Globalisation of anti-doping: the reverse side of the medal

Current anti-doping policy is sufficiently problematic to call for debate and change, say **Bengt Kayser** and **Aaron C T Smith**

Performance enhancement has always been an essential part of sport, but over the past few decades a strong movement against doping has emerged, in parallel with the rapid development of biomedical technology. This movement was led by the International Olympic Committee, which in 1999 formed the World Anti-Doping Agency (WADA). WADA now leads a global movement for harmonisation of anti-doping rules in elite sport, using repressive, punitive policies for transgression, and documented within the World Anti-doping Code and an annually updated list of forbidden substances and methods (www.wada-ama-org).

Solicited by WADA, Unesco has proposed a convention against doping for signature by member states, adding to the pressure placed on national governments and sports federations to comply.[1] This globalisation and harmonisation of anti-doping efforts is ostensibly reasonable since it is designed to enforce consistent rules throughout the elite sporting world. However, there are several compelling reasons to question current anti-doping policies. Inherent flaws and contradictions in the logic of anti-doping policy may have serious consequences for the health and wellbeing of athletes and for public health in general. This article summarises the problems of current anti-doping policy in accordance with the following postulates.

Postulates

- The reasons advanced for anti-doping policy are flawed and do not warrant strong punishment and costly repression of doping practices;
- The effects of prohibition as a means for regulating doping behaviour remain unclear, so the emphasis should be on developing an evidence base regarding any detrimental effects of performance enhancement technologies in order to dissuade potential users rather than coerce them, and to ensure that anti-doping policy does not induce more harm in society than it prevents;
- Testing for doping in bodily specimens will never uncover all use of forbidden substances or methods, as false negatives and false positives are inherent to testing but are unacceptable in sport because athletes can never be considered truly clean; false accusations should be avoided;
- Rules and sampling procedures associated with testing protocols impinge on athletes' privacy to an unreasonable degree and violate basic notions of personal freedom and self regulation;
- The "war on doping" and the "war on drugs" tend to converge, as exemplified by the presence of recreational and performance impairing drugs like marihuana on the list of prohibited drugs;
- Well designed studies of harm reduction strategies are needed—such strategies are demonstrably more successful than just prohibition enforced by strong repression, at least in a democratic society that acknowledges the principles of universal human rights;
- Outside the sporting field, enhancement technologies like cosmetic surgery and eye surgery and use of substances like caffeine, fluoxetine, modafinil, sildenafil, methylphenidate, and anti-ageing drugs are an increasingly accepted social behaviour; this places zero tolerance for enhancement in sport at odds with broader social values.

Four reasons for anti-doping

The rationale for anti-doping has been explored by several authors.[2-4] Four reasons are conventionally advanced in favour of anti-doping: the need to ensure a "level

Box 1 Initiatives on doping in sports and enhancement

International Network for Humanistic Doping Research (www.doping.au.dk/en)— established in 2002 at the University of Southern Denmark. The intention is to share and encourage research on doping practices in their broadest cultural, social, and political dimensions.

Drugs in Sport Research Unit (www.drugsinsport.org)— recently launched in Australia and provides a focal point for the discussion and analysis of drug use and anti-doping regulations in sport. The unit is particularly interested in broadening the anti-doping debate and examining the options that are available to policy makers in the field.

European 5th framework project on enhancement (www.enhanceproject.org) This project brought together academics to work on the advent of new biotechnology to enhance human capacities, rather than therapy. It has addressed questions like: Will the perspective of enhancement of bodily skills, lifespan, or our rationality or personal behaviour turn our society into a post-human society?

FRANCK FIFE/AFP/GETTY IMAGES

Belgian cyclist Kevin van Impe was compelled by an anti-doping officer to produce a urine sample while preparing his son's funeral at a crematorium

SIPA PRESS/REX FEATURES

Dope Test tubes for cocaine and amphetamines

playing field"; the need to protect the health of athletes; the need to preserve the integrity of sport; and the need to set a good example. All four assumptions have at their core a need for moral certainty, and all four are flawed.

The level playing field argument does not take into account the difficulties associated with competitive parity in sport or the inevitable differences between individuals arising from different environments (training technology, economic means) and talent (genotype and phenotype). In reality, innumerable factors unfairly advantage some athletes.

The athlete health argument is paternalistic and at odds with the unhealthy aspects and risks inherent to elite sport practice.

The integrity argument is based on the claim that taking drugs to enhance sports performance is inappropriate because it compromises the ethical foundation and social authenticity of sport. The idea that all sport is bound by common values and customs ignores the cultural histories and evolution of different sports and the impact of science, technology, and commercialisation on their structure and operation.

The role model argument is naive in that it expects elite athletes to be model citizens judged against criteria that are not imposed on any other category of admired citizen.

Problems of current anti-doping policy

The first of the problems with current anti-doping policy concerns the assumption that the sanction based model will eradicate doping. Approximately 1-2% of tests indicate doping,[5] and prohibition is only a partly successful deterrent.[6] Even assuming that testing protocols accurately expose the use of drugs, which is unlikely given that testing will be a step behind the advances in biomedicine, only a small proportion of athletes is tested.[5] Against this backdrop, elite sport holds winning as sovereign, and its socially sanctioned emphasis on achievement will continue to encourage drug taking.[7 8] Furthermore, false negatives and false positives are inherent in testing, and biological and pre-analytical variability may lead to unreliable test results.[9] This uncertainty is acceptable in therapeutic medicine but problematic in sport because athletes can never be declared truly clean. The punitive approach to doping is ill adapted to the dominant values of competitive sport, which is characterised by a culture emphasising heroism and risk taking. Elite sport may not promote a healthy lifestyle or moral development, as is commonly thought; it may encourage the acceptance of the high risk of physical injury, antisocial behaviour, and cheating.[10 11] Paradoxically, repression may serve to stimulate the very actions it seeks to restrain.

A second problem is that current anti-doping policy may encourage the use of substances in society at large. Even though deterrence in elite sport is partially successful, the use of performance enhancing drugs in society, especially the use of anabolic steroids, seems to be increasing.[3 12]

A consequence of prohibition (the third problem) is that users of drugs like anabolic steroids find it difficult to obtain satisfactory medical advice.[12 13] Athletes who self medicate may use higher doses than are safe or necessary.[12] In these instances, punitive policies relying on intensive policing and punishments may have increased the harms associated with drug use while doing little to curtail usage.[12 13]

A fourth problem of existing policy is its claim to uphold parity by ensuring a level playing field. Current policy exacerbates inequity because the rapid development of science and medicine in sport serves only privileged athletes with access to the latest technological and pharmacological inventions.[14]

A final problem is that anti-doping policy may come into conflict with changing values in contemporary society. Although performance enhancing drugs are considered unacceptable in elite sport, elsewhere in society enhancement is increasingly prevalent and accepted. Enforced testing may also intimidate young athletes, who feel uncomfortable being watched while urinating,[15] or it may force athletes to comply at particularly intrusive times).

Side effects of globalisation of anti-doping

As the use of performance enhancing substances in the general population is increasing, doping is not just a problem affecting elite sports and does not justify a sport-only approach. International organised crime has quickly understood the potential of this market and has cultivated markets in anabolic steroids, erythropoietin, human growth hormone, and other substances.[16] Prohibition sends users of these substances, often of dubious quality, into hiding in medically unsupervised practice. Dangerous practices, such as the sharing of syringes, lead to the risk of HIV or hepatitis virus infection,[12 17-19] with considerable impact on public health.

Current policy favours complete repression, very much like the repression of illegal drug use by drug enforcement administrations. The extreme of such a development would be the introduction of a generalised anti-doping, police state system where every citizen is regularly tested. The recent inclusion of strong repression of anabolic steroid use in the US war on drugs is a step in that direction. History provides examples, such as the US prohibition period, of strong repression leading to increases in problems related to consumption. In its current form the war on doping may have a similar fate.

A harm reduction approach

Harm reduction strategies have proved viable and cost effective in the field of illegal drug use, from cannabis to heroin. Strategies such as education and providing clean injecting supplies to users of performance enhancing drugs outside competitive sport may be advantageous,[19] as may programmes such as steroid clinics that provide low threshold access to medical care and advice to anabolic steroid users. In parts of the UK the number of new clients at syringe exchanges who say that they use anabolic steroids has risen beyond the number of new clients injecting psychotropic drugs.[12 17]

Three main barriers to implementation

People use performance enhancing drugs outside anti-doping controlled sport to develop muscularity for aesthetic or occupational reasons, to retard ageing, to combat sexual dysfunction, and to improve cognitive performance. Although robust evidence relating to damage is lacking, the criminalisation and demonisation of users is growing. Several European countries as well as the United States have enacted legislation against personal use of such drugs. In Denmark the introduction of drug testing and banning for clients of gymnasiums has driven an already clandestine population further underground, with the inherent health risks of a hidden drug-using population.

Secondly, the evidence relating to the adverse effects of anabolic steroids and similar drugs is not clear. Most reports are from clinical populations or case studies and rarely deal with the supra-therapeutic regimens and complex pharmacology used by many individuals.[12] Yesalis observed: "Although there is still little available evidence regarding the long

term health effects of anabolic steroids, many current or potential anabolic steroid users unfortunately mistake absence of evidence for evidence of absence."[20] Many healthcare professionals, though, base their messages about the long term health effects of anabolic steroids on scant evidence tainted by a misguided moralistic motivation to protect sport. Perhaps Yesalis should have added: Equally, negative events in individuals using performance and image enhancing drugs do not necessarily prove the causality of those drugs.

The third barrier concerns the credibility gap between what users and potential users believe and observe, and the information that is often presented to them by the scientific and medical community, sometimes termed "prophylactic lies." Dawson[12] concedes that the users of these substances believe the medical profession has little credibility in relation to the consequences of use of anabolic steroids, and that they rely instead on locker room anecdotes and advice from other drug users. This is exacerbated by users' reliance on the internet for uncorroborated information and views from self appointed "steroid gurus," often accompanied by the sale of substances of unknown origin and quality.

An alternative policy

In competitive sport, harm reduction would not necessarily imply abandoning drug testing altogether. If performance enhancing drugs were legal athletes would be more likely to use doping techniques to maintain their competitive positions. An alternative policy might involve making legal the use of drugs associated with low harm and testing health rather than testing for drugs.[2] Implicit in this argument is that more athletes would use performance enhancing drugs if they were both legal and safe, thereby obviating both the moral and level playing field problems. This view holds that if health is safeguarded it does not matter how performance is supplemented.

Most users of performance enhancing drugs are not engaged in elite competitive sport, and are thus generally not subject to any doping control regulations. Sport and the sporting ethos may be considered important within a social and cultural context, but the health and wellbeing of the participant should be an important consideration. Anti-doping policy has been forged without the benefit of robust data concerning the long term health effects of the most prevalent performance enhancing drugs. A moralistic standpoint in defending the integrity of sport must not impinge on the health of the population outside of the competitive arena.

Box 2 Anabolic steroid user clinics: a harm reduction approach

The ideal harm reduction approach to the use of anabolic steroids is characterised by a non-judgmental approach to providing sterile injecting equipment and evidence based information (where available) regarding the risks of specific drugs, and identifying strategies to minimise the potential harm. Alongside credible information and non-pharmacological support, it aims to prevent drug use or at least minimise the harm associated with drug use.

SUMMARY POINTS

Current anti-doping policy is essentially a costly, repressive, zero tolerance approach in elite sport, which seems only partly successful

Clandestine non-medically supervised use of performance enhancing drugs in the general population is increasing, at a substantial cost to public health

We need to question current anti-doping policy and to study alternatives, which should include harm-reduction approaches

Critical systematic examination of the impact of anti-doping policy is urgently needed, as are trials on the effects of doping methods, harm reduction interventions, and the accuracy of anti-doping testing

A list of scholars who read the manuscript and agree with the contents of its summary box and the main argument—that today's anti-doping policy is sufficiently problematic to call for debate and change—is on bmj.com. They do not necessarily agree with all of the arguments made in the manuscript.

Call for debate for change

Current anti-doping policy is inherently contradictory, as it fails to achieve its stated aims of detecting and eradicating drug use, protecting the integrity of sporting competition, and preserving parity on the field. We suggest that its prohibition approach may be deleterious to public health, and that it fails to take into account the complex network of values and behaviours in which drug use in contemporary sport and society is embedded. In the absence of reliable empirical evidence on the impact of doping technology on health and performance, and given the limited data about the effectiveness of the current anti-doping policy based on deterrence, rigorous clinical and policy studies are imperative.

The authors and signatories of this article have concerns about the long term effects of current anti-doping policies and make a plea for the study and debate of other, more pragmatic strategies to limit the possible negative health aspects of the use of performance enhancement technologies in sports and society in general.

Bengt Kayser professor and director of the institute of movement sciences and sports medicine, University of Geneva, 1211 Geneva 4, Switzerland
bengt.kayser@medecine.unige.ch

Aaron C T Smith professor and director of sport and leisure management, Faculty of Law and Management, La Trobe University, Melbourne, Australia

Accepted: 19 June 2008

Contributors: BK initiated the manuscript; BK and AS both contributed equally to writing and revision. In addition, Jim McVeigh contributed to writing and Andy Miah, Alexandre Mauron, Campbell Aitken, Andrea Petroczi, Samia Hurst, Giuseppe Lippi, Barbara Broers, Patrick O'Hare, Norman Fost to revision. BK is the guarantor.

Funding: BK is supported by University of Geneva research funds; AS is supported under the Australian Research Council's Linkage Projects funding scheme (project number LP0669332).

Competing interests: None declared.

Provenance and peer review: Not commissioned; externally peer reviewed.

1 UNESCO. *International convention against doping in sport*. Paris: UNESCO, 2005.
2 Savulescu J, Foddy B, Clayton M. Why we should allow performance enhancing drugs in sport. *Br J Sports Med* 2004;38:666-70.
3 Kayser B, Mauron A, Miah A. Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 2007;8:2.
4 Smith A, Stewart B. Drug policy in sport: hidden assumptions and inherent contradictions *Drug Alcohol Rev* 2008;27:123-9.
5 WADA. Program statistics. 2008. www.wada-ama.org/en/dynamic.ch2?pageCategory.id=328.
6 Caulkins JP, Reuter P. Re-defining the goals of National Drug Policy: Recommendation from a working group. *Am J Public Health* 2005;85:1059-63.
7 Frederick-Recascino CM, Schuster-Smith H. Competition and intrinsic motivation in physical activity: a comparison of two groups. *J Sport Behav* 2003;26:240-54.
8 Dunning E, Waddington I. Sport as a drug and drugs in sport: some exploratory comments. *Int Rev Sociol Sport* 2003;38:351-68.
9 Lundby C, Achman-Andersen NJ, Thomsen JJ, Norgaard AM, Robach P. Testing for recombinant human erythropoietin in urine: problems associated with current anti doping testing. *J Appl Physiol* (in press).
10 Long J, Sanderson I. The social benefits of sport: where is the proof? In: Henry I, ed. *Sport in the city: the role of sport in economic and social regeneration*. London: Routledge, 2001:187-203.
11 Morris L, Sallybanks J, Willis K, Makkai T. Sport, physical activity and antisocial behaviour in youth. *Youth Stud Austral*2004;23:47-52.
12 Dawson RT. Drugs in sport—the role of the physician. *J Endocrinol* 2001;170:55-61.
13 Pope HG, Kanayama G, Ionescu-Pioggia M, Hudson JI. Anabolic steroid users' attitudes towards physicians. *Addiction* 2004;99:1189-94.
14 Waddington I. *Sport, health and drugs: a critical sociological perspective*. London: Spon, 2000.
15 Knight JR, Mears CJ. Testing for drugs of abuse in children and adolescents: addendum—testing in schools and at home. *Pediatrics* 2007;119:627-30.
16 Donati S. World traffic in doping substances. Montreal. 2007. www.wada-ama.org/rtecontent/document/Donati_Report_Trafficking_2007-03_06.pdf.
17 McVeigh J, Beynon C, Bellis MA. New challenges for agency based syringe exchange schemes: analysis of 11 years of data (1991-2001) in Merseyside and Cheshire, United Kingdom. *Int J Drug Policy* 2003;14:6.
18 Melia P, Pipe A, Greenberg L. The use of anabolic-androgenic steroids by Canadian students. *Clin J Sport Med* 1996;6:9-14.
19 Aitken C, Delalande C, Stanton K. Pumping iron, risking infection? Exposure to hepatitis C, hepatitis B and HIV among anabolic-androgenic steroid injectors in Victoria, Australia. *Drug Alcohol Depend* 2002;65:303-8.
20 Yesalis CE, Bahrke MS, Wright JE. Societal alternatives to anabolic steroid use. *Clin J Sport Med* 2000;10:1-6.

Cite this as: *BMJ* 2008;337:a584