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Research Article

DRUGS AND DOPING IN SPORTS

Bappasaheb Maske

H.O.D. Phy.Edu. and Sports.
Sant Ramdas Arts Comm And Science College Ghansawangi, Dist. Jalna

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Abstract

This article addresses some social and management issues relating to drugs in sport (doping). It begins with an overview of recent and prominent cases before developing a comparative approach that sets doping against other forms of drug use in society. The outcomes and implications of this comparison establish the basis for a discussion of how the relevant authorities might deal with doping. The concluding points show that interventions towards education and prevention face the challenges of understanding and responding to the highly specific nature of the elite athlete.

INTRODUCTION:

High-profile cases of sports stars using drugs, whether for performance or for 'recreational use' continue to plague the world of elite, international sport. While such confessions are rare, we do know enough about specific instances of doping behaviour to surmise that it has been prominent in many sports. The most infamous of these have been the THG/Balco scandal (Fainaru-Wada and Williams 2006); the 1998 Festina scandal during the Tour de France that exposed the systematic doping of professional cyclists (Voet 2002); the organized doping of Canadian athletes that led to Ben Johnson's positive test after winning the 100m final during the 1988 Olympics (Francis and Coplon 1991); and the Government sponsored doping of athletes in the former GDR and USSR (Spitzer 2006). Less well known, though are individual cases like Werner Reiterer who used steroids throughout the 1990s without ever being detected (Reiterer 2000).

Other cases have been more complex and show how challenging anti-doping policy and procedures can be. For example, when the Danish cyclist Michael Rasmussen was taken out of the 2007 Tour de France after a journalist exposed the fact he had missed out-of- competition tests, the scandal reverberated around the world. He was castigated as a cheat and once again the future of professional cycling was questioned.

However, recent research has shown that he did not actually break any of the World Anti-Doping Agencies (WADA) rules and therefore has been harshly treated (Møller 2010). Another example might be that of Shoaib Akhtar and Mohammed Asif who tested positive for nandrolone in tests conducted by the Pakistan Cricket Board in 2006. Their initial ban was over-turned on appeal leading to complaints from WADA and the involvement of the The Court of Arbitration for Sport (CAS) which had no authority to impose WADA's code at the time which would have upheld the bans (Cricinfo, July 2, 2007). The case also prompted the International Cricket Council to complain about 'inconsistencies in the Pakistan Cricket Board's anti-doping processes and regulations' (London Evening Standard, 7 December 2006).

Such cases reflect some of the other cases that have been adjudicated through the CAS, where there are very delicate judgments to be made over the punishments to be given for doping when athletes can provide circumstantial reasons for testing positive or for missing out-of-competition tests or

when there are disputes over jurisdiction and variation in regulations.

The History of Drugs in Sport

The use of drugs in sports to improve performance is a major problem for sports governing bodies. This, however, is not a new phenomenon. Drugs have been used to enhance performance since ancient times. Greek and Roman civilisations used mushrooms and herbs to improve their performance. Later in the 19th century, substances including alcohol, opium and caffeine were used.

The more recent forms of performance-enhancing drugs have roots in World War II where Amphetamines we used by American soldiers to keep them alert and Germans used anabolic steroids to increase their aggressive behaviour. A number of deaths and allegations of drug taking encouraged the International Olympic Committee (IOC) to set up a Medical Commission in 1967, which banned the use of drugs and other performance-enhancing substances. Small-scale testing was introduced at the 1968 Mexico Olympics, followed by full-scale testing at the next games in Munich in 1972.

In 1975, anabolic steroid use was banned following the development of a test, after which there was a surge of disqualifications through steroid use. In 1983, Caffeine and testosterone were added to the prohibited list, followed in 1986 by blood doping and EPO in 1990, despite reliable tests for their detection not being available until 2000.
Following a large number of doping offences being committed in the mid-nineties, and the existence of several conflicting organisations, the World Conference on Doping was held in Switzerland in 1999. As a result, the World Anti-Doping Agency (WADA) was formed to promote and coordinate the fight against drug use in sport on an international level, across all sports. WADA was set up under the initiative of the IOC and with the support of other international organisations and governments. The organisation is formed by individuals from the IOC and public authorities. Why do Athletes Take Drugs?

There are a large number of reasons why an athlete may decide to take drugs. A selection is listed here:
Pressure to succeed, either from themselves or coaches/family
Belief that their competitors are taking drugs
Pressure from governments/national authorities (as occurred in the Eastern Bloc countries in the 60's and70's)

Financial rewards for outstanding performance
Lack of access to, or funding for, training facilities and additional support (nutrition, psychological support)

Community and media attitudes and expectations of success

Blood Doping

Blood doping is defined by WADA (World Anti-Doping Agency) as the misuse of techniques and/or substances to increase one's red blood cell count. Most commonly, this involves the removal of two units (approximately 2 pints!) of the athlete's blood several weeks prior to competition. The blood is then frozen until 1-2 days before the competition, when it is thawed and injected back into the athlete. This is known as autologous blood doping. Homologous doping is the injection of fresh blood, removed from a second person, straight into the athlete.
A second method of blood doping involves the use of artificial oxygen carriers. Hemoglobin oxygen carriers (HBOCs) and perfluorocarbons (PFCs) are chemicals or purified proteins that have the ability to carry oxygen. They have been developed for therapeutic use; however are now being misused as performance enhancers. Tests were introduced in 2004 that are capable of detecting the use of homologous transfusions and the use of artificial oxygen carriers. Although a suitable test has not yet been developed to detect autologous blood doping.
After the development of EPO, the use of blood doping fell considerably; however, since the development of a test for EPO detection and the lack of testing for autologous doping, it is again on the rise.

Effects on Performance
Blood doping is most commonly used by endurance athletes, such as distance runners, skiers and cyclists. By increasing the number of red blood cells within the blood (and so increasing the hematocrit), higher volumes of the protein haemoglobin are present. Haemoglobin binds to and carries Oxygen from the lungs to the muscles, where it can be used for aerobic respiration. Blood doping, therefore, allows extra Oxygen to be transported to the working muscles,

resulting in a higher level of performance, without the use of the anaerobic energy systems. Studies have shown that blood doping can improve the performance of endurance athletes.

Side Effects of Blood Doping

The following are side effects that can occur in any form of blood doping:

Increased blood viscosity(thickness)

Myocardial infarction (heart attack)

Pulmonary embolism (a blockage, which can be fat, air or a blood clot, of the pulmonary artery)
Cerebral embolism (a blockage, formed elsewhere in the body, which becomes lodged in an artery within or leading to the brain)

Cerebrovascular accident(stroke)
Infections
Homologous transfusions are prone to further side effects:
Allergic reaction
Risk of blood-borne diseases (hepatitis C, B, and HIV)

WADA Prohibited Substances List

The prohibited substances list is a list of all drugs, supplements and other substances and methods that are banned from use in sports. WADA(World Anti-Doping Agency) is responsible for maintaining and updating this list. Note the list below may not be upto date! Some substances are banned only during competition, the method of administration (for example, inhalation versus tablet or injection form).

The list of prohibited substances is updated annually to keep up with advances in science and technology, with a new list being issued on the 1st of January.
A substance is added to the list if it meets two of the three criteria listed below:

The potential for enhanced performance
The potential for being detrimental to health

Violation of the spirit of sport

In some cases, an athlete may have a pre-existing medical condition that requires them to take medication, which is listed. In this case the athlete can apply to their International Federation for a Therapeutic Use Exemption which must be verified by their physician. In order to be accepted, the

The following must be true:

The athlete would suffer significant health problems if they do not take the medication
There is no suitable alternative that is not listed
There are no considerable performance benefits

What Substances Make up the Prohibited List?

Currently the prohibited list contains 5 classes of substances and 3 methods of doping which are banned at all times and a further 4 substances banned during competition. Substances Banned at All Times:

Anabolic Steroids, including THG
Hormones including:
Erythropoietin(EPO)
Human Growth Hormone(HGH)
Insulin-like Growth Factor(IGF-1)
Human Chorionic Gonadotropin(HCG)

Adrenocorticotropic Hormone(ACTH)
Beta-2-Agonists
Hormone Antagonists and Modulators

Diuretics
Methods Banned at All Times:
Enhancement of Oxygen transferincluding:
Blood Doping
Artificial Oxygen Carriers
Chemical and Physical Manipulation, including tampering with Samples and intravenous infusion
Gene Doping
Substances Banned in Competition:
Stimulants including:
Amphetamines

Ephedra
Cocaine
Caffeine (currently permitted)
Narcotics
Cannabinoids

Glucocorticosteroids

DEALING WITH THE PROBLEM

During the first half of the 20th century, scientists and policymakers could not agree over what constituted 'doping' and how it should be controlled. Anti-doping statements were published by the IAAF in 1928 and the IOC in 1938, but these were not supported by a system of testing or punishment.
Athletes are considered to be responsible for everything in their diet, and thus the legal concept of strict liability is applied by the World Anti-Doping Agency. There is very little legal scope for an athlete to offer an explanation as to how the banned substance came to be in their system (David 2008).

This is highly significant in light of the application of strict liability. If athletes do not always know what March 2004). However, Rusedski's innocence was upheld as he was assumed to have trusted the ATP, which did not act in accordance with anti-doping guidelines. But given the strict liability ruling favoured by the World Anti-Doping Agency, Rusedski was fortunate to have avoided a two ban.
Education strategies that are currently in place are primarily about avoiding testing positive, clarifying some 'grey areas' and explaining the mechanisms of testing.

Most of this material is available online, and athletes are encouraged to access it for themselves. This is also problematic as a pedagogical technique, as it does not take into account the athlete's willingness to read information carefully, their ability to understand, or their appreciation of its wider context. Indeed, it could be argued that the current provision is simplistic and one-dimensional.

A rather more complex picture is painted by Backhouse et al:
The consequences are that information dissemination approaches to athlete education are not sufficient because they cannot address the situation or mindset that would lead to doping as a conscious decision. Many athletes devote their entire lives to their careers and are desperate for any form of success.

They draw upon all manner of other coaching strategies, nutritional advice and, for certain sports, new technological innovations, in order to beat their opponents. The very concept that a potential advantage should be forgone for the sake of the idealised 'level playing field' is not within the logic is banned, what their legal rights are, or which sources of information can be trusted, then how can they always be held responsible for a positive test? An interesting example of such a situation arose in 2004 when the British tennis player Greg Rusedski tested positive for the banned substance nandrolone.

It transpired that the Association of Tennis Professionals, the governing body for the sport, had recommended that its coaches distribute electrolyte tablets to some players who had been contaminated with small traces of the banned drug. During the legal case, the prosecutors tried to argue that 'Rusedski could be held to be positive as he must be taken to have known that he should not take substances given to him by the ATP' (BBC, 10
of sports success. Since anti-doping is based on morally pure notions like fairness, equity and sportsmanship, there is a constant struggle between the concepts of purity and success in elite sport (Møller 2010).

Even the language used reflects these tensions. To be 'sporting' means to show respect to your opponent, while the essence of sport is really about competition, trying to win, trying to display superiority over the opponent; winners are encouraged to feel proud and to celebrate, and losers feel disappointment and shame. Elite sport, as noted by Backhouse et al (2007), contains so many external rewards that the balance often shifts towards a win-at-all-costs mentality.

Any serious anti-doping education would need to address and explore athletes' responses to these
tensions. How do they understand sport? What are they trying to achieve? What moral limits would they place on performance enhancement? How do they imagine their competitors deal with moral issues? Donovan has suggested that athletes' sense of morality (within sport) should be the touchstone for anti-doping education, and the younger the intervention occurs, the better.

CONCLUSION:

This survey suggests that despite regular educational updates, some sportspeople are not fully prepared to avoid accidental doping violations. It is suggested that the educational process itself is altered to encourage a more proactive approach to doping prevention; with the development of individual

contingency plans should minor illness arise. Improving access to information via the internet, and involving a pharmacist may help to reduce doping accidents. There is also a need to consider the educational requirements of team doctors.

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