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**Attitudes toward, knowledge of, and
prevalence of illicit substance use among
elite athletes in Australia: First results**

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**ATTITUDES TOWARD,
KNOWLEDGE OF, PREVALENCE
OF ILLICIT SUBSTANCE USE
AMONG ELITE ATHLETES IN
AUSTRALIA: FIRST RESULTS**

**Matthew Dunn, Johanna O. Thomas, Lucinda Burns,
Wendy Swift, Karen Price and Richard P. Mattick**

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- Australian Institute of Sport/Australian Sports Commission

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ABBREVIATIONS

AGDH&A	Australian Government Department of Health and Ageing
AFL	Australian Football League
AIHW	Australian Institute of Health and Welfare
AIS	Australian Institute of Sport
ASADA	Australian Sports Anti-Doping Authority
ASC	Australian Sports Commission
ASSAD	Australian School Students Alcohol and Drug Survey
DHEA	Dehydroepiandrosterone
DUMA	Drug Use Monitoring in Australia
EDRS	Ecstasy and Related Drugs Reporting System
GHB	Gamma-hydroxybutyrate
GP	General Practitioner
HIV	Human Immunodeficiency Virus
IDRS	Illicit Drugs Reporting System
IOC	International Olympic Committee
KE	Key expert(s)
LSD	<i>d</i> -lysergic acid diethylamide
MDA	Methylenedioxyamphetamine
NCAA	National Collegiate Athletic Association
NDARC	National Drug and Alcohol Research Centre
NDSHS	National Drug Strategy Household Survey
NSO	National Sporting Organisation
NSP	Needle and Syringe Program
NSW	New South Wales
WADA	World Anti-Doping Authority

GLOSSARY

Cannabis	Derived from the cannabis plant (<i>cannabis sativa</i>). It grows wild in many of the tropical and temperate areas of the world. It can be grown in almost any climate, and is increasingly cultivated by means of indoor hydroponic technology.
Cocaine	A central nervous system stimulant, obtained from the cocoa plant. Cocaine hydrochloride, the salt, is the more common form used in Australia. The freebase form is called ‘crack’; little or no crack is available or used in Australia.
Crystal	Street term for crystal methamphetamine, a potent form of methamphetamine. Also known as “ice”.
Ecstasy	Street term for MDMA (3,4-methylenedioxymethamphetamine), which may contain a range of other substances. It is an hallucinogenic amphetamine
GHB	Acronym for gamma-hydroxybutyrate. It is a central nervous system depressant. Other known terms include ‘GBH’ and ‘liquid ecstasy’; however, the latter is misleading as GHB is a depressant, not a stimulant
Ketamine	It is a dissociative psychedelic used as a veterinary and human anaesthetic
Lifetime use	Use on at least one occasion in the participant’s lifetime via one or more of the following routes of administration: inject, smoke, snort, swallow and/or shaft/shelve
Meth/amphetamine	Includes amphetamine and/or methamphetamine. Amphetamine is a psychostimulant drug that is known to produce increased wakefulness and focus in association with decreased fatigue and appetite. Methamphetamine is an analogue of amphetamine, and is a central nervous system stimulant. The three main forms of methamphetamine in Australia are methamphetamine powder (‘speed’), methamphetamine base (‘base’) and crystalline methamphetamine (‘crystal’, ‘ice’)
Recent use	Use in the last twelve months via one or more of the following routes of administration: inject, smoke, snort, swallow and/or shaft/shelve

EXECUTIVE SUMMARY

This report presents the findings from a study investigating attitudes toward, knowledge of, and prevalence of illicit drug use among a sample of elite Australian athletes. We report quantitative data from surveys of elite Australian athletes, and qualitative data from a sample of key experts, defined as those who through the nature of their work come into contact with elite athletes.

Between July 2008 and May 2009, a convenience sample of 1,007 'elite' athletes (defined as those eligible for state or national team selection in their chosen sport) was surveyed, of which 974 surveys were used in the final analysis. These athletes came from such sports as rugby league, rugby union, athletics, diving, hockey, netball, softball, triathlon and the Australian Institute of Sport. Between January and May 2009, twenty-four 'key experts' (KE) were surveyed. These KE represented a range of sports and provided information on the elite athletes with whom they had recent contact.

Demographic characteristics of the athlete sample

Three-quarters of the sample was male, with an average age of 23 years. The majority of the athletes reported coming from an English-speaking background, most reported that they had completed secondary education, and one-quarter reported having completed a tertiary qualification. Almost all participants indicated that they participated in a team sport, and most indicated that all their training time was spent with other athletes. Half of the sample indicated that they were full-time athletes.

The majority of key experts interviewed had direct and frequent contact with male athletes, and twice as many KE reported involvement with a team sport as working with individual athletes. The majority of KE had contact with athletes aged between 18 years and 30 years.

Knowledge of drug use and drug effects

A large proportion of the sample indicated that they were confident in their knowledge of the effects of drugs such as cannabis, meth/amphetamine and ecstasy; over half indicated they were confident in their knowledge of the effects of ecstasy. Only one-quarter indicated that they were confident in their knowledge of the effects of GHB and ketamine. By comparison, between one-quarter and one-third of participants indicated that they desired more information regarding the effects of cannabis, meth/amphetamine, ecstasy and cocaine; two-fifths reported that they desired more knowledge on the effects of GHB and ketamine.

A large proportion of the sample indicated that they believed drug use would impact negatively on their athletic performance. The majority of these participants made reference to the negative impact of drug use on both mental and physical functioning, such as motor functioning, reaction time, altered perception, concentration, judgement and decision making. They also mentioned the addictive properties of drugs, and how these could interfere with training, decrease motivation and affect the athlete's relationship with their team and personal life.

A small proportion of the sample did report that illicit drug use, when taken in the off-season or during one's personal time, would not impact on athletic performance. This was reinforced by the belief that some drugs remained in the body for a short amount of time, thus making it possible for an athlete to train or compete within a few days of use.

While a large proportion of athletes reported that they believed that drug use would negatively impact on their athletic performance, they did not know specifically why it would or what the specific effects of the drugs were.

All but two KE felt that athletes were generally knowledgeable about illicit drugs. A proportion of KE felt that knowledge varied from athlete to athlete and that most athletes had a similar knowledge of drugs to the general population, in that athletes may have a broad knowledge of illicit drugs and may not be aware of specific effects and side effects. The majority of KE felt that education should focus on recreational or 'party' drugs, the most readily available drugs and the drugs athletes are most commonly detected as having used.

Drug testing

Two-thirds of the sample reported that they had been tested for banned substances during competition in the past two years, and two-fifths reported that they had been tested out of competition in the past two years for banned substances. One-third reported that they had been tested in and out of competition in the past two years. More than three-fifths of the sample believed that they would be tested for banned substances in the next twelve months. Three-quarters of the sample agreed or strongly agreed that testing for banned substances is an effective way of deterring people from using these substances.

Three-fifths of the sample believed that the punishment for being caught using a banned substance was appropriately severe in their sport; mixed reports were obtained regarding whether punishments should be more severe. Three-fifths of the sample believed that there should be separate punishments for being caught using a performance-enhancing drug and for being caught using an illicit 'party' drug. Half of the sample believed that the punishment for being caught using an illicit 'party' drug should be less severe than for being caught using a performance-enhancing drug.

The majority of KE believed that drug testing was an effective deterrent to illicit drug use by athletes. Many felt that in-competition testing was more successful than out-of-competition testing. Of the minority of KE who did not believe that testing was an effective deterrent, most attributed this to the inconsistency of testing practices, policies and penalties. The majority of KE believed that there should be separate policies for illicit and performance-enhancing drugs

Knowledge of policies regulating drug use in sport

Most participants reported that they were aware of the policies regarding drug use in sport; slightly more than half of the sample reported that they did not want more information regarding these policies. KE reports generally supported these findings, though a small number of KE thought that athletes were not knowledgeable about these policies and some expressed concern that athlete knowledge was limited.

Drug support services and information resources

Half of the sample indicated that they were aware of drug information services dealing with illicit drugs and that they knew where to get information about illicit drugs if needed. Participants indicated that they would be comfortable asking others about illicit drugs, such as a family member, friend or fellow athlete; one-quarter indicated that they would not seek such information from a coach or trainer. Almost one-third of the sample agreed that they would be concerned others would assume they were using drugs if they asked about them.

The majority of KE believed that athletes were aware of drug support services. A small number of KE reported that while they believed that athletes were aware of information sources for performance-enhancing drugs, they did not think athletes would know where to get information on illicit drugs specifically. Some KE did believe that there was stigma attached to information seeking about illicit drugs.

Two-fifths of the sample agreed that athletes in their sport would benefit from more information regarding illicit drugs; however, more than one in ten participants did not believe athletes needed more information. A small number of athletes believed that information should be specific and brief, rather than generalised.

The majority of KE felt that workshops, lectures and seminars are the most effective way of presenting drug information to athletes and that written information was not effective. There was general agreement that drug education should engage the athlete, be straight forward, brief, and include up-to-date information. Many of the KE also believed that information should be specific to athletes, rather than focus on general health consequences.

Substance use

Perceptions of athlete drug use varied, with participants tending to report that fewer athletes in their sport used drugs compared to athletes in general. Sixteen percent of athletes indicated that there was a drug of concern in their sport, with the nominated drugs of concern being ecstasy, alcohol, cocaine, steroid and cannabis; few believed meth/amphetamine, GHB or ketamine were drugs of concern in their sport. One-quarter of the sample reported that they had been offered or had had the opportunity to use ecstasy in the past twelve months, followed by one-fifth reporting this for cannabis.

One-fifth of the sample reported that they had ever used cannabis and one in ten reported that they had tried ecstasy at some point in the life. Past-year use of illicit drugs was low, with the proportion of athletes self-reporting past-year drug use similar or lower than that reported in the general population. Past-month drug use was reported by less than one percent of the sample.

KE estimates of athlete drug use varied, and in general KE believed that athlete drug use was either similar to or lower than the general population. Ten KE believed that drug use had increased in their sport, and attributed this to increases in availability and the general acceptability of drug use in society. Six KE believed that drug use among athletes had decreased, attributing this to an increased focus on education, testing and penalties. There was, however, general agreement among KE that of the athletes engaging in illicit drug use, the frequency of use was very low and may occur during the off-season or approximately once or twice per year.

Summary

This study represents one of the few investigations of illicit drug use issues among elite athletes, and provides a sound base from which education initiatives and policy decisions can be made.

Overall, athletes' self-reported drug use was lower than that of the Australian general population. One-third of the sample reported that they had had been offered or had the opportunity to use an illicit drug in the past year, and as the data shows, the majority of these athletes did refrain from use. Athletes' and KEs' perceptions of the extent of illicit drug use in sport were varied. Ecstasy, alcohol and cocaine were the three most nominated drugs of concern in athletes' chosen sports. KE were concerned that illicit drugs had become more acceptable in sport, and that this may lead to increased use. There was general agreement among KE that of the athletes who engage in illicit drug use, the frequency of use was low.

In general, the athletes surveyed indicated that they were knowledgeable about the effects of illicit drugs such as cannabis and ecstasy, but less knowledgeable regarding the effects of GHB and ketamine. Despite varying degrees of confidence in knowledge, there were athletes who indicated that they would like more information about the effects of drugs overall. Comments from athletes and KE suggest that education initiatives should be targeted; sport-specific; interactive; to the point; and should focus on recreational or 'party' drugs, such as cocaine and meth/amphetamine.

A large proportion of both athletes and KE endorsed testing for banned substances as an effective way of deterring drug use, and most believed that the current penalties for being caught using a banned substance were of the appropriate severity. The athletes surveyed believed that there should be separate policies regarding being caught using 'recreational' drugs and 'performance-enhancing' drugs, and that penalties for being caught using the former should be less severe than being caught using the latter.

Athletes indicated that they were aware of policies regarding drug use in sport, and sizeable proportions indicating that they wanted more information regarding these policies. KE were of the opinion that athletes were aware of these policies, though some expressed concern that knowledge was limited. Further education regarding this issue may be warranted, taking into account athletes' opinions regarding the best way to present new information.

Participants indicated that they were able to seek information about illicit drugs and that they were aware of drug information services dealing with these. Some KE believed that athletes would not know where to access information about illicit drugs and their effects. While athletes indicated that they were comfortable seeking information, there was concern that this may be seen as an indication that they were using, or intending to use, illicit drugs, and the effect this may have on team selection and their playing career. KE who were retired athletes also endorsed this view.

1 INTRODUCTION

This report presents findings from the study investigating Australian elite athletes' attitudes toward illicit drugs; their knowledge of the effects of these drugs; their opinions regarding the effectiveness of testing for illicit drugs in- and out-of-competition as a deterrent to illicit drug use; and their perception of levels of drug use in sport and their self-reported history of drug use.

In discussing these findings, it is useful to have an understanding of the governing bodies which outline the policies regarding drugs in sport and the agencies which administer them. It is also useful to have an understanding of the drug situation in Australia, so that fair comparison may be made. As such, in this report we:

- Discuss the agencies and bodies which regulate drugs in sport;
- Discuss the prevalence of illicit drug use in Australia;
- Discuss the literature regarding illicit drug use in sport; and
- Present findings from the quantitative and qualitative components of the current project, conducted between July 2008 and June 2009.

The specific aims of this study were to investigate, among a cross-sectional non-representative sample of elite athletes:

1. Levels of knowledge of the difference between an anti-doping policy and an illicit drugs policy, and the impact of each policy on them;
2. Levels of illicit drug use;
3. Levels of knowledge of illicit drugs and the effects of these drugs;
4. Attitudes of athletes to testing for illicit drugs out-of-competition as an effective deterrent;
5. Attitudes of athletes to the adoption of an illicit drugs in sport policy by their sport and whether such policy would serve as an effective deterrent to using, possessing, trafficking or administering illicit drugs; and
6. Levels of awareness of resources used to obtain information about illicit drugs.

2 ANTI-DOPING IN SPORT – AGENCIES, POLICIES AND PROCEDURES

There are various agencies which are involved in the regulation and detection of drug use in sport. The purpose of this chapter is to briefly describe the agencies involved in the detection of illicit drugs in sport, the policies to which athletes must adhere to, and the procedures that are used to detect banned substances.

2.1 World Anti-Doping Agency (WADA)

The World Anti-Doping Agency (WADA) is the independent foundation set up to “promote, coordinate and monitor the fight against drugs in sport”. It was formed in 1999 through a collective initiative led by the International Olympic Committee (IOC), which initially funded the agency. WADA now receives half its funding from the IOC and the other half from various international governments.

One of the key activities of WADA includes monitoring the World Anti-Doping Code. The code is the document which harmonises regulations regarding anti-doping in all sports and countries. WADA also produces the Prohibited List, a list which is updated annually that documents the prohibited substances and methods that athletes are not allowed to take or use in- and out-of-competition.

2.1.1 Prohibited List

The Prohibited List ensures consistency across all World Anti-Doping Code compliant sports and signatories. The Prohibited List is reviewed annually and comes into effect on the 1st January every year, with no amnesty period.

A substance or method is included on the list if it meets two of the following three criteria:

- i. medical or other scientific evidence, pharmacological effect or experience that the substance or method, alone or in combination with other substances or methods, has the potential to enhance or enhances sport performance;
- ii. medical or other scientific evidence, pharmacological effect or experience that the use of the substance or method represents an actual or potential health risk to the athlete;
- iii. WADA’s determination that use of the substance or method violates the spirit of sport described in the Code.

WADA may also include a substance or method if WADA determines that there is medical or other scientific evidence, pharmacological effect or experience that the substance or method has the potential to mask the use of other prohibited substances or prohibited methods.

Tables 1 through 3 present the substances and methods prohibited in 2009. Substances S1 through S5 and methods M1 through M3 are prohibited at all times (Table 1); substances S6

through S9 are prohibited in-competition only (Table 2); and P1 through P2 are prohibited in particular sports (Table 3).

Table 1: Substances and methods prohibited at all times

Substance	Examples*
S1. Anabolic steroids	1. Anabolic-androgenic steroids i. Exogenous steroids, including stanozolol, oxandrolone, oxymetholone, ethylestrenol, fluoxymesterone & danazol ii. Endogenous steroids, including androstenediol, androstenedione & testosterone. 2. Other anabolic agents, including clenbuterol & zeranol.
S2. Hormones and related substances	These include erythropoietin, growth hormone, insulins & corticotrophins.
S3. Beta-2 Agonists	All beta-2 agonists including their D- and L-isomers are prohibited. Therefore, formoterol, salbutamol, salmeterol and terbutaline when administered by inhalation also require a Therapeutic Use Exemption.
S4. Hormone Antagonists and Modulators	These include aromatase inhibitors, selective estrogen receptor modulators, other anti-estrogenic substances and agents modifying myostatin functions.
S5. Diuretics and other Masking Agents	These include diuretics, probenecid & plasma expanders.
M1. Enhancement of Oxygen Transfer	Including blood doping or artificially enhancing the uptake, transport or delivery of oxygen.
M2. Chemical and Physical Manipulation	Includes tampering, or attempting to tamper, in order to alter the integrity and validity of samples collected during doping controls.
M3. Gene Doping	Includes the transfer of cells or genetic elements or the use of cells, genetic elements or pharmacological agents to modulating expression of endogenous genes having the capacity to enhance athletic performance.

Source: WADA Prohibited List, 2009

* This table provides examples only; for a complete list, the reader is referred to the WADA Prohibited List

Table 2: Substances and methods prohibited in-competition only

Substance	Examples**
S6. Stimulants	1. Non-specified stimulants, including amphetamine, cocaine, methylenedioxyamphetamine, methylenedioxymethamphetamine, & p-methylamphetamine. 2. Specified stimulants, including adrenaline & ephedrine.
S7. Narcotics	These include buprenorphine, diamorphine (heroin), methadone, morphine, oxycodone & pethidine.
S8. Cannabinoids	Including marijuana and hashish.
S9. Glucocorticosteroids	All glucocorticosteroids are prohibited when administered by oral, intravenous, intramuscular or rectal routes.

Source: WADA Prohibited List, 2009

* This table provides examples only; for a complete list, the reader is referred to the WADA Prohibited List

There are caveats involved regarding the uses of certain substances, and the reader is referred to the WADA Prohibited List

Table 3: Substances prohibited in particular sports

Substance	Examples*
P1. Alcohol	Alcohol is banned in-competition only in the following sports: aeronautic, archery, automobile, boules, karate, modern pentathlon for disciplines involving shooting, motorcycling, ninepin and tenpin bowling & powerboating.
P2. Beta-blocks	Unless otherwise specified, beta-blockers are prohibited in the following sports: aeronautic, archery, automobile, billiards and snooker, bobsleigh, boules, bridge, curling, golf, gymnastics, modern pentathlon for disciplines involving shooting, motorcycling, ninepin and tenpin bowling, sailing for match race helms only, shooting (also prohibited out-of-competition), skiing/snowboarding in ski jumping, freestyle aerials/halfpipe and snowboard halfpipe/big air & wrestling

Source: WADA Prohibited List, 2009

* This table provides examples only; for a complete list, the reader is referred to the WADA Prohibited List

The prohibited list is final and cannot be challenged by an athlete or any person. It is important to note that while a substance may not specifically be named on the Prohibited List, it could still be prohibited as it may be part of a category of prohibited substances; the product may be chemically similar to other substances on the list; or it may include derivatives of a prohibited substance.

2.2 Australian Sports Anti-Doping Authority (ASADA)

The Australian Sports Anti-Doping Authority (ASADA) is Australia's National Anti-Doping Organisation under the World Anti-Doping Code and was established in 2006. It is part of the Health and Ageing Portfolio and reports to the Minister of Sport.

ASADA assumed the Australian Sports Drug Agency's (ASDA) testing, education and advocacy roles. It has the power to conduct investigations on the basis of information acquired or on its own initiative; to receive, use and disclose (where appropriate) information relevant to a possible breach of a sport's anti-doping policy; to present a case at a sports tribunal or hearing where an athlete or support person has committed an Anti-Doping Rule Violation where delegated by the sport to do so; and the ability to publish findings. ASADA has developed a model anti-doping policy for National Sporting Organisations (NSO), whose funding is conditional on compliance. The policy references the World Anti-Doping Code.

A selected list of Australia NSO policies regarding drug use is presented in Appendix A. The ASADA policy regarding drug use is presented in Appendix B.

2.2.1 Drug testing in sport

ASADA is responsible for detecting doping in sport through the powers given by legislation. ASADA conducts a national and international anti-doping program consistent with the World Anti-Doping Code, the International Standard for Testing and the International Standards Organisation 9001:2000. The program involves a targeted testing plan that involves both in- and out-of-competition sample collection, with an emphasis on no advance notice and conducted at any time, day or night.

Any athlete selected for doping control (testing) will be required to provide a sample. In accordance with the ASADA legislation, ASADA is able to request a sample from any athlete who meets the definition of athlete under the National Anti-Doping Scheme.

An athlete may be selected to provide a sample by one of three methods as outlined by the Code's International Standard of Testing. These methods include targeted testing based on intelligence; weighted testing based on athlete ranking; or random selection.

2.3 Terminology

In this report, the term illicit drug is used to refer to illicit substances such as methamphetamine, ecstasy, cannabis, cocaine, ketamine and GHB. This term does not refer to other substances such as anabolic-androgenic steroids, hormones or related substances (which in turn are referred to as 'banned substances'). It is acknowledged that the possession, use and supply of all these substances¹ are illegal throughout Australia.

¹ Steroids are legal in Australia with a prescription from a medical practitioner, dentist or veterinarian

3 ILLICIT DRUG USE IN AUSTRALIA

There are numerous studies in Australia which provide information on the prevalence and patterns of licit and illicit substance use. These include, but are not limited to:

1. National Drug Strategy Household Survey (NDSHS), a survey of the Australian general population aged 14 years and above;
2. Australian Secondary Students' Alcohol and Drug (ASSAD) survey, of survey of secondary school students aged between 12 and 17 years;
3. Illicit Drugs Reporting System (IDRS), a strategic early warning system that monitors the price, purity, availability and patterns of use of heroin, methamphetamine, cocaine and cannabis in a sentinel group of injecting drug users as its focus population;
4. Ecstasy and Related Drugs Reporting System (EDRS), a strategic early warning system that monitors the price, purity, availability and patterns of use of ecstasy, methamphetamine, cocaine, ketamine, GHB, LSD and MDA in a sentinel group of regular ecstasy users as its focus population;
5. Gay Community Periodic Survey, the major aim of which is providing a snapshot of gay men's sexual practices related to the transmission of sexually transmissible infections including HIV. It includes questions pertaining to past six-month substance use;
6. Australian Needle and Syringe Program (NSP) survey, which forms the basis of Australia's human immunodeficiency virus (HIV) and hepatitis C surveillance among injecting drug users, and monitors behavioural indices of risk in addition to prevalence of infection; and
7. Drug Use Monitoring in Australia (DUMA) program, which seeks to measure drug use among people recently apprehended by police.

The purpose of this chapter is to provide a brief description of the prevalence and patterns of use for the six drug types under investigation in the current project, which include meth/amphetamine, cannabis, cocaine, ecstasy, ketamine & GHB. This gives a context for the interpretation of results from this project.

3.1 Methamphetamine

3.1.1 General population

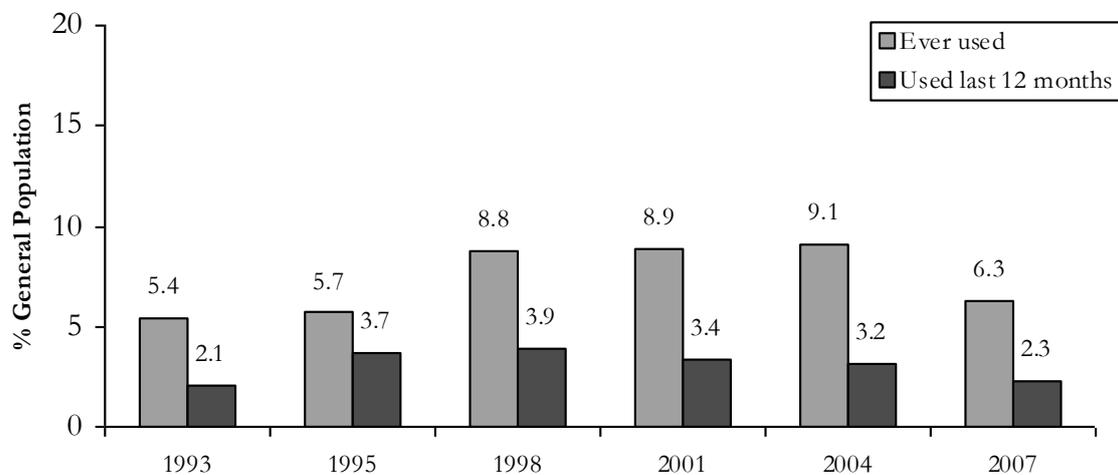
Figure 1 presents the proportion of the Australian general population who have ever used meth/amphetamine as well as the proportion that has used the drug in the past 12 months. A noticeable increase in lifetime use occurred between 1995 and 1998, with the proportion of the Australia general population having ever used meth/amphetamine remaining stable until a decline was observed between 2004 and 2007 (Australian Institute of Health and Welfare 2008). Past-year use of meth/amphetamine also increased between 1995 and 1998, and again, the

proportion using the drug in the past year remained stable until a decline was observed in 2007 (Australian Institute of Health and Welfare 2008).

In 2007, of those who reported use in the past year, the powder form was the main form used (51.2%), followed by the crystal/ice form (26.7%); other forms, such as base (12.4%), tablet (5.1%), prescription amphetamines (3.2%) and liquid (1.3%) were less commonly nominated as the main form used in the past year (Australian Institute of Health and Welfare 2008).

The use of meth/amphetamine in the past year was higher among males than females; those aged 20-29 years compared to other age groups; and males aged between 20-29 years of age compared to other groups. Females aged 14-19 years had a higher prevalence of past-year use than their male counterparts (Australian Institute of Health and Welfare 2008).

Figure 1: Meth/amphetamine use in the Australian general population, 1993-2007



Source: NDSHS 1988-2007

3.1.2 Secondary school students

Approximately five percent of Australian secondary school students have ever tried amphetamines, and 4% have used them in the past year (White and Hayman 2006).

3.1.3 Regular drug users

The proportion of regular ecstasy users in Australia reporting the use of any form of methamphetamine (speed, base or crystal) in the past six months has remained consistent across time, ranging from 84% in 2003 to 82% in 2006 (Stafford, Sindicich et al. 2008). However, this proportion has declined in the past two years to 71% in 2007 and 59% in 2008. Similarly, declines have been noted in the past-six month use of speed (73% in 2003 to 46% in 2008), base (36% in 2003 to 18% in 2008) and crystal (52% in 2003 to 24% in 2008) (Stafford, Sindicich et al. 2008).

The proportion of regular injecting drug users reporting past-six month use of any form of methamphetamine (speed, base, crystal or liquid amphetamine) also remained consistent between 2003 (76%) and 2007 (74%), though a decrease was observed in 2008 (69%) (Stafford, Sindicich

et al. 2008). Decreases were observed in the proportions reporting past-six month use of speed (55% in 2003 vs. 48% in 2008), base (35% in 2003 vs. 22% in 2008) and crystal (54% in 2003 vs. 49% in 2008) (Stafford, Sindicich et al. 2008).

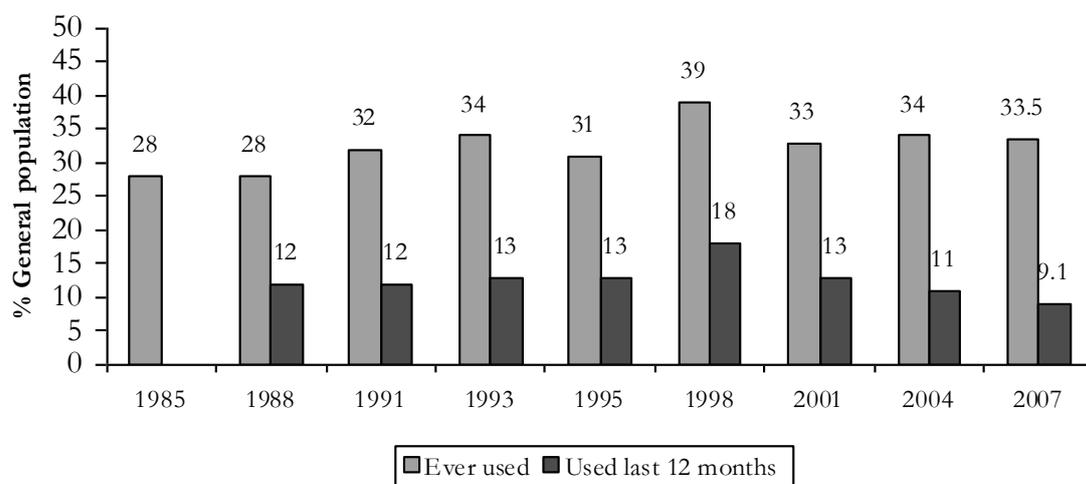
3.2 Cannabis

3.2.1 General population

Figure 2 presents the proportion of the Australian general population who have ever used cannabis as well as the proportion that has used the drug in the past 12 months. Approximately one-third of Australians have tried cannabis at some point in their lives, and this proportion has remained relatively stable since 1993 (Australian Institute of Health and Welfare 2008). There was an increase in the proportion reporting cannabis use in the mid-90s. In 2007, 9.1% reported use in the past year. The proportion of Australians reporting past-year cannabis use appears to be decreasing across time (Australian Institute of Health and Welfare 2008).

The use of cannabis in the past year was highest among males compared to females and those aged 20-29 years compared to other age groups (Australian Institute of Health and Welfare 2008).

Figure 2: Cannabis use in the Australian general population, 1985-2007



Source: NDSHS 1985-2007

3.2.2 Secondary school students

Eighteen percent of Australian secondary school students have ever tried cannabis and 14% have used cannabis in the past year (White and Hayman 2006).

3.2.3 Regular drug users

Approximately three-quarters or more of regular ecstasy users have reported past-six month cannabis use, with 20% reporting daily cannabis use (Stafford, Sindicich et al. 2008). Similar proportions of regular injecting drug users reported past-six month use, with frequency of use among this group daily or near daily (Stafford, Sindicich et al. 2008).

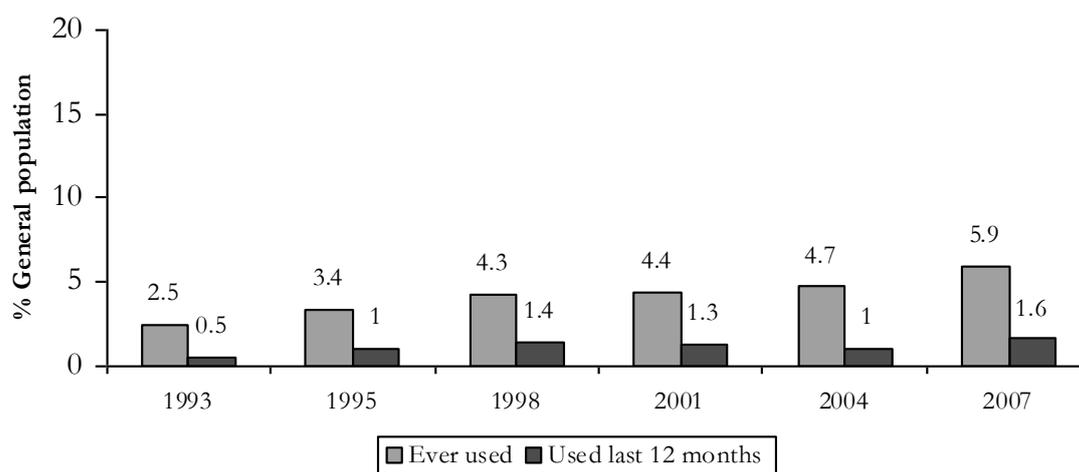
3.3 Cocaine

3.3.1 General population

Figure 3 presents the proportion of the Australian general population who have ever used cocaine as well as the proportion that has used the drug in the past 12 months. Between 1993 and 1995, approximately 3% reported having ever used cocaine, and this figure rose to 4.3% in 1998 and has remained consistent in 2001 (4.4%) and 2004 (4.7%). In 2007 this proportion increased to 5.9% (Australian Institute of Health and Welfare 2008). The proportion reporting use in the past year has remained low across time, with 1.6% reporting use in the past year in 2007 (Australian Institute of Health and Welfare 2008).

The use of cocaine in the past year was highest among males compared to females; those aged 20-29 years compared to other age groups; and males aged between 20-29 years of age compared to other groups (Australian Institute of Health and Welfare 2008). Females aged 14-19 years had a higher prevalence of past-year use compared to their male counterparts (Australian Institute of Health and Welfare 2008).

Figure 3: Cocaine use in the Australian general population, 1993-2007



Source: NDSHS 1993-2007

3.3.2 Secondary school students

Approximately three percent of Australian secondary school students have ever used cocaine, with 2.2% reporting cocaine use in the past year (White and Hayman 2006).

3.3.3 Regular drug users

Between 2003 and 2008, the proportion of regular ecstasy users reporting past-six month use has increased, from 23% to 36%; however, use has been low during this time, occurring on a median frequency of approximately once every two months (Stafford, Sindicich et al. 2008). Use among regular injecting drug users has also been low compared to other drugs – approximately one-fifth have reported past-six month use (18% in 2003 to 20% in 2008) and use has occurred on a median frequency of approximately once per month (Stafford, Sindicich et al. 2008).

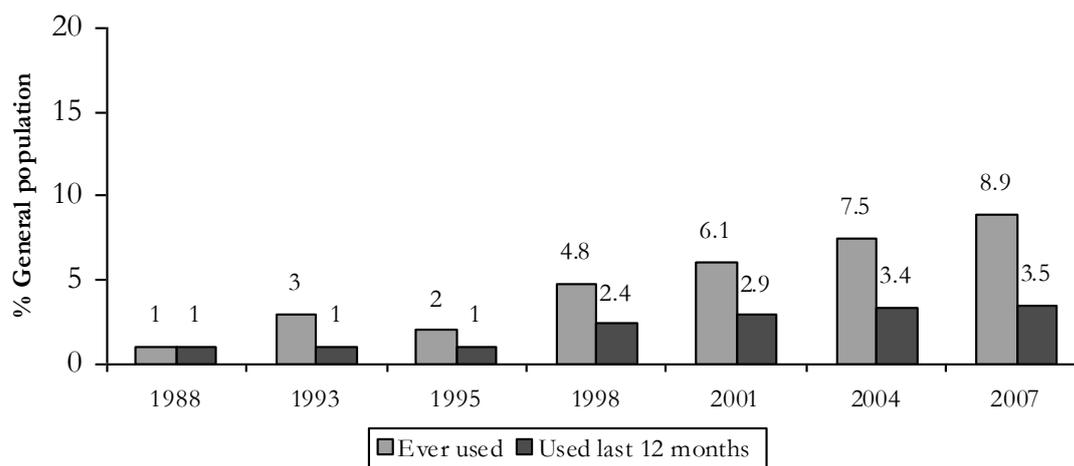
3.4 Ecstasy

3.4.1 General population

Figure 4 presents the proportion of the Australian general population who have ever used ecstasy as well as the proportion that has used the drug in the past 12 months. The proportion of the Australian general population who has ever tried ecstasy has increased, from 1% in 1988 to 8.9% in 2007 (Australian Institute of Health and Welfare 2008). Similarly, the proportion reporting using ecstasy in the past year has increased during this time, from 1% in 1988 to 3.5% in 2007 (Australian Institute of Health and Welfare 2008).

The use of ecstasy in the past year was highest among males compared to females; those aged 20-29 years compared to other age groups; and males aged between 20-29 years of age compared to other groups (Australian Institute of Health and Welfare 2008). Females aged 14-19 years had a higher prevalence of past-year use compared to their male counterparts (Australian Institute of Health and Welfare 2008).

Figure 4: Ecstasy use in the Australian general population, 1988-2007



Source: NDSHS 1988-2007

3.4.2 Secondary school students

Four percent of Australian secondary school students have ever used ecstasy, with approximately 3.2% reporting ecstasy use in the past year (White and Hayman 2006).

3.4.3 Regular drug users

Regular ecstasy users, who report ecstasy use at least monthly in the past six months, typically use ecstasy once per fortnight, with 26% reporting use weekly or more. When they do use ecstasy they report using two tablets in a 'typical' occasion of use; 75% report typically using more than one ecstasy tablet when they do use the drug. Most (94%) typically use other drugs when they do use ecstasy, including alcohol, cannabis and tobacco, and a majority (76%) report using other drugs to come down from ecstasy, including alcohol, cannabis and tobacco (Stafford, Sindicich et al. 2008).

In 2007, 23% of regular injecting drug users reported past-six month ecstasy use, with use occurring on a median of three days (Stafford, Sindicich et al. 2008).

3.5 Ketamine

3.5.1 General population

In the Australian general population aged 14 years and above, 1.1% has ever tried ketamine (Australian Institute of Health and Welfare 2008), and 0.2% has used ketamine in the past year (Australian Institute of Health and Welfare 2008). Previous research has found that approximately two-thirds of those in the general population who have ever tried ketamine have not used it in the past year (Degenhardt and Dunn 2008).

3.5.2 Secondary school students

No data is collected regarding ketamine use in the ASSAD survey.

3.5.3 Regular drug users

The proportion of regular ecstasy users reporting past-six month ketamine use has decreased over time, from 26% in 2003 to 12% in 2008. Across this time, the frequency of use has remained low at an occurrence of approximately once every two months (Stafford, Sindicich et al. 2008).

3.5.4 Gay Community Periodic Survey

The proportion of same-sex attracted men reporting past-six month use of ketamine has ranged from 6.1% in Brisbane (Frankland, Zablotska et al. 2007), 8% in Melbourne (Frankland, Zablotska et al. 2008) and 12.7% in Sydney (Zablotska, Frankland et al. 2008).

3.6 GHB

3.6.1 General population

In the Australian general population aged 14 years and above, 0.5% has ever tried GHB (Australian Institute of Health and Welfare 2008), and 0.1% has used GHB in the past year (Australian Institute of Health and Welfare 2008). Of the general population who have ever tried GHB, two-thirds have not used the drug in the past 12 months (Degenhardt and Dunn 2008).

3.6.2 Secondary school students

No data is collected regarding ketamine use in the ASSAD survey.

3.6.3 Regular drug users

The proportion of regular ecstasy users reporting past-six month GHB use has decreased over time, from 11% in 2003 to 7% in 2008. Across this time, the frequency of use has remained low at an occurrence of approximately once every two months (Stafford, Sindicich et al. 2008).

3.6.4 Gay Community Periodic Survey

The proportion of same-sex attracted men reporting past-six month use of GHB has ranged from 5.3% in Melbourne (Frankland, Zablotska et al. 2008), 5.9% in Brisbane (Frankland, Zablotska et al. 2007) and 13.9% in Sydney (Zablotska, Frankland et al. 2008).

4 DRUG USE AND SPORT: A REVIEW

Much of the literature regarding illicit drugs and athletes focuses upon the preventative properties that exercise and physical activity may have on drug use. Furthermore, much of this literature has focused upon secondary- and tertiary- level students and there is evidence to suggest that substance use may differ according to gender, level of sport competition, type of sport, degree of involvement, and the substance under investigation. In addition, few studies make the distinction between performance-enhancing drugs (e.g. anabolic-androgenic steroids) and illicit 'recreational' drugs (e.g. ecstasy, cocaine, GHB).

Gender and substance use

Research into adolescent substance use and physical activity has found that gender may be related to substance use. Forman (1995) found that while male secondary students were less likely to engage in substance use compared to national and peer data, half of those surveyed reported some form of illicit drug use at some time. Pate (2000) found that male secondary-school sports participants were less likely to report tobacco, cocaine and other illicit drug use than their male non-sporting counterparts.

Peretti-Watel et al (2002), examining the relationship between substance use, sporting activity and gender among a national sample of 14-19 year old French student, found that boys reported alcohol and cannabis use more than girls, while girls were more likely to report daily tobacco use. The authors found a curvilinear relationship between sport and cannabis for boys – that is, boys who performed physical activity reported less cannabis use than those who performed no physical activity, but those who perform sports intensively reported more cannabis use than those who exercised at moderate levels (Peretti-Watel, Beck et al. 2002). For boys as for girls, the proportion of heavy smokers was greater among non-athletes and intensive sportsmen; nevertheless, the proportion of daily smokers decreased with intensity of sporting activity (Peretti-Watel, Beck et al. 2002).

Gender has also found to be important when investigating substance use among tertiary-level sports participants. Kokotailo (1996) found that female tertiary athletes had fewer risk behaviours than their female non-athlete peers, such as tobacco, alcohol and cannabis use; however, male athletes had a higher prevalence of risk behaviours than their non-athlete counterparts.

Level of sporting competition and substance use

National-level competition has been found to be a risk factor for alcohol, tobacco and cannabis use (Peretti-Watel, Guagliardo et al. 2003; Choquet and Arvers 2006). Choquet & Arvers (2006) found that local, departmental or regional sport competition was a risk factor for illicit drug use other than cannabis in girls and the use of cannabis in boys. (Martha, Grelot et al. 2009) found that competitive participation at a departmental or regional level was related to repeated heavy episodic drinking among male tertiary students. Similarly, Wichstrøm & Wichstrøm (2009) found that initial level of participation in organized sport predicted growth in alcohol consumption. Lorente et al (2005) found that cannabis use to enhance sporting performance was positively related to the competitive level among tertiary student athletes.

Type of sport and substance use

Peretti-Watel et al (2003) found that regular practice of strength and combat sports (weightlifting, body-building, boxing, judo, karate) was linked to more frequent use of tobacco, alcohol and cannabis, whereas the regular practice of an athletic sport was linked to less frequent use. They also found that those in team sports were more prone to drink alcohol at least once per month. Martha et al (2009) found that females practicing individual sports were less likely to report heavy episodic drinking, and that among male tertiary students, practicing in a formal context and in a team sport (other than football) were related to repeated heavy episode drinking.

Substance use among secondary and tertiary students

There is good evidence regarding the prevalence of substance use among secondary and tertiary student athletes. Forman (1995) found that more than half of senior high school athletes reported some form of illicit drug use at some time in their life. This included cannabis (18.5%), amphetamines (3.8%), cocaine (2.4%), steroids (2.2%), LSD (2.0%) and heroin (0.7%). Despite this prevalence, Pate (2000), reporting on drug use among high school students participating in team sports, found that male and female sport participants were less likely than non-participants to report substance use.

Wechsler (1997) found that 12% of males and 10% of females involved in sport reported having used cannabis. Peretti-Watel et al (2003) found that 24.2% of elite tertiary student athletes reported using cannabis in the past 12 months, and Koktailo (1996) found that 11.7% of male and 4.6% of female tertiary student athletes reported using cannabis in the past 30 days.

Green (2001) found that, among National Collegiate Athletic Association (NCAA) Division I, II and III student-athletes, alcohol was the most widely used drug in the past year (80.5%), followed by cannabis (28.4%) and smokeless tobacco (22.5%). Other drugs were reported at lower use, such as psychedelics (5.6%), ephedrine (3.5%), amphetamines (3.1%) and cocaine (1.5%). Although anabolic steroid use was reported at 1.1%, some sports demonstrated higher use. Past-year use of the dietary supplement creatine was reported by 13.3% of athletes, with 8.5% using amino acids and 0.6% having used dehydroepiandrosterone (DHEA). The NCAA Research Staff (2006) found that among NCAA Division I student-athletes, the use of amphetamines had increased from 2.5% (1997) to 4.0% (2005). The use of alcohol had decreased from 86.3% (1993) to 74.7% (2005). Cocaine use increased from (0.6%) in 1993 to 2% in 2005.

Elite adult sporting populations

There has been little research undertaken with elite adult sporting populations. Much of this research has co-investigated licit substance use (e.g. alcohol), substances which may be considered more performance-enhancing than recreational (e.g. anabolic-androgenic steroids, diuretics) and sport supplements and conditioning aids (e.g. creatine).

Thomas (1984) conducted a study investigating prohibited drug among all eligible members of Great Britain's men's, women's and men's light weight crews and also a selection of those who rowed in 1980 and 1981 in the junior teams and were likely to be in a senior GB team in a further year or two. Of the 50 tests conducted, two samples were too small to analyse with normal certainty; one sample gave suspected positive for injected anabolic steroid in the initial screening but which the second sample indicated the result was negative; and one participant declared having taken Lemsip and other medicines for a head cold and diarrhoea.

Hardy et al (1997) reported on drug doping in senior Australian Rules football players. The aim of the study was to determine the frequency of performance-enhancing drug use among this group and to compare to other competitions. Data were gathered from randomised, unannounced urine testing collected from players in the league in- and out-of-competition and in finals matches over a five year period. It was found that of 900 random samples, no positive results were obtained for anabolic steroids, diuretics, caffeine or peptide hormones. In two instances, positive results were obtained for pseudoephedrine, and robenecid, methoxyphenamine, and dextropropoxyphene were detected in once instance each. It was determined that each of these instances was inadvertent medical doping and had been declared before testing.

Waddington et al (2005) investigated substance use among professional English footballer players. The aim of the study was to examine player's use of nutritional supplements; their experience of and attitudes toward drug testing; their views on the extent of the use of banned performance-enhancing and recreational drugs in football; and their personal knowledge of players who used such drugs. Forty-five percent of the sample reported that they personally knew players who used recreational drugs. The authors noted that the relative high level of recreational drug use is not reflected in the number of reported positive tests and suggested that many players who used recreational drugs were not detected. Half of the players felt that the punishment for using recreational drugs was of the appropriate severity compared to 20% who felt that the punishment was not severe enough and 13% who felt it was too severe.

Jalleh & Donovan (2008) conducted a survey investigating attitudes toward and beliefs about sports issues. Using a cross-sectional sample of 204 elite Australian athletes (with a response rate of 25%), the study aimed to track the proportion of athletes with a positive predisposition to doping, attitudes to the use of the Athletes Whereabouts Online System, and awareness of various beliefs about ASADA and its role. The authors found that the vast majority of athletes perceived that at least some athletes in their sport had ever used or currently used illicit drugs, and 84% of athletes supported the testing of athletes for illicit drugs. While 70% of athletes reported that their sport had an illicit drug policy, 25% did not know. The awareness of ASADA was almost universal (99%), with athletes perceiving 'conducting blood or urine tests' as a main role of ASADA (94%). Most (90%) athletes felt that using banned performance-enhancing substances to improve performance was legally and morally wrong and the vast majority of athletes 'strongly' disagreed that 'allowing athletes to use performance enhancing substances would make sport more of a level playing field'.

Dietze, Fitzgerald & Jenkinson (2008) investigated alcohol consumption among professional Australian Football League players. The study found that during the playing season, the level of risky/high-risk consumption for long-term harm in AFL players (2%) was typically lower than in age-matched Australian men in the general population (15%). The risk, however, for long-term harm was higher in AFL players during the end-of-season period (54%) and vacation periods (41%) than age-matched Australian men. Risky/high-risk drinking for short-term harm on a monthly basis was frequent at all times of the year (71%). Reports of harmful effects of drinking and negative consequences, such as getting involved in a fight while drinking (26%), were common. The authors found that formal club rules on alcohol consumption had little effect on outcome measures.

5 THE PRESENT STUDY

Limited research has been conducted investigating substance use issues among elite athletes. The research that has been conducted has explored issues pertaining to nutritional substances, performance-enhancing drugs and alcohol; less attention has been given to illicit 'recreational' drugs. The present study seeks to address this gap in the literature by presenting data collected as part of a study investigating substance issues among elite Australian athletes.

5.1.1 Specific aims

The specific aims of the present study were to investigate, among elite Australia athletes:

1. levels of knowledge of the difference between an anti-doping policy and an illicit drugs policy, and the impact of each policy on them;
2. levels of illicit drug use;
3. levels of knowledge of illicit drugs and the effects of these drugs;
4. attitudes of athletes to testing for illicit drugs out-of-competition as an effective deterrent;
5. attitudes of athletes to the adoption of an illicit drugs in sport policy by their sport and whether such policy would serve as an effective deterrent to using, possessing, trafficking or administering illicit drugs; and
6. levels of awareness of resources used to obtain information about illicit drugs.

6 METHODS

The current study consisted of two components:

1. Self-complete survey of athletes recruited from a range of national sporting organisations; and
2. Telephone interviews with key experts who, through the nature of their work, have contact with athletes.

6.1 Survey of athletes

6.1.1 Participants

The convenience sample chosen for the current study consisted of ‘elite’ athletes in Australia. An athlete was considered ‘elite’ if they were eligible for a state or national sporting team. A total of 1,007 athletes were surveyed for the study. Of these:

- 10 surveys were excluded due to the participant being aged less than 18 years;
- 19 surveys were excluded due to the participant completing the demographic section only;
- 3 were excluded due to inconsistent data (e.g. indicating they had never used a drug but then indicating that they used that drug every day); and
- 1 survey was excluded due to it being completed by a team official who was not an athlete.

Data from the remaining 974 surveys are used in this report. It is estimated that the response rate of survey completion was 80%, based on the number of athletes who at the time could have completed the surveys.

6.1.2 Procedure

A list² of national sporting organisations (NSOs) that are recognised by the Australian Sports Commission (ASC) was obtained from the ASC website. From this list, fifteen NSOs were identified for participation. These were:

- National Rugby League
- Australian Rugby Union
- Australian Football League
- Football Federation Australia
- Athletics Australia

²This list can be found at http://www.ausport.gov.au/about/australian_sport_directory/australian_sport_directory?sq_content_src=%2BdXJspWh0dHA1M0E1MkY1MkZ3ZWJhdXNwb3J0JTJGbWF0cm14X3Nwb3J0ZGlyZWV0b3J5JTJGYXNjc3RhdHVzLmFzcCZhbGw9MQ%3D%3D. Last accessed 9th February 2009.

- Cycling Australia
- Cricket Australia
- Diving Australia
- Hockey Australia
- Netball Australia
- Rowing Australia
- Swimming Australia
- Softball Australia
- Triathlon Australia
- Australian Volleyball Association
- Australian Institute of Sport

These sports were chosen, in part, because they represent popular sporting activities in Australia; are sports which Australia has achieved success in international competitions; and, for some, sports which consist of large numbers of athletes which would increase the potential sampling pool and increase anonymity and confidentiality.

In the first instance, letters of introduction were sent to the public relations, public affairs or media and communications officers at each NSO outlining the purpose of the study. Letters were also sent to the chief executives and, where identified, player representatives at each NSO. These letters were followed up with telephone contact within two weeks until contact was made with a representative from each NSO.

Swimming Australia, Volleyball Australia, Cricket Australia, the Australian Football League (AFL) and the Football Federation of Australia declined/were unable to participate. Both Cycling Australia and Rowing Australia agreed to participate in the study; however, due to time constraints for the survey period, no athletes from these two sports were surveyed.

Therefore, participants in the current project are athletes from the remaining NSOs and the AIS. Letters of support were obtained from each participating NSO; where appropriate, these letters were signed by the chief executive, chief medical officer, high performance manager and/or player representative. These letters were obtained to assure potential participants that the project had been approved by the relevant officials in their sport as well as supplementing the institutional ethics application.

Athlete recruitment was coordinated with each NSO. Attempts were made to identify 'natural' gatherings of athletes, such as meetings or competitions, in an attempt to ensure that as many athletes as possible might be available for recruitment. At each gathering, a member of the research team informed athletes of the purpose of the project; that all information provided was strictly confidential and anonymous; and that they could decline to participate with no prejudice from either the researchers, the participant's NSO, or anyone involved in their sport (such as coaches or trainers). It was made explicit that participation in the project was voluntary.

Athletes who agreed to participate were provided with an information statement which outlined the above mentioned information, as well as stating that by completing the survey they were providing consent. All participants self-completed an interview schedule that took approximately fifteen minutes. Surveys were returned to the researchers and sealed in an envelope with no identifying information. Surveys were stored in a locked cabinet at the research centre.

With two exceptions, the recruitment and survey implementation process was consistent across all sports. For netball, surveys were mailed to team managers prior to a tournament, who distributed the surveys to players who in turn returned the surveys to the research team on the day of the tournament. For softball, surveys were given to team managers on the day of the tournament, who distributed the surveys to players who in turn returned the surveys to the research team the following day.

6.1.3 Survey instrument

The athlete survey is comprised of five sections assessing: athlete demographic information; knowledge of illicit drug use and drug effects; attitudes towards drug testing; awareness of available support services and resources; and athletes' perceptions of illicit drug use in their sport and the extent of their own illicit drug use. It was developed in consultation with Dr Hugh Hazard, chief medical officer for the National Rugby League. The items are described briefly below.

Structure of the survey:

- Sections 1 & 2: Demographics information
- Section 3: Knowledge of drug use and drug effects
- Section 4: Drug testing
- Section 5: Support services & resources
- Section 6: Substance use

Section 1

Participants were asked to indicate their gender, current age, main language spoken at home and the highest year of education completed. Participants were asked if they competed in a team sport, how often they trained with other athletes, and if they were a full time or part-time athlete. Participants were asked not to identify what sport they participated in.

Section 2

Section 2 comprised of six parts, with questions in each part pertaining to meth/amphetamine, cannabis, cocaine, ecstasy, ketamine and GHB. Seven questions assessed athletes' knowledge of the effects of each drug; knowledge of the effects of each drug on athletic performance; whether they thought the use of each drug would or would not impact upon athletic performance; and whether they wished to know more information about the effects of each drug.

Section 3

Participants were asked how often they thought drug testing occurred in their sport; how frequently they had been drug tested in- and out-of-competition for banned substances; perceived likelihood of future testing; attitudes towards the efficacy of drug testing; beliefs about the severity of testing positive to a banned substance; and knowledge of their sport's current policies related to banned substances.

In this section, the term 'banned substance' referred to any drug that was banned in the participant's sport, and could thus include any illicit drug (e.g. ecstasy, cocaine) or drugs that are considered performance enhancing (e.g. steroids, testosterone, growth hormones).

Questions in this section were adapted from a study conducted by Waddington et al (2005) with permission from the author.

Section 4

Participants were asked if they were aware of drug information services dealing with illicit drugs; if they knew where to get information about illicit drugs; whether they were comfortable asking people they knew (such as family or other athletes) about illicit drugs; and if they had sought information about illicit drugs in the past and from whom. They were also asked whether they felt that athletes in their sport would benefit from more information about illicit drugs and in what formats this could be delivered.

Section 5

Participants were asked their perception of the extent of illicit drug use in their sport and whether they felt there were any substances of concern in their sport. Additional questions assessed lifetime and recent use of meth/amphetamine, cannabis, cocaine, ecstasy, ketamine and GHB.

Questions in Section 5 were adapted from a study conducted by Waddington et al (2005) with permission from the author; and from were adapted from the National Drug Strategy Household Survey (NDSHS) (Australian Institute of Health and Welfare 2008).

6.1.4 Data analysis

Descriptive analyses are presented in the current report using SPSS for Windows, Version 15.0 (SPSS Inc 2006).

6.2 Survey of key experts (KE)

6.2.1 Recruitment and procedure

KE were recruited either through professional networks of NSO staff or recommendations, and in some instances through 'cold calls'.

A total of 24 KE were interviewed. Twenty KE were male and four were female. The KE interviewed represented a range of sports and provided information on the elite athletes with whom they had had recent contact. KE were administered a qualitative interview schedule.

The 24 KE who were interviewed came from a wide range of positions within the industry. These included retired athletes (n=5), academia (n=5), team managers (n=3), national/high performance managers (n=2), players association managers (n=2), head coaches (n=2), careers/welfare managers (n=2), executive officer (n=1), national sport coordinator (n=1) and team medical officer (n=1).

6.2.2 Survey instrument

The key expert survey was comprised of six sections assessing: key expert demographic information; demographic characteristics of athletes the key expert is in contact with; key expert's perception of athlete knowledge regarding illicit drug use and effects; key expert's attitudes towards drug testing; key expert's perception of athlete awareness of available support services and resources; and key expert's perception of illicit drug use among athletes.

Structure of the survey:

Section 1: Demographics information

Section 2: Knowledge of drug use and drug effects

Section 3: Drug testing

Section 4: Support services & resources

Section 5: Substance use

6.2.3 Data analysis

Analysis of qualitative data from the KE surveys was conducted by categorizing responses and performing content analysis to identify common themes. The relevance of the data was weighted according to the number of KE who endorsed them (Kelleher 1993).

6.3 Ethics

Ethics approval to conduct the study was obtained by the University of New South Wales Human Research Ethics Committee.

7 DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE: THE ATHLETES

The mean age of the sample was 23.1 years (range 18-44 years) and the majority were male (75.6%). Almost all (95.8%) spoke English as their main language at home. Most had completed secondary education (66.1%) and one-quarter had obtained a university qualification (27.6%). The majority (92.4%) participated in a team sport and most (75.8%) trained all of the time with other athletes. Half (51.3%) indicated that they were a full-time athlete while one-third (29.4%) indicated that they were a full-time athlete also engaging in other work (Table 4).

Table 4: Demographic characteristics of the athlete sample

	n=974
Age (in years)	
Mean [median]	23.1 [23]
Standard deviation	3.7
Range	18-44 years
Male (%)	75.7
English-speaking background (%)	95.8
Highest year of education completed (%)	
Year 12 or below	66.1
University	27.6
Participate in team sport (%)	92.4
Frequency of training with other athletes (%)	
None of the time	0.9
All of the time	75.8
Full-time athlete (%)	51.3
Full-time athlete also engaging in other work (%)	29.4
Part-time athlete (%)	18.6

Source: Athlete interviews

7.1 Key expert comments

The KE interviewed reported that of the athletes they had contact with the majority were between the ages of 18 and 30. The youngest reported athlete KE came into contact with was aged 14 and the oldest athlete was 43 years old. The majority of the KE interviewed had direct and frequent contact with male athletes (n=13). Six KE were involved with mixed gender sport

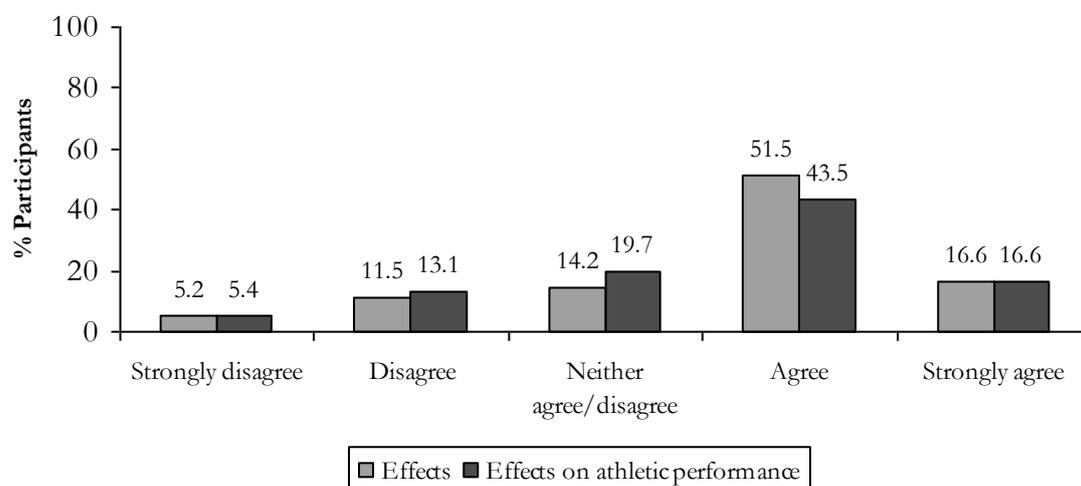
clubs and one KE worked with female athletes. Twice as many KE reported involvement with a team sport (n=12) as working with individual athletes (n=6). These findings are consistent with the demographic characteristics of the athlete sample.

8 KNOWLEDGE OF DRUG USE & DRUG EFFECTS

8.1 Meth/amphetamine

When asked about their knowledge of the effects of meth/amphetamine, 51.5% agreed and 16.6% strongly agreed that they were confident in their knowledge of this drug's effects and similar proportions indicated that they were confident in their knowledge of this drug's effects on athletic performance (Figure 5).

Figure 5: Athlete confidence in knowledge of meth/amphetamine effects* and effects on athletic performance**

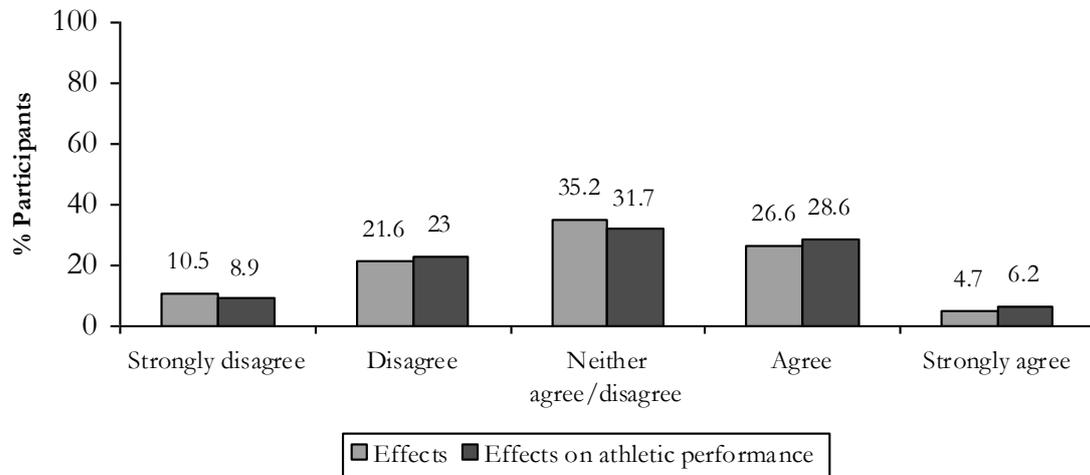


Source: Athlete interviews

*n=965 **n=959

When asked if they would like to know more information on the effects of meth/amphetamine, one third of the sample either agreed (26.6%) or strongly agreed (4.7%) and similar proportions indicated that they would like more information of this drug's effects on athletic performance (28.6% and 6.2% respectively) (Figure 6).

Figure 6: Desire for more information on meth/amphetamine effects* and effects on athletic performance**

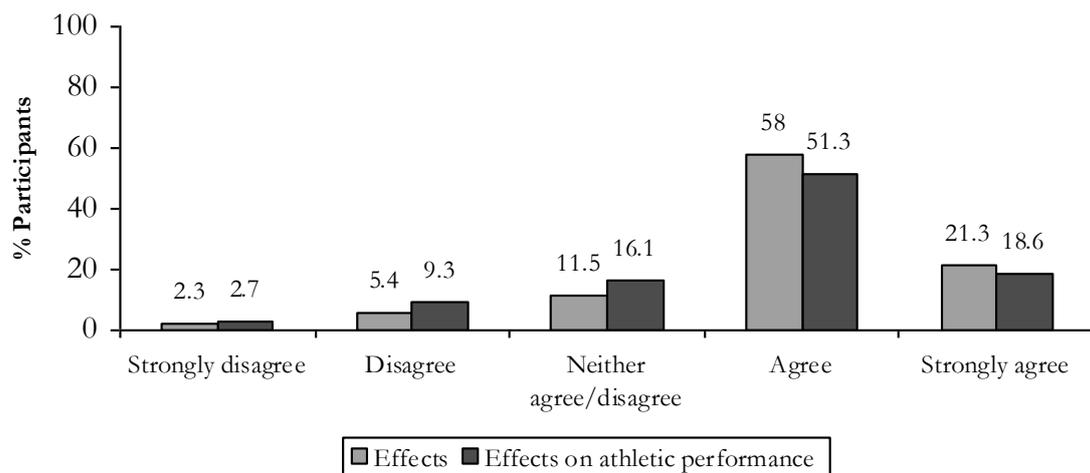


Source: Athlete interviews *n=960 **n=959

8.2 Cannabis

When asked about their knowledge of the effects of cannabis, 58.0% agreed and 21.3% strongly agreed that they were confident in their knowledge of this drug’s effects and similar proportions indicated that they were confident in their knowledge of this drug’s effects on athletic performance (Figure 7).

Figure 7: Athlete confidence in knowledge of cannabis effects* and effects on athletic performance**

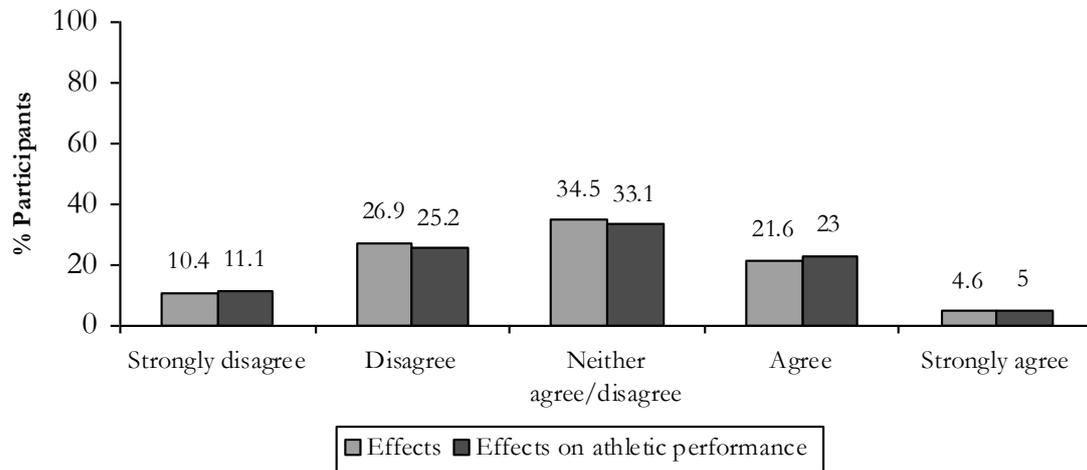


Source: Athlete interviews *n=958 **n=955

When asked if they would like to know more information on the effects of cannabis, one quarter of the sample either agreed (21.6%) or strongly agreed (4.6%) and similar proportions indicated

that they would like more information of this drug’s effects on athletic performance (23.0% and 5.0% respectively) (Figure 8).

Figure 8: Desire for more information on cannabis effects* and effects on athletic performance**

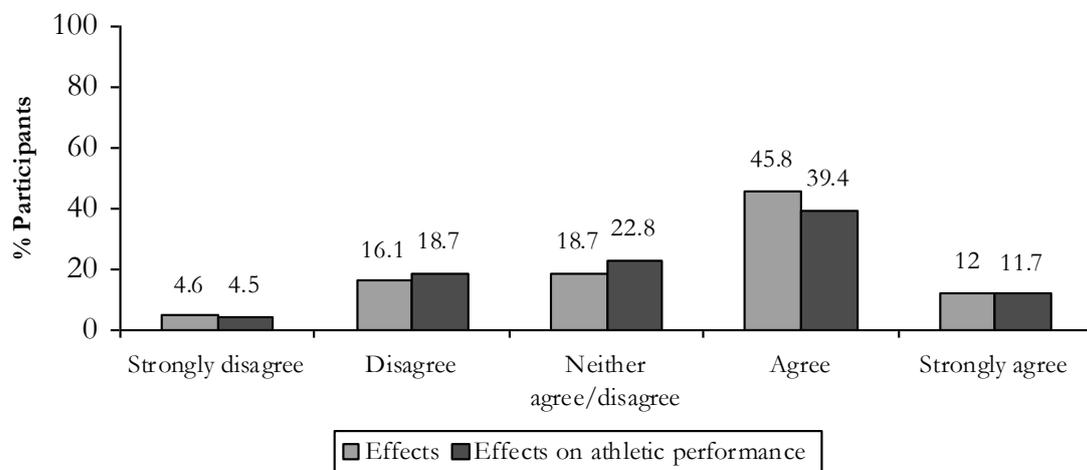


Source: Athlete interviews *n=954 **n=949

8.3 Cocaine

When asked about their knowledge of the effects of cocaine, 45.8% agreed and 12.0% strongly agreed that they were confident in their knowledge of this drug’s effects; 39.4% and 11.7% agreed or strongly agreed that they were confident in their knowledge of this drug’s effects on athletic performance (Figure 9).

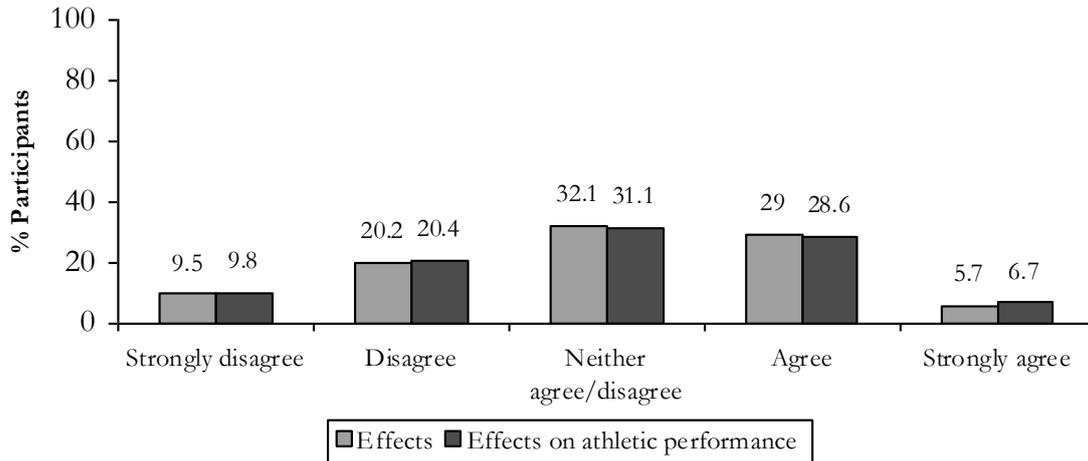
Figure 9: Athlete confidence in knowledge of cocaine effects* and effects on athletic performance**



Source: Athlete interviews *n=947 **n=946

When asked if they would like to know more information on the effects of cocaine, one third of the sample either agreed (29.09%) or strongly agreed (5.7%) and similar proportions indicated that they would like more information of this drug's effects on athletic performance (28.6% and 6.7% respectively) (Figure 10).

Figure 10: Desire for more information on cocaine effects* and effects on athletic performance**

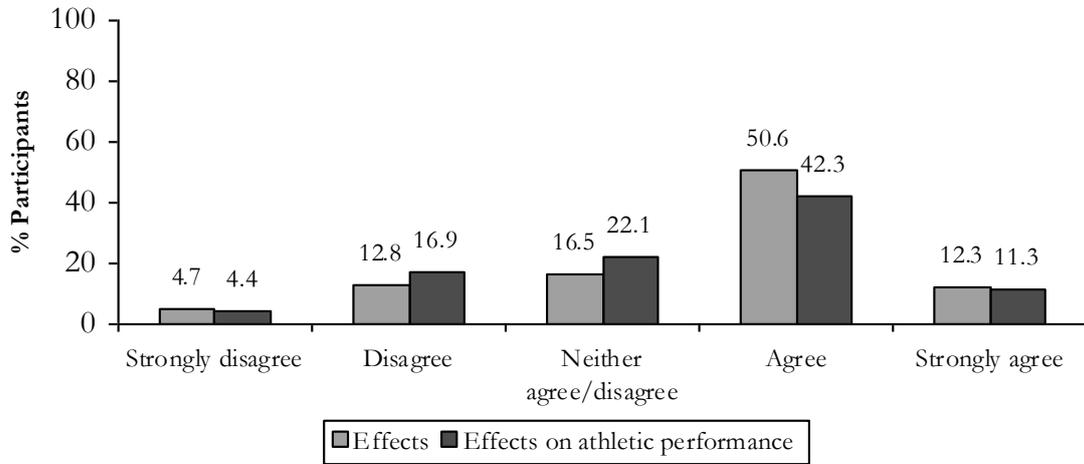


Source: Athlete interviews *n=941 **n=941

8.4 Ecstasy

When asked about their knowledge of the effects of ecstasy, 50.6% agreed and 12.3% strongly agreed that they were confident in their knowledge of this drug's effects. Two-fifths (42.3%) agreed that they were confident in their knowledge of this drug's effects on athletic performance; 11.3% strongly agreed (Figure 11).

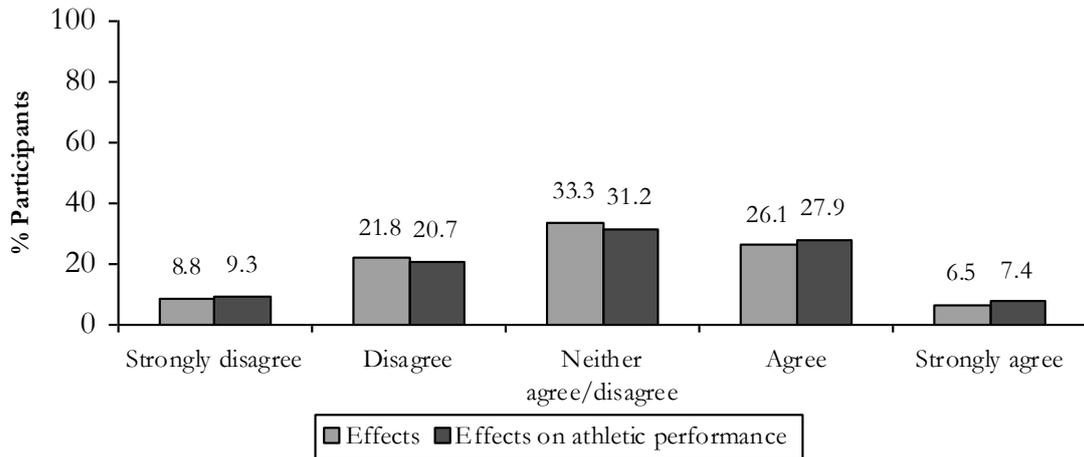
Figure 11: Athlete confidence in knowledge of ecstasy effects* and effects on athletic performance**



Source: Athlete interviews *n=945 **n=945

When asked if they would like to know more information on the effects of ecstasy, one third of the sample either agreed (26.1%) or strongly agreed (6.5%) and similar proportions indicated that they would like more information of this drug’s effects on athletic performance (27.9% and 7.4% respectively) (Figure 12).

Figure 12: Desire for more information on ecstasy effects* and effects on athletic performance**



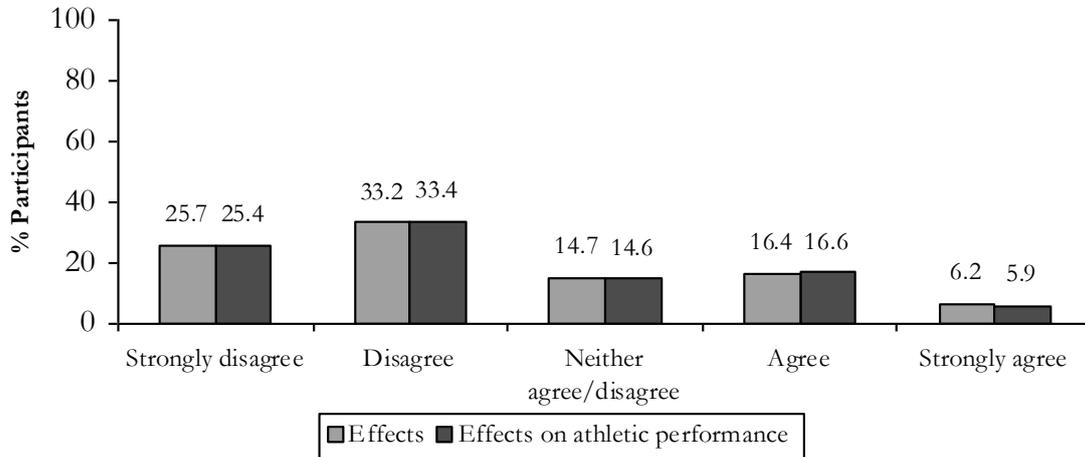
Source: Athlete interviews *n=939 **n=941

8.5 Ketamine

When asked about their knowledge of the effects of ketamine, 16.4% agreed and 6.2% strongly agreed that they were confident in their knowledge of this drug’s effects; similar proportions

agreed (16.6%) that they were confident in their knowledge of this drug’s effects on athletic performance; 5.9% strongly agreed (Figure 13).

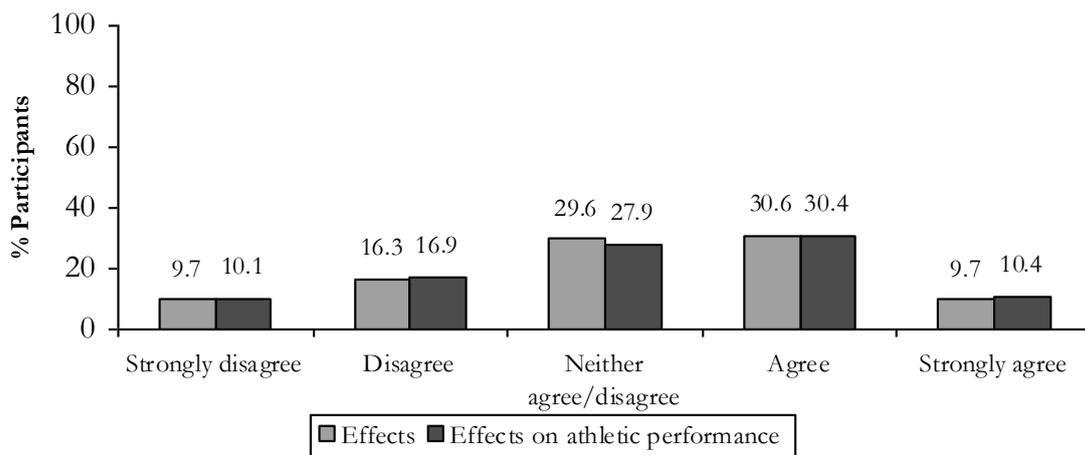
Figure 13: Athlete confidence in knowledge of ketamine effects* and effects on athletic performance**



Source: Athlete interviews *n=936 **n=933

When asked if they would like to know more information on the effects of ketamine, two-fifths of the sample either agreed (30.6%) or strongly agreed (9.7%) and similar proportions indicated that they would like more information of this drug’s effects on athletic performance (30.4% and 10.4% respectively) (Figure 14).

Figure 14: Desire for more information on ketamine effects* and effects on athletic performance**

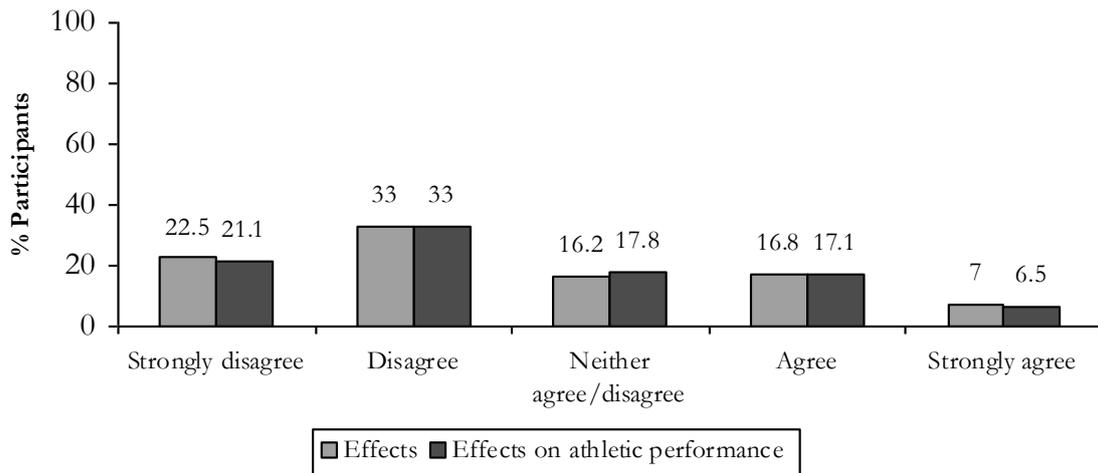


Source: Athlete interviews *n=933 **n=932

8.6 GHB

When asked about their knowledge of the effects of GHB, 16.8% agreed and 7.0% strongly agreed that they were confident in their knowledge of this drug's effects; similar proportions agreed (17.1%) that they were confident in their knowledge of this drug's effects on athletic performance; 6.5% strongly agreed (Figure 15).

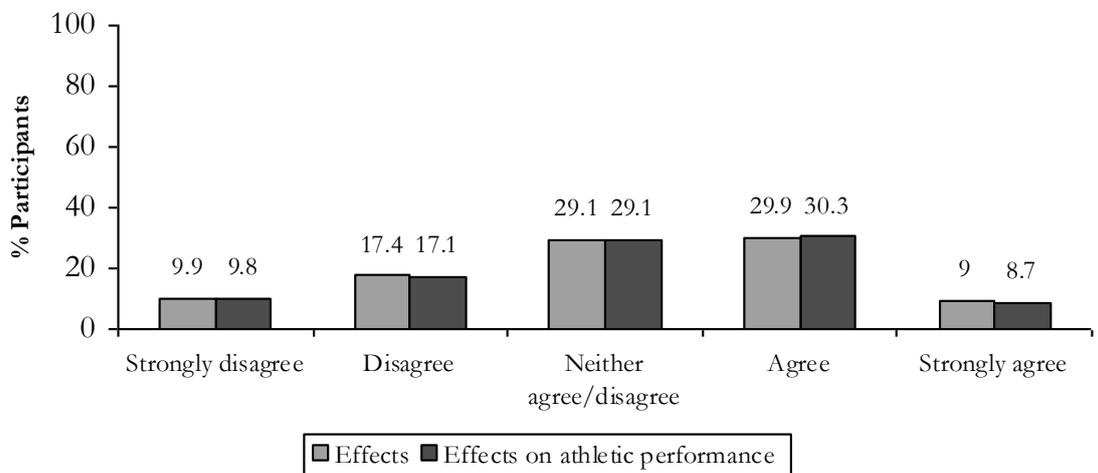
Figure 15: Athlete confidence in knowledge of GHB effects* and effects on athletic performance**



Source: Athlete interviews *n=930 **n=930

When asked if they would like to know more information on the effects of GHB, two-fifths of the sample either agreed (29.9%) or strongly agreed (9.0%) and similar proportions indicated that they would like more information of this drug's effects on athletic performance (30.3% and 8.7% respectively) (Figure 16).

Figure 16: Desire for more information on GHB effects* and effects on athletic performance**

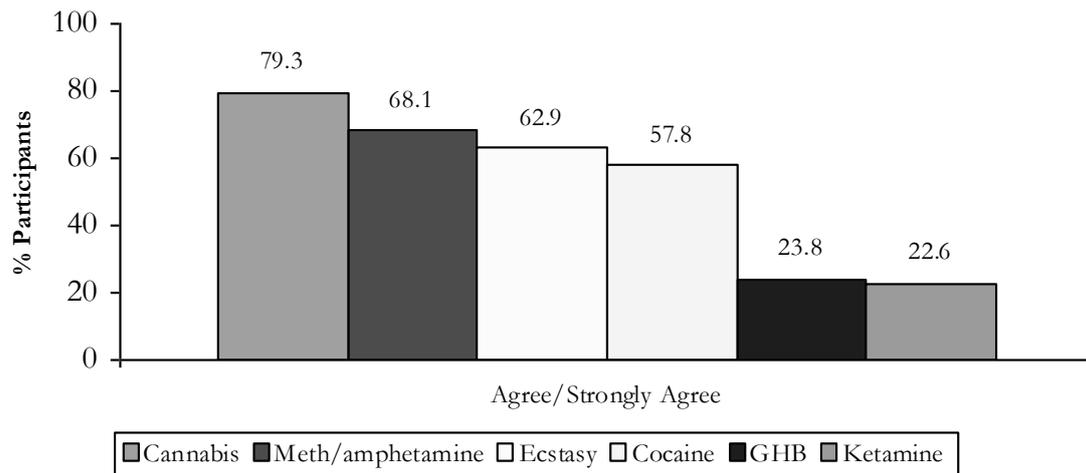


Source: Athlete interviews *n=927 **n=925

8.7 Summary of knowledge of drug use and drug effects

As can be seen in Figure 17, the proportion of athletes who reported that they were confident in their knowledge of drug effects was highest for cannabis and meth/amphetamine; smaller proportions of the sample reported that they were confident in their knowledge of drugs such as ketamine and GHB.

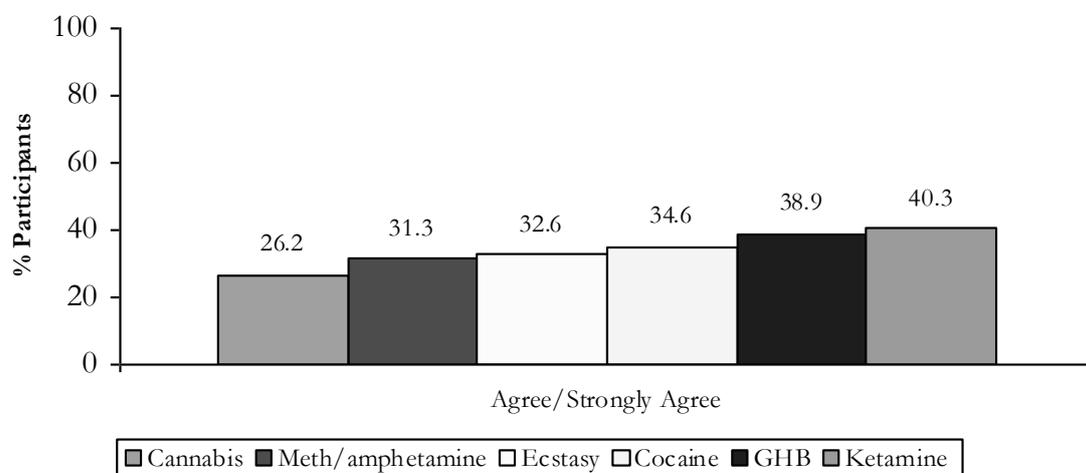
Figure 17: Confident in knowledge of the effects of meth/amphetamine, cannabis, cocaine, ecstasy, ketamine and GHB



Source: Athlete interviews

Despite the varying degrees of confidence in knowledge of these drugs effects, between one-quarter and two-fifths of the sample reported that they would like more information about the effects of these drugs (Figure 18).

Figure 18: Desire for more information about the effects of meth/amphetamine, cannabis, cocaine, ecstasy, ketamine and GHB



Source: Athlete interviews

8.8 Impact of drug use on athletic performance

For each drug, participants were asked to indicate whether they believed the drug would impact negatively upon athletic performance (Table 5). While large proportions indicated that they believed drug use would impact negatively upon athletic performance, between one-fifth and half of the sample did not know whether this would be the case; the proportions were highest for drugs such as GHB (51.6%) and ketamine (54.8%). This may be related to poor knowledge about the effects of these substances.

Table 5: Belief that drug use would impact upon athletic performance

	Yes	No	Do not know
Meth/amphetamine (%)	75.3	3.0	18.5
Cannabis (%)	72.1	3.0	21.4
Cocaine (%)	60.1	4.4	31.6
Ecstasy (%)	61.4	3.1	31.5
Ketamine (%)	38.5	1.6	54.8
GHB (%)	41.3	1.2	51.6

Source: Athlete interviews

Participants were asked to indicate why they believed drug use would/would not impact upon athletic performance. Participant comments varied however there were some common themes in the responses.

8.8.1 Participants who felt drug use would impact upon athletic performance

The majority of participants made reference to the negative impact of drug use on both mental and physical functioning, such as motor function, reaction time, altered perception, concentration, judgment and decision making.

“Would alter the body’s functions particularly the way in which the brain operates; e.g. reaction, thought process” (Male, Aged 23 years, commenting on meth/amphetamine).

“Effects concentration, motor skills, decision making and encourages impulsive decisions. It has catastrophic effects on the body” (Male, Aged 29 years, commenting on meth/amphetamine).

“It affects my fitness, cognition processing and general ability to complete every day activities and training” (Female, Aged 29 years, commenting on meth/amphetamine).

Many participants commented on both general and specific health consequences of drug use.

“Increased heart rate” (Female, Aged 25 years, commenting on cocaine).

“Cardiovascular performance, health, cancer” (Male, Aged 25 years, commenting on cannabis).

Participants also commented on how the addictive properties of drugs could interfere with training sessions, decrease motivation and affect an athlete’s relationship with their team and personal life.

“It has a lasting effect for days at a time and disrupts your normal life; e.g. eating, sleeping, moods and social life” (Female, Aged 20 years, commenting on meth/amphetamine).

“Drugs are highly addictive and the athlete would not be able to focus on training and eating healthy above using the drug” (Female, Aged 20 years, commenting cocaine).

“You can get addicted to the drug which makes you lose concentration on the game” (Male, Aged 24 years, commenting on meth/amphetamine).

Some participants differentiated between short-term and long-term use, the time of use, and the varying degrees of impact on athletic performance.

“Short term- improved sharpness and alertness (stimulant). Long term- negative effects on performance” (Female, Aged 19 years, commenting on meth/amphetamine).

“Only heavy use would have major impact; casual use would have little effect” (Male, Aged 28 years, commenting on cannabis).

“If a drug was taken at the time of performance, speed and strength may increase however these are reduced in come down and recovery period” (Male, Aged 20 years, commenting on meth/amphetamine).

A small number of athletes differentiated between recreational drugs and performance enhancing drugs.

“It is recreational; it affects you negatively. I don’t believe people use it for athletic performance” (Male, Age unknown, commenting on cannabis).

“Because it is a party drug. Decreases athletic performance” (Male, Aged 18 years, commenting on meth/amphetamine).

“Would be the opposite of performance enhancing” (Male, Aged 32 years, commenting on cannabis).

8.8.2 Participants who felt drug use would not impact upon athletic performance

As shown in Table 5, a very small proportion of athletes indicated that they believed drug use would not impact upon athletic performance. Reasons given included that drug use may not impact upon performance if taken in the off season; that some drugs had no effect on an athlete; and that some drugs have properties which may help improve athletic performance. Overall, however, this was a minority of the entire sample.

8.8.3 Participant uncertainty regarding the impact of drug use on athletic performance

A large proportion of participants reported that although they believed that drug use would negatively impact on athletic performance, they did not know specifically *why* it would or what the specific effects of the drugs were.

“Not knowing effects I can’t be specific but any loss of control of the body is negative to athletic performance” (Male, Aged 22 years, commenting on cannabis).

“Not too sure but I’m sure it wouldn’t help” (Male, Aged 24 years, commenting on ketamine).

A good proportion of participants gave very vague responses such as “*not good for you*”, “*stuff you up*”, “*drugs are bad*”, “*because*” and “*many reasons*”.

Comments made for ketamine and GHB made up the majority of these ‘unsure’ and vague responses.

8.9 Key expert comments

Of the 24 KE who had regular contact with elite athletes, all but two felt that athletes were generally knowledgeable about illicit drugs. Seven KE believed that the athletes they worked with were very knowledgeable about illicit drugs, including information on the effects and side effects of drugs, and felt that they got sufficient information from their sport organization, club and the community. Fifteen KE commented that knowledge varied from athlete to athlete and that most athletes had a similar knowledge of drugs to the general population (i.e. athletes may only have a broad knowledge of illicit drugs and may not be aware of specific effects and side effects).

Many of the KE described athletes as having “street smarts” in regards to their knowledge of illicit drugs. As one KE who worked in academia commented:

“The majority of athletes are knowledgeable in the ‘street smarts’ sense but they couldn’t give you text book definition for the effects/ side effects of drugs”.

KE comments suggest that although athletes may be knowledgeable about drug types, they are not knowledgeable about the adverse side effects of illicit drugs.

“They are knowledgeable about kinds of drugs but not the long term effects including addiction and mental health” (Retired athlete).

“Athletes are knowledgeable about drugs however they may not be or may not want to be knowledgeable about adverse effects” (Team medical officer).

KE reported on varying degrees of athlete knowledge and commented that knowledge about illicit drugs may vary by age.

“In my sport, I deal with a broad range of knowledge. They younger athletes may not know as much as the older athletes” (High performance manager).

Knowledge of illicit drugs may also vary by someone's upbringing. One KE who worked in academia commented:

"Athletes come from a wide range of backgrounds. For example an athlete from the country may never have heard of ecstasy whereas a city athlete is extremely knowledgeable about the drug".

One KE felt that athletes were more knowledgeable about performance enhancing drugs than illicit drugs

"...because of the hype of anti-doping".

This KE also felt that

"...in general prevalence equals knowledge. That is, those who use will also be knowledgeable about the drug".

Comments from two KE suggested that athletes are more knowledgeable now than they were a few years ago due to improved and mandatory drug education seminars.

"Three to four years ago it would have been a different story but over the past few years we have had a very comprehensive drug education program including in house seminars and yearly ASADA presentations covering policies and penalties" (Players' association official).

"Professional athletes are beginning to get exposed to the appropriate education" (Drug and mental health policy consultant).

Despite an increase in drug education, one KE was hesitant to assume that athletes are digesting this information.

"They receive drug education every year but how much goes in is the real question" (Careers advisor).

KE were asked what drugs or issues concerning drugs athletes should be more knowledgeable about. The majority of the KE felt that education should focus on recreational drugs or 'party drugs', the most readily available drugs and the drugs athletes are most commonly caught using. KE felt that cocaine, 'ice' and ecstasy were the biggest concern in their sport and that athletes should be more knowledgeable about these drugs and their adverse effects.

9 DRUG TESTING

Participants were asked a series of questions related to testing for banned substances. Banned substances were defined as any drug that is banned in their sport, including illicit drugs such as ecstasy, cocaine or cannabis, or drugs considered performance enhancing such as anabolic-androgenic steroids or growth hormones.

9.1 Frequency of drug testing

Two-thirds (66.4%; n=647) of participants reported that they had been tested during competition for banned substances in the past two years. Of these, three-fifths (60.0%; n=388) reported that this had occurred three times or more during this time; 17.5% (n=113) reported that this had occurred twice and 15.6% (n=101) reported that this had occurred once.

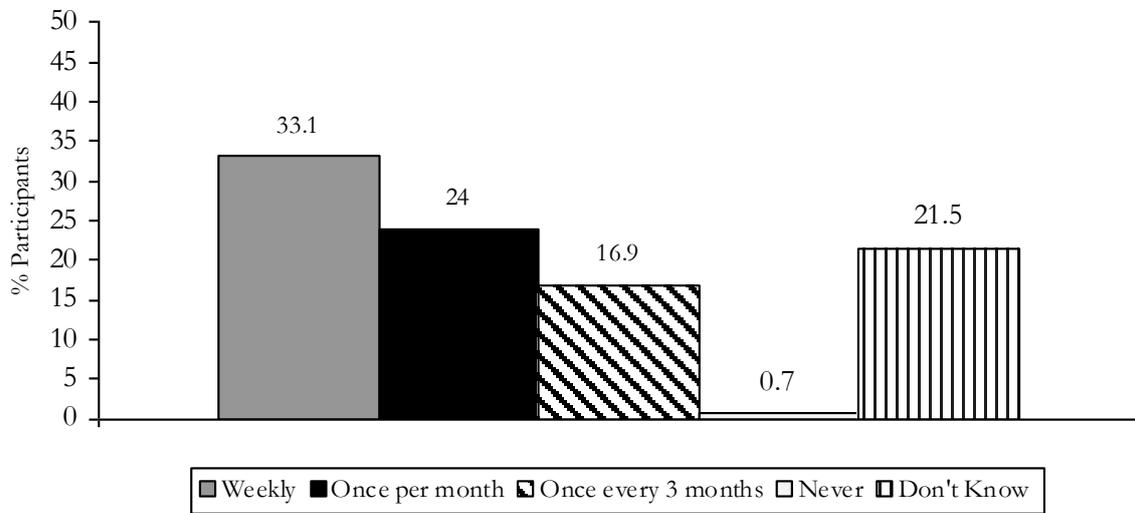
Two-fifths (40.8%; n=397) of participants reported that they had been tested out of competition for banned substances in the past two years. Of these, more than half (53.9%; n=214) reported that this had occurred three times or more during this time; 18.9% (n=75) reported that this had occurred twice and 18.6% (n=74) reported that this had occurred once.

Overall, more than one-third of the sample (37.2%; n=362) reported that in the past two years they had been tested for banned substances both in and out of competition at least once.

9.2 Perceptions of drug testing

Participants were asked how often they thought testing occurred in their sport. Few participants (0.7%; n=7) thought that testing never occurred in their sport; one-third (33.1%; n=322) believed that testing occurred on a weekly basis in their sport (Figure 19). One-quarter of the sample (21.5%; n=209) did not know how often testing occurred in their sport.

Figure 19: Perceptions of drug testing frequency

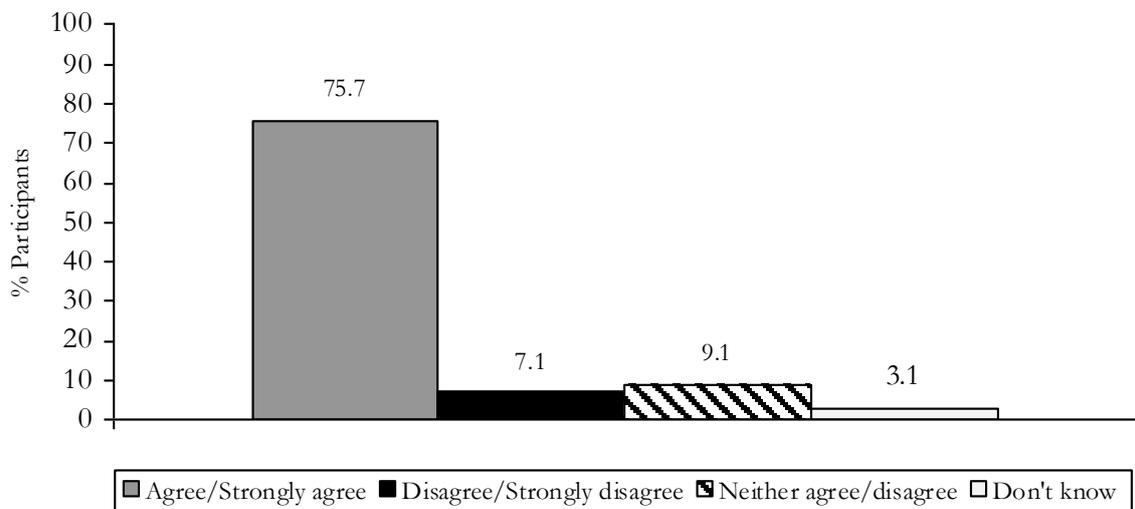


Source: Athlete interviews n=937

When asked the likelihood of being tested for banned drugs in the next 12 months, two-fifths (38.9%; n=379) believed that they were likely to be tested while one-third (29.3%; n=285) believed that they certainly will be tested. A smaller proportion believed that they were not likely to be tested (15.4%; n=150) and 3.8% (n=37) believed that they certainly would not be tested. Eight percent (n=78) did not know.

Three-quarters of the sample (75.7%; n=738) agreed/strongly agreed that testing for banned substances is an effective way of deterring people from using them (Figure 20); few participants disagreed/strongly disagreed (7.1%; n=69).

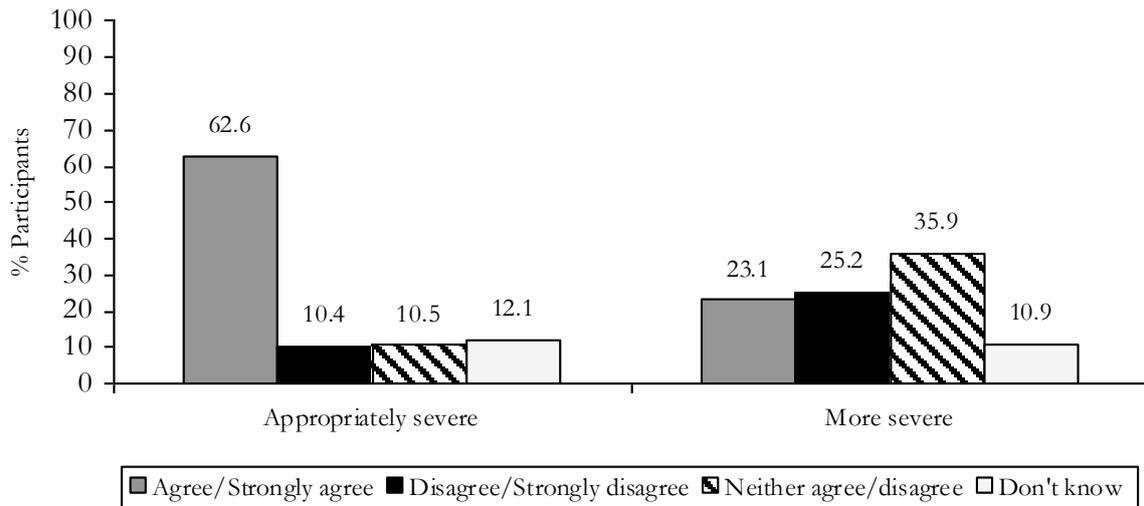
Figure 20: Effectiveness of testing for banned substances in deterring their use



Source: Athlete interviews n=926

Participants were asked whether they believed that the punishment for being caught using a banned substance in their sport was appropriately severe, and whether the punishment should be more severe. Three-fifths (62.6%; n=610) agreed/strongly agreed that the current punishment was of the appropriate severity (Figure 21). When asked if the punishment should be more severe, there was mixed response: one-quarter (25.2%; n=246) disagreed/strongly disagreed, one-quarter (23.1%; n=225) agreed/strongly agreed, and one-third (35.9%; 350) neither agreed nor disagreed (Figure 21).

Figure 21: Perception of punishment severity for being caught using a banned substance

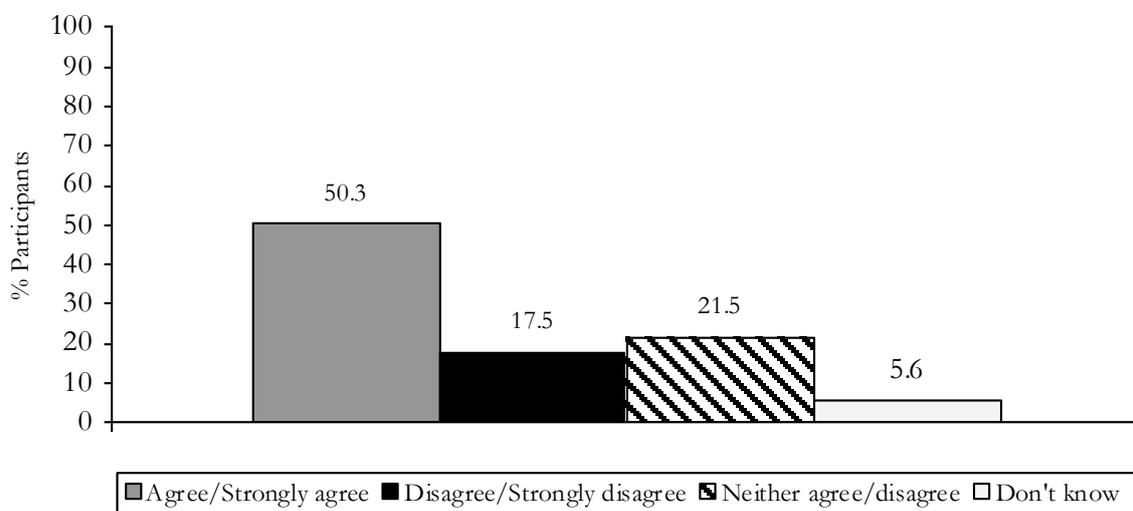


Source: Athlete interviews

Three-fifths of the sample (59.0%; n=575) agreed/strongly agreed that there should be separate punishments for being caught using an illicit drug (such as cocaine or cannabis) and being caught using a performance-enhancing drug (such as anabolic-androgenic steroids) in their sport; 14.2% (n=138) disagreed/strongly disagreed, 16.4% (n=160) neither agreed or disagreed and 5.2% (n=51) did not know.

Participants were asked whether the punishment for being caught using an illicit drug should be less severe than for being caught using a performance-enhancing drug. Half of the sample (50.3%; n=490) agreed/strongly agreed, while one-quarter (21.5%; n=209) neither agreed nor disagreed and almost one-fifth (17.5%; n=171) disagreed/strongly disagreed (Figure 22).

Figure 22: Punishment for being caught using an illicit drug should be less severe than for being caught using a performance-enhancing drug



Source: Athlete interviews

9.3 Policy knowledge

Participants were asked whether their sport has a policy on illicit drugs and a policy on performance-enhancing drugs, whether they were aware of these policies, and whether they would like to be better informed of these policies. As described in Table 6, most participants reported that their sport had both of these policies and that they were aware of these. Just over half reported that they did not want to be better informed of these policies.

Table 6: Knowledge and awareness of policies regarding drug use in sport

Sport has illicit drug policy			Sport has performance-enhancing drug policy		
Yes (%)	No (%)	Do not know (%)	Yes (%)	No (%)	Do not know (%)
72.8	1.8	19.9	81.6	1.5	11.0
Aware of illicit drug policy			Aware of performance-enhancing drug policy		
Yes (%)		No (%)	Yes (%)		No (%)
68.4		25.7	76.7		16.8
Would like to be better informed of policy			Would like to be better informed of policy		
Yes (%)		No (%)	Yes (%)		No (%)
39.8		54.0	39.3		53.8

Source: Athlete interviews

9.4 Key expert comments

9.4.1 Effectiveness of drug testing

The majority of KE interviewed believed that drug testing was an effective deterrent to use of illicit drugs (n=21). Three KE did not think that drug testing served an effective deterrent to use either in- or out- of competition.

Of those KE who believed that drug testing was effective, many felt that in-competition testing was more successful in deterring athlete use than out-of-competition testing. Some KE reported that their sport did not carry out drug testing during the off season.

Comments from two retired athletes suggested that athletes would definitely use illicit drugs if testing did not exist.

“I think many athletes would use illicit drugs if they weren’t tested but because of the strict rules, I would be very surprised if any players got caught”.

“One hundred percent- drug testing is the main reason players do not engage in drug use; this influences their decision more than health concerns”.

Two KE felt that although they believed testing deterred athletes from using illicit drugs, the testing procedure needed to be improved.

“Testing needs to be followed by sanctions and we need to be consistent with the penalties. We must come on hard and consistent so that athletes believe that they will be caught and will be banned” (National sport coordinator).

“It all depends on how well it is implemented. If athletes are only getting tested once a year then no I don’t think it is effective. Regular and random testing implemented appropriately is definitely a deterrent to use” (Academic).

Of those KE who did not believe testing was an effective means of deterring athletes from using illicit drugs, the majority attributed this to the inconsistency within testing, policy and penalties. Three KE believed that despite new and improved testing devices, athletes continue to find their way around testing.

“For the majority of athletes, once they realize that testing is just a big hype and that most athletes get away with it, the threat of testing will not deter them” (Academic).

9.4.2 Perception of policy severity for being caught with banned substance

Five KE felt that the current policies in their sport were not adequate and felt that penalties should be more severe. Eleven KE believed that punishment severity was sufficient in their sport and two felt the penalties for being caught with an illicit drug should be less severe.

A small number of KE mentioned that the consequence of a two-year ban varies between athlete and sport.

“If a gymnast is banned for two years her career is over whereas for a cricket player two years is nothing. The cricket player is likely to continue using when they return regardless of the penalty” (Academic).

Three KE did not believe that penalising was an effective way to deal with the issue of drugs in sport, but instead suggested that sport organizations should focus on providing guidance and support.

“I don’t think penalty is the problem. Does the death penalty solve murder? We need to deal with athletes’ internal principles, ethics and morals” (Academic).

“Sport organizations need to deal with someone being caught with illicit drugs as a duty of care rather than shaming the person. They should not be treated any different than the average Joe” (Academic).

9.4.3 Differences in penalties for being caught using an illicit drug versus a performance-enhancing drug

The majority of the KE believed that there should be separate policies for illicit and performance enhancing drugs.

“It is important to recognize the differences between each sport – the culture, structure, organization. Environment is key and therefore one solution is not efficient” (Academic).

Five KE did not think that there should be separate policies and shared the opinion that both illicit and performance enhancing drugs were illegal substances and therefore should share the same penalty.

“No I don’t think that there should be separate policies. An illegal substance is an illegal substance. I get very annoyed when athletes are not penalized when they are caught using an illicit drug” (Coach).

One KE commented that having two separate policies was not necessary in his sport.

“Unless we get evidence that there is an issue of use I am satisfied with the current policy” (High performance manager).

9.4.4 Knowledge and awareness of policies regarding drug use in sport

Thirteen KE believed that athletes were knowledgeable about policies regarding banned substances.

“Athletes are responsible for understanding the policy. It is similar to knowing the rules of the game” (Academic)

Three KE did not think that athletes were knowledgeable about banned substance policies.

“No! The policies are very complicated and they change all the time. Even the top policy makers can’t sort through them” (Academic).

“I don’t believe that players understand the consequences for getting caught on the individual level or association level” (Team manager and retired athlete).

Some KE expressed concern that athlete knowledge about the policies was quite limited. Athletes may be aware of the basics (e.g. if you get tested and you are found to have used a banned substance you will get banned) but athletes may not understand that they can be banned for possession or trafficking of drugs. KE also expressed that even if athletes receive drug education only a limited proportion of athletes will retain the information.

“Players have been given this info but it’s probably only about one half of them that has taken in the information” (Welfare and education manager).

10 DRUG SUPPORT SERVICES & INFORMATION RESOURCES

Participants were asked a series of questions related to accessing services concerning illicit drugs (where the term ‘illicit drug’ refers to drugs such as ecstasy, meth/amphetamine, cocaine and cannabis). Half (49.8%; n=485) indicated that they were aware of drug information services dealing with illicit drugs in their state and half (51.8%; n=505) indicated that they knew where to get information about illicit drugs if they needed to (Table 7).

Most participants appeared to be comfortable asking others, such as a family member, friend, or fellow athlete, about illicit drugs if they wanted to know more about them (60.8%, n=592; 72.6%, n=707; 60.9%, n=593) (Table 7). While almost half indicated that they were comfortable asking their coach/trainer (45.8%; n=446), one-quarter indicated that they would not be comfortable (25.9%; n=252).

Table 7: Sources of illicit drug information

	Disagree/ strongly disagree	Agree/Strongly Agree	Neither agree/disagree	Do not know
Aware of drug information services (%)	13.7	49.8	20.1	8.3
Can access information about illicit drugs (%)	16.1	51.8	19.7	4.3
Comfortable asking a family member about illicit drugs (%)	14.1	60.8	16.5	-
Comfortable asking a friend about illicit drugs (%)	5.0	72.6	13.6	-
Comfortable asking a fellow athlete about illicit drugs (%)	12.0	60.9	18.8	-
Comfortable asking a coach/trainer about illicit drugs (%)	25.9	45.8	19.7	-

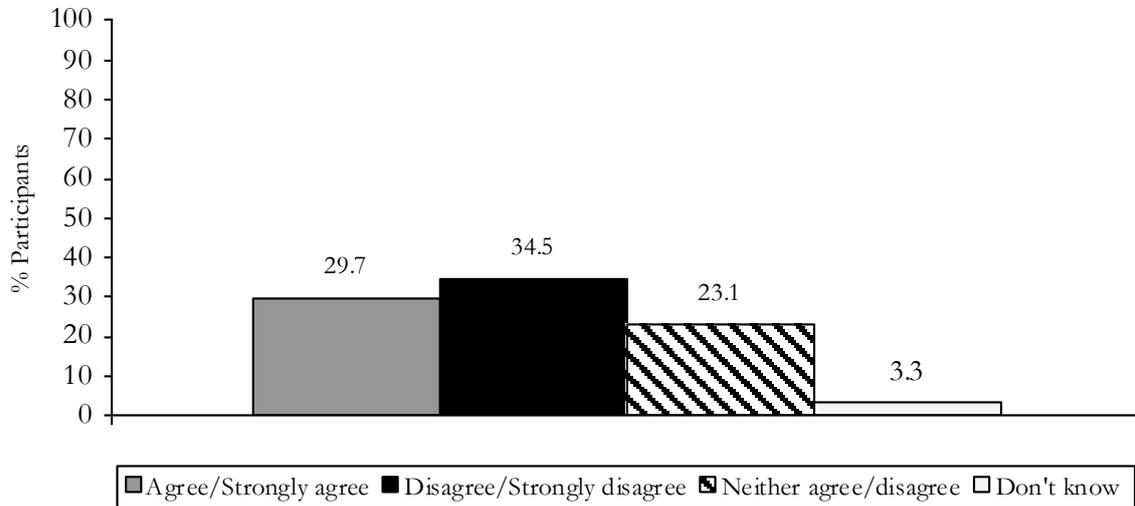
Source: Athlete interviews

Participants were asked if they believed that if a person asked about illicit drugs it meant that they were using them. Two-thirds (65.2%; n=635) disagreed/strongly disagreed, 16.3% (n=159) neither agreed nor disagreed, 7.8% (n=76) agreed/strongly agreed and 2.3% (n=22) did not know.

There were mixed findings in response to the statement “I would be concerned that if I asked a person about illicit drugs, they would think I was using them.” While 34.5% (n=336)

disagreed/strongly disagreed with this, 29.7% (n=290) agreed/strongly agreed; 23.1% (n=225) neither agreed nor disagreed and 3.3% (n=32) did not know (Figure 23).

Figure 23: Concern that a person may think participant is using illicit drugs if they ask about them



Source: Athlete interviews

One-quarter of the sample (22.8%; n=222) indicated that in the past they had looked for information about illicit drugs. Of these, the most commonly reported source of information was the Internet (64.0%). Other sources included a friend (24.8%), information sheet (23.9%), a family member (13.5%), team member (11.7%), and coach/trainer (9.9%).

Two-fifths (39.3%; n=382) of the sample agreed/strongly agreed that athletes in their sport would benefit from more information about illicit drugs. Thirteen percent (n=127) disagreed/strongly disagreed, 33.8% (n=329) neither agreed nor disagreed and 4.0% (n=39) did not know.

Participants were asked what information sources they would personally find best to get more knowledge about illicit drugs. Similar proportions indicated a presentation (38.8%) or a pamphlet (38.2%); other sources included a workshop (16.8%), a book (13.6%) or the Internet (9.0%).

A small number of athletes indicated that they did not want more information about illicit drugs.

“By the time athletes get to this level we know all about them; no more workshops please!” (Male, Aged 20 years).

“No more talks about drugs.” (Male, Aged 25 years).

Other athletes indicated that information should be specific.

“Specific presentation – not generalised.” (Male, Aged 24 years).

“Not too much info; keep it simple to be most effective.” (Male, Aged 20 years).

“Books specific to sport.” (Male, Aged 29 years).

10.1 Key expert comments

10.1.1 Awareness of drug support services and resources

The majority of KE believed that athletes were aware of drug support services and resources. KE reported the ASADA hotline as the most commonly used resource by athletes. General practitioners (GPs), team medical staff, in-house psychologists, fellow teammates, friends and players associations were also mentioned as resources and support for athletes. A few KE commented, however, that although athletes are aware of information sources for performance-enhancing drugs, such as the ASADA hotline, athletes may not know where to get information on illicit drugs specifically.

“I think the issue is there is a lack of access to information regarding illicit drugs” (Retired athlete).

Eight KE believed that athletes would not know where to find information on either illicit or performance enhancing drugs. One KE attributed this to the acceptance of drugs within the sport they had contact with.

“Drugs are part of this sport’s culture and no one knows where to go for information. There are a few athletes within the sport that are really trying to do the right thing in terms of talking through the doping issues but they are the minority” (Academic).

10.1.2 Concern that a person may think participant is using illicit drugs if they ask about them

KE were asked whether they thought there was a stigma attached to athletes seeking information regarding illicit drugs. Ten of the KE believed that stigma did exist and that athletes would not feel comfortable seeking information within their club or sport organization because it may assume personal drug use.

“I would not have felt comfortable going to someone within my club for information regarding drug because it would be detrimental to my club selection if they suspected I was using. I believe athletes are comfortable going to their Players Association for information but not directly to their club or sport organization” (Retired athlete).

Seven KE believed that an athlete would feel comfortable seeking information within their club or sport organization. The majority mentioned that they thought the athlete would feel comfortable asking the team medical staff for information regarding illicit drugs. No KE, however, felt that an athlete would feel comfortable approaching a coach or team manager for information.

“Players have two concerns; 1) are they going to be picked for a team and 2) how long will they play for that team. They may feel that asking for information or advice regarding drugs would put them at risk however I hope that they would feel comfortable talking to the team doctor but asking a coach is highly unlikely” (Coach and retired athlete).

10.1.3 Preferred information resources

The majority of the KE felt that workshops, lectures and seminars are the most effective way of presenting drug information to athletes. Many commented that written information, such as pamphlets and flyers, and the internet were not effective.

“Seminars and workshops are good. Written information is useless. Athletes receive so much in the mail and can’t be bothered to read through it all” (Retired athlete).

There was a general agreement that drug education should engage the athletes, with interactive activities such as role play, and presentations should be straight forward and brief and information should be up-to-date and change every year.

“The best approach to drug education will always change with time. What worked five years ago may not be the best approach now. When educating athletes, we must take into account that they have worked their lives to achieve sport performance....Education should engage the athletes, while being short and straight forward” (Drug and mental health policy consultant).

KE comments suggest that athletes may respond better to presenters of a similar demographic; someone they can relate to, such as an ex-player. Many of the KE mentioned that instead of focusing on the general health consequences, drug education should be specific to the athletes, illustrating how drugs affect recovery, performance and one’s career.

“Education is important but telling an athlete about the risk of the drug on their health will not scare them off. Educating them on the tests, penalties and effects, like how long the drug stays in your system, is more important” (National sports science coordinator).

“Education should be specific to the athlete- demonstrating how drugs affect performance but also taking into account that athletes are a different group than the general population- they have more access and money” (Retired athlete).

One KE believed the issue of drugs in sport was not a matter of improving education but rather an issue of club culture.

“It’s not really an issue of education but more about the club’s culture. Old players need to set an example for the young players. If the older players are not using and have created an atmosphere where drug use is not tolerated than this will trickle down to the younger players” (Retired athlete).

10.1.4 Benefit from more drug education

KE were asked whether they thought athletes would benefit from more drug education. The majority of the KE believed that athletes would benefit from more information.

“The more information the better” (Welfare and education manager)

Some KE felt that in order for education to be effective the format and content of the education needed to be changed.

“There is no point in education if it’s in the form of presentation. This method only justifies the non-users decisions to not to use. We may have a better effect if we use another method that is more evidence based” (Academic).

Two KE felt that athletes would not benefit from more information.

“There are only so many brochures that one can produce” (Retired athlete).

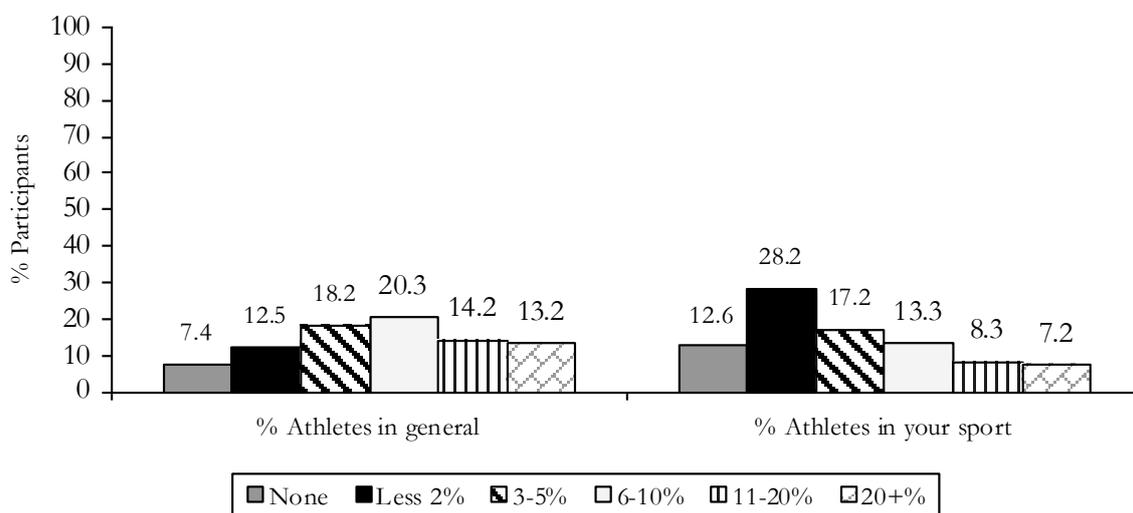
“The real task should be strengthening the club culture and leadership skills in the older players as they can influence the drug culture within the club” (Retired athlete).

11 SUBSTANCE USE

11.1 Perceptions of substance use

Participants were asked what proportion of athletes in their sport they believed used illicit drugs and what proportion of athletes in general they believed used illicit drugs. A higher proportion of athletes reported that no athletes in their sport used illicit drugs (12.6%; n=123) compared to athletes in general (7.4%; n=72). The proportion of athletes who reported that 20% or more athletes used illicit drugs was lower when describing their own sport (7.2%; n=70) compared to describing athletes in general (13.6%; n=132) (Figure 24).

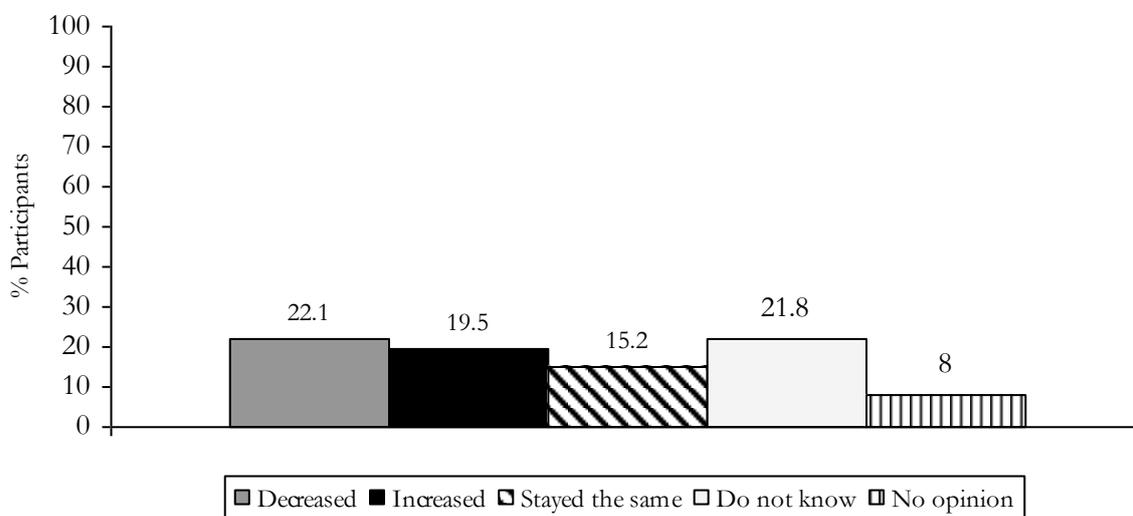
Figure 24: Athletes perception of the proportion of athletes in their sport* and athletes in general using drugs**



Source: Athlete interviews *n=847 **n=839

There were mixed findings with regard to participants' perception of the change in the proportion of athletes using illicit drugs: 22.1% (n=215) reported that the proportion has decreased, 19.5% (n=190) reported that it had increased and 15.2% (n=148) reported that the proportion had stayed the same. One-quarter (21.8%; n=212) indicated that they did not know (Figure 25).

Figure 25: Athlete perception of the change in the proportion of athletes using illicit drugs

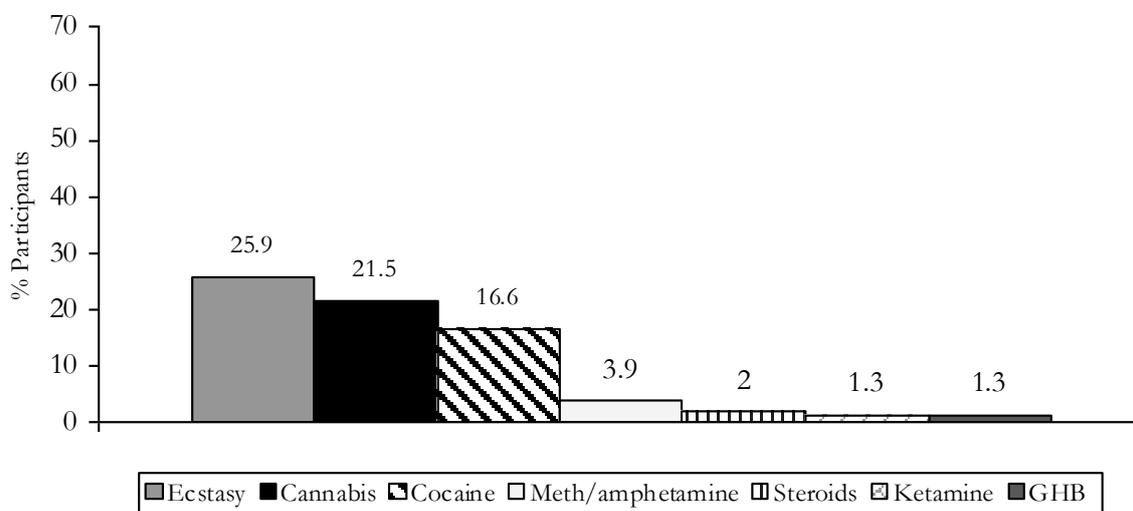


Source: Athlete interviews

When asked if there was a drug of concern in their sport, 16.2% (n=158) of participants indicated that there was a drug of concern in their sport. The nominated drugs of concern were ecstasy (55.1%; n=87), alcohol (46.8%; n=74), cocaine (41.8%; n=66), steroids (23.4%; n=37) and cannabis (16.5%; n=26). Few participants reported meth/amphetamine (3.2%; n=5), GHB (2.5%; n=4) or ketamine (1.9%; n=3) as drugs of concern in their sport.

Participants were asked if they had been offered, or had the opportunity to use, a range of illicit drugs in the past 12 months. One-quarter (25.9%; n=252) of participants reported that they had been offered/had the opportunity to use ecstasy in the past 12 months, followed by cannabis (21.5%; n=209) and cocaine (16.6%; n=162). Smaller proportions indicated that they had been offered/had the opportunity to use meth/amphetamine (3.9%; n=38), steroids (2.0%; n=19), ketamine (1.3%; n=13) and GHB (1.3%; n=13) (Figure 26). Overall, 32.5% (n=317) of the sample indicated that they had been offered, or had the opportunity to use, at least one illicit drug in the past year.

Figure 26: Proportion of participants who had been offered or had the opportunity to use illicit drugs in the past 12 months



Source: Athlete interviews

11.2 Athlete drug use history

Participant drug use history is presented in Table 8. One-fifth of the sample reported having ever used ('lifetime use') cannabis (21%), with 3.2% reporting past-year use ('recent use'). Past-year use of ecstasy and cocaine was reported by 3.7% and 3.2% of the sample respectively. Only four participants reported recent GHB use and two participants reported recent ketamine use.

Table 8: Participant drug use history

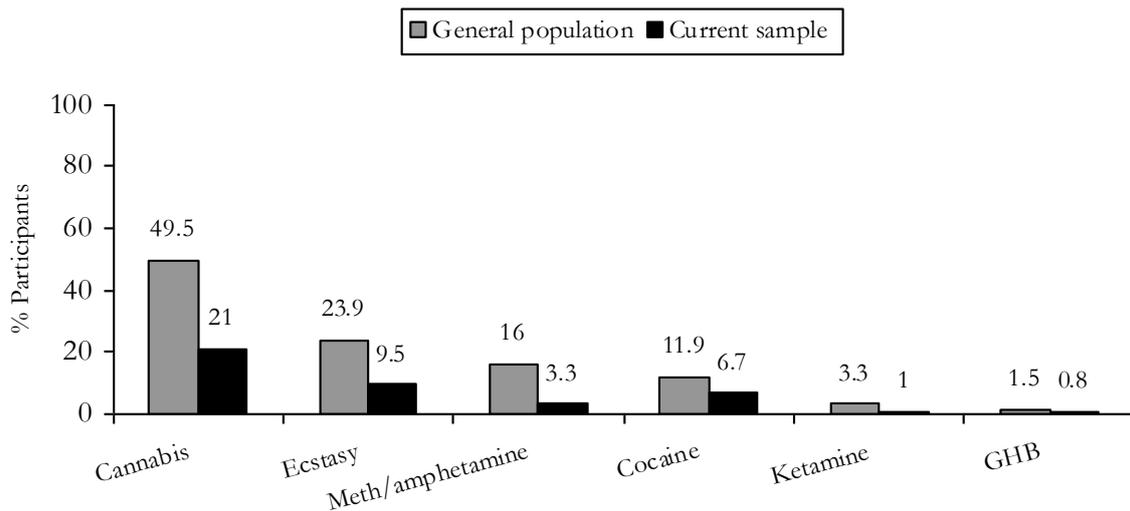
	Lifetime use		Recent use	
	%	n	%	n
Meth/amphetamine	3.3	32	1.0	10
Cannabis	21.0	205	3.2	31
Cocaine	6.7	65	3.3	32
Ecstasy	9.5	93	3.7	36
Ketamine	1.0	10	0.2	2
GHB	0.8	8	0.4	4

Source: Athlete interviews

Ten participants reported recent use of meth/amphetamine. Six reported that the main form they had used during this time was the powder form, and one each reported that their main form they had used was crystal/ice, base and tablet. One participant did not indicate the main form they had used.

Figure 27 presents a comparison of lifetime drug use between those aged 20-29 years in the Australian general population and participants in the current study (77.9% of participants in the current study were aged between 20-29 years). The proportion of participants aged 20-29 years reporting lifetime use of all drugs under investigation in the current study was less than that of the corresponding age group in the general population.

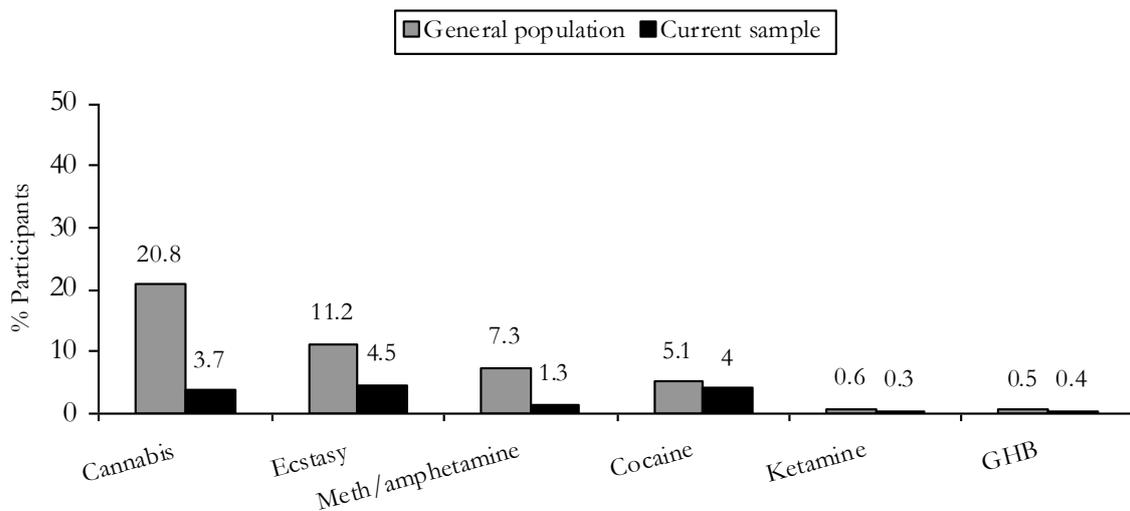
Figure 27: Lifetime substance use among those aged 20-29 years in the Australian general population and participants in the current study



Source: Athlete interviews; Australian Institute of Health and Welfare, 2009

Figure 28 presents a comparison of recent drug use between those aged 20-29 years in the Australian general population and participants in the current study (77.9% of participants in the current study were aged between 20-29 years). The proportion of participants aged 20-29 years reporting recent use of all drugs under investigation in the current study was less than that of the corresponding recent age group in the general population.

Figure 28: Recent substance use among those aged 20-29 years in the Australian general population and participants in the current study



Source: Athlete interviews; Australian Institute of Health and Welfare, 2009

11.3 Key expert comments

11.3.1 Perceptions of substance use

KE were asked what percentage of athletes they thought engaged in illicit drug use. Estimated proportions were given by some of the KE. These proportions varied from 1-10% (n=3), 10-20% (n=3), 30-40% (n=1), 40-50% (n=1) and 50% (n=1).

Five of the KE believed that the proportion of athletes using illicit drugs was similar to that of the general population while three KE reported that the proportion of athletes using illicit drugs was less than the general population. One KE guessed that the proportion of athletes in his sport using drugs may be higher than that of the general population.

KE were asked whether they believed drug use within their sport had increased, decreased or remained stable. Ten KE felt that percentage of athletes engaging in illicit drug use had increased. The majority of these KE attributed this increase to an increase in availability and general acceptance of drug use in society.

“Drug use is in general is more acceptable and seen as a way of life” (High performance manager).

“Drugs are more commonly accepted. Athletes are exposed more to drugs and there is a level of peer pressure. It’s a common thing to pop a few pills now instead of a few drinks. I think the most frightening thing is that when you talk to athletes now-a-days, they talk so comfortably about drugs as though they accept it for what it is, compared to years ago when you asked an athlete and they would have been shocked” (Retired athlete).

“When I was an athlete there was alot of general talk about marijuana however the group I was involved with wouldn’t know a) where to get it or b) if we did get our hands on it we’d have no idea how to use it.”

Now-a-days there are more athletes who know where to get and use marijuana” (National performance manager and retired athlete).

Six KE believed that the proportion of athletes engaging in illicit drug use had decreased and two KE felt it had remained stable. Those KE who felt the proportion had decreased attributed it to an increase in education, testing and penalties within sporting organizations and clubs.

“...in 2001, at which time there was no in house testing. By word of mouth, I was informed that drug was well spread throughout the sport.... I have personally seen very little drug use in the past five years. I believe it has changed alot. It was almost accepted before” (Coach and retired athlete).

“This decrease is a result of increased education, in house testing drug testing and ASADA testing. Also has to do with the shame put upon players and the penalties (Welfare and education manager).

A small number of KE mentioned “access to drugs”. KE comments suggest that high profile athletes who have high incomes may have greater access to drugs than athletes in low profile sports who tend to make less money.

“Because our players don’t get paid alot of money- they are working part time on top of training and many of them are raising families and thus do not have alot of recreational time on their hands. I am not naive enough to think that it doesn’t happen but I honestly don’t think it happens much in this sport” (Retired player).

There was a general agreement between KE that of the athletes engaging in illicit drug use, the frequency of use was very low. Almost all KE reported that athletes engaged in illicit drug use only during the off-season or about once or twice a year. There was only one KE that reported a frequency of once per week.

12 SUMMARY

This study represents one of the few investigations of illicit drug use issues among elite athletes, and provides a sound base from which education initiatives and policy decisions can be made.

Overall, athletes' self-reported drug use was lower than that of the Australian general population. One-third of the sample reported that they had had been offered or had the opportunity to use an illicit drug in the past year, and as the data shows, the majority of these athletes did refrain from use. Athletes' and KEs' perceptions of the extent of illicit drug use in sport were varied. Ecstasy, alcohol and cocaine were the three most nominated drugs of concern in athletes' chosen sports. KE were concerned that illicit drugs had become more acceptable in sport, and that this may lead to increased use. There was general agreement among KE that of the athletes who engage in illicit drug use, the frequency of use was low.

In general, the athletes surveyed indicated that they were knowledgeable about the effects of illicit drugs such as cannabis and ecstasy, but less knowledgeable regarding the effects of GHB and ketamine. Despite varying degrees of confidence in knowledge, there were athletes who indicated that they would like more information about the effects of drugs overall. Comments from athletes and KE suggest that education initiatives should be targeted; sport-specific; interactive; to the point; and should focus on recreational or 'party' drugs, such as cocaine and meth/amphetamine.

A large proportion of both athletes and KE endorsed testing for banned substances as an effective way of deterring drug use, and most believed that the current penalties for being caught using a banned substance were of the appropriate severity. The athletes surveyed believed that there should be separate policies regarding being caught using 'recreational' drugs and 'performance-enhancing' drugs, and that penalties for being caught using the former should be less severe than being caught using the latter.

Athletes indicated that they were aware of policies regarding drug use in sport, and sizeable proportions indicating that they wanted more information regarding these policies. KE were of the opinion that athletes were aware of these policies, though some expressed concern that knowledge was limited. Further education regarding this issue may be warranted, taking into account athletes' opinions regarding the best way to present new information.

Participants indicated that they were able to seek information about illicit drugs and that they were aware of drug information services dealing with these. Some KE believed that athletes would not know where to access information about illicit drugs and their effects. While athletes indicated that they were comfortable seeking information, there was concern that this may be seen as an indication that they were using, or intending to use, illicit drugs, and the effect this may have on team selection and their playing career. KE who were retired athletes also endorsed this view.

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APPENDIX A

Table 10. Comparison of national sporting organisation drug policies

		Athletics	Diving	Hockey*	Netball*	Rugby League**	Rugby Union	Softball*	Triathlon
Penalty	(1) Ineligibility for prohibited substances and prohibited methods								
	(i) First violation: 2 years ineligibility	Y	Y	N	N	N	Y	N	Y
	(ii) Second violation: lifetime ineligibility	Y	Y	N	N	N	Y	N	Y
	(2) If the athlete can establish that a specified substance was not intended to enhance sport performance								
	(i) First violation: minimum-warning and reprimand	Y	Y	N	N	N	Y	N	Y
	(ii) Second violation: 2 years ineligibility	Y	Y	N	N	N	Y	N	Y
	(iii) Third violation: lifetime ineligibility	Y	Y	N	N	N	Y	N	Y
In competition testing for illicit drugs		Y	Y	Y	Y	Y	Y	Y	Y
Out of competition testing for illicit drugs		N	N	N	N	Y	N	N	N
Stimulants (e.g. MDMA, meth/amphetamine, cocaine)		Y	Y	Y	Y	Y	Y	Y	Y
Cannabinoids		Y	Y	Y	Y	Y	Y	Y	Y
Narcotics (e.g. heroin, buprenorphine, methadone)		Y	Y	Y	Y	Y	Y	Y	Y

* Policy differs in that Court of Arbitration in Sport (CAS) will determine if a person has committed a violation and if so, what sanction will apply and for how long.

** Differs in that there exists a separate illicit drug policy. First offence: Suspended fine of 5% of a player's salary, official written warning and 3 months compulsory attendance at counselling. Second offence: 12 week suspension.

APPENDIX B

ASADA

ASADA is an integrated anti-doping organisation with functions outlined in the Australian Sports Anti-Doping Authority Act (2006) and the Australian Sports Anti-Doping Authority Regulations (2006). ASADA has the power to investigate suspected Anti-Doping Rule Violations, make recommendations on its findings, and present cases against alleged offenders at sport tribunals. ASADA have access to customs information.

Table 11. ASADA Anti-Doping Rule Violations & Sanctions

Anti-Doping Rule Violation	First Offence	Subsequent offence(s)
Presence of a prohibited substance	2 year ban	8 years-life ban
Possession	2 year ban	8 years-life ban
Tampering/refusing to submit sample	2 year ban	4-8 year ban
Trafficking	4 year ban	Life ban
Exceptional circumstances	A minimum warning or 2 year ineligibility	2-4 years for a second offence and a life ban for a subsequent offence