



Coherence of drug policy in sports: Illicit inclusions and illegal inconsistencies



Kathryn Henne^{a,*}, Benjamin Koh^b, Vanessa McDermott^c

^a Regulatory Institutions Network, School of Regulation, Justice and Diplomacy, ANU College of Asia and the Pacific, Coombs Extension (Building 8), The Australian National University, Canberra, ACT 0200, Australia

^b Independent Medical Practitioner and Researcher, Management Discipline Group, University of Technology (UTS), Australia

^c Government Discipline, Faculty of Business & Government, University of Canberra, ACT 2601, Australia

ARTICLE INFO

Article history:

Received 21 January 2013

Received in revised form 28 May 2013

Accepted 28 May 2013

Keywords:

World Anti-Doping Agency

Prohibited List

World Anti-Doping Code

Illicit drugs

Doping

Health

ABSTRACT

Anti-doping regulation has become a critical element of contemporary sport, conveying what substances and methods athletes may use. Although this form of regulation is often synonymous with banning performance enhancing substances and methods, the World Anti-Doping Agency (WADA), the global authority tasked with formulating policies on drug use in sports also regulates illicit drugs, including those considered non-performance enhancing. This paper examines how the inclusion of illicit drugs on the WADA Prohibited List falls under the agency's mandate by focusing on how the agency justifies the prohibition of substances more generally. In so doing, it highlights inconsistencies in the criteria used to evaluate whether or not substances should be prohibited. After critically considering WADA's criteria, this paper posits a way to reconcile the inconsistencies. It suggests that aligning the criteria with existing claims that doping is a broader health concern provides a way for WADA to clarify ambiguities around why substances are on the WADA Prohibited List and better communicate why it regulates illicit non-performance enhancing drugs.

© 2013 Elsevier Ltd. All rights reserved.

Generally speaking, rules in sport are to ensure the integrity of competition and guide the terms of engagement between athletes and those managing sports. In so doing, they communicate values to the broader sporting community, including stakeholders and spectators. Anti-doping regulation, in particular, resonates with the goal of preserving a level playing field in sport, because it legislates what substances and methods athletes are allowed to use and communicates the importance of fair play in sport – that is, it posits performance-enhancing drug use as unethical, condemning and punishing athletes when they are caught. Anti-doping regulation, however, targets more than just substances and methods with performance-enhancing qualities. The World Anti-Doping Agency's (WADA) Prohibited List also includes drugs that likely have no performance enhancing effects. Through an examination of WADA's inclusion of illicit non-performance enhancing drugs, this paper addresses the inconsistencies of the criteria applied to evaluate whether or not substances and methods are banned in sport. In particular, this analysis focuses on the importance of ensuring that the prohibition of substances meets WADA's stated objectives and mission. In so doing, we contend that while such substances should be regulated on the basis of their health-related risks, it is important

that WADA clarify its reasoning for doing so and expressly articulate that its regulatory concerns surpass performance enhancing substances and methods.

Under the World Anti-Doping Code (WADC), the inclusion of drugs on the WADA Prohibited List is guided by the broad principles of safeguarding the integrity of sport as well as protecting the health of athletes who participate in sports governed by WADA. These principles are often closely linked to the societal concerns regarding the health-related and social consequences associated with drug use. For example, WADA President John Fahey has described doping as a problem not limited to elite-level athletes, characterising it as also a serious health threat to the greater public. This, WADA has argued, is particularly so for impressionable youths influenced by the conduct of their sporting idols (WADA, 2007). Thus, WADA has acknowledged that the WADC is a tool to “address a growing problem [drug use in sport] that threatens public health” (WADA, 2012).

On this basis, we argue that the prohibition of illicit drugs – even those that are not performance enhancing in nature – is consistent with WADA's mission, but acknowledge that WADA's reasoning for banning substances has not always been convincing or consistent with the WADC. Redressing the reasoning for including substances on the Prohibited List would help to alleviate some of these inconsistencies. This has the potential to enhance the anti-doping movement in ways that the removal of illicit drugs from

* Corresponding author. Tel.: +61 2 6125 2874.

E-mail address: kathryn.henne@anu.edu.au (K. Henne).

the WADA Prohibited List cannot. Here, we examine these inconsistencies by taking a critical look at the criteria used to determine whether or not a substance belongs on the WADA Prohibited List and then discuss possible remedies. A successful drug management or control policy in sport should, at the very least, be cohesive and congruent with elements that “fit together in a mutually supporting whole” and sanctions based on just, consistent, coherent and comprehensive ideas (Battin et al., 2008, p. 23; Buti & Fridman, 1994). Overall, our objective is to use the discussion of what illicit substances fit within WADA’s mission – especially regarding substances perceived as not evidently performance enhancing – to illuminate the need for WADA to clarify the reasons why any substance should be on the Prohibited List.

Because we focus on regulatory adjustments that would reflect how the inclusion of illicit non-performance enhancing drugs is consistent with WADA’s mandate, this paper does not address other possible inconsistencies in the WADC or engage in broader debates about athletes’ civil liberties under its rules. While issues related to the practical application and enforcement of the WADC – for example, the Strict Liability Standard applied in determining anti-doping rule violations – are important more generally, they are peripheral to this particular discussion.¹ It is also not easy to characterise what substances actually fall under the category of “illicit non-performance enhancing drugs.” Neither the WADC nor the Prohibited List describes prohibited substances as illegal or illicit or explain why substances fall into the prohibited category. To delineate substances for readers, we follow the United Nations drug control convention by adopting the perspective that only the use of a drug is licit or illicit. We therefore use *illicit drugs* to describe drugs that are under international control (and may or may not have licit medical purposes) but which are produced, trafficked and/or consumed unlawfully (United Nations Office on Drugs and Crime, 2013). By way of differentiation, we use *illegal drugs* to describe substances currently on the WADA Prohibited List and trafficked or consumed illegally by athletes in the context of sports. Illicit and illegal drugs therefore include both performance enhancing drugs (PED) and non-performance enhancing drugs (NPED).

1. Historical background and contemporary international anti-doping regulation

Research suggests that “doping” – that is, a punishable offence in sport as detected by and contingent on scientific testing – is a relatively contemporary concept (Fraser, 2004). Anti-doping policies first emerged in horseracing at the turn of the twentieth century, motivated by concerns that the practice was unfair to gamblers. Bans on substance use in human sport did not begin until several decades later (Houlihan, 1999, 2002a; Stokvis, 2003; Verroken, 2000; Yesalis & Cowart, 1998) assisted over time by the availability of improved diagnostic tests (Fraser, 2004). The regulation of drugs in sport has a varied and complex history, which others have discussed in more depth than we can here (e.g., Beamish & Ritchie, 2006; Dimeo, 2007; Hunt, 2011). What we do know of that history highlights that the reasons for regulating drugs in sport have been varied, but that the use of a variety of substances to enhance athletic performance is not new.²

In the 1950s and 1960s, athlete deaths attributed to drug use prompted urgent calls for the regulation of substance use in sport,³ precipitating moves by (mostly European) governments, the International Olympic Committee (IOC) and individual sporting bodies to develop anti-doping rules. In 1963, for instance, the Council of Europe (CoE) adopted a resolution against doping, including a proposed list of banned substances and a definition of doping (Dimeo, 2007; Houlihan, 1999). The CoE definition of doping included concerns that doping eroded equality in competition (Houlihan, 2002a). Building on this view, IOC regulators linked health concerns around doping to the value of sport, including ideals of fair play and a level competitive playing field,⁴ contending that doping sports heroes were poor role models (Dimeo, 2007; Stokvis, 2003). Contemporary anti-doping rules thus have roots in the shared concerns for athletes’ wellbeing and their influence on the public.

Throughout the latter part of the twentieth century, anti-doping policies were disjointed and inconsistent, because various governments and sporting authorities had enacted on anti-doping measures independently (Houlihan, 2002b). There were different definitions, policies and sanctions between organisations, even despite efforts by the IOC to develop and maintain uniform rules and protocols (Houlihan, 1999; Hunt, 2011; Vest Christiansen, 2009). The 1998 Festina scandal during the Tour de France⁵ highlighted instances of organised and systematic doping, emphasising the need to set unified anti-doping standards and to coordinate the efforts of sports organisations and public authorities worldwide (Hanstad, Smith, & Waddington, 2008). It also brought attention to a bigger issue: that sporting authorities seemingly turned a blind eye to doping, mounting pressure for governments to take the lead on the regulation of drug use in sport (Henne, 2010; Pound, 2006). In 1999, stakeholders met at the first World Conference on Doping in Sport and agreed on the creation of a separate, independent administrative agency to spearhead efforts in this field, WADA (Hanstad et al., 2008).

WADA’s establishment was significant, as it signalled an official recognition that drug use in sport is a unique phenomenon that required its own regulatory framework. One of WADA’s main objectives has been to standardise anti-doping policies across sports, organisations and public authorities worldwide. This has included the adoption of universally applicable sanctions, a comprehensive list of prohibited substances that is binding for all stakeholders, and improved administrative management of doping control (Houlihan, 2004; Kayser & Smith, 2008). WADA’s formation has thus led to greater regulatory consistency across sporting federations and countries.⁶ Although one of the key factors

nitro glycerine, digitalis, opium and heroin (Cashmore, 1990; Donohoe & Johnson, 1986; Kennedy, 2000; Mignon, 2003).

³ The deaths of cyclists, soccer players and track athletes have been linked to amphetamines or other illicit substances (Dimeo, 2007; Fife, 1999; Hoberman, 2005; Mignon, 2003; Woodland, 1980; Yesalis & Cowart, 1998). As Møller (2010) argues, the circumstances and causes for these deaths are more complex and may not be as a result of doping, especially given the fact that a list of prohibited substances did not exist when notable athletes, namely Knud Jensen, died.

⁴ Gleaves (2011) notes that the ideals typically associated with amateurism have played a significant role in the development of contemporary attitudes to doping. Over time, doping shifted from a tacitly tolerated practice to a serious threat to the integrity of sport. Others have noted the ways in which appeals to ideals of amateurism are inconsistent with the realities of contemporary sport (Goff, Shughart, & Tollison, 1988; Pope, 1996; Strenk, 1988).

⁵ French customs officers intercepted and arrested the Festina cycling team masseur with large amounts of EPO and human growth hormone (hGH). The arrest led to police investigations of a number of Tour de France teams as well as associated medical personnel (Waddington, 2000).

⁶ WADA, a Swiss private law foundation, alone does not have the authority to compel governments to align domestic policy with the WADC. The UNESCO International Convention against Doping in Sport, which came into force in 2007, does have that legally binding power (Henne, 2010).

¹ Others have discussed these issues in depth as well (e.g., Kayser, Mauron, & Miah, 2007; Kayser & Smith, 2008; Magdalinski & Warren, 2004; Schneider, 2004).

² For example, it is believed that a range of groups, including early Olympians, Roman gladiators, the ancient Chinese and Greeks as well as indigenous South Americans used alternative medicines and stimulants to overcome fatigue and injury and increase endurance (Woodland, 1980; Yesalis & Bahrke, 2005). Historical evidence shows that many athletes in the nineteenth century used a range of substances (ether soaked sugar cubes, strychnine tablets, brandy and cocaine, caffeine, alcohol,

driving standardised anti-doping rules was to protect athletes from the dangerous risks of drug use, the rules have since come to focus just as keenly on guarding the integrity and idealised image of elite competitive sports as they are about protecting athletes' health (Aschwanden, 2012).

Even though certain substances used to enhance performance in sport have detrimental health effects, some argue that health should not be a cornerstone of anti-doping regulation. For example, prior to the London 2012 Olympics, the United Kingdom's Sports Minister Richard Caborn argued that of the principles underpinning the WADC he would give "far more weight" to whether it is performance enhancing (London Evening Standard, 2006). In contrast, WADA representatives contend that the regulation of drug use in sport, regardless of whether or not it enhances athletic performance, is an important part of safeguarding impressionable youth (WADA, 2007). According to WADA Director General David Howman, the practices of elite athletes have "a trickle-down effect into recreational sports and into the high schools" (O'Connor, 2012). Further, former WADA President Richard Pound has elaborated that the potential negative influence of role models far surpasses sport, especially given the "wave of misconduct at the end of the twentieth century and the beginning of the new millennium" across multiple spheres of social life, including corporate practices and popular culture (Pound, 2006, p. 29). In other words, they associate unregulated drug use in sport with undermining the positive ethics associated with sport.

Accordingly, WADA's criteria reflect these stated concerns; however, they are not presented in a way that ensures consistent regulatory enforcement or expresses a clear message regarding its regulation of NPED. If anything, current criteria, which we discuss further in the next section, actually complicate and cloud its message. To alleviate these inconsistencies, we suggest reconsidering the use of one criterion, the Spirit of Sport, because it is ambiguous and difficult to consistently apply when evaluating substances. WADA's mission statement captures its commitment to fair play, but using Spirit of Sport as a criterion complicates decision-making instead of ensuring consistency. To explain how and why this is a concern, we first address and contextualise the challenges of classifying illicit and illegal drugs within and beyond sport and then discuss the practical and technical reasons that support the inclusion of illicit NPED in the WADA Prohibited List as well as the challenges that accompany their inclusion.

2. Towards more consistent drug classifications in sport

Prior to the formation of WADA regulation of drug use was disparate. Even despite the creation of WADA and its aims of harmonising international anti-doping efforts, there remain challenges in classifying and justifying banning substances. These concerns are not unique to sport. More generally, the classification of substances as illegal or illicit is complex and often influenced by particular national, political and social discourses. Drug prohibition is generally justified on the grounds that the use of particular substances is addictive or contributes to serious health problems, violent crime and social disorder (Boland, 2008). The United Kingdom drug classification, for instance, reflects these concerns; drugs are grouped into three classes (A, B and C) based on their level of harm, or potential harm, for individuals and society (Scottish Crime and Drug Enforcement Agency, 2005). In the European Union, some Member States distinguish between narcotic and psychotropic substances while others combine the two based on the level of medicinal use or potential harm. In Australia, where harm minimisation is an important part of drug control policy (including for tobacco and alcohol), the expressed reasons for drug regulation have been articulated from a public health (the dangers of

substance abuse to society) perspective (Ministerial Council on Drug Strategy, 2010, 2011). These differences influence prosecution procedures and sanctions for improper drug use (European Monitoring Centre for Drugs and Drug Addiction, 2012). In other words, substance control measures are often contested, especially in an international context (Gossop, 2006; Seddon, 2010).

In an attempt to overcome these issues, the WADC, which operates in conjunction with the Prohibited List, is the mechanism used to resolve ambiguities, dictating the guidelines for what is prohibited in sports. Under the current WADC, substances or methods can be included in the Prohibited List if they meet two of the following three criteria: (1) they are performance enhancing, (2) they are dangerous to the health of the athlete, or (3) they violate "the spirit of sport" (WADA, 2009). WADA adds, "[T]he potentially unhealthy abuse of certain substances without therapeutic justification based on the mistaken belief they enhance performance is certainly contrary to the spirit of sport *regardless of whether the expectation of performance enhancement is realistic*" (WADA, 2009, p. 33, our emphasis). In other words, the concept of performance enhancement is not simply based on scientific evidence or objective rationality; it also relies on the subjective expectations of users. The inclusion of any drug, regardless of whether or not it is performance enhancing or not, on the Prohibited List is therefore, at least in part, relative.

WADA's approach to evaluating objective scientific evidence – that is, in terms of determining the performance effect of various substances – presents additional challenges. Evidence-based medical research uses a scientific level of evidence (Phillips et al., 2011) grounded on statistical probability. In contrast, and because the WADC accounts for subjective expectations, evidence is based on a lower possibility of effect (the tail ends of the statistical distribution curve), not the usually required 95% likelihood. Further, the scientific level of evidence used to justify Prohibited List inclusions is not consistent. In some cases, where the evidence is contradictory, a higher level of evidence (e.g., randomised controlled trials) is chosen over a lower level of evidence (e.g., expert opinion without critical appraisal), and at other times the reverse is true. In sum, WADA's criteria actually contribute to the inconsistent evaluation of evidence.

To illustrate this point, consider the example of recombinant erythropoietin (EPO). Without significant scientific evidence that EPO enhances performances, it is currently prohibited under the WADC, because there is a widely held belief that it does (Heuberger et al., 2012). In contrast, caffeine has been removed from the Prohibited List on the basis of scientific evidence that it is not performance enhancing, even though many athletes believe – and some research shows – caffeine to be ergogenic (Keisler & Armsey, 2006; Salleh, 2008; Sökmen et al., 2008). These examples attest that ideas around how, or even whether, substances actually improve performance are complex and often subjective, which makes consistent application of the WADC challenging. In light of these difficulties, banning substances *perceived* as ergogenic (the level of scientific evidence notwithstanding) has served as a way of achieving consistency in the WADC.

Beyond considerations of performance enhancement, the matter of including a drug on the Prohibited List can be contingent on medical or scientific evidence of a risk to athletes' health. Again, there are inconsistencies in WADA's application of scientific evidence. For example, one of the reasons for banning EPO injections is the *potential* health risks associated with high EPO levels in the body (WADA, 2011). The practice of boosting EPO through high altitude training also carries health risks, but many athletes support its use (Flaherty, 2010; Gallagher et al., 2012; Tuttle et al., 2012). Further illustrating the complexity of the health criterion and the contested nature of scientific and medical knowledge, some research provides evidence that suggests EPO use in healthy humans, in low doses

under experimental conditions, appears to be safe (Parisotto et al., 2001; Russell, Gore, Ashenden, Parisotto, & Hahn, 2002). In other words, the progressive nature of research into substances and their doping effects means that, to be effective, the WADC and the Prohibited List must be adaptable and flexible. This is important because users' subjective beliefs and their behaviour are also influenced by the evolving, at times conflicted, nature of scientific research into performance enhancing substances. Conflicts regarding both performance enhancement and health effects reiterate that the pursuit of regulatory consistency requires reconciling competing ideas (objective scientific evidence versus subjective beliefs or athletes' expectations) around these concerns and health. As is, these conflicts go unaddressed and embedded in the definition of doping.

In addition to performance enhancement and health, the inclusion of any drug on the Prohibited List is also dependent on the arguably nebulous concept of the "Spirit of Sport." According to the WADC, the "Spirit of Sport" is "the celebration of the human spirit, body and mind," and includes "the following values: Ethics, fair play and honesty, health, excellence in performance, character and education, fun and joy, teamwork, dedication and commitment, respect for rules and laws, respect for self and other participants, courage, community and solidarity" (WADA, 2009, p. 14). Ideals underpinning this concept can be traced to early (and arguably misplaced) appeals to Olympic ideals and amateurism (Beamish & Ritchie, 2006; Gleaves, 2011). The Spirit of Sport, like the reasons for societal prohibitions of illicit drugs, may be tacitly understood and conceptually broad, but it is also poorly defined. In a practical sense, it is difficult to operationalise it in terms of policy implementation, which inhibits efforts to ensure consistency and clarity in concrete cases of anti-doping rule violations (Foddy & Savulescu, 2007; Loland & Hoppeler, 2012, p. 347; Møller, 2010). Because of this, decisions regarding drug inclusion on the Prohibited List based on the Spirit of Sport criterion can be perceived as inconsistent.

Advocates of excluding illicit and presumably NPED from the Prohibited List often highlight the inclusion of such substances as a regulatory shortcoming. While these substances may harm athletes' health, they may not necessarily violate the Spirit of Sport, because the criteria itself is too vague to make a determination. Further, some critics have even questioned whether WADA or other sports bodies have the moral authority to regulate athletes' personal behaviour in relation to recreational drug use (e.g., Kayser & Smith, 2008). In response to these criticisms, we consider how prohibiting the use of some illicit NPED is consistent with the core purpose of the WADC. That is, including illicit drugs can "protect the Athletes' fundamental right to participate in doping-free sport" and "promote health, fairness and equality for Athletes worldwide" (WADA, 2009, p. 11). Recognising the flaws in the current anti-doping paradigm, we discuss the inclusion of this class of substances on the Prohibited List in relation to performance enhancement and health, and then, separately address them in relation to the Spirit of Sport. Rather than try to discuss the multitude of substances, we discuss illicit drugs in relation to the criteria, considering them under the following categories: opiates, other central nervous system (CNS) depressants, CNS stimulants and cannabis.

3. Performance enhancing and health

The fact that WADA's notion of performance enhancement includes scientific evidence of performance enhancement and the subjective expectations of users makes its evaluation difficult. To further complicate this, scientific knowledge about various substances and their performance enhancing qualities is evolving and sometimes contested. Knowledge is also often dependent upon how, or what, level of evidence is used. In terms of claims around

health, there is little argument on the importance of protecting athletes' health by regulating against harmful substances or practices. Even without using drugs, elite sport is harmful to an athlete's health: some sports and training regimes present high levels of risk and injury but are not prohibited (Loland & Hoppeler, 2012). As Smith and Stewart (2008, p. 125) ask, "Given that athletes are free to engage in sports with substantial risks, why are they not also free to utilise performance enhancements that are, in some cases, less risky than the sports in which they engage?" This observation points to an inherent challenge of elite sport: discerning the "proper calculation and taking of risk" to avoid injury (Loland & Hoppeler, 2012, p. 348). Illegal drug use has potential health implications, whether it be performance enhancing or not, and poses additional risks for athletes. To elaborate on the criterion of performance enhancement and to illustrate what those health dangers are, we consider various categories of illicit drugs here.

3.1. Opiates

Opiates, a group of drugs that depress the central nervous system and are used therapeutically as analgesics (pain killers), are prohibited under WADC only in-competition. Opiates include drugs such as opium, morphine, codeine, heroin, methadone, pethidine and fentanyl. As illicit drugs, opiates have been abused for their euphoric effects, to reduce anxiety (anxiolytic) and to mediate physical or emotional pain. Medical and scientific evidence, pharmacological effect and clinical experience attest that opiates can enhance sport performance through their analgesic effects (Koh, Freeman, & Zaslowski, 2012). Physical sports, for instance, require athletes to endure physical stress by way of muscle resistance and/or cardiovascular endurance. Such stresses are potentially damaging, and the human body has an in-built protective mechanism through the physiological response of pain. The presence of pain during physical exertion can thus prevent athletes from reaching sporting goals. Any substance that inhibits this physiological pain response, opiates among them, can therefore result in performance enhancement in sport (e.g., Hanton, Mellalieu, & Hall, 2002; Jones & Hanton, 2001; Robazza & Bortoli, 2007; Wilson, Smith, Chattington, Ford, & Marple-Horvat, 2006). Consequently, opiates technically satisfy the WADC performance enhancement criterion. In terms of risks to athlete health, morbidity and mortality risks from opioids are due to respiratory function side effects, acute lung injury, status epilepticus (seizures) and cardiotoxicity. Opioid addiction also causes drug withdrawal effects during periods of abstinence. Banning opioids in sports is therefore consistent with the WADC under both its performance enhancement and health criteria.⁷

3.2. Other CNS depressants

This category of drugs includes various non-opiate substances such as barbiturates and benzodiazepines.⁸ These drugs act as sedatives/hypnotics and have been used therapeutically as anaesthetics in the treatment of tension/anxiety, tremors and insomnia. As illicit

⁷ It should be noted that athletes using opioids out-of-competition are not violating an anti-doping rules since the use of opioids is illegal only in-competition, which points to another possible inconsistency in relation to protecting athletes' health.

⁸ Benzodiazepines and barbiturates are not currently banned under WADA's Prohibited List, although Australia's Olympic Council has banned the benzodiazepines Rohypnol (Flunitrazepam; Hoffman-LaRoche, Inc.) and Mogadon (Nitrazepam; Hoffman-LaRoche, Inc.) and the benzodiazepine-like sedative of Stilnox (Zolpidem; Sanofi-Aventis) on the basis of its detrimental health effects. Full description of health effects cited in-text is provided elsewhere (DuPont, Greene, & Lydiard, 2010; Lafferty, 2012).

drugs, these substances have been used mainly for their sedative and pleasurable intoxication effects. As an ergogenic aid, these drugs have been used in reducing muscle tremors in some sports (Goral, 2008). Currently, sedatives have mainly been reported in the context of “negative doping” whereby athletes are “spiked” with the drugs by their sporting opponents with the intent to reduce their performance level (Lippi, Sanchis-Gomar, & Banfi, 2012). Barbiturates are powerful CNS depressants that can cause drowsiness. Barbiturates can also cause internal injuries such as respiratory complications of bronchitis and emphysema. At high doses, barbiturates can cause unconsciousness or death through respiratory failure. Benzodiazepines can have adverse consequences on cognition and affect mental functions of memory and concentration. If used in the context of sport, CNS effect of barbiturates and benzodiazepines put the athlete at risk of external injuries and accidents. Drug addiction is also possible, with withdrawal effects including anxiety, insomnia, restlessness, and death (for barbiturate). Non-therapeutic use in sports is therefore harmful to an athlete’s health, providing evidence to support their inclusion on the Prohibited List on the basis of performance enhancement and risks to health.

3.3. CNS stimulants

CNS stimulants increase the neural activity of the body, in turn negating the effects of fatigue and improving alertness and muscle activity. These drugs include some substances that are legal (e.g., caffeine) and some substances that are illegal (e.g., cocaine) in sport. These drugs are illicit in some countries, but not all. For example, jurisdictions vary in the regulation of over-the-counter availability of pseudoephedrine (found in some decongestants and laxatives) without a prescription (Pomeranz, Taylor, & Austin, 2013). CNS stimulants may be from plants substances such as coca (*Erythroxylum coca*), cocaine, khat and betel nuts, as well as synthetic substances such as amphetamine and amphetamine-type compounds. Cocaine is perhaps the best known illicit CNS stimulant. The snorting of cocaine can lead to the erosion and destruction of the nasal septal tissue and the atrophy of the nasal mucosa. When cocaine is smoked, it can result in chronic bronchitis. For drug dependent users, withdrawal symptoms produce a state of acute unease or discomfort, depression, fatigue, insomnia and an intense craving for the drug.

As therapeutic substances, drugs such as cocaine have been used as a local anaesthetic and vasoconstrictor. Amphetamine and amphetamine-type compounds have also been prescribed for weight loss, in the treatment of narcolepsy and for managing children with attention deficit disorder. As an illicit drug, CNS stimulants have been abused for their mood elevating effects and to overcome fatigue. CNS stimulants therefore have the potential to enhance sporting performance by preventing fatigue. The ability of increasing aggression is also a possible performance enhancing attribute relevant in some sports (Avois et al., 2006). Overall, though, medical and scientific evidence attests to the significant dangers these substances present to athletes’ health.⁹ Thus, irrespective of evidence that they can have a performance enhancing effect, these substances’ clear risk to athletes should warrant their inclusion on the WADC Prohibited List.

3.4. Cannabis

Cannabis is described separately here because of its prevalence in sports. According to WADA statistics, of the substances detected

by WADA’s laboratories, cannabinoids, which are the metabolites of marijuana, are consistently among the top three abused drugs (behind anabolic agents and stimulants) (Huestis, Mazzoni, & Rabin, 2011). Cannabis acts as a sedative and has relaxing and mood-enhancing effects in low doses. As a potential doping substance, cannabis is similar to opiates in enhancing sport performance through its analgesic and anxiolytic effects (Huestis et al., 2011). There are also concerns cannabis may impair motor coordination, shorten attention span, modify cognitive perceptions or cause anxiety, panic or paranoia. Smoking cannabis is also associated with respiratory cancers, bronchial and cardiovascular pathologies (Aydin, 2011; Teitelbaum, DuPont, & Bailey, 2012). Further, the American Psychiatric Association (2000) recognises eight cannabis-associated disorders.¹⁰ The medical and scientific attributes of cannabis thus support its inclusion on the Prohibited List. While cannabis is presently prohibited only in competition, an athlete’s out-of-competition use (or of other substances that may remain in an athlete’s system¹¹) can lead to an anti-doping rule violation in-competition. WADA’s Strict Liability Standards gives no room for reform around the implementation of this protocol as long as the substance is on the Prohibited List.

The evidence presented here in relation to performance enhancement and health relies primarily on medical and scientific evidence of potential physical/physiological effects. Both criteria suggest that the inclusion of these illicit drugs on the WADA Prohibited List can be justified. In the next section, we consider the Spirit of Sport. We contend that this criterion complicates rather than clarifies why substances are on the Prohibited List. Instead, as WADA claims doping is a public health issue, it would be better served to focus more closely on this commitment, because it has the potential to ensure that all aspects of anti-doping regulation are consistent.

4. Spirit of sport

Although vague, the Spirit of Sport can be broadly understood in much the same way that attitudes supporting the prohibition of illicit drugs outside sport contexts are. In utilising it as a criterion for prohibiting a substance, the lack of clarity around its definition makes its application particularly problematic, because it is largely left to subjective interpretation. This conundrum has far-reaching effects on decisions regarding whether or not to include illicit drugs from the WADA Prohibited List.

To illustrate how this criterion is problematic, consider its application to hypoxic chambers, which are obviously not drugs but still offer a precedent. As many well-respected athletes, including marathon world record holder Paula Radcliffe who WADA has showcased as an exemplar of the Spirit of Sport, use hypoxic chambers, WADA referred the issue of their use to the Ethical Issues Review Panel (Malloy, Kell, & Kellin, 2007). The Panel clarified that the WADC’s definition of the Spirit of Sport provided “only general guidance” and “examples of elements that are constitutive to, or promotive of, the concept” (cited in Lambelet Coleman, Coleman, Haagen, & Bradley, 2006, p. 2). In relation to performance enhancement, “the crucial test,” according to the Panel, is “whether it

¹⁰ Evidence-based medical reviews on the ergogenic effects of cannabis in sport (Huestis et al., 2011) and health effects in non-sport contexts (Aydin, 2011; Teitelbaum et al., 2012) provide further detail.

¹¹ The detection of drugs in an athlete is dependent on various factors: the dose/sensitivity of detection method, the preparation and route of administration of drug, the duration of use (acute or chronic) of drug, the molecule or metabolised compound being tested, the pH and concentration of biological fluid (urine, oral fluid, blood) sampled, and the inter-individual variation in metabolic and renal clearance of the drug. The metabolite of some illicit drugs (e.g., Cannabis, PCP, Barbiturate) can be detected in body fluids several weeks after last use.

⁹ Fuller discussion on the various health effects of illicit CNS stimulants are available beyond the summary provided here (e.g., Bartu, Freeman, Gawthorne, Codde, & Holman, 2003; Climko, Roehrich, Sweeney, & Al-Razi, 1986; Hall & Henry, 2006).

supports or detracts from sport as the extension of natural talents and their virtuous perfection” (cited in [Lambelet Coleman et al., 2006](#), p. 2). Accordingly, hypoxic chambers constitute a “passive” – as opposed to active – use of technology, thus failing the crucial test and consequently violating the spirit of sport ([Malloy et al., 2007](#)). In essence, the Panel understood this criterion as requiring an athlete to exert effort in using the technology, not “passively” receive its benefits.

In seeking to clarify how to evaluate the Spirit of Sport, the Panel evokes the concept of virtue, but does not explain how to measure the pursuit of “virtuous perfection.” It therefore still leaves classifications of substances based on the Spirit of Sport open to subjective notions. As [Lambelet Coleman et al. \(2006, p. 3\)](#) point out:

If “the spirit of sport” is going to be a standard for banning a substance or method, it must be defined in a way that permits fair and consistent application. It is neither fair nor consistent to define the term in a way that authorizes the arbitrary application of an ambiguous term that provides no guidance at all in establishing the line between virtue and its opposite.

Arguments made for or against the inclusion of illicit NPED on the WADA Prohibited list can thus neither be confirmed nor denied on a consistent basis using this criterion, which raises important practical issues regarding WADA’s definition of doping ([Beamish & Ritchie, 2006](#); [Gardiner, 2012](#)). Thus, rather than advocate for the use of Spirit of Sport, we outline how strengthening the commitment to the health criterion may be more fruitful. In particular, it aids in aligning WADA’s mission with public health agendas.

4.1. Strengthening the health criterion and its public implications

As stakeholders from governments and sports agreed to WADA’s establishment, the agency has a mandate to regulate substances in sport on both normative and health grounds ([Gardiner, 2012](#); [Smith & Stewart, 2008](#)). Moving away from the current ambiguities of the Spirit of Sport in favour of concentrating on the performance enhancement and health criteria offers one way for WADA to more clearly explain which substances it regulates. It is also arguably necessary to reinforce why the agency’s mandate includes regulating the use of illicit NPED. In so doing, this concentrated focus reflects how anti-doping administrators already frame their mission: as supporting the integrity of competition and counteracting doping as a public health concern. For example, at the 2012 symposium on Doping as a Public Health Issue, WADA Director General David Howman characterised doping as a “problem that permeates other areas of our society,” one that is linked to broader social issues around public health ([Howman, 2012](#)). IOC President Jacques Rogge shares this stance: during a speech at the 2007 World Conference on Doping in Sport, he explicitly aligned WADA’s mission with public health campaigns.

In terms of achieving regulatory consistency, explicitly articulating this stance not only moves towards clearer criteria, but also towards a more “mutually supporting whole” ([Battin et al., 2008](#), p. 23). Centralising the public dimension of health as a priority is pursuant to WADA’s objectives of harmonisation directly aligns with the missions of its partners, which include the World Health Organisation (WHO), INTERPOL and the United Nations Educational, Scientific and Cultural Organisation (UNESCO). Representatives from these organisations attended the aforementioned symposium on Doping as a Public Health Issue, and the WHO has classified doping as a public health issue ([O’Connor, 2012](#)). UNESCO has also announced a unified list of prohibited substances in sport. The list, which came into effect in January 2013, mirrors WADA’s Prohibited List ([Whittle, 2013](#)). Rendering these shared concerns around public health explicitly reinforces how bans on illicit drugs

in sport are consistent with WADA’s commitments to its regulatory partners.

More specifically, a focus on individual athletes’ and public health requires considering whether or not current rules actually promote health in relation to sport. [Beamish and Ritchie \(2006\)](#) make a compelling observation that advances in anti-doping detection mechanisms and surveillance strategies have incentivised innovations to avoid getting caught, which have made some PED more dangerous for athletes. Also, sanctioning athletes from sport for using illicit NPED without providing substance abuse support can actually put them at further risk of abuse, especially if sport provides them a stabilising or supportive environment for users. Punishment reinforces the stigmatisation of drug use without encouraging its treatment, a stance that counters other public health agendas in the area of illicit drug use ([Stevens, 2011](#)). Rather than addressing and counteracting the harmful effects of drug use, WADA’s approach can actually exacerbate risks endured by athletes. In contrast, drawing upon public health approaches to drug abuse requires first, as [Stevens \(2011, p. 15\)](#) explains, “disentangling the harmful effects of drug use from the deleterious consequences of drug control.” Only from there can regulators begin to evaluate how to effectively treat the varying kinds of drug use in sport.

If regulators take seriously the differential reasons for athletes’ motivation to use PED versus illicit NPED, it is clear that distinct regulatory responses are necessary. Some scholars have already proposed a harm reduction approach to the issue of drug use in sport, which has proven both feasible and cost effective in counteracting illicit drug use in other spheres ([Kayser et al., 2007](#); [Kayser & Smith, 2008](#)). Proposed changes to the WADC offer spaces to address these issues, but, thus far, do so in a limited way. For instance, one proposed change would “allow the Athlete the opportunity to participate in a programme of rehabilitation, at the Athlete’s expense, in lieu of an appropriate part of the period of Ineligibility which would otherwise be applicable” ([WADA, 2013](#)). While this recommendation partially recognises that rehabilitation may be necessary for some athletes’ drug use, this change puts the expense onto the athlete (who may not be able to afford it) and reiterates that the athlete is responsible for his or her drug use, negating the broader conditions that contribute to abuse, some of which may be sport specific in nature. Both current rules and proposed changes to them therefore still fail to provide scope to accommodate a more holistic approach to health-related concerns.

WADA’s stance thus remains problematic, given the fact that the WADC and anti-doping regulators advocate that regulation promotes ethical and communal social values. Removing the Spirit of Sport criterion does not negate WADA’s normative claims to protect the integrity of sport; rather, it enables to the agency to focus more explicitly on making stronger connections with other public health agendas to make sport healthier for athletes. As sport is an inherently risky endeavour, a harm reduction approach that attends to athletes’ wellbeing would address the effects of regulation, aiming to reduce health-related risks, not exacerbate them as current tactics have.

5. Concluding remarks

While there is evidence supporting the inclusion of many illicit drugs on the Prohibited List, our aim in this paper is to highlight deeper regulatory inconsistencies to consider. Illicit drugs may have performance enhancing effects and definitely can impact health negatively, but the use of Spirit of Sport as a criterion is problematic. Although the concept may refer to an ideal of shared values, the criterion itself is a practical shortcoming, because it complicates, rather than clarifies, why or how particular substances are

on the WADA Prohibited List. This, a foundational problem, makes it impossible to consider whether or not illicit NPED should be included on the Prohibited List. By removing the Spirit of Sport criterion in favour of further emphasising the importance of the health criterion, WADA and its stakeholders can better articulate decisions regarding the inclusion of substances on the WADA Prohibited List and redress inconsistencies embedded within anti-doping rules so as to better (and more consistently) uphold these values in practice.

Although detailing what such regulatory reform would entail is beyond the scope of this paper, it is worth noting that a health-related emphasis would require re-examining punishment schemes. There are standardised sanctions for anti-doping offences; however, they negate the fact that the use of NPED is a fundamentally different offence than the use of PED on the basis of the prongs used to determine what substances should be prohibited. Penalties under the WADC are based on the Strict Liability Standard, which removes the need to prove “intent, fault, negligence or knowing Use on the Athlete’s part” (WADA, 2009, p. 19), but modifications can be made if athletes can prove no fault or negligence (in exceptional circumstances) (Orchard, Fricker, White, Burke, & Healey, 2006, p. 133; WADA, 2009, p. 56). The purpose of the Strict Liability Standard is to overcome the problem of proving that athletes intended to cheat or avoid detection by taking advantage of the inexact nature of anti-doping science (Koh, Edwards, Freeman & Zaslowski, 2012; Robinson, 2007). Not all anti-doping violations necessarily reflect the intention to cheat, which is especially evident in most cases of illicit NPED use. Similarly, in a broader societal context, different punishments are applied for criminal acts depending on intent (Lippi, 2008).

WADA needs to better differentiate between deliberate and unintentional violations in a way that demonstrates its commitment to protecting athletes’ health, doping-free sport and fair play. In order to maintain a consistent sporting code regarding drug use, both the language and enforcement of the WADC need to reflect the differences between violations. Evaluations of current policy should address not simply whether more athletes are “caught” doping, but whether or not policy outcomes support or hinder WADA’s stated principles. Failing to do so undermines the credibility of the reasons applied to guide and justify anti-doping regulation. Rules that are not “defensible in both theory and practice” challenge the integrity of the current anti-doping framework by potentially undercutting “its own cause – healthy and honest competition and competitors – in the process” (Lambelet Coleman et al., 2006, p. 2).

This is not to suggest the WADC is ineffectual or that WADA should expand its regulation of illicit drug use; rather, it is to highlight the need for clarification and better communication with regards to why and how the governance of illicit drugs falls under WADA’s jurisdiction. Remedying these inconsistencies provides WADA an opportunity to refine the application of the WADC so that drug management, substance control policy and sanctions are just, consistent, coherent and comprehensive. It also gives stakeholders in the global sports community an opportunity to reflect on the values WADA seeks to uphold and how they instil a duty of care. Addressing the health of athletes is not simply punishing them for drug use; rather, it requires a more holistic approach that considers the reasons for particular kinds of drug use among athletes and provides responsive forms of assistance before the health-related consequences become dire.

References

- American Psychiatric Association. (2000). *Diagnostic criteria from DSM-IV-TR*. Washington, DC: American Psychiatric Association.
- Aschwanden, C. (2012). *The top athletes looking for an edge and the scientists trying to stop them*. *Smithsonian*. July–August. Available at: <http://www.smithsonianmag.com/science-nature/The-Top-Athletes-Looking-for-an-Edge-and-the-Scientists-Trying-to-Stop-Them-160284335.html>.
- Avois, L., Robinson, N., Saudan, C., Baume, N., Mangin, P., & Saugy, M. (2006). Central nervous system stimulants and sport practice. *British Journal of Sports Medicine*, 40(Suppl. 1), i16–i20. doi:10.1136/bjism.2006.027557.
- Aydin, A. (2011). *Cannabinoid poisoning*. Available at: <http://emedicine.medscape.com/article/833828-overview> – showall
- Bartu, A., Freeman, N., Gawthorne, G., Codde, J., & Holman, C. (2003). Mortality in a cohort of opiate and amphetamine users in Perth, Western Australia. *Addiction*, 99(1), 53–60.
- Battin, M., Luna, E., Lipman, A., Gahlinger, P., Rollins, D., Roberts, J., et al. (2008). *Drugs and justice: Seeking a consistent, coherent, comprehensive view*. New York: Oxford University Press.
- Beamish, R., & Ritchie, I. (2006). *Fastest, highest, strongest: A critique of high-performance sport*. New York: Routledge.
- Boland, P. (2008). British drugs policy: Problematising the distinction between legal and illegal drugs and the definition of the drugs problem. *Probation Journal*, 55(2), 171–187.
- Buti, A., & Fridman, S. (1994). The intersection of law and policy: Drug testing in sport. *Australian Journal of Public Administration*, 53(4), 489–507.
- Cashmore, E. (1990). *Making sense of sport*. London: Routledge.
- Climko, R., Roehrich, H., Sweeney, D., & Al-Razi, J. (1986). Ecstasy: A review of MDMA and MDA. *The International Journal of Psychiatry in Medicine*, 16(4), 359–372.
- Dimeo, P. (2007). *A history of drug use in sport 1876–1976: Beyond good and evil*. New York: Routledge.
- Donohoe, T., & Johnson, N. (1986). *Foul play: Drug abuse in sports*. Oxford: Blackwell.
- DuPont, R. L., Greene, W., & Lydiard, R. B. (2010). *Sedatives and hypnotics abuse and dependence: Pharmacology and epidemiology*. Available at: http://www.uptodate.com/contents/sedatives-and-hypnotics-abuse-and-dependence-pharmacology-and-epidemiology?source=search_result&search=barbiturate&selectedTitle=1~150.
- European Monitoring Centre for Drugs and Drug Addiction. (2012). *Legal topic overviews*. Available at: <http://www.emcdda.europa.eu/html.cfm/index5036EN.html>.
- Fife, G. (1999). *Tour de France: The history, the legend, the riders*. Edinburgh: Mainstream.
- Flaherty, G. (2010). *Altitude training*. *High altitude Medicine*. Available at: http://www.highaltitudemedicine.ie/index.php?option=com_content&view=article&id=130:altitude-training&catid=39:slideshow.
- Foddy, B., & Savulescu, J. (2007). Ethics of performance enhancement in sport: Drugs and gene doping. In R. Ashcroft, A. Dawson, H. Draper, & J. McMillan (Eds.), *Principles of health care ethics* (2nd ed., pp. 512–519). Chichester: John Wiley & Sons, Ltd.
- Fraser, A. (2004). Doping control from a global and national perspective. *Therapeutic Drug Monitoring*, 26(2), 171–174.
- Gallagher, S. A., Hackett, P., & Rosen, J. (2012). *High altitude illness: Physiology, risk factors, and general prevention*. Uptodate. Available at: http://www.uptodate.com/contents/high-altitude-illness-physiology-risk-factors-and-general-prevention?source=see_link.
- Gardiner, S. (2012). *Sports law* (4th ed.). New York: Routledge.
- Gleaves, J. (2011). Doped professionals and clean Amateurs: Amateurism’s influence on the modern philosophy of anti-doping. *Journal of Sport History*, 38(2), 237–254.
- Goff, B., Shughart, W., & Tollison, R. (1988). Disqualification by decree: Amateur rules as barriers to entry. *Journal of Institutional and Theoretical Economics*, 144(3), 515–523.
- Goral, M. (2008). Evaluation of acth, steroids, barbiturates, benzodiazepines, beta blockers, caffeine, cannabis and cocaine dopings in sportsmen. *Research Journal of Biological Sciences*, 3(8), 830–836.
- Gossop, M. (2006). Classification of illegal and harmful drugs. *British Medical Journal*, 333, 272–273.
- Hall, A., & Henry, J. (2006). Acute toxic effects of Ecstasy (MDMA) and related compounds: Overview of pathophysiology and clinical management. *British Journal of Anaesthesia*, 96(6), 678–685.
- Hanstad, D., & Loland, S. (2009). Where on earth is Michael Rasmussen? Is an elite level athlete’s duty to provide information on whereabouts justifiable anti-doping work or an indefensible surveillance regime? In V. Møller, M. McNamee, & P. Dimeo (Eds.), *Elite sport, doping and public health* (pp. 167–177). Odense: University Press of Southern Denmark.
- Hanstad, D., Smith, A., & Waddington, I. (2008). The establishment of the World Anti-Doping Agency: A study of the management of organizational change and unplanned outcomes. *International Review for the Sociology of Sport*, 43(3), 227–249.
- Hanton, S., Mellalieu, S., & Hall, R. (2002). Re-examining the competitive anxiety trait-state relationship. *Personality and Individual Differences*, 33(7), 1125–1136.
- Henne, K. (2010). WADA, the promises of law and the landscapes of anti-doping regulation. *PolAR: Political and Legal Anthropology Review*, 33(2), 306–325.
- Heuberger, J., Cohen Tervaert, J., Schepers, F., Vliegthart, A., Rotmans, J., Daniels, J., et al. (2012). Erythropoietin doping in cycling: Lack of evidence for efficacy and a negative risk-benefit. *British Journal of Clinical Pharmacology*. doi:10.1111/bcp.12034.
- Hoberman, J. (2005). Olympic drug testing: An interpretive history. In K. Young, & K. B. Wamsley (Eds.), *Global olympics historical and sociological studies of the modern games* (pp. 249–268). Amsterdam: Elsevier.

- Houlihan, B. (1999). *Anti-doping policy in sport: The politics of international policy co-ordination*. *Public Administration*, 77(2), 311–334.
- Houlihan, B. (2002a). *Dying to win: Doping in sport and the development of anti-doping policy* (2nd ed.). Germany: Council of Europe.
- Houlihan, B. (2002b). Managing compliance in international anti-doping policy: The World Anti-Doping Code. *European Sport Management Quarterly*, 2(3), 188–208.
- Houlihan, B. (2004). Civil rights, doping control and the World Anti-Doping Code. *Sport in Society*, 7(3), 420–437.
- Howman, D. (2012). *Developing new alliances to tackle the increasing problem of doping in sport*. Available at: <http://www.wada-ama.org/Documents/News.Center/Speeches.Presentations/ArneSymposium.pdf>.
- Huestis, M. A., Mazzoni, L., & Rabin, O. (2011). Cannabis in sport: Anti-doping perspective. *Sports Medicine*, 41(11), 949–966.
- Hunt, T. (2011). *Drug games: The International Olympic Committee and the politics of doping, 1960–2008*. Austin: University of Texas Press.
- Jones, G., & Hanton, S. (2001). Pre-competitive feeling states and directional anxiety interpretations. *Journal of Sports Sciences*, 19(6), 385–395.
- Kayser, B., Mauron, A., & Miah, A. (2005). Viewpoint: Legalisation of performance-enhancing drugs. *The Lancet*, 366, 521.
- Kayser, B., Mauron, A., & Miah, A. (2007). Current anti-doping policy: A critical appraisal. *BMC Medical Ethics*, 8(2), 1–10.
- Kayser, B., & Smith, A. (2008). Globalisation of anti-doping: The reverse side of the medal. *British Medical Journal*, 337, 84–86.
- Keisler, B., & Armsey, T. (2006). Caffeine as an ergogenic aid. *Current Sports Medicine Reports*, 5(4), 215–219.
- Kennedy, M. (2000). Newer drugs used to enhance sporting performance. *Medical Journal of Australia*, 173, 314–317.
- Koh, B., Edwards, J., Freeman, L., & Zaslowski, C. (2012). *Doping in aquatic sports Part 1: Actus reus versus mens rea*. Paper presented at Be Active 2012, Sydney, Australia. <http://sma.org.au/be-active/>.
- Koh, B., Freeman, L., & Zaslowski, C. (2012). Alternative medicine and doping in sports. *Australasian Medical Journal*, 5(1), 18–25.
- Lafferty, K. A. (2012). Barbiturate toxicity. *Medscape*. Available at: <http://emedicine.medscape.com/article/813155-overview>.
- Lambelet Coleman, D., Coleman, J., Haagen, P., & Bradley, C. (2006). *Position paper of the Center for Sports and Law Policy. Whether artificially induced hypoxic conditions violate the "spirit of sport"*. Durham, NC: The Center for Sports Law & Policy, Duke University School of Law.
- Lippi, G. (2008). Accidental cheating? *British Journal of Sports Medicine*, 31 July.
- Lippi, G., Sanchis-Gomar, F., & Banfi, G. (2012). Anti-"negative-doping" testing: A new perspective in anti-doping research? *European Journal of Applied Physiology*, 112(6), 2383–2384.
- Loland, S., & Hoppeler, H. (2012). Justifying anti-doping: The fair opportunity principle and the biology of performance enhancement. *European Journal of Sport Science*, 12(4), 347–353.
- London Evening Standard. (2006). *Allow athletes to use cannabis, says sports minister*. *London Evening Standard*. Available at: <http://www.standard.co.uk/news/allow-athletes-to-use-cannabis-says-sports-minister-7193159.html>, 12 December
- Magdalinski, T., & Warren, I. (2004). Civil liberties and athletes. *Alternative Law Journal*, 29(2), 95–96.
- Malloy, D., Kell, R., & Kelln, R. (2007). The spirit of sport, morality, and hypoxic tents: Logic and authenticity. *Applied Physiology, Nutrition, and Metabolism*, 32(2), 289–296.
- Mignon, P. (2003). The Tour de France and the doping issue. *The International Journal of the History of Sport*, 20(2), 227–245.
- Ministerial Council on Drug Strategy. (2010). *The national drug strategy 2010–2015: A framework for action on alcohol, tobacco, illegal and other drugs Consultation Draft*, Ministerial Council on Drug Strategy, Commonwealth of Australia: Canberra. Available at: [http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/E3AAD7FA931F0998CA2577DD0006E36C/\\$File/ndsdraft.pdf](http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/E3AAD7FA931F0998CA2577DD0006E36C/$File/ndsdraft.pdf).
- Ministerial Council on Drug Strategy. (2011). *National drug strategy 2010–2015, Department of Health and Ageing, Commonwealth of Australia: Canberra*. Available at: [http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/DB4076D49F13309FCA257854007BAF30/\\$File/nds2015.pdf](http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/DB4076D49F13309FCA257854007BAF30/$File/nds2015.pdf).
- Møller, V. (2010). *The ethics of doping and anti-doping: Redeeming the soul of sport?* London: Routledge.
- O'Connor, P. (2012). *Doping is now a public health issue, conference told*. *Reuters*, 22 September. Available at: <http://www.reuters.com/article/2012/09/22/us-doping-health-idUSBRE88106E2012092>.
- Orchard, J., Fricker, P., White, S., Burke, L., & Healey, D. (2006). The use and misuse of performance-enhancing substances in sport. *Medical Journal of Australia*, 184(3), 132–136.
- Parisotto, R., Wu, M., Ashenden, M., Emslie, K., Gore, C., Howe, C., et al. (2001). Detection of recombinant human erythropoietin abuse in athletes utilizing markers of altered erythropoiesis. *Haematologica*, 86(2), 128–137.
- Phillips, B., Ball, C., Sackett, D., Badenoch, D., Straus, S., Haynes, B., et al. (2011). *Levels of evidence*. Oxford Centre for Evidence-based Medicine. Available at: <http://www.cebm.net/index.aspx?o=1025>, 16 September
- Pomeranz, J., Taylor, L., & Austin, S. (2013). Over-the-counter and out-of-control: Legal strategies to protect youths from abusing products for weight control. *American Journal of Public Health*, 103(2), 220–225.
- Pope, S. (1996). *Amateurism and American sports culture: The invention of an athletic tradition in the United States, 1870–1900*. *The International Journal of the History of Sport*, 13(3), 290–309.
- Pound, R. (2006). *Inside dope: How drugs are the biggest threat to sports, why you should care, and what can be done about them*. Mississauga, ON: Wiley & Sons.
- Robazza, C., & Bortoli, L. (2007). Perceived impact of anger and anxiety on sporting performance in rugby players. *Psychology of Sport and Exercise*, 8(6), 875–896.
- Robinson, S. (2007). Drugs in sport: A cure worse than the disease? *International Journal of Sports Science & Coaching*, 2(4), 363–368.
- Russell, G., Gore, C., Ashenden, M., Parisotto, R., & Hahn, A. (2002). Effects of prolonged low doses of recombinant human erythropoietin during submaximal and maximal exercise. *European Journal of Applied Physiology*, 86(5), 442–449.
- Salleh, A. (2008). Athletes' caffeine use reignites scientific debate. *ABC News* (2008, 2 Aug 2008).
- Schneider, A. (2004). Privacy, confidentiality and human rights in sport. *Sport in Society*, 7(3), 438–456.
- Scottish Crime and Drug Enforcement Agency. (2005). *Drug Classes and Penalties*. Available at: <http://www.sdea.police.uk/drugsinfo.htm>.
- Seddon, T. (2010). *A history of drugs: Drugs and freedom in the liberal age*. Abingdon: Routledge-Cavendish.
- Smith, A., & Stewart, B. (2008). Drug policy in sport: Hidden assumptions and inherent contradictions. *Drug and Alcohol Review*, 27, 123–129.
- Sökmen, B., Armstrong, L., Kraemer, W., Casa, D., Dias, J., Judelson, D., et al. (2008). Caffeine use in sports: Considerations for the athlete. *The Journal of Strength & Conditioning Research*, 22(3), 978–986.
- Stevens, A. (2011). *Drugs, crime and public health: The political economy of drug policy*. London: Routledge.
- Stokvis, R. (2003). Moral entrepreneurship and doping cultures in sport. *ASSR Working Paper Series, Amsterdam School for Social Science Research*, 1–25.
- Strenk, A. (1988). Amateurism: The myth and the reality. In J. Seagrave, & D. Chu (Eds.), *The olympic games in transition* (pp. 303–327). Champaign, IL: Human Kinetics Books.
- Teitelbaum, S., DuPont, R., & Bailey, J. (2012). *Cannabis use disorders: Treatment, prognosis, and long-term medical effects*. Available at: http://www.uptodate.com/contents/cannabis-use-disorders-treatment-prognosis-and-long-term-medical-effects?source=search_result&search=cannabis&selectedTitle=1~150.
- Tuttle, T., Ali, A., Filsoof, D., & Higgins, J. (2012). *High altitude and heart disease*. *Uptodate*. Available at: http://www.uptodate.com/contents/high-altitude-and-heart-disease?source=search_result&search=altitude&selectedTitle=4~101.
- United Nations Office on Drugs and Crime. (2013). *Information about drugs*. Available at: <http://www.unodc.org/unodc/en/illegal-drugs/definitions/index.html>.
- Verroken, M. (2000). *Drug use and abuse in sport*. *Bailliere's Clinical Endocrinology and Metabolism*, 14(1), 1023.
- Vest Christiansen, A. (2009). Doping in fitness and strength training environments – politics, motives and masculinity. In V. Møller, M. McNamee, & P. Dimeo (Eds.), *Elite sport, doping and public health* (pp. 99–118). Odense: University Press of Southern Denmark.
- Waddington, I. (2000). *Sport, health and drugs: A critical sociological perspective*. London: E&FN Spon.
- Whittle, T. (2012). *UNESCO announces new prohibited list for anti-doping to be valid on Jan. 1, 2013*. *NZWeek*. Available at: <http://www.nzweek.com/world/unesco-announces-new-prohibited-list-for-anti-doping-to-valid-on-jan-1-2013-37238/>, 13 December
- Wilson, M., Smith, N., Chattington, M., Ford, M., & Marple-Horvat, D. (2006). The role of effort in moderating the anxiety-performance relationship: Testing the prediction of processing efficiency theory in simulated rally driving. *Journal of Sports Sciences*, 24(11), 1223–1233.
- Woodland, L. (1980). *Dope: The use of drugs in sport*. Sydney: Reid.
- World Anti-Doping Agency. (2007). *Q&A: The World Anti-Doping Agency*. Available at: <http://www.wada-ama.org/rtecontent/document/QA.The.World.Anti-Doping.Agency.pdf>.
- World Anti-Doping Agency. (2009). *World Anti-Doping Code*. Available at: <http://www.wada-ama.org/rtecontent/document/code.v2009.En.pdf>.
- World Anti-Doping Agency. (2011). *The 2012 prohibited list*. Available at: <http://www.wada-ama.org/Documents/World.Anti-Doping.Program/WADP-Prohibited-list/To.be.effective/WADA.Prohibited.List.2012.EN.pdf>.
- World Anti-Doping Agency. (2012). *Code and International Standards (IS) Review*. Available at: <http://www.wada-ama.org/en/world-anti-doping-program/sports-and-anti-doping-organizations/the-code/code-review/>.
- World Anti-Doping Agency. (2013). *2015 Code review. Third Code consultation phase showing Article 10: Sanctions on individuals*. Available at: <http://www.wada-ama.org/Documents/World.Anti-Doping.Program/WADP-The.Code/Code.Review/Code%20Review%202015/3rd%20consultation/Code%20part%201/WADA-Code-Review-2015-3rd-Consult-Part-1-Art-10.pdf>.
- Yesalis, C., & Bahrke, M. (2005). *Anabolic steroid and stimulant use in North American sport between 1850 and 1980*. *Sport in History*, 25(3), 434–451.
- Yesalis, C., & Cowart, V. (1998). *The steroids game*. Champaign, IL: Human Kinetics.