	2.5	3.9	19.4	8.6	51.7	4.1
Garoua	1.2	1.2	6.3	0.8	6.3	19.3	3.2	61.4	5.9
Bamenda	16.0	1.0	24.5	3.0	2.0	3.5	0.0	33.0	4.5
Level of education									
None	3.1	0.0	9.4	0.0	6.3	12.5	0.0	56.3	3.1
Primary	5.4	2.7	9.5	1.4	6.8	5.4	2.7	54.1	0.0
Secondary	5.5	0.4	6.5	1.3	4.4	19.5	6.7	55.1	4.3
Post secondary	5.0	0.5	6.6	3.8	5.4	36.1	9.3	40.6	5.9
Federation									
Football	5.9	0.6	5.6	2.2	3.5	19.2	7.4	55.5	3.4
Handball	7.0	0.4	7.0	1.9	4.7	28.1	4.3	45.3	5.5
Basketball	3.5	0.4	9.1	1.7	6.9	24.1	7.8	50.0	5.2
Volleyball	7.1	0.0	6.3	3.9	2.4	31.5	10.2	40.2	6.3
Cycling	0.0	0.0	9.1	0.0	0.0	45.5	0.0	40.9	18.2
Athletics	4.6	0.5	5.6	2.0	7.1	31.3	5.6	49.5	4.0
Boxing	2.9	0.7	8.6	0.0	7.1	8.6	5.7	57.1	3.6
Total	5.3	0.5	6.7	2.0	4.8	23.3	7.1	51.1	4.5

Knowledge of sources of supply of chemical drugs as shown in table above indicate that with the exception of Bamenda the main source of supply for the other sources was mainly the pharmacy (Yaounde 34%, Douala 19%, and Garoua 19%). Athletes from the Bamenda site acquired their chemical drugs mainly from dealers (25%) and friends (16%). The supply of chemical drugs to athletes by other sources such as relatives (1%), managers and medical personnel was rather insignificant.

Athletes with the highest level of education had better knowledge about the sources of supply of artificial doping substances. For instance, only 4 in 10 highly educated athletes declared they did not know where to acquire chemical doping substances, while the majority of athletes, that is, 6 in 10 knew where and how to obtain illegal chemical substances. These well-educated athletes mainly obtained their drugs from pharmacies (36%), followed by medical doctors (9%), dealers (7%) and from the market and friends (5% and 5% respectively). Well educated athletes also cited a variety of other sources of acquisition of chemical substances. Athletes with lower educational levels were less knowledgeable about sources of acquisition of illicit chemical drugs. Overall, most athletes did not know where to

acquire chemical substances: athletes who had never been to school (56%), those with primary education (54%), and those with secondary education (55%). Most of those who knew these sources obtained the drugs mainly from the pharmacies.

By federation, athletes who knew where to obtain chemical doping substances were as follows: handball (46%), cycling (41%) and volleyball (40%), while athletes of boxing (57%), football (56%) and basketball (50%) were less informed about the sources of supply of these substances. For the cycling federation (46%), the pharmacy constituted the one and only channel of acquisition of illicit chemical substances unlike athletes of the other federations who cited multiple sources of acquisition, e.g. volleyball (32%), athletics (31%), handball (28%), and basketball (24%).

Involuntary drug use/acquisition

Involuntary drug use could be defined as the use of natural or chemical drugs by an athlete without his or her consent. The data provides evidence that involuntary acquisition of performance enhancing substances is a reality in Cameroon. As a matter of fact, 55% of respondents or the majority admitted that some athletes often received illegal drugs without requesting for them. However, 28% of respondents disagreed with this, while 18% had no opinion.

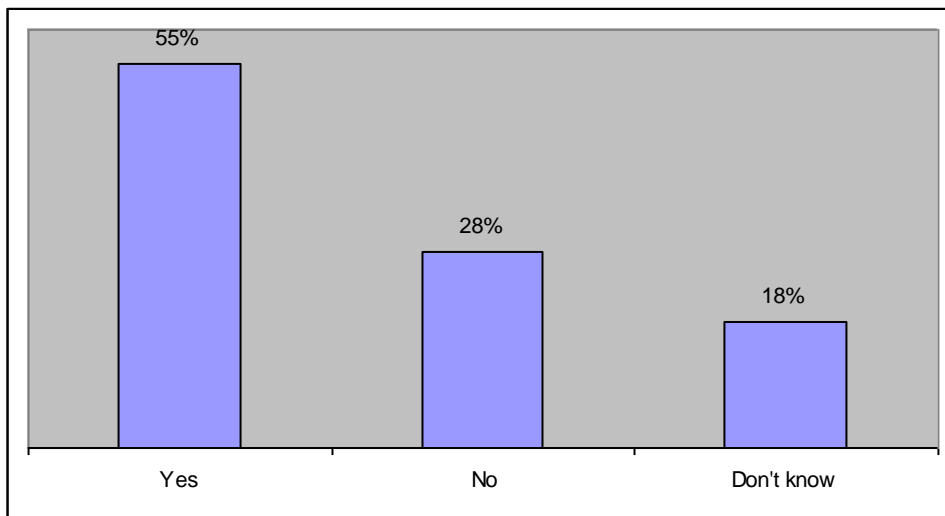


Figure 13: Proportion of respondents who used unlawful drugs involuntarily

Those who encourage athletes to use drugs

Data obtained suggest that three types of individuals could be responsible for supplying drugs free of charge to athletes. These were cited as sports agents/coaches (52%), sports medics (43%), and friends (25%).

Table 27: Distribution of respondents according to sources/persons supplying unlawful substance to athletes

	Friend	Parent	Dealer	Manager/ coach	Market	Pharmacy	Doctor	Don' t know	Others
Site									
Yaounde	18.6	0.0	2.6	58.0	0.5	0.5	54.4	0.5	18.8
Douala	23.9	0.4	1.2	56.2	0.4	0.8	50.6	4.8	13.2
Garoua	25.2	1.8	2.7	32.4	0.9	2.6	30.6	5.4	33.3
Bamenda	47.5	0.8	7.4	38.5	0.0	2.5	1.6	7.4	4.1
Level of education									
None	33.3	0.0	0.0	41.7	0.0	0.0	25.0	8.3	16.7
Primary	44.8	0.0	10.3	44.8	0.0	0.0	6.9	6.9	10.3
Secondary	25.6	0.4	3.1	48.5	0.6	1.3	43.0	3.9	17.1
Post secondary	21.6	0.7	1.7	58.2	0.4	1.4	47.0	1.7	17.4
Federation									
Football	20.4	0.3	2.6	46.8	0.6	0.9	51.2	3.5	18.6
Handball	23.9	1.4	2.8	56.3	0.0	0.7	35.2	3.5	15.5
Basketball	27.7	0.0	1.5	51.5	0.0	1.5	42.3	4.6	18.5
Volleyball	34.6	0.0	2.5	48.2	0.0	3.7	39.5	0.0	12.4
Cycling	33.3	0.0	0.0	55.6	11.1	11.1	22.2	11.1	55.6
Athletics	24.8	0.0	1.9	62.9	0.9	0.0	43.8	1.9	10.5
Boxing	34.4	1.6	9.8	50.8	0.0	1.6	21.3	4.9	19.7
Total	25.0	0.5	2.9	51.5	0.5	1.3	42.9	3.3	17.0

When the supply of free chemical substances is considered, the sites can be categorized into two: the first category is made up of the Yaounde and Douala sites where the coaches/team managers and sport medics are the main sources of supply of chemical substances to athletes (Yaounde 58% vs 54%; Douala 56% vs 51%) ($p = 0.00$). The second category is made up of the Garoua and Bamenda sites. Although they can be conveniently put into one category both sites have some differences. While the Bamenda site cited principally friends (48%) and managers/coaches (39%), Garoua mentioned "others" (33%), managers/coaches (32%), medics (31%) and friends (25%) as the sources that provide free drugs to athletes ($p = 0.00$).

Regardless of level of education, managers and coaches were the primary source of free drugs to athletes. The importance of managers and coaches increased with increase in level of education of respondents: 42% for athletes who had not been to school, 45% for those with primary education, 49% for those with secondary education and 58% for those with post secondary education ($p = 0.04$). Friends constituted the second most important source of free supply for those who had never been to school (33%) and for those with primary level education (45%) ($p = 0.03$). Meanwhile, medical practitioners were the second most important source of supply for athletes with secondary and post secondary education (43% and 47% respectively) ($p = 0.00$). By federation of affiliation, the main source of free provision of unlawful substances was still the managers/coaches. However, the proportion was slightly higher in athletics (63%), handball (56%), cycling (56%), boxing (51%) and volleyball (48%) than in football (47%) ($p = 0.06$). The acquisition of free drugs through medical practitioners varied significantly with federation affiliation ($p = 0.00$) (from 21% boxing to 51% football).

Acquiring natural unlawful doping substances

Majority of respondents declared that it was easy for athletes to obtain performance-enhancing substances such as Banga, Wie-wie and Iboga, which are freely sold in the Cameroonian black markets. However, 18% of respondents thought otherwise, while 27% of them admitted that they knew nothing about it, 4% of respondents said that this depended on the circumstance.

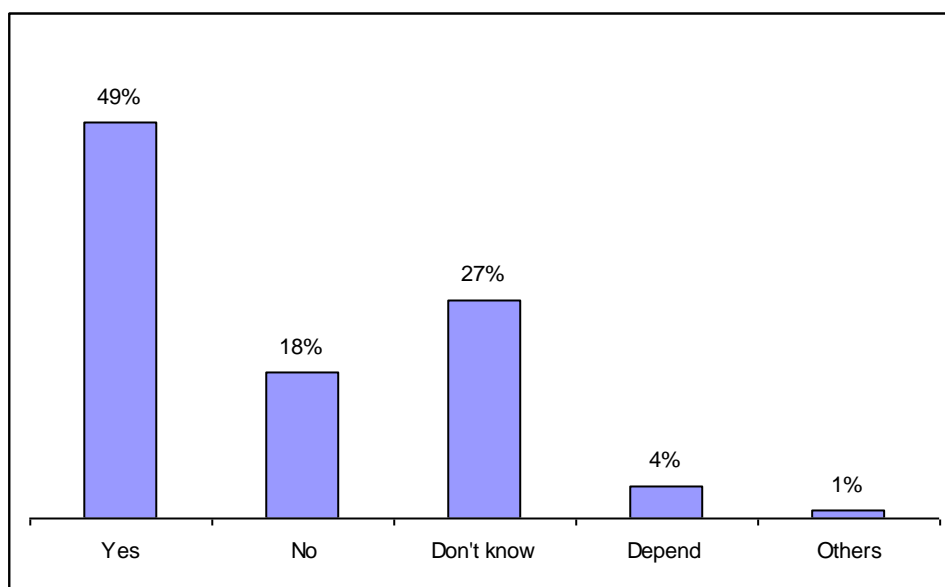


Figure 14: Proportion of athletes who acquire unlawful substances easily

Easy access to drugs

About 42% of the respondents knew where they could acquire performance enhancing substances if they needed to use them; 38% had a different opinion, while 20% said they knew nothing about doping substances.

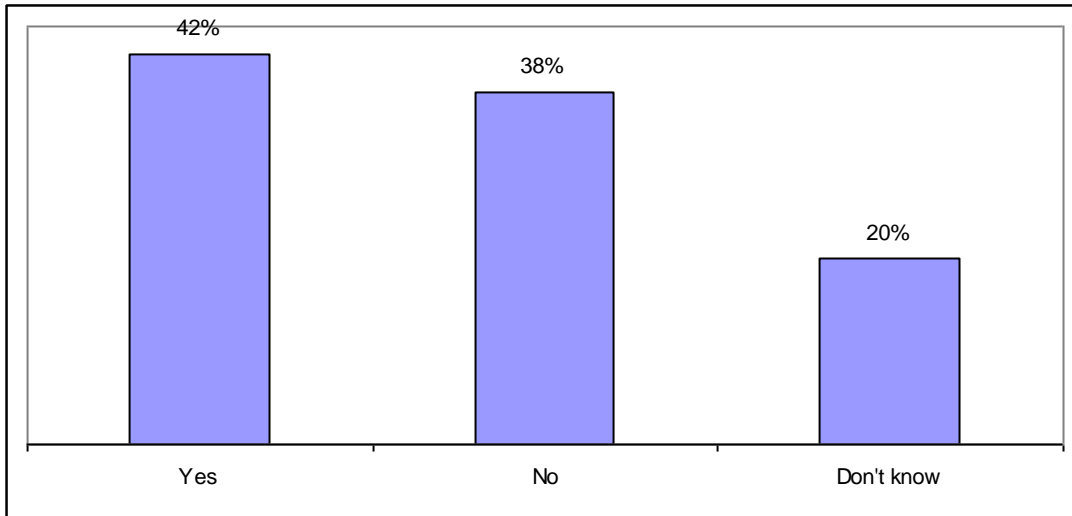


Figure 15: Proportion of respondents who could acquire chemical drugs with ease

VI –DOPING PREVENTION IN CAMEROON

VII- Measures taken by the various federations to prevent young athletes from using performance enhancing substances

Nine hundred and forty two (59%) of the 1600 respondents declared without that nothing was being done within their federations of affiliation to prevent young athletes from using performance enhancing substances. Only 486 (30%) athletes knew about the existence of any anti-doping measures within their federations, while 172 athletes (11%) of the sample had no opinion on the question.

I 2. Type of measures taken by the various federations to prevent doping

According to a minority of the respondents who acknowledged the existence of anti-doping measures within their federations, very little of these measures were applied in order to prevent athletes of their federation from using doping substances. The table below shows that the main measure taken by the federations bordered around sensitisation of athletes on the negative effects of drug use. In addition, athletes mentioned other measures (24%), monitoring (19%), repression (11%), and the care of addicted athletes (2%).

Table 28: Distribution of respondents according to type of anti-doping measures said to be taken by their federations

	Education/ prevention	Management (Care)	Repression	Surveillance	Nothing
Sex					
Male	62.7	1.9	11.3	19.9	21.4
Female	58.3	3.3	10.0	13.3	41.7
Site					
Yaounde	55.7	0.0	10.7	20.1	40.9
Douala	51.4	1.9	11.2	32.7	14.9
Garoua	66.7	5.3	17.5	17.5	21.9
Bamenda	75.9	1.7	5.2	6.9	12.1
Level of education					
None	75.0	0.0	37.5	12.5	25.0
Primary	65.5	0.0	6.9	20.7	13.8
Secondary	64.9	2.9	12.0	18.8	20.1
Post secondary	54.6	0.7	8.5	19.9	34.0
Federation					
Football	63.6	1.7	14.5	21.4	17.9
Handball	56.9	3.1	12.3	20.0	29.2
Basketball	71.1	2.2	11.1	8.9	13.3
Volleyball	53.8	5.1	5.1	10.3	28.2
Cycling	50.0	0.0	10.0	20.0	40.0
Athletics	66.3	1.1	5.3	26.3	32.6

Boxing	57.6	1.7	13.6	13.6	23.7
Total	62.1	2.1	11.1	19.1	23.9

Analysis of results by sex shows that male athletes were more aware of anti-doping measures taken in their respective federations than women. On the other hand, women were more informed about other little measures taken by their federations (42%) and on the care of addicted athletes (3%) than men (2%).

It appeared that athletes from the Bamenda (76%) and Garoua sites (67%) were more sensitized on doping issues than those of Yaounde (36%) and Douala (52%). Monitoring activities were cited more in the Douala (33%) than Yaounde (21%) and Garoua (17%), sites. Meanwhile, monitoring of athletes was less cited in Bamenda (7%). Repressive measures appeared to be more frequently cited in Garoua (18%), Douala (11%) and Yaounde (11%) sites than in the Bamenda site (5%). Cases of care given to addicted athletes in the Yaounde site were inexistent, while care given to addicted athletes in Bamenda stood at 5%. In addition to these four main measures assessed, other isolated measures were mentioned by respondents. However, these were more important in Yaounde (41%) and Garoua (22%), than in Douala (15%) and Bamenda (12%).

Analysis by level of education indicates that the more educated athletes were, the less likely they were to say that any measures were being taken to prevent doping in their respective federations. Consequently, 75% of athletes who had never been to school, 66% of those with primary education, 65% of those with secondary and 55% of those with post secondary education reported that some preventive measures were implemented within their federation. The same tendency was observed when repressive measures were considered in isolation. For athletes who had not been to school, 38% of them cited repressive measures implemented within their federations as against 12% for those with secondary level education, and 9% for those with post secondary education and 7% for those with primary level education.

The results (table 28) show that basketball with 71% of sensitized athletes was the federation that cited education and prevention most, followed by athletics (66%), football (64%) and boxing (58%). Cycling was the federation whose athletes were least educated on the effects of drug use with hardly 50% of athletes who were capable of citing any measures taken by

their federation to address the problem. Cycling was followed by volleyball (54%) and hand ball (57%). Cycling athletes did not admit to any care provided to cyclists who were found addicted to drugs (0%), while 5% of volleyball athletes mentioned some form of care and counselling.

Repressive measures appeared to be more important in football (15%), boxing (14%) and in handball than in the other disciplines. Meanwhile volleyball and athletics were the disciplines whose athletes were least likely to mention any coercive measures (5.1% and 5.3% respectively).

Doping use monitoring activities existed mainly in basketball (26%), football (21%), handball and cycling (20%) as they were less important in basketball and volleyball. Cyclists (40%), track athletes (33%), handball players (29%), and volleyball players (28%) were among those who cited measures put in place by their respective federations to combat drug use, in addition to the above mentioned four measures.

VI3 Measures taken by teams to prevent doping

The principal measures taken by clubs to prevent doping remained education and prevention (34%), followed by repression (5%) and surveillance (5%). Treatment and care of addicted athletes was cited by 0.6% of study participants. Curiously a significant proportion of participants (28%) declared that their clubs did nothing to prevent unlawful drug use. They stated that instead the attitudes of most clubs seemed to encourage the uptake of drug use by athletes.

Table 29 : Distribution of respondents according to anti-doping measures implemented by their clubs

	Education/ prevention	Management	Repression	Surveillance	Nothing
Sex					
Male	34.8	0.5	5.4	5.1	28.1
Female	31.1	0.8	1.6	3.2	28.3
Site					
Yaounde	30.6	0.3	2.5	5.7	38.6
Douala	23.5	1.0	4.7	4.9	24.1
Garoua	48.4	0.8	11.8	5.5	21.3
Bamenda	55.5	0.0	3.5	1.0	14.0
Level of education					
None	37.5	3.1	34.4	6.3	15.6
Primary	37.8	0.0	4.1	1.4	20.3
Secondary	35.1	0.7	4.4	5.0	25.7

Post secondary	31.3	0.2	3.8	4.8	36.1
Federation					
Football	35.7	0.5	6.2	6.2	27.5
Handball	27.3	0.0	2.7	4.7	30.5
Basketball	30.6	0.4	4.7	1.3	27.6
Volleyball	30.7	0.0	3.2	0.8	31.5
Cycling	40.9	0.0	0.0	9.1	27.3
Athletics	40.9	0.5	4.0	6.1	29.3
Boxing	39.3	2.9	5.7	5.7	22.9
Total	34.3	0.6	4.8	4.8	28.1

Evidence provided by the data appears to suggest that male athletes (35%) were more informed on preventive measures than their female counterparts (31%). Male athletes were also more likely to cite repression and surveillance (5% and 5% respectively) than female athletes (2% and 3% respectively).

When a site analysis is considered, Douala (24%) and Yaounde (39%) had a significantly higher proportion of athletes who declared that their clubs did nothing to prevent drug use. However, Bamenda (56%) and Garoua (48%) sites cited preventive measures as some of the important actions taken in these regions. Repressive measures were more frequently cited in the Garoua site (12%) than in the other sites.

About 34% of respondents who had never been to school cited repressive measures as opposed to 4% of athletes with primary, secondary and post secondary education. Conversely, the percentage of athletes who declared that clubs were doing nothing to prevent doping increased with level of education. As a matter of fact, the higher the level of education the more likely athletes were to deny the existence of any anti-doping measures implemented in their respective clubs. Thus, 16% of the respondents who had not been to school declared that their club was not enforcing any anti-doping measures, against 20% of athletes with primary education, 26% of those with secondary and 36% of those with post secondary education.

By federation, there was a difference between individual and collective sports. With the exception of football and basketball, a significant proportion of athletes of team sports declared that their clubs did nothing to prevent doping. Athletes cited education/prevention as the principal anti-doping measure implemented by clubs in individual disciplines (athletics and cycling, 41%, and boxing, 39%), as well as in collective disciplines (football 36% and

basketball 31%). Repression and surveillance were less mentioned by respondents of football (6%) and boxing (4%) federations. Meanwhile, surveillance was most cited in cycling (9%), football (6%), athletics (6%), and boxing (6%). Treatment and care for addicted athletes was practically non-existent.

VI.4 Proportion of athletes who had taken a doping test during competition

The implementation of doping test was not systematic for reasons which will be explored elsewhere in this report. Only 17% of athletes had in their sporting career profile undergone a doping test for their many years of involvement in competitive sports. Thus, the overwhelming majority of study participants had never been tested for drug use before.

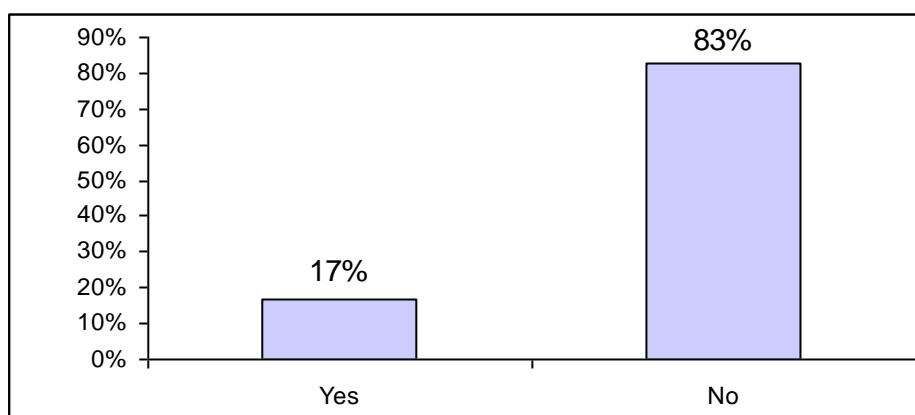


Figure 16. Proportion of athletes who have taken a doping test before in Cameroon

VI.5 What athletes think about their counterparts who use performance-enhancing substances

Forty nine percents of athletes qualified the use of doping drugs by their colleagues as bad; 31% thought the use of doping drugs amounts to cheating; while 14% of participants qualified drug users as a disgrace to the sport movement. Only a little proportion of participants (3%) thought that athletes who use doping drugs make the choice that is best for them, while 6% of them had no opinion or were indifferent about the matter.

About half of study participants recognized that athletes who use drugs have made a bad choice. About 16% of female athletes and 14% of male athletes believed that athletes who use doping drugs were not honouring sports. Meanwhile, 4% and 2%, of male and female respectively justified that athletes who use doping drugs do the right thing.

Table 30: Opinions of athletes about their colleagues who use performance enhancing substances

	Don't know	Bad choice	Good choice	None	Disgrace sports	to Others
Sex						
Male	4.6	48.5	3.7	6.2	13.8	31.3
Female	5.6	49.8	1.6	7.6	15.5	29.9
Site						
Yaounde	5.0	41.1	1.4	8.7	17.3	40.5
Douala	4.7	52.6	2.2	6.6	17.0	22.3
Garoua	4.7	45.3	2.4	2.8	8.3	40.9
Bamenda	5.5	67.0	14.0	3.5	3.5	11.0
Level of education						
None	3.1	43.8	0.0	3.1	3.1	43.7
Primary	6.8	51.4	4.1	9.5	9.5	17.6
Secondary	5.4	51.1	2.8	6.6	13.8	29.0
Post secondary	3.6	42.9	4.8	5.9	16.3	37.4
Federation						
Football	5.1	48.5	5.3	6.6	12.2	30.9
Handball	5.1	48.4	1.6	8.2	13.3	30.9
Basketball	3.5	43.1	1.3	5.2	13.8	37.9
Volleyball	3.2	55.1	3.2	4.7	19.7	24.4
Cycling	4.6	31.8	4.6	4.6	27.3	40.9
Athletics	5.1	49.0	3.0	5.1	18.7	29.8
Boxing	7.9	55.7	2.1	8.6	10.7	27.1
Total	4.9	48.7	3.4	6.4	14.1	31.1

By site of study, most athletes from Bamenda believed that the use of drugs was a bad thing (67%). However, they also had a relatively significant proportion (14%) of those who believed that doping is a justifiable practice. Athletes from Yaounde and Douala believed that the practice of doping did not honour sports. By level of education of participants, unexpectedly, athletes with highest levels of education had the least condemnation of the use of doping substances by their colleagues. They were the least (43%) to believe that athletes who dope have made a bad choice, as against 44% for athletes who had not been to school, 51% for athletes with primary education and 51% for athletes with secondary education. Athletes with the highest level of education also had the highest proportion of those who thought athletes who dope have made a good choice (5%), while 0% of athletes who had not been to school felt that those who choose to dope have made a good choice.

By federation, cycling (32%) and basketball (43%) were the federations with a low proportion of respondents who believed that athletes who use drugs made the wrong choice. A significant proportion of boxing (56%) and volleyball (55%) athletes condemned the practice of doping. About 27% of cyclists thought the use of doping substances did not honour sports (27%). In addition, they had the strongest negative opinion about the use of drugs to enhance their performances (27%). Finally, cyclists (5%) and footballers (5%) had the biggest proportion of respondents who believed that athletes who dope have made the right choice.

VI-6 Proportion of respondents who favour the legalization of doping

Notwithstanding the different views, the overwhelming majority of study participants were against doping. About 90% of them were against legalization or authorisation of doping. However, a tiny minority of athletes (5%) were in favour of the legalization of doping and 4% did not provide any opinion on the question.

VI.7- Proportion of athletes who are willing to publicly condemn doping

Most of the respondents (84%) declared their readiness to publicly condemn doping. Only a few respondents (11%) declined to do so and a tiny minority (5%) did not provide any response to the question.

PERCEPTION OF CAMEROON'S ANTI-DOPING MEASURES: VIEWS FROM SOME MAJOR STAKEHOLDERS

Distribution of key informants

Views were qualitative collected from a total of 33 key informants drawn from the four study sites. The table below shows the distribution of informants by category according to site. Key informants were drawn from a range of stakeholders: coaches, presidents of various sports federations, presidents of clubs, sports medics, regional delegates of sports, and instructors of physical education. Table 36 below provides a distribution of key informants by site and category.

Table 31: Distribution of key informants by category according to site

Background characteristics	Site				Total
	Bamenda	Yaounde	Douala	Garoua	
Coaches	2	1	2	6	11
Presidents of Federation	2	2	0	3	7
Presidents of Clubs	2	2	1	1	6
Sport medics	1	1	1	1	4
Provincial Delegates of Sports	1	1	1	1	4
Physical Education Teachers	0	1	0	0	1
Total	8	8	5	12	33

Table ?? below shows participants' citation of disciplines perceived to be most affected by doping. Athletics and football were cited as the two most affected disciplines. This was followed by cycling and boxing. Informants stated that the enormous amount of physical energy required to excel in these disciplines is what pushes athletes of these disciplines to resort to doping. They added that drug use is believed by athletes to be a necessary energy booster that can be used to improve athletic performance. Additionally, athletics and football were thought to be most affected because of their popularity and importance at the national and international levels. They further stated that owing to enormous pressure for greater competitiveness at various levels, sportsmen and women of these disciplines tend to indulge in drug use in order to excel. Informants cited Marie Leonie, a Cameroonian athlete who was sanctioned after failing a drug test during an international competition, as a case in point.

Table 32: Sports disciplines perceived to be most affected by doping

Affected discipline	Frequency
Athletics	18
Football	11
Cycling	8
Boxing	7
Weight lifting	4
Martial art	2
Rugby	1
Handball	1
Body building sports	1

a) Informants' perception of the magnitude of doping among Cameroonian athletes

An assessment of perceptions of key informants about the magnitude of doping in Cameroon has enabled us to come out with underlying explanations for the phenomenon.

Lack of testing facilities

Informants declared that most young sportsmen and women in Cameroon practise doping and regretted the absence of drug testing infrastructure. Informants noted that the absence of testing laboratories makes routine testing during competitions infeasible in Cameroon. Measures to halt what one informant called “full-fledged explosion” of doping in the country were said to be barely dissuasive. For instance, although blood and urine samples were said to be collected for testing, tests results were not often provided.

The influence of wrong beliefs and misperceptions

Informants said the rise of doping in Cameroon was due to a common belief that excellence in sports cannot be achieved without the use of performance enhancing substances. They stated that elite athletes were generally perceived to be taking performance enabling substances. Informants believed this misperception was fuelling young athletes' desire to engage in doping practices.

Conspiracy of silence

Informants expressed a concern about what they believed was sport authorities' indifference regarding doping. Some Informants described this as a "conspiracy of silence" noting that ordinary Cameroonians seem more worried about the growing use of drugs in sports than the authorities. Informants worried that athletes in Cameroon have little or no knowledge about lawful and unlawful substances for sports. The decision to use or not use substances was said to rely more on the independent assessment of athletes than a respect for anti-doping measures.

Impunity

Informants declared that athletes dope with impunity mainly because minimum measures to identify and expose culpable individuals have not been put in place. Even the rudiments of anti-doping measures e.g. awareness raising programs, were said not to be implemented in the country although they may exist on paper. Consequently, the use of psychotropic substances, like *marijuana* (better known locally as Banga) and some inhalants like *shoe gum*⁵, to enhance physical performance was admittedly common. Informants believed that all athletes in Cameroon take at least some kind of substance whether lawful or unlawful, to enhance individual performance.

Poor knowledge of lawful and unlawful substances

Participants stated that doping is not well defined and understood in the Cameroon context. They observed that there are no clear lists of lawful and unlawful substances, believing that a lot of athletes in Cameroon dope unconsciously because they cannot differentiate between substances that should be used and those that should be avoided. Others mentioned that some pharmaceutical products have doping effects and that proper education could enable athletes to avoid those. Overall, informants felt that the Cameroonian public and more particularly the sports community need a better understanding of doping.

Poor control of drug acquisition channels

The growing use of doping substances was blamed on government's laxity in the control of prescription drugs. Prescription and non-prescription drugs were said to be acquired over the counter indiscriminately. They reported that athletes who wish to procure doping substance, formally or through the black market, would do so easily. They blamed this on a poor

⁵ Shoe gum is used as an inhalant which is thought capable of enhancing physical performance

regulatory environment. They observed that discussions among young sportsmen and women are often overshadowed by doping related stories, which they said shows the extent of the problem.

Voodoo beliefs and practices

Study participants recounted the use of African magic and witchcraft as common practices in Cameroon sports. Athletes were said to believe that the use of magic charm would enhance their competitive edge and render their opponent inept. Voodoo practices included amongst others, special bathes, slaughtering of domestic animals and chicken, spending the night before a competition in a cemetery, scarification of the body of athletes, special massage, drinking some strange concoctions, etc.

Drugging versus doping

Some informants stressed that there is a difference between drugging and doping and argued that most athletes in Cameroon drug while few dope. According to this category of informants, some substances merely produce an ecstatic effect but do not enhance performance and therefore could be classified as drugging while those that improve performance could be considered as doping. They also argued that in most cases, it is dosage that determines doping and not type of substance. They noted that the concept of doping is very confusing as each substance has a threshold above which further use would produce a doping effect. They also argued that vitamin substances taken in large quantities would amount to doping. Others stated that several substances whose use was not considered doping in the past are now regarded as doping, thus adding to the confusion surrounding their understanding of the concept.

b) Motivations for taking drugs in sports

Qualitative analysis showed that there are different motivations for using doping drugs.

Performance-enhancing objective

Informants stated that most athletes don't believe success in sports can be achieved without the use of performance enhancing substances. Improving an athlete's performance was believed to come through hard work but also through the use of performance-enhancing substances. Lazy athletes were perceived more likely to dope in a bid to succeed. Football players, notably, were said to dope in order to increase their performance in test matches for recruitment into the national team and also European teams..

Imitation of peers

Some athletes were said to take drugs through the influence of their colleagues and peers. Informants stated that drug naïve athletes are often proposed drugs by their doping-experienced counterparts. And since, doping substances were said to be cheaply accessible and affordable, this tended to encourage young athletes to begin experimenting with drug use.

Poverty

Informants noted that athletes in Cameroon lack the necessary facilities for adequate training. Consequently, a lot of athletes were said to be unable to fully develop their talents and so would resort to doping as an alternative or complementary means to improve their performance. Young sportsmen and women were also said to use poverty related excuses to rationalise their recourse to doping as an option for survival in sports.

The influence of elite athlete

Informants felt convinced that since doping is not routinely checked and monitored in Cameroon it is likely that many elite athletes have attained prominence through doping. They stated that young athletes see successful athletes as models whose methods to achieve prominence ought to be emulated. Consequently, elite sportsmen and women who serve as role models were believed to play a key role in young athletes' decision to engage in doping practices.

The influence of the urban environment

Informants stated that doping in Cameroon is mainly an urban problem. Drugs were said to be more commonly used in the cities than in the rural areas. City athletes were said to have initiated drug as another way of coping with the difficulties of city life. In this regard, informants saw doping as an extension of drug use that is consistent with urban life in Cameroon.

The influence of trainers

Informants stated that trainers or coaches sometimes push athletes to use doping substances by their insistence on high performance at all cost. According to this view, when athletes discover that they cannot deliver on their trainers' great expectations through natural skills, they resort to using performance enhancing substances. Pressure from trainers was

believed to bear mainly on young and newly recruited athletes who are expected to prove their worth at all cost in order to be retained.

c) Doping and the future of sports in Cameroon

Doping and corruption

Study informants lamented the negative impact of doping in Cameroon sports, noting that cheating in sports is gradually being institutionalized as corruption has taken a firm grip in the organisation and running of major sporting competitions in the country. Some informants stated that tackling doping in Cameroon sports could not be isolated from tackling corruption as a whole. Key informants from the football extraction spoke about doping and match fixing as twin evils plaguing the game of football in Cameroon. They attributed this to the generalised corruption that is rocking public life in the country.

The dependency syndrome

Informants remarked that doping creates a strong dependency on drugs in the sense that athletes who have doped once tend to do it again and again and their systems eventually become programmed to using drugs all the time. Informants declared that if the present trend is allowed to continue, performance enhancing substances would soon overtake physical training. Others stated that the future of sports in Cameroon against a backdrop of uncontrolled doping looks bleak. Study participants emphasized that Cameroon needs an emergency anti-doping plan if doping would not be allowed to compromise the future of sports in the country.

Multiple adverse events from doping

Study participants also noted an increase in multiple adverse events during sport competitions in the country which they said were associated with the use of doping substances. Cases of athletes who have collapsed and died during field and track events were regularly cited by informants. The case of an athlete who collapsed and died during a marathon race in Douala, and who was widely alleged to have doped was particularly noted by study participants from the Douala site. They regretted the absence of surveillance of adverse events in sports that could help highlight the problem and give it more visibility in decision making circles. They believed that if action is not taken sportsmen and women will continue to lose their lives from doping related accidents in the country.

Policy lapses

Study participants defined sports as an act of physical exercise in which talents are demonstrated. They decried the fact that the practice of sports in Cameroon is losing its moral and ethical high ground owing to the abusive and unregulated use of drugs. Informants believed that sustainability and survival in sports can only be guaranteed by the development of natural talents through healthy practice as opposed to cheating and the use of drugs. A strong policy was said to be essential if this has to happen. Informants blamed policy makers in Cameroon for failing to take timely remedial measures.

d) The demand and supply of doping substances

Sources for the procurement of doping substances were stated to be both formal and informal. Chemical substances such as steroids and amphetamines were procured mainly through formal channels while natural substances such as banga (marijuana), ⁶*alla* and ⁷*bilibili* were procured mainly through informal and often clandestine circuits. Natural products were said to be easier and cheaper to procure than chemical substances. And because athletes often lack the money, they were said to go for cheaper natural than expensive chemical substances.

Informants noted that though the demand for locally produced substances was high, the market situation for these products was difficult to characterize owing to the black market nature of the products. Cocaine and to a limited extent, steroids and amphetamines were said to be acquired through cross-border trading agents and also through informal vendors. Elite athletes and those who were thought to be rich were said to buy substances including stimulants directly from the pharmacy and through direct market orders.

Informants blamed pharmacy operators for focusing more on profit than ethics. They noted that currently in Cameroon, it is no longer obligatory to have a prescription in order to buy from a pharmacy. Additionally, athletes were said to regard pharmacy acquired substances

⁶ Alla is a local herb grown mostly in the Northern part of Cameroon.

⁷ Bilibili is a locally made alcoholic drink distilled from maize or Soya bean and even from rice and very common in the Northern part of Cameroon.

as legitimate products for general health including physical fitness for sports and hardly as doping:

When they are found in pharmacies, we don't consider them doping products. Take for example a product like Guronsan. When we give this to a player we don't consider it doping but as a way to put athletes back in form as fast as possible (Coach, Yaounde).

Informants also mentioned that a lot of pharmacy acquired products are meant to treat fatigue among athletes and therefore are not often regarded as doping.

Improved system of communication using the internet facility and telephone networks was cited as a factor that has led to increased knowledge about where and how to get doping substances. Informants noted that through these media, athletes get prescriptions from colleagues abroad while some get prescriptions using internet identified sources. The long Cameroon-Nigerian border was also reported to constitute an important portal for the supply of substances.

Informants stated that in some cases, notably for team sports, a single player may constitute the link between the team and the supply channel for a particular product. They said suppliers often take up strategic positions around the stadiums in order to supply doping drugs during training and before competitions. Talking about drug suppliers in stadiums, one informant observed:

Policemen are arresting the boys with bundles of marijuana everyday in this stadium. The market is growing and clients are not just sportsmen and women but include spectators and drug addicts as well (Physical education teacher, Douala).

The use of coded language or language understood only by athletes was said to be common currency among athletes who surreptitiously acquire doping substances.

e) Potential complicity of resource persons in doping

Complicity of trainers and medical personnel

Coaches, trainers and medical personnel were reported to contribute significantly to athletes' decision to dope. Informants stated that not so infrequently, the training and medical personnel of some teams have been implicated in the purchase of anabolic steroids

for use by their athletes. Informants blamed sports managers for working against the goal of sports. One informant mentioned that throughout his sporting career, his trainer never prescribed energy replenishing elements other than natural fruits and he was able to maintain a high profile throughout his career. In his own words he stated:

In my days as an athlete, I had a trainer who never gave me anything to replenish my energy other than just natural fruit juice. I am therefore one of those who can testify that anything above this is not necessary and may constitute an attempt to cheat (President of a club and an ex-athlete, Douala).

Influence of parents

Some informants argued that often team officials bow to pressure mounted by parents and sponsors to dope athletes. Informants stated that parents of athletes are very impatient and want to see their children become venerated sportsmen and women as soon as possible. Consequently, they push trainers to go the extra mile to make their dreams happen. One trainer noted:

a parent would bring a child today and wants this child to become a Roger Milla⁸ tomorrow, failing to recognise how long it took Milla to become famous (Coach, Yaounde).

Equally, sponsors who promise enormous reward to trainers if their athletes won were viewed by informants as coercing trainers to dope their athletes. Informants argued that the impatience of parents and sponsors to allow athletes evolve naturally could easily push trainers to become involved in the doping of athletes.

The short-sightedness of sports organisers

Informants remarked that sports organisers in Cameroon have not been helpful in the anti-doping course in the sense that they pay all emphasis to winning and very little if any attention, to ethics, fair play and the welfare of athletes. In addition to this, study participants accused sports organisers for focusing their attention on the huge financial benefits accruing from competitions while overlooking anti-doping issues. A consequence of this is that athletes tend to concentrate only on winning and would stop at nothing to have this happen. In Garoua, an informant cited the Cameroon's annual horse race as a typical case of open

⁸ Roger Milla is a famous ex-Cameroonian footballer who was voted African best footballer of the last century by Confederation of African Football (CAF).

doping. He stated that during this event, “*both horse-riders and the horses all dope but no one seems to bother*”.

The contribution of untrained trainers

Informants remarked that most trainers of sports in Cameroon do not possess the basic skills for the job and are likely to encourage or be indifferent to doping. They noted that most trainers in Cameroon are not professionals because sports institutions don't have the money to train or recruit professional trainers. For this reason, they stated, trainers lack the skills in raising young athletes and would focus on already accomplished athletes as opposed to athletes who are still developing their talents. One informant observed:

Institutions tend to recruit less qualified coaches, team managers or medical personnel with little knowledge of doping. It is common to hear an athlete whisper to a coach, “Coach, can I take this (this meaning a substance).....”. Often the answer is: “Yes.... but make sure no one is aware” (Sport medic, Bamenda).

Evaluating existing anti-doping strategies

a) Key informants' views on existing anti-doping regulations/policy

Informants stated that Cameroon has some organs, e.g. the National Committee for the Fight against Drug and Prohibited Substances, and the National Olympics Committee, working to prevent doping. No informant mentioned OCCALUDS (*Organisation Camerounais de Lutte Contre le Dopage en Sport*) or the National Doping Prevention Program either because of its newness, ineptitude or both. The names of some prominent anti-doping personalities in Cameroon and their accomplishments were variously cited. Informants also stated that the Ministry of Health, Cameroon, has a drug prevention department and its role is to sensitize the public about the deleterious effects of drug use. Informants also quoted Cameroon to be one of the signatories of the World Anti-Doping Agency convention. However, they noted that measures cited were principally on paper with only very little or no implementation going on. They observed that the little effort made to prevent doping in Cameroon is spearheaded principally by individuals and non-governmental organisations as ordinary Cameroonians seem to bother more about doping than the authorities.

Informants stated that government support for sports activities in the country has dropped to a record low in recent years, noting that even football which is the pride of Cameroon, has

become heavily underfunded. They remarked that when athletes are left to fend for themselves, they easily fall prey to doping. They blamed this on political appointees who they said, have little knowledge of sports administration.

b) Informants' evaluation of anti-doping measures

Informants believed that measures put in place to combat doping are grossly inadequate to raise public awareness. They argued that public awareness of anti-doping policies is extremely low, stating that even among amateur sportsmen and women, knowledge of anti-doping measures was scant and sometimes completely lacking. Athletes who feature only in provincial and national level competitions were said to take anti-doping measures for granted since these measures do not affect them in practice. Most informants testified that they had not seen a document on anti-doping measures before although they have been working in the sports domain for a while. They maintained that most of what they know about anti-doping is through the foreign media. They imagined that if they know so little, the general public is likely to know by far more little. Informants argued that the implementation of testing and identification of doping offenders could constitute a powerful tool for raising awareness and educating people about anti-doping measures. They argued that to the extent that this is not done, all other efforts are bound to be cosmetic.

Disciplinary measures against offenders up to the point of retrieving fraudulently gotten medals were said likely to have the greatest impact. One informant stated:

.....if medals that have been obtained fraudulently are retrieved from athletes; I think this will drive home a message. I also think the names of offenders should be read on prime time radio and television.....in this way, athletes who are contemplating to dope will be forced to reconsider their decision (Provincial Delegate of Sports).

Informants further expressed disappointment at the fact that anti-doping measures tend to focus mainly on international competitions while neglecting national competitions. In their judgement, this is unhelpful to the development of an anti-doping culture in Cameroon.

According to key informants, existing measures include an expectation from the Ministry of Sports and Physical Education that national sport federations clearly articulate anti-doping stance when drafting their internal rules and regulations; that sports officials have to endeavour to provide counselling and education to athletes on the risk associated with doping. They also noted that the National Olympic Committee has as a policy to constantly

address the issue of doping to the executives of sport federations in Cameroon and make anti-doping a priority issue for all competitions. They said the National Olympic Committee is also working to ensure that different federations develop doping prevention plans.

Furthermore, the National Olympic Committee was said to use opportunities such as school games (FENASCO), university games, and health clubs in schools to sensitise students on the dangers of doping in sports. Physical education teachers and animators were also said to have the responsibility of educating and sensitising the Cameroonian public on the risks of doping although no evaluation of their work has been done. In addition, sports medics were also cited as giving lectures once in a while on anti-doping benefits. Overall, study participants acknowledged the existence of some start-up measures to fight doping, stressing that these measures need strategic reinforcement, clarity and increased funding.

c) Successes and failures in the anti-doping campaign

Informants remarked that existing anti-doping measures constitute an essential first step. Opportunistic doping prevention education; isolated efforts to rehabilitate athletes affected by drugs; detoxification units and psychosocial rehabilitation centres were variously cited as indications of some effort made to control drug use as a whole in the country. Informants remarked that although so little has been done, there is still a glimmer of hope especially as sports federations in the country are gradually being obligated to embrace rules and regulations prescribed by the world's sports governing bodies.

The biggest failure in anti-doping in the country was said to be the lack of sufficient political will. They mentioned that political will could ensure that resources are allocated for doping prevention programs and also that anti-doping is given adequate attention. Underfunding, uncoordinated activities, limited sensitisation and education about doping were quoted as justifying insufficient political will. Informants emphasized that evidence based advocacy through research endeavours could reverse the trends of neglect and make anti-doping a government priority for sports development in Cameroon. The absence of testing facilities for local and national competitions was overwhelmingly cited by informants as a sign of failure in doping prevention programs. Informants recounted that the absence of doping surveillance meant that the scale of the problem is not known and can therefore not be prioritized accordingly. The absence of testing programs and sanctions against offenders was recurrently cited as a major setback to the current effort.

Barriers to the implementation of anti-doping measures

Most informants declared that ignorance about lawful and unlawful substances constitute one of the greatest barriers to their active involvement in the fight against doping in Cameroon. They raised the concern that even as sports managers who deal very closely with athletes, they had only limited knowledge of lawful and unlawful substances. In this regard, they said this makes it difficult for them to provide useful advice, identify athletes at risk and speak with confidence about doping prevention matters.

Informants noted that the absence of drug testing programs severely limits their ability to effectively cooperate in doping prevention programs. They stated that even if managers suspect athletes for doping, they are reluctant to take the matter seriously because defaulters would not be penalised. They stated that because of this, team officials have developed an attitude of indifference about the doping status of their athletes. Informants commented that for sport managers to be actively involved in doping prevention, a lot of issues especially testing would have to be sorted out first.

Another barrier cited by most informants was the indifference of public authorities, notably, the officials of the Ministry of Sports and Physical Education. Informants remarked that official indifference to doping does not encourage stakeholders who are willing to initiate anti-doping action. Informants expressed a desire to see anti-doping given priority in government action. Some called for a national conference on the problem and tried to size-up what their contribution will be if such a conference were organized. Acknowledging that this was the first study they knew about the problem, they nursed hopes that through this effort the situation could begin to be given attention.

Informants further indicated that the absence of materials for sensitization and public awareness programs constitute another serious limitation to their involvement in doping prevention programs. Participants requested that they would like to receive materials first for their own use and secondly for use with their athletes.

The lack of funds to do the most basic things, e.g. medical examinations for athletes, was cited as one other barrier. They noted with dissatisfaction that their teams were not receiving any subventions from the government a fact, which they said, severely limits their ability to

implement athlete development programs. They said fighting doping requires means and they have a hard time engaging the fight if they are severely limited by the means to do so. They remarked that owing to underfunding, the implementation of anti-doping measures is done more at the individual than at collective and official levels.

Reinforcing doping prevention measures: Potential sectorial contribution

a) Family

Participants stated that parents could assist in educating their children on the negative effects of doping. They stated that it is incumbent on parents to do primary sensitization especially to children who have taken a definite interest in and aspire for competitive sports. However, they equally noted that in order to do this, parents would themselves have to be educated about the disadvantages of doping. They noted that a lot of young athletes are pressured into doping by parents who insist on excellence by any means. They stated that the family constitute the basic unit of all securities noting that parents could be helpful in the early dictation of athletes at risk and take steps to have the situation corrected.

b) Sports federations

Participants stated that it is the duty of federations to establish texts which prohibit the practice of doping. In addition, they stressed that it should be the primary responsibility of federations to ensure that drug testing equipment is available during competitions. They added that federations can play a leading role in educating stakeholders, e.g. club executives, trainers, sponsors, athletes, etc, on the dangers of doping and encourage them to learn to concede defeat with honour. Informants further emphasised that sports federations could persuade teams to shun sponsors that deal with substance related products such as tobacco and alcohol, noting that a national anti-doping initiative that brings together all national sports federations could put federations at the frontline of anti-doping in the country.

c) Athletes

Most informants believed that athletes need more education about the negative consequences of doping. Study participants stated that while drug testing and sanctioning of offenders need to be stressed, routine education for athletes is critical for long-term success. In addition, participants mentioned that a mechanism to reward honest athletes or those who refuse to dope will be necessary to discourage doping initiation and practice. They mentioned that education will empower athletes to be able to say no to drugs. They stated

that sportsmen and women should be represented in anti-doping initiatives noting that role-models such as Francois Mbango, (a Cameroonian Olympic gold medallist who passed the drug test), Roger Milla (a veteran footballer who is alleged never to have drunk alcohol or smoke a cigarette), etc, could be solicited to play an active role.

d) Sponsors

In the views of most key informants, sponsorship to sporting events ought not to be limited to funding competitions only but rather should also be extended to anti-doping activities such as education and drug testing programs. Informants stressed that sport federations could cause that sponsors put anti-doping issues at the forefront of their involvement. They stated that big national sponsors like Orange Cameroon, MTN Cameroon, PMUC, CAMSHIP, SODECOTON, etc, should be made to integrate anti-doping measures into their guidelines for sponsorship. Informants also stated that sponsors would need to develop a positive attitude towards teams and athletes that lose. Athletes should be assured that they will still receive some sponsorship even when they lose. They said such a measure could dissuade athletes from doping just to be able to secure sponsorship. Participants stated that mechanisms to reward athletes who shun drugs ought to be established so that in no occasion should they have recourse to a feeling of being the overall losers.

e) The Ministry of Health

Informants declared that the Ministry of Health (MOH), Cameroon, could engage in capacity building for laboratory personnel who would perform drug tests using standards procedures. In addition, informants blamed MOH for not properly regulating pharmacy business in Cameroon, maintaining that too much laissez faire has allowed pharmacies to sell prescription drugs to athletes without prescription. Informants believed that if pharmacy regulation could be respected, this will reduce the indiscriminate use of chemical drugs for doping purposes in the country. They also indicated that MOH could develop a mechanism to provide orientation on the types of products, e.g. fortifiers, vitamins and other nutritional supplements, athletes are allowed to take. Participants stated that a list of lawful versus unlawful substances should be established by MOH for regular distribution to athletes, trainers, and coaches during training sessions as part of an education process. Study participants felt convinced that the Ministry of Sports and Physical Education, MOH and their collaborating ministries can reasonably coordinate this effort to good effect without an incremental budgetary requirement.

f) The Ministry of Education

Study participants indicated that the Ministry of Education (MOE) could be an essential partner in anti-doping education. Some suggested that doping prevention knowledge could be included in some book chapters citing for instance, French and English readers. They also noted that Physical Education is a compulsory discipline for all schools in Cameroon and could constitute an appropriate channel for anti-doping education. Biology and Civics were also cited as other disciplines that could be used to teach anti-doping education to youngsters, in-school athletes and non-athletes alike. MOE has annualized sports competitions for schools known as school games (FENASCO). Participants suggested that school games could be an opportunity for the promotion of anti-doping programs. Some said that anti-doping education could be encouraged through the use of health clubs which are well established in most schools in the country. However, a minority opinion feared that introducing doping prevention education in schools could lead to an opposite effect to that expected, where doping naïve athletes may seek to experiment the use of doping substances. This category of informants argued that instead general lessons on morals, honesty, and hard work as against cheating, should be emphasized.

g) The Ministry of Sports and Physical Education

Study participants stressed that the Ministry of Sports and Physical education constitutes the cornerstone of all anti-doping effort. Being the ministry that coordinates most sports activities in the country, participants thought that this ministry should be the chief whip regarding the initiation and implementation of anti-doping measures. Since this ministry underwrites the creation of all sport federations and directly oversees their functioning, participants thought that this ministry could play a primordial role in initiating anti-doping measures. Regulation relating to the organisation of sporting events and sponsorship could be streamlined by this ministry to include anti-doping measures. Informants stressed that anti-doping has taken a low profile mainly because all other agencies see this activity as the primary responsibility of the Ministry of Sports and Physical Education. Informants stressed that this ministry would have to assume its responsibility in establishing an appropriate framework for anti-doping that integrates all relevant strategies.

h) The police and the judiciary

Informants blamed the police for failing to curb the circulation and use of natural doping substances such as marijuana and cocaine. Participants thought that the police could do more to identify drug supply channels especially those situated in the vicinity of playgrounds.

They mentioned that doping substances are frequently sold just a few meters from playgrounds and that athletes have easy access to these substances and do take them regularly without threats from the police. Participants thought that the police could seek the assistance of some athletes to expose athletes who are guilty of drug offences.

i) Media

Informants noted that the media can play an important role in anti-doping by sensitizing the public about the problem while revealing its seriousness. Participants stated that in the Western world it is the media that helps to expose offenders. They stated that unless the strategy of naming and shaming of guilty athletes on TV is adopted in Cameroon, doping is unlikely to reduce. They stressed that to take anti-doping to a higher level of attention, the media cannot be excluded. They said TV and radio programs could carry out education on the use of substances in sports including lawful and unlawful substances. Also that the media could help to highlight adverse events associated with the practice of doping especially severe adverse events like deaths. Informants stated that anti-doping in Cameroon has to incorporate a media plan in order to break media silence which has led to public ignorance of the problem in Cameroon.

DISCUSSION

One thousand six hundred amateur sportsmen and women drawn from the seven disciplines included for the study participated in the survey. In addition 33 key informants with influential role on sport practice and organisation were also interviewed during this survey

Frequency of practice of sports

The results show that less than half of the athletes interviewed were regular in the practise of their respective disciplines. The proportion of football players who engaged in regular football practice was higher than the proportion of other athletes doing so for their own respective disciplines.

The study also reveals that the vast majority of Cameroonian sportsmen and women are amateurs, as they devote most of their time for work other than sports in an attempt to generate money for their survival and upkeep. More than half of those who participated in the survey had been practising sports for at least five years.

Knowledge of lawful and unlawful drugs as well as food complements

Most of the respondents knew about lawful drugs (55%), unlawful drugs (93%), as well as food complements (84%) associated with sports. Less than a quarter of the athletes mentioned cigarettes and 33% mentioned alcohol as unlawful substances. On the other hand, the study reveals that Cameroonian athletes know about a wide range of performance enhancing substances, notably, Banga (74%) and Cocaine (54%). Although drug use is a common phenomenon in Cameroon, there is little evidence of any organised/planned sensitisation programs. Therefore, in the absence of official sensitisation, athletes were informed about drugs mainly through friends. .

Attitudes and behaviours of athletes towards drug-use

More than half (54%) of the respondents declared that doping use is a rampant practice within their respective federations. The most affected disciplines were football, athletics, boxing and cycling. Close to 34% of study participants declared that they knew some of their counterparts who use drugs to improve their performances, while 41% said they knew about

opponents who did the same. Regarding drug-use by athletes, Banga (44%) was the most common doping drug used by athletes, followed by Guronsan (16%) and Cocaine (8%).

Theoretically, it would be difficult for athletes to admit to the use of drugs especially if this is perceived to be reprehensible and of course, criminal. That some of the participants had the courage to acknowledge the use of substances appears to confirm the fact that drug use is increasingly becoming an acceptable norm in Cameroonian sports. In the absence of a well defined policy, peer and environmental influences appear to be the predominate factors likely to account for increasing drug use in sports. Athletes who avoided drug use did so mainly because they feared their negative side effects and not because they saw drug use as unethical and criminal.

The influence of perceptions

The strong perception among study participants that their rivals were already taking doping drugs may well be a major driver behind doping initiation among young athletes in Cameroon. For instance, 40.7% of respondents believed their rivals were doping. Moreover, the general perception that drug offenders are not penalised as reported by key informants could give non-users and occasional users compelling reason to initiate or continue the practice of doping. Poor knowledge of what constitutes doping, potential side effects and the unlawfulness of the practice hinders athletes from making a free and well-informed decision about the use of performance enhancing substances. Additionally, poor knowledge of doping renders athletes susceptible to the negative manipulations of influential peers, trainers and parents.

External and internal pressures to use doping substances

The role of friends and other actors of the sports milieu is brought to light in this study. Athletes face external and internal pressures to use doping substances. Drug use appeared to be approved by coaches and encouraged by friends. From the accounts given, it looks certain that many doping offences are likely to occur due to the ignorance of what constitutes unlawful and lawful substances and limited knowledge of anti-doping regulation. For instance, some key informants were able to identify the substances athletes often use, by sight and not by name, and were even less likely to categorize them either as lawful or unlawful.

The demand for performance-enhancing drugs seems to have increased because of too much attention and financial support for those who win and very little attention and support for those who lose. The growing popularity and the increasing commercialisation of sports mean that greater competitiveness will continue to attract more resources. This attraction may tempt athletes to dope if they want to succeed at all cost in order to benefit financially. Underfunding, on the other hand, may potentially attract the use of performance enhancing drugs if athletes must outshine their rival competitors in order to have access to the limited resources that may be available. The association of doping with underfunding of sports activities seems to suggest that adequate funding may play a positive role in doping prevention.

Occult practices

The study reveals that in addition to traditional practices of doping, some athletes engage in practices that can be qualified as occult, in a bid to increase their competitive edge. The use of occultism with performance enhancing intentions reported by key informants in the study, adds another dimension to the problem. Occult practices were said to include bloodletting not administered under medical supervision. Although it is uncertain if such voodoo practices may amount to cheating, a concern about the likely health and physical hazard of this practice, especially in a context where HIV/AIDS is so much of an issue, should be considered legitimate. More investigations into these practices appear necessary.

Circuits of acquisition of drugs

A relatively high proportion of athletes appeared not to know the channels of acquisition of unlawful substances. However, friends, dealers, the market and the pharmacies were reported to be the main sources of supply of doping substances. Curiously, more than half of the study participants/athletes declared that they had used drugs involuntarily. Managers, coaches, sports medics, as well as the relatives of athletes were reported to be some of the main suppliers of doping substances. Drug supply networks appeared generally accessible to athletes in need of drugs, particularly natural drugs, and to a limited extent, chemical drugs.

Implementation of anti-doping measures

More than half of the respondents declared that there are no anti-doping measures implemented by their federations of affiliation. For those who claimed their federations

enforced some anti-doping measures, 60% of them mentioned education, followed by surveillance/monitoring (19%), and repressive measures (11%). The same measures were reported to be taken at the club level. The results also reveal that drug testing is not a common, let alone, routine practice in Cameroon. Only 17% of the respondents declared having undergone a drug test before even though they had been involved in sports for >5 years for each study participant.

The results of this study show that doping is a common phenomenon in Cameroonian sports and that it may soon become generalised because there are not enough regulatory safeguards against the initiation and use of illicit substances in sports. Additionally, this study reveals that lawful and unlawful drugs are used by athletes for doping and maybe recreational purposes all over Cameroon. Official anti-doping controls are not conducted during local and national competitions. Doping surveillance is not practised and therefore no systematic data gathering about drug use for doping purposes has so far been carried out.

Knowledge of doping and anti-doping regulation

Knowledge of anti-doping regulation and what constitutes doping was notoriously limited and frequently distorted both among athletes and key informants in the study. The fact that athletes saw banga (marijuana) and cannabis as different substances is proof of distorted knowledge. Meanwhile, the absence of testing programs made the violation of anti-doping regulation more of a norm than an exception. Additionally, the distinction between lawful and unlawful substances seemed blurred and confusing for most study participants mainly because of limited exposure to text that sanction anti-doping violations. An anti-doping policy perceived to be less rigorous exists but its implementation is evaluated to be unsatisfactory as it falls short of the expectations of most key informants. Fair competition free of cheating, ethics and a concern for the wellbeing of athletes are said to have taken backstage thus, paving the way for a generalised use of performance-enhancing substances.

The unregulated sale of prescription drugs where drugs are sold often without requiring a prescription was believed to give athletes an easy access to unlawful chemical substances. A vibrant black market was thought to provide opportunities to acquire chemical and natural substances for doping or recreational reasons. Marijuana (Banga), various inhalants, cocaine, alcohol, ecstasy, and a host of other stimulants, were viewed as the most often used substances. Athletes who possessed the money were thought able to afford and use

the more refined substances such as anabolic steroids, caffeine and amphetamines. Overall, every sportsman or woman was perceived to use a substance, be it lawful or unlawful, to enhance athletic performance.

Easy acquisition of doping substances

Study respondents expressed the ease of being able to acquire drugs for either doping or recreational purposes. The existence of a vibrant black market for drugs facilitates easy access to substances likely to enhance the performance of athletes. Evidence from the data suggests that the black market for doping and recreational drugs is characterised by its ease of access and also the diversity of its supply sources with friends and parents constituting the two main sources of supply of substances.

CONCLUSIONS AND RECOMMENDATIONS

Anti-doping education

Drugs used and the vague awareness of doping underline the importance of implementing preventive measures in combination with epidemiological surveillance of doping offences in the country. The ,“2005 Prohibited List of World Anti-Doping Agency“ (WADA, 2005, <http://www.wada-ama.org>), needs to be disseminated and popularized using appropriate forums and channels that target the sports community as well as the general population in Cameroon as an essential step toward reducing “accidental and uninformed” doping.

Since most athletes, including users and non-users, are not satisfactorily familiar with doping and potential side effects, the education of athletes on the problem must become a top priority. The fact that coaches were the least important source of information about the side effects of drugs and a significant proportion (20%) of athletes were encouraged by coaches to dope, shows that coaches should constitute an important target group for doping prevention.

Particular attention would also have to be paid to the younger population who may suffer the most from the health problems caused by doping use. Starting early even before doping behaviours are set is crucial. School programs starting at an early age that help to shape and promote drug preventive behaviours may help initiate change in prevailing norms. Specifically, there is need to prepare a concise and locally relevant anti-doping education manual which could be readily available to athletes and people in need in the future.

Multi-sectorial approaches

The complexity and magnitude of doping suggest that multiple strategies and a multi-sectorial response are required to tackle the problem. Generic measures are essential but a multi-sectorial strategy will ensure that each sector adapts these measures to their own context and come out with sector-specific mechanisms to contribute to the fight against the unlawful use of substances in sports. However, there are no local examples of the multi-sectorial approach (unless perhaps for other problems), that have been successfully put into practice. It would be necessary to pilot models for an integrated response to drug use and

particularly drug use in sports and document their effectiveness as well as the obstacles that they are likely to encounter.

Need for more research

There is total scarcity of data on doping in Cameroon. Since monitoring and evaluation of doping is not done, the little evidence available is based on reported data from questionnaire-based surveys. Since doping is a criminal offence, it may be difficult to obtain reliable estimates of prevalence based on self-report. There is need for prevalence data derived from scientifically more robust approaches such as doping surveillance involving testing programs. Research is essential to improve understanding of the magnitude and nature of the problem and to inform the development of interventions. Such an initiative will also provide baseline data necessary to understand trends and patterns as they appear.

The findings highlight a gap between policy, reality and public opinion. Policy analysis of causes of non-application of anti-doping measures in the country needs to be carried out to provide a more accurate picture of what is going on. Evidence from such studies may provide unavoidable arguments for advocacy on doping prevention matters in the country.

Drug testing programs

Organising regular doping control initiatives, such as testing during competitions, and extending this to include also training sessions, would help to prevent or reduce doping and performance enhancing drug offence. Drug testing and sanctioning of doping offenders will need to accompany routine education for athletes as a critical way forward and a guarantee for success at long-term.

Addressing structural barriers

Structural barriers may make it difficult for policy implementers, coaches, managers, club presidents, etc, to put what they know into practice. For example, sports officials may feel they lack support from their hierarchy, disciplinary and homologation structures or the infrastructure to deal with doping cases even when they have the information and interest to dictate and report cases. Addressing structural barriers to the implementation of a doping prevention program is essential for success at long-term.

REFERENCES

- Ama, PFM, B Betnga, VJ Ama Moor and JP Kamga. Football And Doping: Study Of African Amateur Footballers. *Br J Sports Med* 2003; 37:307-310.
- Ambrose, J.P. Doping Control In Sports – A Perspective From The 1996 Olympic Games. *Am J Health-Syst Pharm* 1997; 54:1053-7.
- CRETES. La situation de consommation de drug au Cameroun. 2002. Yaounde, Cameroon.
- Lausanne Declaration on Doping in Sport. *The Sport Journal* 1999; Vol. 2, No. 2.
- Lippi, G. & G. Guidi. New Scenarios in Anti-doping Research. Editorial *Clinical Chemistry* 2003; Vol. 49 No.12,
- Meldrum, R & JR Feinberg. Drug Use By College Athletes: Is Random Testing An Effective Deterrent? *The Sport Journal* 2002; Vol. 5 No. 1
- Mendoza, J. The War On Drugs In Sport: A Perspective From The Front-Line. *Clinical Journal of Sport Medicine* 2002; Vol. 12 (4).
- MINSEP, Listing des Federations Sportives Nationales, 2005. Yaounde, Cameroon.
- Moulton, M, P Moulton, T Gallien, & S Roach. Generic Alcoholism: Are College Athletes at Risk? *The Sport Journal* 1999; Vol. 2, No. 1
- Oseid, S. Doping In Athletes – Prevention And Counselling. *J Allergy Clin Immunol* 1984; 73(5 Pt 2): 735-9.
- Petitpas, J Albert, Judy L Van Raalte, A E Cornelius, & Jim Presbrey. A Life Skills Development Program For High School Student-Athletes. *The Journal of Primary Prevention*, 2004; Vol. 24, No. 3.
- Randall, RW, M Gray, JA Rodrigo. Anabolic Steroids and Pre-Adolescent Athletes: Prevalence, Knowledge and Attitudes. *The Sports Journal* 2002, Vol. 5, No. 3,.

APPENDICES

APPENDIX I

STUDY QUESTIONNAIRE

⁹Consent form

INFORMED CONSENT

Dear participant,

We are working for AFRID Research Group that means African Research Institute for Development. This research group is currently carrying out a study which is funded by the World Anti-doping Agency (WADA) on knowledge, attitudes and behaviors of young athletes regarding doping. We are collecting data from athletes chosen from different sport disciplines that are practiced here in Cameroon.

Purpose of the study

The main aim of this study is to gather information that can enable us understand the phenomenon of doping in Cameroon. This data could also be useful in the formulation of a national policy for surveillance and management of issues related to doping among athletes in the country. As such we intend to:

1. Look at knowledge, practices, attitudes and beliefs (KPAB) of athletes and those who work closely with them such as coaches, trainers, sponsors, parents of athletes, teachers and executives of different sport federations.
2. Look for appropriate ways and means that can be used to educate athletes and non-athletes on the harmful effects of doping,
3. Look for appropriate ways and means to reduce high-risk behaviors that surround the practice of sports,
4. Look for best approaches to teach practical ways that can enable young athletes of different disciplines to develop their skills in ways that are healthy and acceptable to society and the sports community.
5. Look very closely at anti-doping policies of the different sports federations in Cameroon to see where they are weak and may need strengthening and advice.
6. Make suggestions to the Ministry of Youth and Sports, Ministry of Health, and the different Sports Federations. Such suggestions may help the different departments to

⁹ According to law No. 91/023 of December 1991, information from surveys and census data is strictly confidential and can, therefore, not be used in any way recriminating.

be able to set up national monitoring and prevention programs for doping in the country.

Procedure of participation

To be in this study, one must be an active sports person in any one of the sport disciplines and belong to one of the sport federations of the country. Your participation in this study will consist of responding to a series of questions that we have formulated. Only you and I will be talking to one another. The interview will last about 30-45 minutes during which I'll ask you questions and you are advised to answer them just as honestly as the answers are. If you feel as to fill out the questions yourself, the choice is yours. However, if you decide to fill them yourself, I'll be with you to give you clarification for any question(s) that you find difficulties understanding and also so that I can take along the completed copy.

Risks and discomfort to you

Some questions may make you feel uncomfortable or embarrassed. You are free to refuse to answer any question or questions you don't feel comfortable with.

Benefits to you

What you tell us may help to improve the organization of sports in Cameroon and contribute to improving the health of athletes in the country. The information may also help in controlling cheating during competitions and establish an atmosphere of fair competition in sports in this country. This study may increase what people know about the use of drugs and sports throughout the whole country. You may also enjoy telling me how you feel about drugs and sports in Cameroon either from your own experience or that of friends, colleagues and competitors which you have seen or heard.

Cost to you

There is no direct cost to you for being in this study. However, we know that your participation will require that you sacrifice some of your precious time. Given the importance of this study for the development of sports in Cameroon, we request that you make this sacrifice (approximately 30-45 minutes) as your own contribution to the development of sports in Cameroon and the world.

Confidential issues

You have been randomly selected to be one of 1600 sportsmen and women to participate in this study. Your participation is entirely anonymous, meaning that nobody will be able to say this is what you said including even us the researchers. All information you will provide therefore is totally confidential and will not be disclosed to anybody. It will only be used for research purposes and the responses will be analyzed in the aggregate, that is, together with all other responses and will not be associated with individual participants. Your name, address, and other personal information will not be taken down in the questionnaire, and only a code will be used to identify the information that you shall provide. Your participation is entirely voluntary and you have the right to respond or not to respond to any questions you are not comfortable with.

All information you give us will be kept private by us. We will be collecting your age, your sporting discipline, your level of education, whether you are still schooling or not, if you are

married, number of years you have been practicing sports, etc. We will destroy all questionnaires once all reports have been written.

Signing this paper is also voluntary. You may choose to participate in this research without signing this paper. If you choose to do so, you must say that you however agree to participate in the study.

Reports about the study

What you tell us will be added to what we hear from other people. As earlier said, your information will not be presented by itself. The reports from this study will be shared with the rest of sportspersons throughout Cameroon and especially people who make decisions regarding sports competitions in this country.

Your rights to refuse or withdraw

It is your choice to take part or not. Taking part in this study will not affect any advantages or benefits that you get from sports or being a member of your sports federation. You may choose to answer or not to answer any questions. If you choose not to be part of this study, it will not affect whether or not you can take part in any future study of this kind.

Persons to contact in case of any questions

If you have any questions about this study or your rights, you may ask me or contact our office at the following contacts, AFRID PO Box 3592, Yaounde, Cameroon, Tel. 775-6380 or 989-3644. You can also contact the National Ethics Committee in Yaounde. This is the office that ensures that the rights of people participating in studies like this one are protected. Their contact number is: 220-9075.

Your Consent

I understand the reasons for this interview and my questions have been answered. I agree to participate in the interview by my own choice.


Participant's Name **Participant's Signature** **Date**

Signing Witness's Name **Signing Witness's Signature** **Date**

I have explained the purpose of this study. To the best of my knowledge, he/she understands the purpose, procedures, risks and benefits of the study.

Investigator/Designee Name **Investigator/Designee Signature** **Date**

IDENTIFICATION	
DIVISION _____	DIVISION NUMBER <input type="text"/> <input type="text"/> <input type="text"/>
SUB-DIVISION _____	SUBDIVISION NUMBER..... <input type="text"/> <input type="text"/> <input type="text"/>
TOWN _____	PROVINCE NUMBER..... <input type="text"/> <input type="text"/> <input type="text"/>
QUARTER _____	QUARTER NUMBER <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
PROVINCE _____
	SUBJECT NUMBER <input type="text"/> <input type="text"/> <input type="text"/>
	TOWN NUMBER..... <input type="text"/> <input type="text"/> <input type="text"/>

INTERVIEW ASSESSMENT					
		1	2	3	FINAL VISIT
DATE					DAY <input type="text"/> <input type="text"/> <input type="text"/>
NAME					MONTH <input type="text"/> <input type="text"/> <input type="text"/>
INTERVIEWER					YEAR..... <input type="text"/> <input type="text"/> <input type="text"/>
RESULT*					CODE NAME <input type="text"/> <input type="text"/> <input type="text"/>
					RESULT* <input type="text"/> <input type="text"/> <input type="text"/>
NEXT VISIT PLANNED	DATE HOUR				TOTAL NUMBER OF HOME VISITS <input type="text"/>
*CODES RESULT	1 COMPLETED 2 ABSENT 3 POSTPONED		4 REFUSED 5 PARTIALLY COMPLETED 6 UNABLE TO PROVIDE ANSWERS		7 OTHERS <hr/> (Detail)

FIELD CONTROLLER NAME _____ <input type="text"/> <input type="text"/> DATE _____	SUPERVISOR NAME _____ <input type="text"/> <input type="text"/> DATE _____	IMPUTE <input type="text"/> <input type="text"/>	CODE NAME <input type="text"/> <input type="text"/>
---	---	--	---

SECTION 1 : SOCIO-DEMOGRAPHIC CHARACTERISTICS

N°	QUESTIONS AND FILTERS	REPOSSES/CODES	GO TO
101	NOTE TIME OF INTERVIEW	HOURS..... <input type="text"/> <input type="text"/> MINUTES..... <input type="text"/> <input type="text"/>	
102	Sex of participants	MALE1 FEMALE 2	
103	Which month and year were you born?	MONTH.....[][] Don't know MONTH..... 98 YEAR[][][][] Don't know YEAR.....9998	
104	What was your age during your last birth anniversary? COMPARE AND CORRECT 103 AND/OR 104 IF INCONSISTENT	AGE IN COMPLETED YEARS .[][]	
105	Have you been to school? (CORANIC SCHOOL = OTHER)	YES..... 1 NO..... 2 OTHER..... 3	} → 111
106	What level of schooling have you attained : primary, secondary, or post secondary?	PRIMARY.....1 SECONDARY..... 2 POST SECONDARY.....3	
107	Which is the last class attained at the level named above ?	YEAR[]	
108	Are you still schooling?	YES..... 1 NO..... 2	} →
109	At what age did you stop schooling?	AGE.....[][]	
110	Besides sports, what other gainful activity do you do? _____	COMMERCE.....1 AGRICULTURE.....2 TAILORING/HAIRDRESSING/ EMBROIDERY.....3 CONSTRUCTION/MAINTENANCE/4	

	(NOTE THE NATURE OF ACTIVITY)	NO GAINFUL ACTIVITY.....5 OTHER 7	
111	What is your ethnic group?	BAMILEKE/GRASSEFIELD BETI SAWAS HAUSSA OTHER.....	
112	Do your parents live together?	Yes1 No2	

*PRIMARY	SECONDARY	POST SECONDARY
LESS THAN 1 YEAR = 0	LESS THAN A YEAR. = 0	LESS THAN 1 YEAR.... = 0
INFANT/CLASS 1.... = 1	FORM 1 = 1	YEAR 1 = 1
STANDARD 1/CLASS 2 .. = 2	FORM 2 = 2	YEAR 2. = 2
STANDARD 2/CLASS 3 .. = 3	FORM 3 = 3	YEAR 3. = 3
STANDARD 3/CLASS 4 .. = 4	FORM 4 = 4	YEAR 4. = 4
STANDARD 4/CLASS 5 .. = 5	FORM 5 = 5	DON'T KNOW..... = 8
STANDARD 5/CLASS 6 .. = 6	LOWER 6 TH FORM . = 6	
STANDARD 6/CLASS 7 .. = 7	UPPER 6 TH FORM .. = 7	
DON'T KNOW..... = 8	DON'T KNOW..... = 8	

SECTION 2 : TYPE OF SPORT PRACTICED

N°	QUESTIONS AND FILTERS..	REPOSSES/CODES	GO TO
201	To which of the following sports federations are you affiliated?	Football.....1 Handball2 Basketball3 Volleyball4 Cyclist5 Athletics6 Box7	
202	How often do you practice this sport?	Regularly1 Very often2 Sometimes3	
203	How often do you practice this sport in a month?	Once a month1 Twice a month2 Thrice a month3 Four times a month4 More than four times a month5 It depends on the season of the year6 OTHER7	
204	About how many hours of sporting activity do you do in a week?	_____	
205	Are you a member of more than one of these federations?	Yes1 No2	
206	For how many years have you been practicing this sports discipline?	Lest than a Year1 One Year2 Two Year3 Three Years4 Four years5 Five years and more6	
207	Which other sporting activity do you practice?	Football1 Handball2 Basketball3 Volleyball4 Cyclist5 Athletics6 Boxing7	

		Tennis8 Swimming9 Karate10 Other11.	
208	How often do you practice this other sports activity?	Regularly1 Very often.....2 Sometimes.....3 Very rarely4	
209	Which is the highest level of sports competition that you have participated in?	Local/Provincial level1 National level2 International level3	301
210	If national level, how often have you participated?	Once in a month.....1 Once in a quarter2 Once in a year3 Other4	
211	If international level, how often have you participated?	Once in a month.....1 Once in a quarter2 Once in a year3 Other4	

SECTION 3 : AWARENESS OF LAWFUL AND UNLAWFUL SUBSTANCES

N°	QUESTIONS AND FILTERS	REPONSES/CODES	GO TO
301	Have you heard about substances that are allowed in sports?	Yes1 No.....2	
302	If Yes, which?	Cigarettes1 Alcohol.....2 Other3	
303	Have you heard about banned substances?	Yes1 No2	
304	If Yes, which?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis5 Anabolic steroids6 Amphetamine7	

		Creatinine8 EPO ¹⁰9 OTHERS10	
305	Have you heard about alimentary supplements used in sports?	YES1 NO2	
306	If Yes, which ?	VITAMIN C1 IRON2 MAGNESIUM3 OTHERS4	
307	Which is your main source of information about the following local substances: Banga, Wie-Wie, Liboga, Cannabis	Coach1 Friends/Peer2 Parent3 Sibling4 Dealer5 Books/Magazine6 Teacher7 Television/Radio/News paper8 Others9	
308	Which is your main source of information about the following drugs? : Cocaine, Anabolic steroids, Amphetamine, EPO	Coach1 Friend/Peer2 Parent3 Sibling4 Dealer5 Books/Magazine6 Teacher7 Television/Radio/News paper8 Others9	
309	Have you had any sensitization/education about the side effects of doping substances?	YES.....1 NO2	
310	If Yes, through which source(s) have you received this education?	Coach1 Friend/Peer2 Parent3 Sibling4 Dealer5 Books/Magazine6 Teacher7 Television/Radio/News paper....8 Others9	
311	What effect will doping substances induce in	Muscular development and strength	

¹⁰ EPO = Erythropoietin

	the body of an athlete?1 Development of self-confidence.....2 Improvement in physical capacity...3 Prevents stress4 Better competitiveness5 Improved muscle oxygenation6 Others7	
312	Which are the side effects of doping in sports?	Cardio-vascular risk1 Substance dependence2 Others3	
313	Have you read about any Cameroonian regulation against the use of doping substances?	YES.....1 NO2 DON'T KNOW3	

SECTION 4 : DOPING BEHAVIOR

N°	QUESTIONS AND FILTERS	REPONSES/CODES	GO TO
401	Is doping in sports a good thing?	YES1 NO2 DON'T KNOW3 OTHER4	
402	Do you think doping is a regular phenomenon in the sport discipline you practice?	YES1 NO2 DON'T KNOW3	
403	Do you think taking doping substances is necessary for success in sports competitions?	YES1 NO2 DON'T KNOW3	
404	In your opinion, which of these sports disciplines practiced in Cameroon have the most regular users of doping substances?	Football1 Handball2 Basketball.3 Volleyball4 Cycling5 Athletics6 Boxing.....7	
405	Are you aware of some colleagues who use substances to improve their competitiveness?	YES1 NO2 DON'T KNOW3	
406	Do you think those you compete with them use substances to improve their physical	YES NO	

	fitness?	DON'T KNOW	
407	Which are the products commonly used by young people who practice the same sports discipline as you?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis.....5 Anabolic steroids6 Amphetamine7 Creatinine8 EPO9 Others10	If NO in all, go to 424
408	Have you used the following products at least once in the past ?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis5 Anabolic steroids6 Amphetamine7 Creatinine8 Corticoides9 Ecstasy10 EPO11 Others12	
409	Have you used any of these products within the last 12 months?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis.....5 Anabolic steroids6 Amphetamine7 Creatinine8 Corticoides9 Ecstasy10 EPO11 Others12	
410	Have you used any of these products at least once within the last three months?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis.....5 Anabolic steroids6	

		Amphetamine7 Creatinine8 Corticoides9 Ecstasy10 EPO11 Others12																																					
411	Since which year (month) have you been taking this (these) product(s) within the framework of sports?	YEAR _____ MONTH _____																																					
412	Do you regularly use any of these products?	Banga1 Wie-Wie2 Liboga3 Cocaine4 Cannabis.....5 Anabolic steroids6 Amphetamine7 Creatinine8 Corticoides9 Ecstasy10 EPO11 Others12																																					
413	At what time (in relation to sports activities/competition) do you use these products?	<table border="0"> <thead> <tr> <th></th> <th>BEFORE</th> <th>AFTER</th> </tr> </thead> <tbody> <tr><td>Banga</td><td>.....1</td><td>.....2</td></tr> <tr><td>Wie-Wie</td><td>.....1</td><td>.....2</td></tr> <tr><td>Liboga</td><td>.....1</td><td>.....2</td></tr> <tr><td>Cocaine</td><td>.....1</td><td>.....2</td></tr> <tr><td>Cannabis</td><td>.....1</td><td>.....2</td></tr> <tr><td>Anabolic steroids</td><td>.....1</td><td>.....2</td></tr> <tr><td>Amphetamine</td><td>.....1</td><td>.....2</td></tr> <tr><td>Creatinine</td><td>.....1</td><td>.....2</td></tr> <tr><td>Corticoides</td><td>.....1</td><td>.....2</td></tr> <tr><td>Ecstasy</td><td>.....1</td><td>.....2</td></tr> <tr><td>EPO</td><td>.....1</td><td>.....2</td></tr> </tbody> </table>		BEFORE	AFTER	Banga12	Wie-Wie12	Liboga12	Cocaine12	Cannabis12	Anabolic steroids12	Amphetamine12	Creatinine12	Corticoides12	Ecstasy12	EPO12	
	BEFORE	AFTER																																					
Banga12																																					
Wie-Wie12																																					
Liboga12																																					
Cocaine12																																					
Cannabis12																																					
Anabolic steroids12																																					
Amphetamine12																																					
Creatinine12																																					
Corticoides12																																					
Ecstasy12																																					
EPO12																																					
414	Through which means do you administer this product? (Note other means of administration, e.g. nasal (<i>nose</i>), parenterally (<i>skin</i>), etc)	<table border="0"> <thead> <tr> <th></th> <th>ORAL</th> <th>INJECTION</th> </tr> </thead> <tbody> <tr><td>Banga</td><td>.....1</td><td>.....2</td></tr> <tr><td>Wie-Wie</td><td>.....1</td><td>.....2</td></tr> <tr><td>Liboga</td><td>.....1</td><td>.....2</td></tr> <tr><td>Cocaine</td><td>.....1</td><td>.....2</td></tr> <tr><td>Cannabis</td><td>.....1</td><td>.....2</td></tr> <tr><td>Anabolic steroids</td><td>.....1</td><td>.....2</td></tr> <tr><td>Amphetamine</td><td>.....1</td><td>.....2</td></tr> </tbody> </table>		ORAL	INJECTION	Banga12	Wie-Wie12	Liboga12	Cocaine12	Cannabis12	Anabolic steroids12	Amphetamine12													
	ORAL	INJECTION																																					
Banga12																																					
Wie-Wie12																																					
Liboga12																																					
Cocaine12																																					
Cannabis12																																					
Anabolic steroids12																																					
Amphetamine12																																					

		Creatinine1.....2 Corticoides1.....2 Ecstasy12 EPO1.....2																																					
415	The last time you used any of these products which was the means of administration you used?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">ORAL</th> <th style="width: 25%; text-align: center;">INJECTION</th> </tr> </thead> <tbody> <tr><td>Banga</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Wie-Wie</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Liboga</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Cocaine</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Cannabis</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Anabolic steroids</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Amphetamine</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Creatinine</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Corticoides</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Ecstasy</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>EPO</td><td>.....1.....</td><td>.....2</td></tr> </tbody> </table>		ORAL	INJECTION	Banga1.....2	Wie-Wie1.....2	Liboga1.....2	Cocaine1.....2	Cannabis1.....2	Anabolic steroids1.....2	Amphetamine1.....2	Creatinine1.....2	Corticoides1.....2	Ecstasy1.....2	EPO1.....2	
	ORAL	INJECTION																																					
Banga1.....2																																					
Wie-Wie1.....2																																					
Liboga1.....2																																					
Cocaine1.....2																																					
Cannabis1.....2																																					
Anabolic steroids1.....2																																					
Amphetamine1.....2																																					
Creatinine1.....2																																					
Corticoides1.....2																																					
Ecstasy1.....2																																					
EPO1.....2																																					
416	The last time you used any of these products what was the dose you took?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">STANDARD</th> <th style="width: 25%; text-align: center;">EXCESS</th> </tr> </thead> <tbody> <tr><td>Anabolic steroids</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Amphetamine</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Corticoides</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Ecstasy</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>EPO</td><td>.....1.....</td><td>.....2</td></tr> </tbody> </table>		STANDARD	EXCESS	Anabolic steroids1.....2	Amphetamine1.....2	Corticoides1.....2	Ecstasy1.....2	EPO1.....2																			
	STANDARD	EXCESS																																					
Anabolic steroids1.....2																																					
Amphetamine1.....2																																					
Corticoides1.....2																																					
Ecstasy1.....2																																					
EPO1.....2																																					
417	Are any of the following people aware that you take drugs in sports?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">YES</th> <th style="width: 25%; text-align: center;">NO</th> </tr> </thead> <tbody> <tr><td>Coach</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Friend/Peer</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Parent</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Sibling</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Dealer</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Teacher</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Others</td><td colspan="2">_____</td></tr> </tbody> </table>		YES	NO	Coach1.....2	Friend/Peer1.....2	Parent1.....2	Sibling1.....2	Dealer1.....2	Teacher1.....2	Others	_____														
	YES	NO																																					
Coach1.....2																																					
Friend/Peer1.....2																																					
Parent1.....2																																					
Sibling1.....2																																					
Dealer1.....2																																					
Teacher1.....2																																					
Others	_____																																						
418	Who advised you to take any substance for the first time?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">YES</th> <th style="width: 25%; text-align: center;">NO</th> </tr> </thead> <tbody> <tr><td>Coach</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Friend/Peer</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Parent</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Sibling</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Dealer</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Teacher</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Myself</td><td>.....1.....</td><td>.....2</td></tr> <tr><td>Others</td><td colspan="2">_____</td></tr> </tbody> </table>		YES	NO	Coach1.....2	Friend/Peer1.....2	Parent1.....2	Sibling1.....2	Dealer1.....2	Teacher1.....2	Myself1.....2	Others	_____											
	YES	NO																																					
Coach1.....2																																					
Friend/Peer1.....2																																					
Parent1.....2																																					
Sibling1.....2																																					
Dealer1.....2																																					
Teacher1.....2																																					
Myself1.....2																																					
Others	_____																																						
419	And who advised you to take any substance the last time you took one?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">YES</th> <th style="width: 25%; text-align: center;">NO</th> </tr> </thead> <tbody> <tr><td>Coach</td><td>.....1.....</td><td>.....2</td></tr> </tbody> </table>		YES	NO	Coach1.....2																															
	YES	NO																																					
Coach1.....2																																					

		Friend/Peer1.....2 Parent1.....2 Sibling1.....2 Dealer1.....2 Teacher1.....2 Myself1.....2 Others _____																						
420	Did you take the substance willingly?	YES NO																						
421	What is the motivation for your taking substance in sports?	Improve physical appearance1 Improve performance2 To be selected by coach3 To make more money4 Fight against tiredness5 Increase physical fitness6 Others7																						
422	Where often do athletes take or consume drugs?	Home1 Sports ground2 Hospital3 Home of coach/promoter4 Depends on type of drug5 Others _____																						
423	The last time you took any substance, where did you administer or take this substance?	Home1 Sports ground2 Hospital3 Home of coach/promoter4 Depends on type of drug5 Others _____																						
424	If you have not used any performance-enhancing substance, have you been proposed any before and if so by whom?	<table style="width: 100%; border: none;"> <tr> <td></td> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> <tr> <td>Coach</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>Friends/Peer</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>Parent</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>Sibling</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>Dealer</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>Teacher</td> <td>.....1</td> <td>.....2</td> </tr> </table>		YES	NO	Coach12	Friends/Peer12	Parent12	Sibling12	Dealer12	Teacher12	
	YES	NO																						
Coach12																						
Friends/Peer12																						
Parent12																						
Sibling12																						
Dealer12																						
Teacher12																						
425	What are the reasons why you do not take performance-enhancing substance?	My parents forbid me1 Substances are not effective2 Substances are dangerous to health.....3 Don't need substances4																						

		Substance are expensive5 Substances are not accessible6 Substance are forbidden7 Others8	
426	Do you think a substance is essential for you to improve your performance?	YES1 NO2 DON'T KNOW3	
427	Would you consider taking performance enhancing drugs?	YES1 NO2 DON'T KNOW3	
428	What would be your motivation or reasons for taking any substance?	Improve physical appearance1 Improve performance2 To be selected by coach3 To make more money4 Fight against tiredness5 Increase physical fitness6 Others7	

SECTION 5 : SUBSTANCE ACQUISITION-COST- NETWORK

N°	QUESTIONS AND FILTERS	REPONSES/CODES	GO TO
501	Which are the main sources of obtaining the following substances : Banga, Wie-Wie, Liboga, Cocaine, Cannabis ?	FRIENDS1 PARENTS2 DEALER 3 MANAGER/COACH4 MARKET5 PHARMACY6 PHYSICAL THERAPIST7 DON'T KNOW8 OTHERS	
502	Which are the main sources of obtaining the following substances: Anabolic steroids Amphetamine Creatinine Corticoides, Ecstasy, EPO?	FRIENDS1 PARENTS2 DEALER 3 MANAGER/COACH4 MARKET5 PHARMACY6 PHYSICAL THERAPIST7 DON'T KNOW8	

		OTHERS _____	
503	Do some sportsmen and women take doping substances without requesting for them?	YES1 NO2 DON'T KNOW3	
504	If Yes, who are the principal persons who freely propose these products to them?	FRIENDS1 PARENTS2 DEALER3 MANAGER/COACH4 MARKET5 PHARMACY6 PHYSICAL THERAPIST7 DON'T KNOW8 OTHERS _____	
505	How much would it cost (in FCFA) for an average use of these products?	<p style="text-align: right;">COST</p> (FCFA) Banga _____ Wie-Wie _____ Liboga _____ Cocaine _____ Cannabis _____ Anabolic steroids _____ Amphetamine _____ Creatinine _____ Corticoides _____ Ecstasy _____ EPO _____	
506	According to you, is it easy to buy these products when one is in need of them: Banga, Wie-Wie, Liboga, Cocaine, Cannabis?	YES1 NO2 DON'T KNOW3 DEPENDS4 OTHERS.....5	
507	According to you, is it easy to buy these products when one is in need of them: Anabolic steroids Amphetamine Creatinine, Corticoides, Ecstasy EPO?	YES1 NO2 DON'T KNOW3 DEPENDS4 OTHERS.....5	
508	For sportsmen and women who have never used doping substances. If you wish to use a substance to improve your performance, is it likely you will know where to get it?	YES1 NO2 DON'T KNOW3	

SECTION 6 : DOPING CONTROL

N°	QUESTIONS CREATINE	REPONSES/CODES	GO TO
601	Are there measures taken within your federation to prevent doping in your discipline?	YES NO	
602	If Yes, which are these measures?	EDUCATION/PREVENTION1 REHABILITATION...2 REPRESSION3 SURVEILLANCE/TESTING.....4 OTHERS5	
603	Which specific measures are taken by your club/team to fight against doping?	EDUCATION/PREVENTION1 REHABILITATION...2 REPRESSION3 SURVEILLANCE/TESTING.....4 OTHERS5 NONE6	
604	Have you been tested for drug use during any sports competition before?	YES NO	
605	If Yes, how many times have you been tested ever since you got involved in this sport?	Number or times tested.....[] []	
606	What do you think about sportsmen and women who take drugs to boost their capacity to compete or their physical fitness?	DON'T KNOW1 BAD CHOICE FOR THEM2 GOOD CHOICE FOR THEM3 NOTHING4 DISHONORABLE5 OTHERS6	
607	Have you been tested for drug use during any competition in Cameroon?	YES1 NO2	
608	Should doping be legalized?	YES1 NO2 DON'T KNOW3 OTHERS4	
609	If no, would you publicly condemn the practice of doping?	YES1 NO2 DON'T KNOW3	

701	END OF THE INTERVIEW	HOUR <input type="text"/> <input type="text"/> MINUTES <input type="text"/> <input type="text"/>	
702	INTERVIEW DURATION	MINUTES..... <input type="text"/> <input type="text"/>	

	THANK THE PARTICIPANT		
703	OBSERVATIONS		

APPENDIX II

KEY INFORMANT INTERVIEW GUIDE

INFORMED CONSENT

Dear participant,

We are working for AFRID Research Group that means African Research Institute for Development. This research group is currently carrying out a study which is funded by the World Anti-doping Agency (WADA) on knowledge, attitudes and behaviors of young athletes regarding doping. In addition to athletes, we are collecting data from people like you who work closely with sportsmen and women and have the advantage of knowing more about sports than the rest of the population.

Purpose of the study

The main aim of this study is to gather information that can enable us understand the phenomenon of doping in Cameroon. This data could also be useful in the formulation of a national policy for the surveillance, prevention and control of doping among sportsmen and women in country. As such we intend to:

1. Look at knowledge, practices, attitudes and beliefs (KPAB) of athletes and those who work closely with them such as coaches, trainers, sponsors, parents of athletes, teachers and executives of different sport federations.
2. Look for appropriate ways and means that can be used to educate athletes and non-athletes on the harmful effects of doping,
3. Look for appropriate ways and means to reduce high-risk behaviors that surround the practice of sports,
4. Look for best approaches to teach practical ways that can enable young athletes of different disciplines to develop their skills in ways that are healthy and acceptable to society and the sports community.
5. Look very closely at anti-doping policies of the different sports federations in Cameroon to see where they are weak and may need strengthening and advice.
6. Make suggestions to the Ministry of Youth and Sports, Ministry of Health, and the different Sports Federations. Such suggestions may help the different departments to be able to set up national monitoring and prevention programs for doping in the country.

Procedure of participation

To qualify to be interviewed one must fall under any of the following categories of persons: be a coach, trainer, sponsor, parent of an athlete, teacher of sports, an executive of a sport federations, sport physician, decision making person in the Ministry of Youth and Sports, an advocate of anti-doping policies, etc. Your participation in this study will consist of responding to a series of questions that we have formulated. Only you and I will be talking to one another. Because I will not be able to write down everything that we are going to discuss, I

will request to have our discussion tape-recorded. The discussion will last about an hour to an hour and half.

Risks and discomfort to you

Some questions may make you feel uncomfortable or embarrassed. You are free to refuse to answer any question or questions you don't feel comfortable with.

Benefits to you

What you tell us may help to improve the organization of sports in Cameroon and contribute to improving the health of athletes in the country. The information may also help in controlling cheating during competitions and contribute to establish an atmosphere of fair competition in sports in this country. This study may increase what people in Cameroon know about the use of drugs and sports throughout the whole country. You may also enjoy telling me how you feel about drugs and sports in Cameroon either from your own experience or that of friends and colleagues which you have seen or heard.

Cost to you

There is no direct cost to you for being in this study. However, we know that your participation will require that you sacrifice some of your precious time. Given the importance of this study for the development of sports in Cameroon, we request that you make this sacrifice (approximately 60-90 minutes) as your own contribution to the development of sports in Cameroon and why not the world.

Confidential issues

You have been randomly selected to be one of about 1600 individuals to participate in this study. Your participation is entirely anonymous, meaning that nobody will be able to say this is what you said including even us the researchers. All information you will provide therefore is totally confidential and will not be disclosed to anybody. It will only be used for research purposes and the responses will be analyzed in the aggregate, that is, together with all other responses and will not be associated with individual participants. Your name, address, and other personal information will not be taken down in the labelling of the tape, and only a code will be used to identify the information that you shall provide. Your participation is entirely voluntary and you have the right to respond or not to respond to any questions you are not comfortable with.

All information you give us will be kept private. We will be collecting your title, your functions, and duration of exercise of those functions, etc. We will destroy all questionnaires once all reports have been written.

Signing this paper is also voluntary. You may choose to participate in this research without signing this paper. If you choose to do so, you must say that you however agree to participate in the study.

Reports about the study

What you tell us will be added to what we hear from other people. As earlier said, your information will not be presented by itself. The reports from this study will be shared with the

rest of sportspersons throughout Cameroon and especially people who make decisions regarding sports competitions in this country.

Your rights to refuse or withdraw

It is your choice to take part or not. Taking part in this study will not affect any advantages or benefits that you get from sports or being a member of your sports federation. You may choose to answer or not to answer any questions. If you choose not to be part of this study, it will not affect whether or not you can take part in any future study of this kind.

Persons to contact in case of any questions

If you have any questions about this study or your rights, you may ask me or contact our office at the following contacts, AFRID PO Box 3592, Yaounde, Cameroon, Tel. 775-6380 or 989-3644. You can also contact the National Ethics Committee in Yaounde. This is the office that ensures that the rights of people participating in studies like this one are protected. Their contact number is: 220-9075.

Your Consent

I understand the reasons for this interview and my questions have been answered. I agree to participate in the interview by my own choice.

Participant's Name

Participant's Signature

Date

Signing Witness's Name

Signing Witness's Signature

Date

I have explained the purpose of this study. To the best of my knowledge, he/she understands the purpose, procedures, risks and benefits of the study.

Investigator/Designee Name

**Investigator/Designee
Signature**

Date

Introduction and Icebreaker

- Explain the purpose of the study
- Ethical and confidentiality dispositions of the study
- Explain the major axes of the interview
- Negotiate and obtain consent for the interview as indicated in the informed consent procedures outlined for the study and included below in this text
- Negotiate and obtain consent for tape recording of the interview as indicated in the informed consent procedures outlined for the study

Problem of doping among amateur sportsmen and women in Cameroon

1. What are your views about the magnitude of doping among sportsmen and women in Cameroon?
 - a. Is doping a myth or it is real?
 - b. If real, is this a rampant phenomenon?
2. Which are the sports disciplines most affected by this phenomenon and which are those less affected?
3. What are the motivations for taking drugs in sports among young sportsmen and women in Cameroon?
4. What is your vision about this phenomenon for the future of sports in Cameroon?
5. What can you say about the supply of doping substances?
 - a. Where do athletes get these substances from?
 - b. Are there some established supply sources?
 - c. Are they formal or informal?
 - d. Are they well known by young athletes?
 - e. Is there a strong demand for doping substances?
6. What can you say about the involvement of some resource persons (decision makers in the area of sports) in the phenomenon of doping in Cameroon?

Existing anti-doping strategies: Strengths and weaknesses

1. What do you say about the national policy for the fight against doping in sports in Cameroon?
2. What can you say about anti-doping regulation in Cameroon?
3. Do you think Cameroonians are informed about existing anti-doping regulations, laws, text and national strategies surrounding the practice of sports in Cameroon? If so how and through what medium(s)?
4. Can you say what measures have been taken at the national level to check this phenomenon? Probe about the details of these measures :
 - a. Action to increase awareness including early detection, prevention and development of positive skills
 - b. Repressive actions
 - c. Actions to identify/test doping cases during sports practice and competitions ,
 - d. The identification of athletes at risk
 - e. Doping cessation or rehabilitation measures for identified cases, etc.
 - f. Probe for specific actions by sector : family level (Parents), sports circles, police, justice, Executive of sport, Coaches, Team Managers, Sponsors, Sport medics, school Teacher
5. Do you have the feeling that these measures (if they exist) have brought about any significant changes in the behaviour of young athletes in the country?
6. If no, do you have any explanation as to why? Can you say which measures have failed and why?

7. If yes, what do you think accounts for the success and which may need to be reinforced?
8. What are some of the strategies devised by sportsmen and women to acquire and use doping substances?

Reinforcement of doping prevention measures in Cameroon

1. What role should each sector play to implement anti-doping measures in Cameroon? (Explore measures likely to generate maximum impact)
 - a. By the family/parents
 - b. By sports federations,
 - c. Sportsmen and women (including their peers),
 - d. Sponsors of sports events and promoters of clubs,
 - e. The health ministry,
 - f. The police and the judiciary,
 - g. Ministry of education
 - h. Ministry of sports
 - i. The media
2. Would you be willing to actively participate in the implementation of doping prevention measures? Currently, what are the obstacles to your active involvement in the implementation of doping prevention measures? Any facilitators?