

Drugs in Sport — A Change is Needed, but What?



André La Gerche, MBBS, PhD^{a*},
Maria J. Brosnan, MBBS, FRACP, PhD^{a,b}

^aBaker Heart and Diabetes Institute, Melbourne, Vic, Australia

^bSt Vincent's Hospital Melbourne, Melbourne, Vic, Australia

Performance enhancing drugs (PEDs) confound much of what is considered great about sport. Sport is generally associated with excellent health outcomes that can be challenged by the direct toxicities of PEDs and the indirect effects of enabling the body to push beyond normal physiological reserves, thereby potentiating the risk of some exercise-associated conditions such as atrial fibrillation. Sport should also be a source of aspirational behavioural change but this 'legacy effect' of elite sport is modest, perhaps due in part to the public disillusionment brought about by repeated drug scandals. Elite sport is an extremely lucrative industry and, whilst this money could be used to support grass roots campaigns promoting exercise, it also provides incentive for a "win at all costs" mentality that provides the substrate for drug use to enhance performance. This article discusses these issues and asserts that the destructive influence of PEDs has arguably reached a tipping point at which the reputation of professional sport is starting to become irrevocably damaged. We assert that there is a need for change, and that doctors need to be a part of this change. Repeated attempts by the anti-doping authorities to stay ahead of the PED "industry" have failed, and we argue that new approaches now need to be considered. The controversial concept of a more permissive policy in which physiological limits are set has been championed by some; whilst we propose a more restrictive process in which all drugs are banned except for a few commonly used drugs that are not associated with performance enhancement. This article is not designed to provide definitive answers but rather to promote debate and consideration of novel approaches to what may be sport's greatest challenge — the use of performance-enhancing drugs.

Keywords

Performance enhancing drugs • Doping • Anabolic steroids • Erythropoietin • Sports • Drug policy

Sport maintains a central position in society. It attracts participants and spectators who are drawn to the goal setting, discipline and countless hours of training required in the pursuit of sporting success. It is a relatively simple equation, *effort equals reward*. It is partly this simplicity that makes sport so attractive.

Over recent decades, performance enhancing drugs (PEDs) have greatly altered this equation and have progressively eroded the trust of competitors and spectators. Repeatedly, "clean" athletes are being denied success by drug

takers, denied a livelihood as sponsors withdraw and denied acclaim as the public generalise the seemingly ubiquitous use of PEDs and allow it to taint every breathtaking performance. Perhaps of even greater concern is that PEDs may be placing athletes' health at risk. In short, PEDs are potentially ruining sport and despite multiple efforts and assurances that cheats will be caught, we have not seen any compelling evidence that authorities are winning the fight against what appears to be a well-financed PED "industry".

*Corresponding author at: Head, Clinical Research Domain, Baker Heart and Diabetes Institute, 75 Commercial Rd, Melbourne 3004, VIC, Australia. Tel.: +61 38532 1143, Fax: +61 38532 1899., Email: Andre.LaGerche@baker.edu.au

© 2018 Published by Elsevier B.V. on behalf of Australian and New Zealand Society of Cardiac and Thoracic Surgeons (ANZSCTS) and the Cardiac Society of Australia and New Zealand (CSANZ).

In this manuscript, we aim to focus on the broader issues regarding PEDs and obstacles to their control. There are multiple reviews detailing the specific side effects related to established and novel PEDs [1–3]. Increasingly, the side effects of many agents are not known as the agents are not subject to the clinical trials and post-market surveillance of mainstream pharmaceuticals. Rather, modern PEDs can be designer peptides where the investigational pipeline moves directly to the athlete. Thus, in some respects, descriptions of side effects are always going to be one step behind usage. We argue that a dramatic overhaul in approach is required, as our current system of drug enforcement is clearly not working. We will discuss some of the options for change that require debate, and which could help us to protect the reputation of competitive sport.

Benefits of Sport to the Individual and to Society

There are several ways in which sport can be perceived as providing public health benefit. In brief, three key pillars are:

Athletes have excellent health outcomes

These outcomes significantly exceed the longevity and disability-free years expected for a non-athletic community member [4,5]. It is not entirely clear to what extent these health advantages are owed to sports participation itself, or the host of favourable lifestyle attributes that tend to be associated with an athletic lifestyle. However, this detail seems somewhat unimportant given that the whole “package”, including socio-economic advantage, good nutrition and avoidance of harmful agents like nicotine and alcohol excess, results in a net health benefit.

Athletes can influence others for the better

The advertising world has long been aware of the fact the behavioural change can be affected by “key opinion leaders”. Athletes have the potential to leverage their profile to inspire others to emulate their behaviour. In a setting in which our greatest public health challenges are related to inactivity and its cardiometabolic consequences, it would seem that there is an opportunity to promote health through sporting role models.

Sport is a positive industry

Sporting activities attract significant sponsorship funding through private companies and governments. For example, it is estimated that first world governments invest approximately \$7 million of public funding for each Olympic gold medal won [6]. If directed wisely, this money could go to athletes and also to the sporting infrastructure, to broaden the number of sports participants such that the whole community benefits once again.

Performance Enhancing Drugs: Attacking Every Pillar of Sport's Benefits

Using the schema of benefits outlined above, we can start to illustrate how destructive PEDs can be to the greater benefit that should be afforded by the pursuit of athletic excellence:

Putting athletes' health at risk

There is a long list of potential adverse cardiovascular effects associated with traditional PED use that have been comprehensively discussed in a recent review by La Gerche and Brosnan [1]. Anabolic steroids and oxygen (O₂) carrying boosting substances such as synthetic erythropoietin (EPO) have been associated with an increase in cardiac events, including sudden cardiac death. However, of possibly far greater potential risk is athletes' willingness to experiment with experimental drugs that have not been proven safe for human use.

The massive performance benefits associated with EPO abuse transformed endurance sports such as cycling in the late 1980s and 1990s until authorities developed detection methods that reduced its widespread use. It would seem that, from this experience, some people learnt that other drugs, “the next EPO”, may become available and there is a period of advantage to be gained prior to the authorities developing a means of detection.

This is a very dangerous game of brinkmanship, using agents of unproven efficacy and unproven safety being tested in a poorly supervised environment. For example, in 2001 a cyclist's room was one of many raided during the Giro D'Italia cycle tour, and multiple experimental agents including a synthetic haemoglobin-based blood substitute (HemAssist) and an experimental drug named RSR-13 was found [7]. RSR-13 (right shifting reagent 13, or Efavoximal) is a synthetic modifier of haemoglobin (Hb), with *in vivo* studies demonstrating a shift in the Hb/O₂ dissociation curve to the right, thereby increasing the dissociation of O₂ in the peripheral muscles. Then, during the 2003 Tour De France, a cyclist who collapsed and was taken to hospital was found to have been infused with a synthetic blood substitute that had been approved for veterinary use only [7]. Thus, it can be argued that the greatest risk to athletes' health is not the agents that we know that they are taking but rather the long list of drugs that we do not know about—off-label use, drugs that are too early in the production pipeline to have been tested in humans, or designer peptides being produced in laboratories with perhaps no intent to ever submit to the rigorous safety standards required to bring a drug to market. To us, it would seem to challenge the very core of sporting ethos to be submitting those who should represent the pinnacle of health to experimentation with agents that are not deemed safe to test on the sick.

Another issue with PEDs that is seldom considered are their potential indirect effects. It is possible that PEDs enhance cardiovascular adaptation beyond the point

Download English Version:

<https://daneshyari.com/en/article/8659660>

Download Persian Version:

<https://daneshyari.com/article/8659660>

[Daneshyari.com](https://daneshyari.com)