Ethical Aspects of Doping and Anti-Doping: In Search of an Alternative Policy

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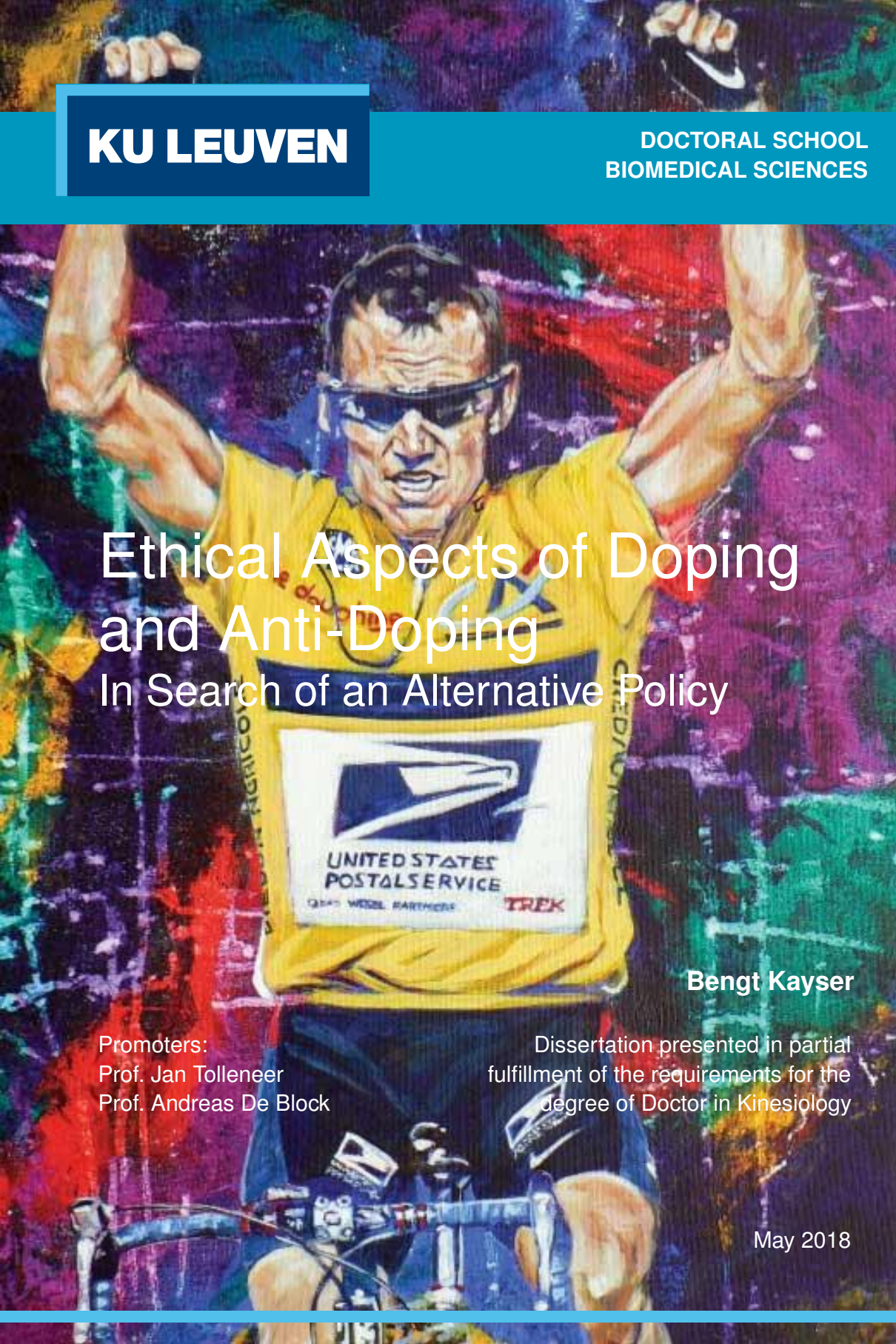

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In Search of an Alternative Policy

Bengt Kayser

Promoters:
Prof. Jan Tolleneer
Prof. Andreas De Block

Dissertation presented in partial fulfillment of the requirements for the degree of Doctor in Kinesiology

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KU Leuven
Biomedical Sciences Group
Faculty of Movement and
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Dissertation presented in partial fulfillment of the requirements for the degree of Doctor in Kinesiology

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Preface

Bengt Kayser

This thesis would not have been possible without an appropriate mix of conditions, including some luck. The possibility of a sabbatical offered to me by the University of Lausanne, even though I had only just arrived there after having spent more than 20 years at the University of Geneva, provided the first incentive. Rector Dominique Arlettaz suggested that I take a sabbatical leave sooner rather than later so that the University of Lausanne would profit more from what I would bring back, and I thank him for the opportunity.

Discussions with my life companion Barbara then spawned the idea to do something with my (and our) work on doping and anti-doping. A chance meeting in 2009 with Jan Tolleneer at the occasion of a two-day meeting on human enhancement at the Brocher Foundation on the shores of Lake Geneva resulted in an invitation from him to participate in a workshop he had organised at the University of Leuven. This was followed by an invitation for a contribution to a volume, co-edited by Jan Tolleneer, Pieter Bonte & Sigrid Sterckx[1].

It was at the occasion of that Leuven workshop that I learned about the interfaculty workgroup on ethics in sport at the KULeuven, bringing together colleagues from the Faculty of Movement Sciences and Rehabilitation Sciences, the Faculty of Medicine and the Institute of Philosophy. It all seemed to fit, and I therefore approached Jan Tolleneer with the idea of coming to Leuven for a sabbatical and to aggregate my work on doping and anti-doping in the form of a doctoral thesis. Jan reacted enthusiastically and proposed asking Andreas De Block to be co-promotor, which to my pleasure Andreas accepted. The University of Leuven then agreed to offer me an adapted PhD program, given my previous research background, for which I am grateful.

I especially thank Jan and Andreas very warmly for their willingness to accompany me on my endeavour; I learned a lot from working with them. It must have been somewhat strange to supervise an older student like me, but they dealt with it in a loving way. I am also very grateful for the stimulating environment that was provided to me at the KULeuven during my sabbatical there in 2016.

I heartily thank my colleagues at the historical Hollands College, where as a fellow, I was provided with a wonderful office in the intelectually stimulating environment of the Metaforum, a multidisciplinary initiative of the KULeuven to foster thinking and communicating on important societal questions and developments. The encounters at Metaforum, both formal and informal, were rich, eye-opening and often entertaining.

[1] Tolleneer J, Sterckx S & Bonte P (2013) *Athletic Enhancement, Human Nature and Ethics*. Springer Science & Business Media. http://doi.org/10.1007/978-94-007-5101-9

I also thank the University of Lausanne for the logistics necessary for a six-month leave, an essential ingredient for all of this.

Special thanks go to the members of the thesis jury. I am very grateful for their willingness to share their expertise in their critical appraisal of the present thesis.

And last but not least, I thank my beloved life companion, Barbara, and my children Remco and Emma, for their love and for coping with an often absent (-minded) husband and father.

Saas-Fee, May 2018.

Abstract

The use of certain technologies, especially of specific pharmacological means, with the aim of improving performance, is forbidden in competitive sport. This practice, called doping, is repressed by increasingly strong anti-doping measures, which are overseen by the World Anti-Doping Agency (WADA). Even if these anti-doping developments essentially concern elite competitive sport, they influence society in general. Some agents present doping as a major societal problem, and the dealing with it is therefore considered a political priority. In several countries, the principles of anti-doping in elite sport are now applied outside of competitive sport, such as in the realm of fitness centres, and calls for further extension of regulations are regularly heard. Increasingly specific legislation has been introduced, in some countries in the form of criminal law that is also applicable to non-athletes.

These developments have spawned academic interest, and doping inside and outside elite sport, as well as the anti-doping efforts aimed at eradicating this practice, have become the subject of an active field of scholarly study. There is considerable overlap with two other important societal and scientific debates, one on the regulation of psychoactive drug use and one on overall human enhancement, i.e. the use of technology to improve human performance in general. Regarding sport, two diametrically opposed discourses can be found in the scholarly, but also lay, literature. Today's most vocal discourse is that of a zero tolerance approach, enforced in elite competitive sport by surveillance, repression and punishment. On the other hand, an opposing discourse can also be heard that finds anti-doping illogical and calls for the liberalisation of doping. These opposing positions would seem to have their limitations. Past experience with prohibition has shown that a zero-tolerance stance using stringent repression to curb a forbidden behaviour may lead to important (unintended) side effects, while there is insufficient public and political support for the total liberalisation of currently forbidden substances.

The general aim of this thesis is to contribute to the discussion on doping and anti-doping, and to sketch the outlines of an alternative way of dealing with doping inside and outside of sport. After a short introduction (Chapter 1) that sketches the historical background of the main issues, an analysis of modern anti-doping in elite sport is presented, highlighting some paradoxes and weaknesses at the basis of today's anti-doping policies (Chapter 2). Chapter 3 provides an analysis of the argument that allowing doping would merely result in a uniform shift of the playing field at the cost of greater health risks. It is shown that this is unlikely to be the case and a counterargument in favour of allowing some regulated forms of doping, because potentially leading to a more dynamic playing field, is then presented. Chapter 4 provides a perspective accounting for some of the side effects of modern anti-doping, also from a legal perspective. It highlights some of these side-effects and shows that anti-doping

comes at a considerable cost to the individual athlete and the community. Chapter 5 then introduces the idea of using a harm reduction approach in the realm of doping in sport. First the principle of harm reduction is explained, building upon the evidence base in the field of recreational substance use. This is followed by a first attempt of applying its principles to doping practices in sport. Chapter 6 then takes the reasoning of the preceding chapter further by completing it with a specific analysis of the ethical implications of such a harm reduction approach for doping, concluding that such an approach can be defended. Chapter 7 finally provides a general discussion that ends with some conclusions and perspectives. The overarching conclusion of the thesis is that there is no society-wide solution to the problem of doping. Therefore practical ways of dealing with its presence aimed at containing its potential risks may represent preferable policy alternatives as compared to today's runaway effects of globalisation of anti-doping efforts, all while promising to enrich the spectacle of modern elite sport.

Samenvatting

Het gebruik van sommige technologieën, en speciaal het gebruik van specifieke farmaceutische middelen, met het doel om de prestatie te verbeteren, is verboden in de competitiesport. Deze praktijk, doping genaamd, wordt onderdrukt met toenemend sterke anti-doping maatregelen, onder de auspiciën van de *World Anti-Doping Association* (WADA). De maatregelen, in principe bedoeld voor de top van de competitiesport, hebben ook effecten voor de algemene samenleving. Sommige personen beschouwen doping als een belangrijk maatschappelijk probleem; het omgaan ermee wordt daarom bestempeld als een politieke prioriteit. In verschillende landen worden de anti-doping principes voor de topsport nu ook buiten de competitiesport toegepast, bijvoorbeeld in fitnesscentra, en regelmatig gaan stemmen op voor verdere uitbreiding. In toenemende mate wordt zelfs een specifieke wetgeving ingevoerd, in sommige landen in de vorm van strafrecht, ook van toepassing op niet-atleten.

Deze ontwikkelingen hebben ertoe geleid dat doping, binnen en buiten de topsport, en de anti-doping maatregelen gericht op het uitroeien van deze praktijk, een actief gebied van academische interesse en werk zijn geworden. Er is een ruime overlap met andere belangrijke maatschappelijke en wetenschappelijke debatten, zoals het reguleren van het gebruik van verboden psychoactieve middelen, en 'enhancement' (verbeterkunde), i.e. het gebruik van technologie voor de verbetering van de menselijke prestatie in het algemeen. Wat de sport betreft zijn er twee tegengestelde betogen, in de wetenschappelijke, maar ook in de algemene literatuur. Het meest gehoorde betoog betreft een nultolerantie die moet worden opgelegd in de topsport middels controle, repressie en straf. Lijnrecht tegenover staat het betoog dat anti-doping onlogisch is, met de vraag om het vrijgeven van doping. Deze twee extreme standpunten hebben beide hun limieten. Ervaring met prohibitie toont dat een nultolerantie beleid met harde repressie om verboden gedrag te onderdrukken leidt tot belangrijke neveneffecten; aan de andere kant is er niet genoeg publieke en politieke ondersteuning voor volledige liberalisering van de huidige verboden middelen.

Het algemene doel van deze thesis is bij te dragen aan de discussie over doping en anti-doping, en het schetsen van een alternatieve wijze om met doping binnen en buiten sport om te gaan. Na een korte introductie en een historische achtergrond (Hoofdstuk 1), wordt een analyse van moderne anti-doping in de topsport gepresenteerd die fundamentele zwakheden en paradoxen binnen de hedendaags anti-doping politiek belicht (Hoofdstuk 2). Hoofdstuk 3 betreft een analyse van het argument dat het toelaten van doping enkel maar een uniforme translatie van het speelveld zou opleveren, maar met een groter gezondheidsrisico. Er wordt aangetoond dat dit onwaarschijnlijk is, waarna het tegenargument wordt ontwikkeld dat het gereguleerd toelaten van sommige vormen van doping juist mogelijk tot een dynamischer speelveld zou kunnen leiden. Hoofdstuk 4 bespreekt sommige neveneffecten van modern anti-doping beleid vanuit een

legaal perspectief en toont dat anti-doping gepaard gaat met hoge kosten voor de individuele atleet en de gemeenschap. Hoofdstuk 5 introduceert dan het idee van een invoering van het schadeverminderingsprincipe op het gebied van doping. Eerst wordt het principe van schadevermindering uitgelegd, met meenemen van de bewijslast op het gebied van recreatief middelengebruik. Dit wordt gevolgd door een eerste poging deze principes toe te passen in de sport. Hoofdstuk 6 werkt deze redenering verder uit met een specifieke analyse van de ethische implicaties van een schadeverminderingsbenadering voor doping, die laat zien dat deze benadering verdedigd kan worden. Hoofdstuk 7 bespreekt het onderwerp nogmaals in een breed perspectief en eindigt met een aantal conclusies en perspectieven. De overkoepelende conclusie van het proefschrift is dat er geen oplossing mogelijk is voor het doping vraagstuk. Er moet daarom gezocht worden naar praktische manieren van omgaan met het bestaan van doping, die gericht zijn op het begrenzen van de potentiële risico's voor het individu en de maatschappij. Deze alternatieve benaderingen met een potentieel voor verrijking van het moderne sportspektakel zijn wellicht te prefereren boven de huidige, op hol geslagen, globale anti-doping inspanningen.

Prelude: a short introduction from a personal perspective

Bengt Kayser[2]

[2]This prelude is not part of the thesis proper. The narrative represents the personal view of the author.

What made me begin to think about doping and anti-doping?

In 2003, I participated in a group visit, organised by the Swiss Society of Sports Medicine, to the headquarters of the UCI[3] in Aigle, Switzerland. First, we were shown around the premises. On the impressive indoor cycling rink, a few cyclists, clad in colourful skin-tight lycra, were training and repeatedly whizzed along the track past the exhibit full of photographs, equipment and other memorabilia that belonged to past champions. Bicycles and shirts were shown behind glass, together with pictures and lists of victories of some of the sport's icons, such as Eddy Merckx, Miguel Indurain and Lance Armstrong[4], all cyclists whom we know today, with more or less certainty, doped during their cycling careers.

We then had the opportunity of participating in a workshop on the UCI's efforts against doping. I had enrolled without much thought beyond a vague idea that doping had always been, and still was an integral part of professional cycling. At that time my view of cycling, and especially of the Tour de France, was that it was a high-valued, entertaining drama. Heroism was celebrated in a game that had both written and unwritten rules. It involved serious play not devoid of some treachery, including the more or less hidden use of doping. In fact, in the earlier days, cyclists participating in the Tour de France would still openly talk about their practices. In the nineteen-twenties, the Pélissier brothers, and in the nineteen-sixties also Jacques Anquetil, for example, quite openly talked about their doping practices. Although by the end of the last century, doping had been progressively pushed into hiding, nobody doubted, even then, that it was still 'part of the job', as some cyclists themselves said. The 1998 Festina 'scandal', when large scale team-organised doping was discovered by the French customs and police, clearly confirmed this.

As mentioned, however, at that time I did not think too much of all of that, even though my feelings were a bit mixed. On one hand, I felt that rules were rules and that one should keep to them. On the other hand, I also realised that there were also unwritten implicit rules in sport, and doping seemed to be an integral part of the game of cycling the Tour. In those days, when friends would ask me what I thought of Lance Armstrong who was winning one Tour after another, I would answer that I thought that he was a very strong athlete who seemed to play the game to utter perfection, keeping to both the written and unwritten rules. This may sound paradoxical, in the sense that it would seem contradictory that an official rule would say 'no doping' whereas an unwritten rule would claim the contrary, but in those days, that was exactly the accepted

[3] *Union Cycliste Internationale*, the world cycling federation.

[4] This was before his downfall in October 2012 and the subsequent removal of his memorabilia from this hallway of fame.

modus for the majority of professional cyclists, as well as for much of the public, even though some critical voices were heard inside and outside of the peloton. Nevertheless, in the Armstrong era, I found the drama delivered to be of rather good value, albeit perhaps somewhat repetitive (seven wins!). He seemed to be quite the exceptional athlete, even though with time, I developed some reservations about Lance Armstrong as a person – something that bore out later.

However, I had not expected what was going to be presented in the workshop about the UCI's anti-doping activities. Coming into the workshop, my idea about the UCI's anti-doping policy was that it was evolving in a practical way, aiming at limiting any excessive harm of doping practices to the athletes, the sport and, of course, also the UCI itself, i.e. not jeopardising its own survival. At that time, the UCI did not seem to go all the way to trying to eradicate an 'ancient' practice, which had been part and parcel of the game from its very beginnings, but chose, for example, to introduce a cut-off level for red cell content in blood, i.e. an athlete was not allowed to take part in a competition beyond a haematocrit level of 50%[5]. The basic idea was that EPO[6] use was frequent. Because no good test for EPO use was yet available, and since excessive EPO use could lead to high haematocrits thought to increase cardiovascular risk (stroke, heart failure), it was believed that simply measuring haematocrit kept a check on this behaviour. I found this way of dealing with a (potential) health problem to be quite practical.

After a short introduction, arguing that doping was an important problem for cycling, we were presented with what nowadays is known as the whereabouts rule. This rule implies that an athlete, when selected to be part of a special cohort, because (s)he is part of a given elite group, is obliged to inform a controlling body where (s)he is at any time for each day of the year, and the athlete must do this four times a year, three months in advance. This rule was presented with such calm and detachment and without any pause on the evident ethical dimensions of it that for a brief moment I thought that it was tongue-in-cheek – but it wasn't. This rule was going to be implemented to allow unannounced urine sampling for testing purposes to prevent athletes from doping during training periods prior to competition. To me it sounded like

[5]Human blood is made of red cells that carry oxygen, white cells for immunity and blood clotting, and plasma, which is the watery remainder that carries various molecules, hormones, etc. The haematocrit is the percentage of the volume occupied by red cells, and its value is normally in the forties. A higher haematocrit allows more oxygen to be carried by the blood and conveys an advantage for endurance-type activities. One can stimulate red cell production with erythropoietin (EPO). It was thought that beyond a haematocrit of 50% the blood would thicken too much, potentially leading to excessive cardiac strain and non-physiological blood clotting.

[6]Erythropoietin is a small peptide hormone produced primarily by the kidneys; it has many functions among which is the stimulation of red cell production in the bone marrow.

'Big Brother', and I was quite taken aback. What could be the reasons that made such a stringent rule necessary? Why was this intrusion into the private sphere of the athlete deemed justified? Was doping in elite sport such a problem that it needed transgression of usual contemporary boundaries of privacy and autonomy in a modern democratic society? I remember coming out of the workshop truly puzzled.

In the following weeks I started thinking and reading up on those developments. Having no formal training in philosophy or ethics, apart from extremely limited secondary and medical school minima, I contacted a colleague in bioethics at the University of Geneva, Alexandre Mauron, and also Andy Miah, at that time lecturing at the University of Paisley in Scotland. I asked them if they would agree to work with me on a manuscript analysing these developments. They accepted and we wrote up a first version of our analysis of the anti-doping policy changes that came after the inception of the World Anti-Doping Association (WADA), resulting from a pivotal meeting in Lausanne in 1999 that brought together, upon the initiative of the IOC, international sports federations and government representatives.

We first sent our manuscript to a general medical journal, *The Lancet*, which reacted in a way that I interpreted to mean they were compelled by our reasoning but felt uneasy about publishing a full paper, given the obvious sensitive political aspects of the debate. Instead they asked us to write a condensed version, to be published as a viewpoint in a special issue on sport for the occasion of the UN International Year of Sports and Physical Education in 2005. Interestingly, our one-page viewpoint was published next to a portrait of Dick Pound, IOC member and the first director of WADA, and a strong advocate of a harsh anti-doping stand. As usual with pieces written for *The Lancet*, our viewpoint was heavily edited, and for the better, except for the title, which was suggested by the editorial office: 'Viewpoint: legalisation of performance-enhancing drugs'. It put a strong label on our piece that came with many consequences because many readers took the literal meaning of the title for our position: 'just let them take whatever', which was not actually what we argued for (Kayser, Mauron & Miah 2005).

In the weeks and months following the publication of our viewpoint, a wave of strong reactions from colleagues and the media engulfed me. Initially, I was perhaps a bit naïve when embarking on this direction of thinking. Being trained as a doctor and a scientist, researching questions in the field of exercise physiology, I had learned to deal both with facts and uncertainty and knew how to distinguish between questions that allow binary answers (i.e. black or white) from questions where this is not possible. I thought the ethics of doping and anti-doping belonged to the latter category, but this point-of-view was clearly not shared by many people, who often reacted quite emotionally

to our viewpoint. As paraphrased so clearly by Dick Pound, the first director of WADA: 'Doping is bad. Period', truly a black and white position that is apparently shared by many others.

At the time, I was an elected member of the board of the Swiss Society of Sports Medicine, representing academia (i.e. the Swiss universities). At the first board meeting after the viewpoint had been published, several members of the board made it clear that they strongly opposed my ideas, even though some other members expressed some openness to them. A heated discussion took place during which emotion often took the upper hand. I was finally requested to not talk to the press anymore about my ideas, which essentially meant that I was censored. I argued, in vain, that a divergence of opinion in a professional medical association should be seen as a sign of intellectual health and that I should be able to continue to explain my ideas to the outside world while making clear in what position I would answer questions (i.e. as an academic and not representing the official strict no-doping stance of the Swiss Society of Sports Medicine). I argued that debate is paramount for good policy making and evaluation and that contrasting positions foster such debate. In essence, I tried to defend the idea that diversity in ethical theories is not only necessary but even obligatory, if not unescapable. Apparently, however, I had stepped too far outside of a comfort zone and was seen as so dangerous to the sports(-medicine) establishment that I had to be silenced.

In the end, it all culminated when a former president of the Swiss Society of Sports Medicine felt obliged to organise (and manipulate) a vote by the attending members to the 2007 general assembly to kick me off the board. I was only given a few minutes (!) to defend my case, after which I was characterised as deviant and, with some distortion of the rules, was voted out (the blank votes were not counted while these should have been considered). There were even voices heard asking for my full exclusion from the society, but this finally did not happen since I had only written critically about anti-doping, but had never engaged in any actual illicit doping-related activities. During the coffee break after the vote, there was clearly unease, especially among those who probably had voted against me; I was ostracised by many. It somewhat eased my frustration that I was also approached by several others who felt extremely uncomfortable about what had just happened. Some came not only to share their opinion, more or less in agreement with mine, but especially to express their disapproval of what had just happened. Several told me that even though they did not necessarily agree with my arguments, they found it a disgrace for this professional society to have come to this.[7]

[7]The meeting minutes can be obtained from the secretariat of the society (https://www.sgsm.ch/fr/, French version filename: smgv07prot f.pdf)

At the same time, several colleagues at the University Hospitals of Geneva who ran the local sports medicine service wrote a letter to the Rector of the University, copying the Dean of the Faculty of Medicine, also openly condemning my ideas and distancing themselves from me, probably afraid that they might lose their prestigious Swiss Olympic Medical Centre label. They barely kept themselves from calling for disciplinary sanctions against me. Fortunately, and rightly so, both the Rector and the Dean saw my work in the framework of academic freedom of a scholarly endeavour, so no particular measures were taken.

Even today, many members of the sports and sports medicine establishments continue to see my viewpoints as blasphemous and as something for which I need to be excluded and neutralised. Ever since the publication of the viewpoint in *The Lancet*, my relationships with people and organisations close to elite sport have been rather tense, though people would regularly come up to me and express their sympathy with some (or even all!) of my ideas. To my surprise, even some people active in anti-doping have approached me to tell me that they agree with part of my analysis, but paradoxically then would say that it just is impossible to go any other way than their own.

The result of all of that was that I became even more intrigued and wanted to better understand what was (and still is) going on. Together with my co-authors Alexandre Mauron and Andy Miah we first decided to submit a full version of our paper to the scientific journal *BMC Medical Ethics*. We chose an Open Access journal so that it would be widely available and seen. After critical review, which further improved the paper, it was published in 2007. The paper was quickly picked up by colleagues and frequently cited and continues to be so. According to scholar.google as of May 2018, more than 240 other scholarly articles, papers and chapters have cited it. Our aim of contributing to the academic debate about anti-doping in sport and its possible effects on doping-like behaviour outside sport appears to be met.

Since then, I have alone and with different colleagues published a series of articles and chapters in books, addressing various aspects of the thematic.[8] In 2016, profiting from an opportunity for a sabbatical leave from my work at the University of Lausanne, I decided to pursue this line of work within the realm of another doctoral thesis with the help of my two promotors, Jan Tolleneer and Andreas De Block, both at the University of Leuven. This was inspired by exchanges with Jan Tolleneer at a meeting on Human Enhancement on the shores of Lake of Geneva at the Brocher Foundation in July 2009. He kindly invited me to participate in a research seminar in Leuven shortly afterwards and to contribute a chapter to a book he was editing with Sigrid Sterckx and

[8] A list can be found at the end of this booklet.

Pieter Bonte, bringing together the results of a seminar they had organised in Leuven (Tolleneer, Sterckx & Bonte, 2013). Attracted by the existence in Leuven of an interfaculty working group on ethics and sport, I then inquired with Jan Tolleneer about the possibilities for writing up a doctoral thesis under his guidance. Jan reacted enthusiastically and proposed asking Andreas De Block to be co-promotor, which Andreas gladly accepted.

This thesis is therefore the result of serendipity and curiosity. It is a collection of some previously published work, completed with work done during my stay in Leuven in 2016 and thereafter. It does not aspire to be all-encompassing, simply because the problematic is much too broad. Standing on the shoulders of giants, I try to see what is on the distant horizon. I think I can make out some outlines of developments and want to share my views with the readers of my work. I am profoundly convinced that doping and anti-doping are not only a concern for elite sport, but that the thematic ties in with performance enhancement practices and substance use in general. I also believe that there is lack of discussion of alternatives, given the current tendency for an all-out arms race against doping. My hope is that my work contributes somewhat to the societal debate on how to come to grips with enhancement possibilities and practices, inside and outside sport, without spiralling into excessive surveillance and punishment schemes of a dystopian kind.

References

Kayser B, Mauron A & Miah A (2005) Viewpoint: Legalisation of performance-enhancing drugs. *The Lancet* 366 Suppl 1, S21.
http://doi.org/10.1016/S0140-6736(05)67831-2

Tolleneer J, Sterckx S & Bonte P (Eds.) (2013) *Athletic Enhancement, Human Nature and Ethics : Threats and Opportunities of Doping Technologies. International Library of Ethics, Law, and the New Medicine* 52, 21–43. Springer Netherlands, Dordrecht, Netherlands.
http://doi.org/10.1007/978-94-007-5101-9

Contents

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Chapter 1

Introductory remarks

Bengt Kayser

Introduction

The use of certain technologies, especially of some specific pharmacological means, with the aim of improving performance, is forbidden in competitive sport. This practice, called doping, is repressed by increasingly strong anti-doping measures overseen by the World Anti-Doping Agency (WADA)[1]. Even if these anti-doping measures principally concern elite competitive sport, they influence society in general. Some agents present doping both within the sport and outside of it as a major societal problem [e.g. Pound (2006); Ljungqvist (2017)], and therefore, dealing with it is considered a political priority[2]. In several countries, the principles of anti-doping in elite sport are now also applied outside of competitive sport, such as in the realm of health clubs and fitness centres [e.g. in Denmark, see Christiansen (2011)] or in prisons (Verhelle *et al.* 2016)[3], and calls for further extension are regularly heard [e.g. Rodenberg & Holden (2017), who asked for extension of anti-doping to coaches and team executives]. Increasingly specific state legislation has been introduced – in some countries in the form of criminal law – that is also applicable to amateurs and non-athletes[4] (Christiansen 2011; Lowther 2015; Henning & Dimeo 2017).

These developments have spawned academic interest, and doping inside and outside of elite sport, as well as the anti-doping efforts aimed at eradicating this practice, have become the subject of a dynamic field of scholarly study in the last decade or so. There is considerable overlap, even though not always recognised, with other important societal and scientific debates, such as the one on (illicit) psychoactive drugs, and the one on overall human enhancement, i.e. the use of technology to improve human performance in general, not only in competitive sport.

[1] The World Anti-Doping Agency (aka Agence Mondiale de l'Antidopage, AMA), is a foundation according to Swiss law, with headquarters in Montreal, Canada: https://www.wada-ama.org, accessed May 2018.

[2] This was, for example, illustrated by the adoption of a UNESCO 'Convention Against Doping in Sport' in October 2005, which paved the way for the use of international law for anti-doping: http://www.unesco.org/new/en/social-and-human-sciences/themes/anti-doping/international-convention-against-doping-in-sport/, accessed May 2018.

[3] In Flanders in 2006, particularly muscular inmates of the Oudenaarde prison were tested for anabolic steroid use and convicted according to Flanders' anti-doping legislation. https://www.nieuwsblad.be/cnt/dmf20160701_02366878, accessed May 2018.

[4] Throughout this thesis the word 'athlete' is used to denote someone who practices any sport, not only athletics.

What is doping?

The common meaning of the word 'doping' in everyday language, what I will call the wide definition, is that it is the use of substances or other means to improve (physical or cognitive) performance, not necessarily only in the realm of competitive sport. Apart from the use of performance-enhancing drugs in sport, one can think of the use of beta-blockers by musicians to control stage fright or the use of methylphenidate by students in preparation for exams.[5] WADA defines doping in an operational way by stating: 'Doping is defined as the occurrence of one or more of the anti-doping rule violations set forth in Article 2.1 through Article 2.10 of the Code'.[6] The articles 2.1 to 2.10 list not only the detection of traces of doping in urine or blood, but for example, also the tampering with sampling or the association with someone who is currently banned for doping. Patrick Laure introduced the distinction between doping in the narrow sense, reserved for behaviour in the realm of elite competitive sport (as defined by WADA), and doping-like behaviour, referring to the use of substances or other means by anyone, to confront real or imaginary obstacles in daily life (Laure 2004). Laure also reminds us that humankind has a very long history of searching for and using products both for performance enhancement and sensations (alcohol, bettel, caffeine, cannabis, coca, ephedra, kola, nicotine, opium, etc.).

As a backdrop for the following chapters I now first briefly introduce these two partly overlapping thematics, the one on (illicit) psychoactive drugs, and the one on human enhancement, i.e. the use of technology to improve human performance in general.

The war on drugs

Fifty years of a global war on drugs has had little effect on the prevalence of illicit drug use but has had many negative consequences (Room & Reuter 2012). Recent years have seen a slow shift away from a global policy based on a zero-tolerance stance aimed at eradicating the production and the use of substances such as cocaine, heroin and cannabis. Several states in the USA

[5] Beta-blockers reduce the effects of the sympathetic nervous system, the body's 'fight or flight' system, in reaction to a perceived threat; they counteract (nor-)adrenaline, reducing e.g. jitteriness and trembling. Methylphenidate is better known by its trademark, Ritalin. It is a molecule akin to amphetamine, with less potency but measurable stimulating effects.

[6] Use or Attempted Use (Article 2.2), Evading, Refusing or Failing to Submit to Sample Collection (Article 2.3), Whereabouts Failures (Article 2.4), Tampering (Article 2.5), Possession (Article 2.6), Trafficking (Article 2.7), Administration (Article 2.8), Complicity (Article 2.9) and Prohibited Association (Article 2.10), https://www.wada-ama.org/en/what-we-do/the-code, accessed May 2018.

have now legalised the trade and use of cannabis, Canada is in the process of doing so as well, and several European countries have also successfully relaxed their ways of dealing with illicit psychoactive drug use (e.g. Portugal, Czech Republic), as have South American countries like Uruguay.[7] Also in Flanders, a discussion of the arguments for and against for the regulation of cannabis use is ongoing.[8] [see e.g. Decorte *et al.* (2016); Muyshondt (2017)]

Meanwhile psychoactive drugs such as cannabis remain prohibited in sport, not so much because they are performance enhancing, but because they can be dangerous for health reasons and are deemed at odds with the values of elite sportsmanship as exemplified by the 'spirit of sport' concept used by WADA as an inclusion criterion for forbidden substances on their list.[9] A sizeable number of doping violations concern substances such as cannabis, leading to the athletes concerned being excluded from competition even though a vast majority of them likely did not seek performance improvement (INHDR 2013; Dimeo & Møller 2018).

Human enhancement

The other thematic concerns human enhancement in general [e.g. Juengst & Moseley (2016)]. Doping in sport can be seen as a form of human enhancement. The term 'human enhancement' covers distinct though overlapping concepts: self-improvement, improvement of human capacities and improvement of human nature. It makes sense to discuss doping in the wider perspective of what the present and future possibilities for human enhancement may imply. The ongoing debate on human enhancement covers a full spectrum of positions, ranging from conservative and prudent, all the way to fully embracing the opportunities offered by human invention as advocated by the transhumanists.

[7]See e.g. the 2014 report of the Global Commission on Drugs: https://www.globalcommissionondrugs.org/wp-content/uploads/2016/03/GCDP_2014_taking-control_EN.pdf, accessed May 2018.

[8]For a recent exchange between the toxicologist Tytgat and the mayor of Antwerp, De Wever, see: https://feditobxl.be/nl/2018/03/het-grote-drugsdebat-toxicoloog-jan-tytgat-versus-burgemeester-bart-de-wever-de-knack/ accessed May 2018.

[9]The most recent version of the World Anti-Doping Code, published by WADA in 2015 states: 'Anti-doping programs seek to preserve what is intrinsically valuable about sport. This intrinsic value is often referred to as "the spirit of sport". It is the essence of Olympism, the pursuit of human excellence through the dedicated perfection of each person's natural talents. It is how we play true. The spirit of sport is the celebration of the human spirit, body and mind, and is reflected in values in and through sport, including: 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. Doping is fundamentally contrary to the spirit of sport.' https://www.wada-ama.org/en/what-we-do/the-code, accessed May 2018.

Prohibition vs. liberalisation

As for human enhancement, in sport two diametrically opposed discourses can be found in the scholarly and lay literature. The most vocal discourse is that of a 'zero tolerance' approach towards doping, which is enforced in elite competitive sport, by surveillance and punishment. On the other hand, an opposing discourse can be heard too that finds anti-doping illogical and calls for the liberalisation of doping. These opposing positions seem to have their limitations. Past experience with prohibition (alcohol, other psychoactive substances) has shown that a 'zero-tolerance' stance using stringent repression to curb a forbidden behaviour may lead to important (often unintended) side effects. While in the case for the opposite stance, a total liberalisation of currently forbidden substances, there is insufficient public and political support, even though it is unknown if such a policy would lead to a worse outcome on an overall societal level.

Since anti-doping overlaps with the repression of illicit psychoactive drug use[10], since doping is a form of human enhancement, and also since doping and anti-doping increasingly concern non-elite (amateur) athletes and also non-athletes (Christiansen 2011; Henning & Dimeo 2017), discussions on doping and anti-doping should therefore also take into account the broader societal developments with regard to illicit psychoactive drugs and human enhancement. Such discussions might provide ideas for potential alternatives as opposed to the present 'zero-tolerance' stance, seeking eradication by means of harsh repression. This thesis therefore aims to contribute to the discussion on possible alternative policies for doping and anti-doping. Given the potential for a runaway dynamic[11] of anti-doping, opposing a 'dichotomy of "good anti-doping" up against "evil doping" ' (Dimeo 2008) in a 'war against doping', in which the end would seem to justify the means[12], a discussion of alternative ways for dealing with this likely insoluble problem is warranted.

[10]Of interest in this regard is that Barry McCaffrey, a former US 'drug czar', i.e. directing the US Office of National Drug Control Policy, was a member of the foundation board of WADA. A former military officer, he defended a particularly hard line in the US efforts in the 'war on drugs', responsible for the US anti-coca interventions in Colombia (Dimeo & Møller 2018).

[11]I use the term 'runaway dynamic' to describe situations in which two processes that mutually reinforce each other spiral out of control, such as in an arms race; see also chapter three.

[12]For example, the recent call by the chief executive of the World Olympians Association Mike Miller to equip athletes with GPS chips: https://www.theguardian.com/sport/2017/oct/10/call-for-athletes-to-be-fitted-with-microchips-fight-against-drug-cheats, accessed May 2018.

Objective and aims

The general objective of this thesis is to contribute to the search for alternative anti-doping policies. The specific aims are to:

1. Discuss some of the assumptions underlying anti-doping policy;
2. Highlight some of the (actual and potential) side effects of anti-doping;
3. Sketch the outlines of an alternative policy based on a relaxation of the anti-doping rule within a harm reduction perspective[13].

Methods and structure

This thesis is the result of a piecemeal approach to the thematic of doping from historiographical, sociological, legal, epidemiological, physiological, sports medical and philosophical perspectives. It is based on a series of mostly previously published papers that are presented in a particular order. The purpose of the next sections of this introductory chapter is to introduce those papers, putting them in an overall perspective. I begin with a short section on when and how modern anti-doping came about because it is what first prompted my scholarly interest. I then present some more historical aspects of doping and anti-doping in sport to provide further perspective. This historiographical perspective is relevant because it illustrates how recent the globalisation of anti-doping is. It also reminds the reader that doping has always existed and that it was not always regarded as deviant behaviour. I then finalise this introductory chapter by shortly introducing the original papers that follow, which form the spine of this thesis.

[13]I use the terminology as defined in the British Medical Journal (BMJ http://www.bmj.com/content/353/bmj.i2512?etoc=, accessed May 2018): 'Harm reduction—Interventions that reduce negative health and other outcomes of drug use without necessarily reducing use, such as giving clean needles to drug injectors and prescribing opioid substitutes; Prohibition—Application of sanctions for drug production, distribution, and possession, including criminal or administrative penalties. UN treaties require prohibition; Decriminalisation—Removal or non-enforcement of criminal penalties for possession of small quantities of drugs, which remains an offence but subject only to administrative or civil sanctions. Decriminalisation can occur without breach of treaty obligations; Regulation—Legally enforceable rules that govern a drug market, including controls on production, products, availability, and marketing; Legalisation—Replacement of prohibitions on production, distribution, and possession with legally regulated drug markets. Alcohol, tobacco, and prescription drugs are legal but regulated in many countries.'

The advent of modern anti-doping

Nowadays doping in sport is a common theme in the media; hardly a day goes by without some mention of it.[14] The discovery in 2016 of an apparently state-sanctioned pervasive doping culture in elite sport in Russia, leading to the exclusion of many Russian athletes from the 2016 Rio Olympic games and the exclusion of the official delegation of Russia to the 2018 Pyeongchang Olympic games[15] seems like just another case in a seemingly never-ending series of doping 'scandals' or 'affairs'. Apart from questioning what the reasons are for this apparently ongoing stream of doping 'affairs', one may also wonder when all of this began. In fact, as I will discuss hereunder, doping was rather common in modern sport and deemed not much of an issue for most of its history. At the same time, though, some anti-doping thinking was already present in the Olympic movement at an early stage, but this was not translated into any actual policy making until the late nineteen sixties, and even then, only cursorily (Hunt 2011; Dimeo & Møller 2018).

Although there had been some earlier 'affairs'[16], arguably the first watershed doping affair that rocked the Olympic world concerned the Canadian athlete Ben Johnson during the 1988 Olympics. After winning the 100 m dash in a record time of 9.79 seconds, the anabolic steroid stanozolol was found in a sample of his urine. He was disqualified and his case set off a major crisis that led to a Canadian national inquiry into doping and ethics in sport. This Dubin inquiry, named after its coordinator, clearly indicated that Johnson was not a lone wolf and that doping was a prevalent practice in several elite sports.[17] This episode paved the way for more concrete anti-doping measures by the official sports institutions and also alerted some state agents that there was a problem that needed action (Hanstad 2008). Despite calls for concrete policy changes, though, little was actually done (Hunt 2011; Dimeo & Møller 2018).

The case that really started off the dynamic that led to contemporary anti-doping policies was arguably the 'Festina affair' in 1998, wherein organised doping was discovered among one of the professional cycling teams enrolled in

[14] Google proposes news feeds based on keywords; with the keyword 'doping' this results in (sometimes lengthy) daily feeds.

[15] https://www.olympic.org/news/ioc-suspends-russian-noc-and-creates-a-path-for-clean-individual-athletes-to-compete-in-pyeongchang-2018-under-the-olympic-flag, accessed May 2018.

[16] Notably, the deaths of cyclists Jensen (summer Olympics 1960) and Simpson (Tour de France 1967), allegedly from amphetamine use, had already catalysed some (minor) policy changes.

[17] There are reasons to believe that several other athletes against whom Johnson competed at those Olympics, as well as other athletes competing in other events had also been doping: https://sports.vice.com/en_ca/article/53v7xd/throwback-thursday-ben-johnson-at-the-seoul-olympics-and-the-doping-race-that-never-ends, accessed May 2018.

the Tour de France. Willy Voet, a soigneur of the Festina team, was stopped by French customs on a secondary road near the Belgium-French border with a vast selection of doping substances in the trunk of his car. The French minister of sport at the time, Marie-George Buffet, then provided the executive state power for a first serious crackdown on doping in sport in France. During that year's Tour, team cars and hotel rooms were searched by the police, and riders and personnel were arrested. This eventually led the athletes to engage in a strike during one of the stages. The riders stepped off their bikes and sat down in the middle of the road, asking 'to be left alone so that they could do their job'. The Festina team was excluded from the Tour, as were other teams. Some further teams and individual riders subsequently also left the tour, and only a fraction of the peloton made it to the finish line in Paris that year, now also known as the 'Tour of Shame'. The final podium was occupied by Marco Pantani, Jan Ulrich and Bobby Julich, of whom we now know doped during their careers. This 'Festina affair' resounded strongly in the media, who presented it as a 'scandal', and accompanied their reporting by strong calls for action from political and other official agents, both inside and outside sport. Juan Antonio Samaranch, at that time the president of the International Olympic Committee (IOC), at first seemed to steer for a more relaxed middle stance but was quickly silenced by strong calls for more stringent measures.[18]

Thus, in the wake of this 'Festina affair', in an attempt to keep control of the anti-doping agenda, the International Olympic Committee (IOC) finally reacted by organising an international meeting in Lausanne in early 1999, bringing together representatives of the sports world and of some governments, in a move that led to the official creation of WADA on November 10 of that year (Hanstad 2008; Hunt 2011; Dimeo & Møller 2018). WADA's declared mission was 'to lead a collaborative worldwide movement for doping-free sport'.[19] The idea of a special international anti-doping entity was not new but had never obtained the sufficient backing to be realised. This newly instituted WADA was going to strive for the globalisation and harmonisation of anti-doping policy in elite sport. In 2004, a first version of the WADA Code, defining doping and anti-doping, together with a list of banned substances and methods,

[18]'Calling the Tour de France drug scandal a "tough blow for all sports," Juan Antonio Samaranch, the president of the International Olympic Committee, wants to reduce the list of drugs that athletes cannot use. "The ones to blame are not the athletes but those around them", Samaranch was quoted as saying in the newspaper El Mundo today. "Doping demands an exact definition – and I have been asking for it for years." Samaranch said that while the I.O.C. would not consider legalizing doping, the list of banned products "'must be reduced drastically." "Doping is everything that, firstly, is harmful to an athlete's health and, secondly, artificially augments his performance," Samaranch said. "If it's just the second case, for me, that's not doping. If it's the first case, it is." ' NYT, July 27 1998, http://www.nytimes.com/1998/07/27/sports/cycling-a-call-for-doping-changes.html, accessed May 2018.

[19]https://www.wada-ama.org/en/who-we-are, accessed May 2018.

was published. By leveraging UNESCO, through the above mentioned 2005 International Convention Against Doping in Sport, WADA was able to have a majority of UN member states adhere to its objectives, giving universal status to the Code and the List [see Jedlicka & Hunt (2013)].

It then took another 'affair' to help the growing anti-doping movement gaining further momentum, especially in professional cycling, which was the 'Armstrong affair' (Dimeo 2014). After having recovered from cancer, the American athlete Lance Armstrong had an extremely successful professional cycling career, with a record seven wins of the Tour de France. He became a public icon, also through his Livestrong Foundation, and its outreach to cancer patients and cancer survivors. Upon his 2009 return from retirement from professional cycling, he picked up cycling again, but also competed in triathlon, mountain-biking and long distance running. By this time, the public and official opinions on doping in sport had changed, and the strong suspicions of doping concerning Armstrong's cycling career were taken up again, first by the US legal apparatus and then by the USADA.[20] When he was dropped by several of his former team-mates, who admitted having doped during their Armstrong years and who also directly accused Armstrong himself of systematic doping throughout his career, he was finally excluded from sport for life and all of his wins were annulled upon the publication of the 'Reasoned decision of the USADA on disqualification and ineligibility' in 2012.[21] Just as the prior 'affairs', the 'Armstrong affair' helped put doping in elite sport back into the lime light, giving the global anti-doping movement further impetus.

These 'affairs' and more recent ones, such as the above-mentioned wide-spread and possibly state-sanctioned, doping in Russia and the high prevalence of doping among East-African long distance runners[22], have thus been steadily fuelling the movement towards more stringent anti-doping policies world-wide. Nowadays, WADA's Code and its implementation have obtained universal value and coverage, with potentially far-reaching consequences, as will be discussed in this thesis.

[20] United States Anti-Doping Agency, https://www.usada.org/, accessed May 2018.

[21] http://cyclinginvestigation.usada.org, accessed May 2018.

[22] See e.g. http://www.independent.co.uk/sport/olympics/rio-2016-olympics-doping-kenya-drugs-major-michael-rotich-sunday-times-ard-track-and-field-running-a7177176.html, accessed May 2018.

Some earlier historical aspects of doping and anti-doping

The previous section illustrated how modern doping, exemplified by the inception of WADA, came about. As a backdrop, I here provide a short summary of earlier historical aspects of doping and anti-doping. Doping, in the sense of using a substance to improve performance, has a long history, dating back well before the above series of 'affairs'. Ephedra, a stimulant extracted from a bush, was already used to combat fatigue in China 5,000 years ago (Laure 2004). Doping in competition can be traced as far back as the Greek sporting competitions of antiquity (Hunt 2017). Only when 'modern' sport developed in the 19th century did doping become a matter of any controversy. Until recently, this was a rather understudied era; the study of the beginning of anti-doping *per se* only recently became an active scholarly field. Apart from Dimeo (2008), few scholars have critically researched the historical aspects of doping and anti-doping [see e.g. Laure (2004); Hoberman (2005); Møller (2005); Hunt (2011); Lopez (2013); Gleaves (2016); Dimeo & Møller (2018)].

Still, scores of scholarly as well as popular media texts frequently refer to past events when discussing this or that aspect of doping and anti-doping. A famous example is that of the frequently cited and recited story of the so-called first victim of doping in sport. Arthur Linton supposedly died from doping during a Bordeaux-Paris cycling race in 1886, a story repeatedly reported as a fact, even in the scholarly press. According to historical research by Paul Dimeo, however, Linton died ten years later, likely from typhoid fever (Dimeo 2008; Gleaves 2014). Recent research by historians such as Dimeo (2008) and Lopez (2013) has allowed the formation of a better picture of the advent of doping in sport. As aptly remarked by Paul Dimeo in the foreword to his hallmark monography *'History of Drug Use in Sport 1876-1976, Beyond Good and Evil'* (Dimeo 2008), there was an important void concerning a proper historiography of doping and anti-doping.

He was frustrated

> 'to read, in so many different places, passages of historical narrative that failed to meet the the most fundamental requirements of reasonably good historiography. They did not use primary sources, they unquestioningly repeated secondary sources that contained no evidence, they used invented stories from the past to prove points about the present, and they failed to ask any contextual questions'. (Dimeo 2008, p. x)

In his book, Dimeo contributes to filling this critical void. He researched and analysed doping and anti-doping in sport over a period of one hundred years starting from the late nineteenth century and convincingly made the point that today's 'classic dichotomy of "good anti-doping" up against "evil doping" ' is a rather recent concept and not the result of an explicit search for a lost 'golden age' of 'pure' and 'clean' sport as modern anti-doping advocates. Instead, Dimeo neatly documents that doping has been part of the culture of modern sport since the late nineteenth century. In fact, scientists quite openly looked for ways to combat fatigue and (semi-)professional sportsmen readily adopted such strategies. Further advances in medical sciences and the budding of sport science (i.e. exercise physiology) in the interwar period then led to an even more informed introduction of doping in sport. Surely enough, there was simultaneously amateur sport, especially in England, where not only doping but even training with the help of a coach were 'not done', but this concerned only a social elite (see also Dimeo & Møller 2018). The second world war subsequently provided the impetus for research into stimulants, such as amphetamines, for obvious military objectives on both sides, and these drugs quickly found their way into sport after the war. In parallel with an increasing societal presence of psychotropic drugs from the late nineteen fifties into the sixties, some early anti-doping resentment became more concrete. This was accentuated when the Cold War opposing West and East, also led to an arms race in sport, with the aid of anabolic steroids, on both sides of the curtain [see Hunt (2011), and Dimeo & Møller (2018)]. Only when it became possible to measure anabolic steroids in urine did the anti-doping movement actually begin its efforts against doping. It was the science of measuring traces of doping in urine and blood that led up to an intensification of the quest for an Olympic elite sport free of doping. It is remarkable that in some way, science can thus be seen as having 'invented' both doping and anti-doping. Nevertheless, 'an overarching tacit acceptance of doping, however, worked against major progress in anti-doping policy' (Hunt 2011, p. 69).

So, if doping was prevalent throughout the history of sport, when and how did anti-doping begin? Work by Gleaves (2012) suggests that the early attention on doping in sport in the late 19th century was perhaps spawned by the sport of horse racing. There was worry that the doping of race horses (to *hinder* their performance!) would negatively affect betting, which led to the introduction of presumably the earliest anti-doping policies. In contrast, in early (human) professional sport (pedestrians, cycling, etc.), doping was common and did not cause much outrage (Dimeo 2008; Gleaves 2014; Dimeo & Møller 2018). Over the next few decades or so, however, aristocrats such as Coubertin took on the organisation of international athletics based on amateur ideals; this social elite found the use of drugs by the lower and middle classes engaging in sport to be inappropriate behaviour (Dimeo & Møller 2018). In 1928, the International

Association of Athletics Federations decided to prohibit doping at its events and the IOC followed suit a few years later (Hunt 2017). According to some scholars, modern anti-doping should therefore be seen as anchored in the foundation myths of Olympism (especially the 'amateur' myth) and the notion that it represents 'pure' sport (Ritchie 2014; Dimeo & Møller 2018).

From this brief historical overview it follows that both doping and anti-doping mindsets have existed in parallel ever since the beginning of modern sport. Though for most of the history of modern sport, the doping mindset would seem to have prevailed, with the inception of WADA, the anti-doping mindset became the more prominent one (Hunt 2011; Dimeo & Møller 2018; Kayser & Møller, Appendix B). Operating from a 'zero tolerance' stance the anti-doping movement successfully created the necessary momentum to leverage increasing means for the repression of doping in sport. These efforts have been labelled a 'war on doping' in which, for some official agents the goal justifies the means. This may come with a non-negligible cost to society with a risk of further exacerbation, however, as I will argue in this thesis.

Introductory remarks on the following chapters

The preceding historical section was necessary to provide the backdrop for the following chapters, which are based on five previously published original articles and one submitted one. Their order is such that first modern anti-doping policy is described and analysed, then some of the side-effects of modern anti-doping policy are presented. This is then followed by an argument in favour of a change in anti-doping policy, of which the outlines are sketched. Those chapters based on previously published papers are followed by short comments discussing their reception by other scholars since publication.

Chapter two thus presents a critique of anti-doping policy as it was shortly after the inception of WADA. It was first published as a condensed viewpoint in *The Lancet* in 2005 (Kayser, Miah & Mauron 2005). The reactions to that piece prompted us to publish a full article in *BMC Medical Ethics* (Kayser, Miah & Mauron 2007). This frequently cited article[23] analyses the arguments in favour of anti-doping and finds them to be based on questionable grounds. We here introduce the hypothesis that current anti-doping policy might potentially introduce greater-impact problems than it solves, and in response, we provide the beginning of an argument on behalf of enhancement practices in sport within a framework of medical supervision.

[23] 243 times as of May 2018 according to scholar.google.com.

Chapter three then presents a more detailed critique of one particular argument that has been advanced for anti-doping – that liberalising doping would lead to pervasive doping and a uniform shift of performance at a greater health cost. It explores the question of whether a relaxation of the anti-doping rule would lead to an arms race, with similar increases in performance between individuals at the cost of an increased morbidity. It then counters this argument, postulating that the individual effects of doping vary between athletes, comparably to the varying effects of therapeutic drugs, and that allowing doping would add to the variance in performance similarly to the varying effects of training.

Chapter four presents an analysis of some regulatory and legal aspects of modern anti-doping policy in elite sport and its (unintended) consequences (Kayser 2011). It identifies four types of consequences: 1) those derived from the lack of clarity of operational doping and anti-doping definitions, 2) those related to surveillance in sport, 3) those referring to the limits of testing technology and 4) those raised in the relationship between sport and the larger society. It is argued that society is always evolving and changing its definitions as well as its attitudes toward performance-enhancing substances. For instance, WADA uses the principle of 'strict liability' and holds that athletes are responsible for the presence of a forbidden substance in their body, no matter how it came into their blood or urine. However, for the majority of crimes in wider society, intentionality plays a significant part in the punishment.

Chapter five and six then sketch the outlines of a potential alternative policy for dealing with doping inside and outside sport. Chapter five is based on a chapter written for the *Routledge Handbook of Drugs and Sport* (Kayser & Broers 2015). It provides an analysis of the similarities and overlaps between the 'war on drugs' and the 'war on doping'. It discusses the harms of doping and argues that these are not well evaluated and often based on myths. It then identifies in further detail some of the unintended harms related to anti-doping. It ends with a first sketch of an alternative way of dealing with doping, and performance enhancement in general, arguing that doping and performance enhancement policies could include harm reduction measures that protect a person's health.

Chapter six provides a more detailed ethical analysis of harm reduction strategies when applied to doping in elite sport. Using the five-level model developed by Tolleneer and Schotsmans (2012), arguments for and against the introduction of a partial relaxation of the anti-doping rule and the introduction of harm reduction measures are discussed at the level of the athletes themselves, the opponents in competition, the sport at stake, the spectators, and humanity.

Chapter seven concludes the thesis with a short discussion that puts the previous chapters into an overall perspective and develops an argument for an anti-doping policy change. It formulates some general conclusions and sketches perspectives

for further work.

References

Christiansen AV (2011) Bodily Violations. Testing Citizens Training Recreationally in Gyms. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport.* Routledge, London, UK.

Decorte T, De Grauwe P & Tytgat J (2016) *Cannabis Onder Controle : Hoe?* Lannoo Campus, Leuven, Belgium.

Dimeo P (2008) *A History of Drug Use in Sport: 1876-1976.* Routledge, London, UK.

Dimeo P (2014) Why Lance Armstrong? Historical context and key turning points in the "Cleaning Up" of professional cycling. *The International Journal of the History of Sport*, 31(8), 951–968. http://doi.org/10.1080/09523367.2013.879858

Dimeo P & Møller V (2018) *The Anti-Doping Crisis in Sport.* Routledge, London, UK.

Gleaves J (2012) Enhancing the odds: Horse racing, gambling and the first anti-doping movement in sport, 1889–1911. *Sport in History*, 32(1), 26–52. http://doi.org/10.1080/17460263.2012.666996

Gleaves J (2014) A global history of doping in sport: Drugs, nationalism and politics. *The International Journal of the History of Sport*, 31(8), 815–819. http://doi.org/10.1080/09523367.2014.909621

Hanstad DV, 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. http://doi.org/10.1177/1012690208100552

Henning A D & Dimeo P (2018) The new front in the war on doping: Amateur athletes. *The International Journal on Drug Policy* 51:128–136 http://doi.org/10.1016/j.drugpo.2017.05.036

Hoberman JM (1992) *Mortal Engines: The Science of Performance and the Dehumanization of Sport.* The Free Press, Glencoe, IL, USA.

Hunt TM (2017) WADA and Doping in World Sport. In Edelman R & Wilson W (Eds.) *The Oxford Handbook of Sports History.* Oxford University Press,

Oxford, UK.
http://doi.org/10.1093/oxfordhb/9780199858910.013.30

Hunt TM (2011) *Drug Games: The International Olympic Committee and the Politics of Doping, 1960–2008.* University of Texas Press, Austin, TX, USA.

INHDR (2013) INHDR statement on regulating non-performance enhancing drugs in sport. *Performance Enhancement and Health* 2(2), 39–40. http://doi.org/10.1016/j.peh.2013.05.001

Jedlicka SR & Hunt TM (2013) The International Anti-Doping Movement and UNESCO: A Historical Case Study. *The International Journal of the History of Sport* 30(13), 1523–1535. http://doi.org/10.1080/09523367.2013.823404

Juengst & Moseley (2016) Human Enhancement:
https://plato.stanford.edu/entries/enhancement/, accessed May 2018.

Kayser B (2011) On the Presumption of Guilt without Proof of Intentionality and other Consequences of Current Anti-Doping Policy. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport.* Routledge, London, UK.

Kayser B & Broers B (2015) Doping and Performance Enhancement: Harms and Harm Reduction. In Møller V, Waddington I & Hoberman J (Eds.) *Routledge Handbook of Drugs and Sport.* Routledge, London, UK.

Kayser B, Mauron A & Miah A (2005) Viewpoint: Legalisation of performance-enhancing drugs. *The Lancet* 366 Suppl 1, S21. http://doi.org/10.1016/S0140-6736(05)67831-2

Kayser B, Mauron A & Miah A (2007) Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8, 2. http://doi.org/10.1186/1472-6939-8-2

Kayser B & Møller V (2018) The Anti-Doping Industry Coming of Age: in Search of New Markets. In van de Ven K & McVeigh J (Eds.) *Human Enhancement Drugs (HEDs).* Routledge, London, UK. In press.

Laure P (2004) *Histoire du Dopage et des Conduites Dopantes.* Edition Paris, Vuibert, France.

López B (2013) Creating fear: the "doping deaths", risk communication and the anti-doping campaign. *International Journal of Sport Policy and Politics* 6(2), 1–13. http://doi.org/10.1080/19406940.2013.773359

Ljungqvist A (2017) Brief History of Anti-Doping. In Rabin O & Pitsiladis Y (Eds) *Acute Topics in Anti-Doping. Medicine and Sport Science* 62, 1–10. Karger, Basel, Switzerland. http://doi.org/10.1159/000460680

Lowther J (2015) Effectiveness, Proportionality and Deterrence. In Møller V, Waddington I & Hoberman J (Eds) *Routledge Handbook of Drugs and Sport*. Routledge, London, UK.

Møller V (2005) Knud Enemark Jensen's death during the 1960 Rome Olympics: A search for truth? *Sport in History* 25(3), 452–471. http://doi.org/10.1080/17460260500396319

Muyshondt P (2017) *Beleid Op Speed*. Vrijdag Uitgevers, Antwerpen, Belgium.

Pound RW (2006) *Inside Dope : How Drugs are the Biggest Threat to Sports, Why You Should Care, and What Can Be Done About Them*. Wiley & Sons, Mississauga, Ont., Canada.

Ritchie I (2014) Pierre de Coubertin, doped 'amateurs' and the "spirit of sport": the role of mythology in Olympic anti-doping policies. *The International Journal of the History of Sport* 31(8), 820–838. http://doi.org/10.1080/09523367.2014.883500

Rodenberg RM & Holden JT (2017) Cognition enhancing drugs ('Nootropics'): Time to include coaches and team executives in doping tests? *British Journal of Sports Medicine* 51(18), 1316–1316. doi:10.1136/bjsports-2015-095474.

Tolleneer J & Schotsmans P (2012) Self, Other, Play, Display and Humanity: Development of a Five-Level Model for the Analysis of Ethical Arguments in the Athletic Enhancement Debate. In Tolleneer J, Sterckx S & Bonte P (Eds.) *Athletic Enhancement, Human Nature and Ethics: Threats and Opportunities of Doping Technologies. International Library of Ethics, Law, and the New Medicine*, 52, 21–43. Springer Netherlands, Dordrecht, Netherlands. http://doi.org/10.1007/978-94-007-5101-9_2

Verhelle H, Vanhouche AS & Huys T (2016) Gewichtheffen, voedingssupplementen en anabole steroïden in detentie. Nieuwe fenomenen binnen de gevangenismuren of weggecijferde moeilijkheden? *Fatik*, (151). https://derodeantraciet.be/actueel/fatik-gewichtheffen-voedingssupplementen-en-anabole-steroiden-in-detentie/, accessed May 2018.

Chapter 2

Current anti-doping policy: a critical appraisal

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Abstract

Background: Current anti-doping in competitive sports is advocated for reasons of fair-play and concern for the athlete's health. With the inception of the World Anti Doping Agency (WADA), anti-doping effort has been considerably intensified. Resources invested in anti-doping are rising steeply and increasingly involve public funding. Most of the effort concerns elite athletes with much less impact on amateur sports and the general public.

Discussion: We review this recent development of increasingly severe anti-doping control measures and find them based on questionable ethical grounds. The ethical foundation of the war on doping consists of largely unsubstantiated assumptions about fairness in sports and the concept of a 'level playing field'. Moreover, it relies on dubious claims about the protection of an athlete's health and the value of the essentialist view that sports achievements reflect natural capacities. In addition, costly antidoping efforts in elite competitive sports concern only a small fraction of the population. From a public health perspective this is problematic since the high prevalence of uncontrolled, medically unsupervised doping practiced in amateur sports and doping-like behaviour in the general population (substance use for performance enhancement outside sport) exposes greater numbers of people to potential harm. In addition, anti-doping has pushed doping and doping-like behaviour underground, thus fostering dangerous practices such as sharing needles for injection. Finally, we argue that the involvement of the medical profession in doping and anti-doping challenges the principles of non-maleficience and of privacy protection. As such, current anti-doping measures potentially introduce problems of greater impact than are solved, and place physicians working with athletes or in anti-doping settings in an ethically difficult position. In response, we argue on behalf of enhancement practices in sports within a framework of medical supervision.

Summary: Current anti-doping strategy is aimed at eradication of doping in elite sports by means of all-out repression, buttressed by a war-like ideology similar to the public discourse sustaining international efforts against illicit drugs. Rather than striving for eradication of doping in sports, which appears to be an unattainable goal, a more pragmatic approach aimed at controlled use and harm reduction may be a viable alternative to cope with doping and doping-like behaviour.

Background

Since the inception, in 1999, of the World Anti Doping Agency – Agence Mondiale Anti-Dopage (WADA-AMA) and its anti-doping regulation, athletes in several sports are obliged to keep the authorities informed of their daytoday whereabouts so that they can be obliged to urinate in full view of another person for sample collection, without prior notice (see the website of WADA-AMA (WADA, 2007)). In accordance with the WADA-AMA 'athlete whereabouts information guidelines', the websites of national antidoping agencies now provide athletes with forms to fill out with daily details of where the athlete stays overnight and goes during the day (for example the USA anti-doping agency website (USADA, 2007)). Similar forms are being used in other countries. This practice seriously impinges on personal privacy and is unacceptable in any other setting except, perhaps, imprisonment. Yet it is considered ethically acceptable in elite sport, since it is meant to protect the noble principles of fair competition, which therefore trump the value of an individual's private sphere. Indeed, it is commonly argued that athletes must relinquish some personal privacy, in order for fair competition to be possible. Our inquiry draws on a developing body of literature within medical ethics that discusses sports related enhancement issues (Fost 1986; Mehlman *et al.* 2006; Savulescu *et al.* 2004). We raise questions about the degree of privacy violation that anti-doping organisations are entitled to request from athletes, on the basis of this sporting norm. We are doubtful about the rule that fair competition should trump fundamental liberties in the majority of cases and are concerned about the escalation of this requirement in contemporary elite sport. The implicit normative framework of elite sports is itself a complex ethical and ideological construct, whose analysis lies beyond the scope of this paper. However, we argue that this normative framework currently plays out into costly surveillance and medical testing practices that are increasingly at odds with the norms of medical ethics and with received notions of personal privacy.

Since the medical profession plays an important role in the war on doping, we need to analyse this situation in order to assess whether the physician's role in anti-doping is compatible with prevailing medical ethics. In this article we will argue that the moral and ethical foundations of the war on doping are doubtful at best. In response, we advance both theoretical and pragmatic arguments that oppose the current trend of intensified and increasingly costly efforts to limit the use of doping in sports. Specifically, we critically explore four main ethical justifications for anti-doping: 1) the level playing field argument, 2) protecting the athlete's health 3) the concern for professional integrity and 4) the concern about unnecessary risk taking. In response to these arguments and in view of fundamental inconsistencies within current anti-doping policy and its limited

effectiveness, we propose a model of medically supervised doping which takes into account the moral responsibility of medical professionals.

Discussion

A Level Playing Field

The first foundation for anti-doping concerns the concept of fair-play. It is reasoned that athletes should compete on equal grounds (Loland 2002; Simon 1991). One purpose of the rules of sports is to define the 'level playing field' on which athletes compete and thus to articulate the notion of fair-play. Currently, anti-doping policies are part of these rules since doping practices are typically seen as cheating. We do not question the need for rules in sports nor the possibility of finding workable 'level playing field' definitions. However, we do find the anchoring of today's anti-doping regulations in the notion of fair-play to be misguided.

Official thinking on these issues simply assumes the validity of the level playing field concept without coming to terms with the reality of widespread biological and environmental inequality. People differ in their biological capacities, which result from interplay between genome and environment. This also applies to athletes and their performance capabilities. Genetic predisposition is of prime importance in this respect even though the identification of these genetic traits is taking time (Rankinen *et al.* 2004). In fact, even a simple genetic mutation may confer a performance advantage. For example, in one Finnish family, a mutation in the erythropoietin receptor has increased the sensitivity of erythroïd progenitor cells leading to high hematocrit. The clinical condition is mild and life span is unaffected. The family's most famous member, Eero Maentyranta, whose blood carries more haemoglobin and therefore more oxygen than that of the average male, won three gold medals in cross-country skiing at the 1964 Winter Olympics in Innsbruck (Booth *et al.* 1998). This example reveals the importance of inherited characteristics for performance. Yet, it is treated very differently by conventional sports ethics policies when compared with for example pharmacological aids, even though neither example is 'earned' by the athlete. Apparently, prevailing sports ethics is unconcerned about this contradiction since 'natural' genetic variation is considered to be an acceptable (or irrelevant) inequality, whereas artificial enhancement is not. However, while WADA has recently signalled a concern about the use of genetic screening for performance (WADA 2006), there are no strict prohibitions of such use. Nevertheless, it will be interesting to follow this development as the warning from the WADA comes just months after the commercialisation of the first

genetic tests for performance, which are now being introduced to a range of countries (Dennis 2005).

In addition to genetics, several other contingent facts about the athlete's circumstances fail to be reflected adequately in the current ethical framework of anti-doping. For instance, depending on their nationality and sports speciality, athletes may differ enormously with regard to their access to care, supervision, and a high quality medical and technological environment (Savulescu et al 2004; Kennedy 2004). Being a top athlete from a rich country is completely different from being an athlete from the developing world. There is certainly no evidence of equality of conditions here and there probably never will be. Furthermore, in a rich high-tech environment, an athlete may come as close as possible to doping, and sometimes into doping, all the while being medically supervised in a sophisticated technological environment.

These inequalities are further compounded by the possibility of undetected sophisticated doping. The recent cases surrounding the United States Bay Area Laboratory Co- Operative (BALCO) concerning the designer anabolic steroid, tetrahydrogestrinone (THG) (Handelsman 2004), clearly show that, given sufficiently high stakes, inventive people will circumvent anti-doping strategies and may remain undiscovered, at least temporarily. It is relevant to note that the discovery of THG came as a result of an individual's 'good will' rather than the success of anti-doping laboratories. In 2003, a syringe filled with the substance was left anonymously at Dr Don Catlin's anti-doping lab at UCLA, from which his team was able to characterise THG and develop a test for it (Knight 2003). Presently, anti-doping relies predominantly on tests for substance groups that are available through prescription or that are known to the anti-doping laboratories as potential doping agents. Anti-doping cannot possibly develop tests for all substances that have ever been developed, especially those that never made it to full commercialisation and about which little is known. This confers force to the claim that anti-doping will always remain one step behind the dopers. Moreover, these circumstances give credence to the argument that doping tests are not effective if they lead merely to catching those athletes who do not have the best 'rogue' scientists working for them. The use by athletes from countries with less access to high-tech medical supervision during the 2004 Athens Olympic Games, of 'old' doping technology like the anabolic steroid stanozolol (IOC 2007) suggests another dimension of this economic inequality. Since testing techniques for these older substances are well established, their users run greater risk of discovery than those who have access to newer more sophisticated molecules (Savulescu *et al.* 2004). The response might be that the function of testing is as much a deterrent as a mechanism to ensure a level playing field. Indeed, one might claim that failure to detect all cheats is not an argument against striving to do so, since this would mean that

perhaps all forms of regulatory systems are inadequate. However, we question this argument, for while it is common for anti-doping advocates to analogise their work to the criminal justice system, this analogy does not hold. In fact, sports are particular because their social value relies on whom is celebrated as the winners of competitions. In turn, it is presumed that these winners undertake their achievements by actions that merit praise or are virtuous. Such actions might include the discipline of training, the learning and acquisition of skills, or even a feel for the game that is somehow special. Yet, if the system is ineffective, then these crucial values are compromised. In contrast, normative systems designed to police society at large do not make highminded assumptions about universal virtue and are, therefore, more resilient as regards the continued existence of transgressions. In addition, even though in elite sports repression may have led to a reduction in doping such is not the case in amateur sports and outside sports, where the available evidence clearly indicates continuous use of performance enhancing substances (DuRant *et al.* 1993; Koch 2002; Laure 2000; Laure *et al.* 2004; Mella *et al.* 1996; Midgley *et al.* 2000).

One more important problem concerns the potential of false positive tests. A recent report mentioned the potential of wrongly accusing an athlete of EPO use with the current testing procedures for EPO (Beullens et al 2006). Anti-doping tests are just as much limited by sensitivity, specificity, precision and reliability as any other biomedical test and acceptable limits for certain products have to be set rather high to prevent false positives and therefore false negatives will continue to occur.

To summarize, we argue that the present concept of fairplay implicit in the war against doping fails to incorporate several other sources of inequality between athletes. Considering the continuous discovery of doping cases and the impossibility of eradicating doping practices, the basic inequality between undiscovered doped athletes and 'clean' athletes is likely to persist. These circumstances invite questions about what system of addressing the inequalities associated with performance enhancement would be most likely to optimise equality. While we do not consider that the discussion turns merely on an equality argument, the 'spirit of sport' criterion within the World Anti-Doping Code is used to give special value to fairness within sport. It is used as an argument on which anti-doping is justified: to ensure athletes are playing the same game. We suggest that, from the perspective of equality, supervised doping practice is likely to provide the greater prospect of ensuring equality of competition. On such a system, competition results would be based on some system of merit, rather than the undeserved inequalities arising from, say, genetic capacities. Critics might argue that scientists, rather than athletes, earn such advantage and that this kind of achievement is not relevant to sports. However, elite athletes are also constituted by scientific knowledge and this is a

valued aspect of contemporary sport. As such, translating doping enhancements into earned advantages – having the best scientists on one's team – would more closely align to the values of competition than leaving it all to chance, unequal access to illicit practice, and the cleverness of undetected cheating.

Protecting the Athlete's Health

The second ethical foundation for anti-doping is the protection of the athlete's health. It is reasoned that anti-doping control is necessary to prevent damage from doping. Even though we endorse the principle of concern about the health of the athlete, there are reasons to question the particular form of this principle as related to anti-doping policy.

The Concern for Professional Integrity

When advocating the need for anti-doping in sport, a strong claim seems to emerge from the values implied by the medical professional's role and the proper role of medicine. There are two parts to this claim; the first relates to a stance on the legality of medical standards, which rejects doping methods because they are instances of medical intervention for non-therapeutic purposes. According to a commonly held position today, medical practice should be either preventive or therapeutic, i.e. aimed at preventing or treating disease, but should not use biomedical technology for human enhancement. Indeed, much discussion in contemporary bioethics seems particularly concerned about the legitimacy of this conceptual distinction, though it is reasonable at least to indicate that such distinctions are made within medical practice, either because of the need to ration treatment or because health care providers do not consider enhancement to correspond with the proper role of medicine. Of further concern is that a particular doping practice has not been approved for use with healthy persons (such as athletes) and so has not benefited from the extensive clinical trials normally necessary before a therapeutic substance can be used. This is why, according to current anti doping policy, doping might be used legitimately with a therapeutic objective to increase the rate of repair of injury, but not if there is no medical need as such. In this sense, the use of doping methods to enhance performance is not sensible to many medical professionals because little is known about their effects on people who do not suffer from the very specific condition(s) for which the intervention was designed and tested. However, this view is not reflected in the wide spread use of off-label prescriptions. While the risks associated with such practice might be acceptable in a therapeutic context (Fost 1998), it is deemed unacceptable in the realm of enhancement for

sport. This is a salient point, since an advocate of doping cannot simply map onto sport substances that are already in existence for therapeutic use. Thus, we cannot claim that a specific form of, say, an anabolic steroid be granted permission for use by athletes. Rather, our claim would require approval for the development of an anabolic substance or dosage scheme designed and adapted specifically for athletes. The implications of this claim are quite different from advocating an uncritical acceptance of substances that already exist.

However, the ethical force of this point arises in the second part of the claim, which relates to the principle of non-maleficience, a principle that applies to all health professionals. In view of this principle, the ethics of antidoping justifies itself on the basis that the counter-position would require medical professionals to use medical products in a way that might lead to greater harms for the patient or because it might compromise the physician's personal integrity. Thus, one might suggest that such risks are different from those an athlete takes when choosing to, say, go horse riding, since the latter does not require prior medical intervention before taking part. At most, it might involve some form of approval that the participant is in good health. In contrast, under medically supervised doping, a physician is making possible the enhancement by intervention and so undertakes a duty of care when treating the athlete. The difficulty with this claim is that sports physicians already engage in such practices when repairing athletes. Consequently, to reject 'enhancement' on this basis fails to take into account the bio-cultural character of health: that making people well always involves making them well for something that involves a whole range of risks. While it might be unreasonable to claim that all physicians have an obligation to enhance athletes, one would nevertheless recognise as legitimate a physician's choice to facilitate such a lifestyle. Indeed, the remaining arguments that might counter this view would involve some concern about the scarcity of resources, though sports are unlikely to rely on public funding for this purpose.

The Concern about Unnecessary or Irrelevant Risks

The second concern about protecting the athlete's health that is often used to justify anti-doping is that doping risks are qualitatively different from other sporting risks, because the former are unnecessary and irrelevant. This view takes into account the fact that elite sports are not innocuous (Parkkari *et al.* 2001; Pipe 2001); participation may lead to serious health problems. Consequently, such practices are not considered unambiguously health promoting. For example, soccer comes with high risks for knee and ankle problems, well beyond that of the general population, especially in elite players (Junge *et al.* 2004). Boxing, in its present form, is well known to be dangerous for the CNS (Jordan 2000). In ice hockey and American football

spine injury is frequent (Banerjee *et al.* 2004). These risks – unlike doping risks – are often characterised (and justified) as a necessary part of the competition. However, the various sports are not defined by their essential nature; rules can be changed to make them safer. For example, boxing has made a number of rule changes over the years to reduce the potential for serious injury. But there is often a limit to reducing risk in this way, since excessive risk reduction could undermine the value typically attached to a particular sport. For instance, if one seeks to free climb a particular mountain route, then the practice is possible only by accepting the rule that no safety support is used. If this rule is not maintained, then the claim that one has climbed freely cannot be made. Thus, if the rules are changed, then the type of experience changes along with the values associated with it. While medical professionals will strive to make sports as safe as possible, there are certain risks that must be accepted in order to have the games take place.

For many practices, the claim about logical necessity and relevance cannot be advanced in relation to doping: one can undertake free climbing without using some form of doping. An interesting case arises when considering extreme performances. For instance, there are some forms of performance that are not possible without some form of technological enhancement. Perhaps for some climbers supplemental oxygen for climbing Mount Everest falls into this category. In these kinds of activities, enhancement has a contested status, though might be seen as a constitutive element of the performance in the same way that a tennis racquet is a constitutive technology of playing tennis. However, doping practice might make possible the experience of certain physical achievements that are simply not possible without the technology. Indeed, one might suggest that the level of competition in many sports is so high that being competitive requires a wide range of sophisticated technological assistance to be used in training. Therefore the notion that current elite sports competitions only test some naturally inherent ability of athletes does not reflect reality.

However, the more salient point is that the level of risk one accepts within the practices we enjoy cannot be prescribed by the moral norms of the medical profession. The kinds of risks one takes in daily life are determined through a complex, personal value system that can often appear inexplicable – such as the motivation for jumping out of aeroplanes or deep sea diving. It is problematic to make such value systems accountable to the moral judgement of the medical profession. Indeed, one conception of a health care system (which we advocate here) would suggest that one of its functions is precisely to care for the risks people freely take in their daily lives.

The key question is whether any rule or enhancement is 'sufficiently safe', rather than absolutely safe. We believe that doping cannot be sufficiently safe as long as it is prohibited and that this fact has a direct bearing on the integrity

of medicine and the physician's commitment to maintain this integrity. Yet, under appropriate supervision, this risk could be more easily justified. Thus, a physician cannot simply assume that doping is, per se, more dangerous than the risks of engaging in elite sports. The risks of every doping technology must be assessed. In turn, this is especially difficult for an illegal practice whose risks are not well described, since they are largely hidden. For instance, the risk of well-controlled use of erythropoietin in elite sports is not well known, since only anecdotal information is available (Tokish *et al.* 2004). The use of dexamphetamine is likely to be dangerous, but scientifically sound data are scarce (Tokish *et al.* 2004). More data exist on anabolic steroids (Tokish *et al.* 2004; Hartgens & Kuipers 2004), but again secrecy prevents an evidence based assessment. Furthermore, in a context of prohibition and penalties for use that discourage scientific assessment of the risks, declaring that doping is dangerous becomes, to some extent, a self-fulfilling prophecy, since doping often happens without proper medical supervision or evidence from sound clinical trials. In elite sports there may at least be some medical supervision, possibly of good quality. This is not the case for the general population, which may result in serious health problems for a much greater number of subjects. Indeed, recent reports on the use of illicit pharmacological means to enhance performance in amateur sports are alarming with regard to the high prevalence of these practices (Laure 2000; Laure *et al.* 2004; Tokish et al 2004; Ama *et al.* 2003; Thiblin & Petersson 2005; Medras *et al.* 2005; Alaranta *et al.* 2006).

Response to the Protection of Health Arguments for Anti-Doping

We propose that allowing medically supervised doping within the framework of classical medical ethical standards, particularly with regard to the principle of non-maleficience, would potentially have a number of positive consequences.

Firstly, it might lead to a clearer view of what is dangerous and what is not. At present doping is largely hidden and its epidemiology unknown. Additionally, the war on doping may have adverse effects of its own. Doping control leads to shifts in behaviour that entail an increased health risk. The detection of oil-based esters of nandrolone, belonging to a class of anabolic steroids with little side effects and low risk for hepatic disease has led to the use of oral analogues with more side effects, but more rapidly eliminated from the body and thus less easy to detect (Voy 1991). Now that recombinant erythropoietin is detectable, there is a shift to the use of other oxygen carrying capacity enhancing drugs, with higher potential health risks (Schumacher & Ashenden 2004). These consequences of anti-doping practices may thus paradoxically introduce more health problems than they prevent.

Secondly, elite sports activity often results in health problems that need specific attention. Sometimes, managing these health problems involves pharmacological interventions that are normally considered doping. The boundary between therapeutic and ergogenic (i.e. performance improving) use of pharmacological means is quite blurred and poses important problems to the controlling bodies of anti-doping practice and athletes' sports physicians (Parens 1998). Several substances can be used for medical reasons but are proscribed when the athlete is healthy or in competition. These rules for therapeutic use exemption (TUE) lead to complicated and costly administrative and medical follow-up (Schweizer *et al.* 2004). They may even lead to athletes being denied medical care corresponding to a best practice standard. Cyclists with documented asthma could not be treated optimally because of the strictness of the rules (Naranjo *et al.* 2006). Medically supervised doping would erase this dual identity of molecules – legitimate therapeutic agents vs. illicit doping – and thus eliminate these additional burdens. This would have to be put into the broader context of non-therapeutic use of substances or practices for reasons of human enhancement in general. Although such practices generate much uneasiness today, they need to be addressed frankly as the diversity and scope of human enhancement is bound to increase.

An example of accepted athlete's enhancement is a surgical procedure originally invented to repair injury of the ulnar collateral ligament of the elbow in baseball pitchers. Anecdotal evidence suggests that this procedure often allows pitchers to perform even better than before they were injured. In this case, the repair of athletes – along with the process of recovery through exercise – works to provide a 'better than well' performance outcome, without giving rise to any moral concern about unfair advantages. While this procedure now has a considerably greater success rate, its development in the 1970s was considerably more experimental and hence dangerous (Rohrbough *et al.* 2002).

Thirdly, the concern about doping is largely disingenuous, if it is supposed to reflect a genuine moral concern for health. There is no lack of moral entrepreneurs, poised to preach the war on doping: sports authorities, politicians, opinion leaders, ethicists, and the media. They claim the moral high ground by waging what has become, in effect, what social scientists call a 'symbolic crusade' (Gusfield 1963). Yet, while high-level sports is touted as embodying the positive values of health, meritorious effort, harmonious development of body and mind, this downplays the very real health risks of elite sports as well as accepted levels of foul play with considerable health damage in certain sports such as soccer or ice-hockey. Today's medical reality of high-level athletics little resembles the quaint image of an ideal harmony between beauty, strength and health dreamed up by the early Olympic movement. Elite sports have become thoroughly alien to the sort of physical exercise that is a legitimate

general public health concern. In addition, high-level athletes are singled out for attention and their health-related behaviours subjected to an invasive scrutiny that would be impractical – and unethical – if it were applied to the general public.

The war on doping diverts scarce resources towards a program of intense and intrusive health surveillance for the few, which makes no sense in terms of public health, if only because the fraction of the population that engages in elite sport is very small. The problem is all the more obvious when compared to the frequent doping practices in amateur sport (Koch 2002; Parssinen *et al.* 2000). Indeed, the recent statement on performance-enhancing drug use by the American Academy of Pediatrics (Gomez 2005) emphasises the broader public health rationale that should govern anti-doping strategies. It argues that the use of such substances is far broader than elite sport and focusing specifically on this area neglects the many other ways in which substances are used in ways that are dangerous. Doping is not just a sports issue, and therefore does not justify a sports-only approach (Miah 2005). In this era of anti-doping, a black market in substances such as anabolic steroids has developed, often of dubious quality. Dangerous practices have emerged, such as sharing syringes, leading to risk of HIV or hepatitis virus infection (Koch 2002; Melia *et al.* 1996; Midgley *et al.* 2000; Berlin 1999; Aitken *et al.* 2002). We should be concerned about the health of this much larger fraction of the population, instead of investing so much effort and money in surveillance of small numbers of often medically well supervised elite athletes. On this view, a drug testing programme is not the most effective way to curtail the use of performance enhancing (or lifestyle improving) substances. Rather, resources should be invested into understanding the shift in cultural values associated with biological modification and the culture in which doping practices emerge. Merely testing athletes attends only to the consequences of such a culture.

The Cost of Anti-doping : Who Pays ?

We acknowledge the need for rules in sports. The principle of the adherence to a set of rules, including the prohibition of doping is, in itself, not problematic when considering the practice of sports. Houlihan (1999) for example articulates the 'keep the rules' argument as part of an agreement that has social weight. However, one problem arises when the application of these rules is beset with diminishing returns: escalating costs and questionable effectiveness. As argued above we believe that the ethical foundation of the prohibition of the use of ergogenic substances in sports is weak at best. Therefore, we find that the increasing cost for the practice of anti-doping raises an ethical dilemma of

greater importance and relevance than the ethical arguments advanced as the foundation for anti-doping practices.

Elite athletes only represent a small fraction of the global population but the resources of anti-doping almost exclusively go into testing of these athletes. The WADA-AMA budget amounted to 21 million dollars in 2004 (WADA 2007). According to its statutes, as of January 1st 2002, WADA-AMA's funding is sourced equally from the Olympic Movement and the governments of the world at least until 2007 (WADA 2007). The budget of the Swiss Anti-Doping Commission for 2004 was about SFr. 1.5 million whereof SFr. 800,000 came from the government (Swiss-Olympic 2007). The budget of the USA anti-doping agency in 2003 was 10 million dollars (USADA 2007). The UCI (Union Cycliste Internationale) spent 1.4 million Swiss francs directly on doping controls and testing in 2003 (UCI 2007). The overall world wide cost of antidoping is difficult to estimate but is likely to be high in the light of the number of athletes concerned. It will probably increase further as the complexity of the analysis increases and the coverage of the world's elite athlete population improves. Today, the rich countries can pay the bill for the increasingly costly practice of doping control, but the developing countries cannot. There is money coming through international federations like the IOC, but increasingly, resources will accrue from governmental sources. Even though today the contribution asked from developing countries is small, especially in those countries the priorities should lie elsewhere from a public health perspective. Furthermore, we have seen that in the competition between increasingly sophisticated doping and anti-doping technology, there will never be a clear winner. Consequently, such a futile but expensive strategy is difficult to defend, especially since the much larger fraction of the population that engages in behaviour like use of anabolic steroids and needle sharing is a real health issue (Melia *et al.* 1996) and does not get the resources necessary for prevention and harm reduction.

Doping shares several characteristics with general substance abuse. Even in a repressive environment substance abuse persists, with potential harm because of the need to hide the abuse. The highest sanction for an athlete, whose doping practice is discovered, is a lifetime exclusion from competition, which is not enough to scare all athletes away from doping. The political and economic incentive, along with the personal quest for money, fame or the thrill of winning is so high that risk taking is likely to continue. As long as the rewards of competition remain high and the consequences of being caught are merely exclusion from competition, the likelihood of athletes using doping will remain high (Savulescu *et al.* 2004). In addition, truly deterrent penalties would have to be as severe as sanctions for major crimes, which is indefensible in terms of social ethics.

Special Cases

Doping Control on Cannabinoid Use

There are additional inconsistencies in the foundation of the world-wide war on doping. If anti-doping were purely addressing the unfair advantage of an ergogenic intervention, anti-doping should be focussing on the control of the use of ergogenic substances only. Cannabis (marihuana, hashish) and its active substance THC are not performance enhancing; THC is probably merely deleterious for performance for any elite sport activity (Campos *et al.* 2003). At present the WADA-AMA rules do not allow for traces of THC metabolites in urine, even though it is well known that these metabolites are found in urine well after the psychophysiological effects of the substance have subsided. Why then test for the substance? We believe that the inclusion of control on THC goes beyond the declared goal of antidoping. Moreover, justification of their inclusion on the claim that athletes are role models is problematic, as this places an unreasonable burden on athletes, compared with other public figures like musicians, politicians or actors whom are not required to undergo such tests. Our point is that the intrusive monitoring of athletes actually undermines their status as role model, since it stigmatizes athletes as people who, without surveillance, will behave improperly. Thus, the burden is unreasonable not because it is unfair, but because it constitutes an attempt to orchestrate role model status which we consider to be deceptive and antithetical to what role models should be. In any case, there is no obvious reason for why testing for THC or similar drugs should be a matter of public concern, unless one also requests tests from other such public figures. If the response is that testing should be applied to other such people, then at least part of our claim would be redundant. However, we believe that there are good reasons for why such surveillance practices would be quite inappropriate in a liberal society. One might also raise questions about the role model status of most athletes. After all, while all competitive athletes are subject to antidoping rules, only a few have a high public profile or a high salary. The majority have no greater public role than, say, a teacher or a parent. Yet, we do not hear pleas to test these and other people for illicit substances on account of their being role models.

Accepted technology

The use of recombinant erythropoietin for enhancing the oxygen carrying capacity of the blood is prohibited in competitive sports. The alleged reason is clear, since it is accompanied by higher oxygen uptakes and improved endurance performance. Altitude exposure has a similar effect and leads to a natural

increase in hematocrit and an increase in oxygen carrying capacity. Nowadays, altitude training camps, often touted with the slogan 'sleeping high and training low' are popular (Wilber 2001). Modern technology allows for the simulation of altitude with the use of hypobaric and normobaric hypoxia. Costly adaptations of sleeping quarters allow sleeping at virtual altitudes and several federations now have these facilities. Even individual athletes who can afford it have altitude sleeping rooms at home (Space-Tech 2007). Since it is the body itself that brings about the increase in hematocrit when exposed to hypoxia, athletes are for now allowed to use this technology even though its objective is to gain 'undeserved' advantage, just as with erythropoietin doping, and there are no long term data on its alleged innocuousness. Again, this is a challenge to equity, since many athletes cannot afford nor have access to such technology. Probably in part in response to this, WADA-AMA recently considered whether such technology should be banned, though has concluded that it should not. This outcome reinforces the inadequacy of anti-doping measures, since the difference between using these techniques and happening to live in a high-altitude locality is ethically irrelevant.

Other permitted technologies reflect a similar hypocrisy in anti-doping rules. For example, electrical muscle stimulation is increasingly used, either in preparation before a competitive event, or after. German athlete Wojtek Czyz won three gold medals (100 and 200 metres, and the long jump) at the 2006 paralympics in Athens after having trained with a unique, commercially unavailable electrical muscle stimulator developed for international space station use (Space-Tech 2007). Many sports involve high tech material from swim suits and running shoes to futuristic bicycles. There is certainly no equitable access to these technologies for rich and poor alike (Miah & Eassom 2002). The usual response to this comparison is that these forms of performance enhancement provoke a physiological response while doping methods a pharmacological one. Yet, this is not the justification for distinctions made within anti-doping policy. Indeed, we suggest that it reveals a dubious essentialism about what it means to be human that relies on claims about what is 'normal' or 'natural' for people to exhibit physiologically. We argue that sports have never been a test of merely 'natural' capabilities, but that they have always been constitutively technological, whether this involves specific artefacts or simply the application of scientific knowledge. This interaction between potentiality and environment is consistent with critical views of human genetics. Moreover, the difficulty with a commitment to essentialist views about natural capacities is made more apparent through the application of genetic technologies to sport specifically.

Genetic Technology

Thus, one further challenge that lies ahead for the world of doping exacerbates the need for reform in anti-doping ethics: gene transfer. Also known as 'gene doping', this new form of potential performance enhancement has received considerable attention in recent years. While there is much scientific dispute about the science and current feasibility of gene doping (Sheridan *et al.* 2006; Haisma & de Hon 2006), its prospect does alert us to the inadequacy of current strategies on doping control. Since some gene doping techniques might be undetectable in urine or blood in principle, one may wonder whether current approaches to doping are at all practical in an era where there can be no realistic expectation of catching all cheats. This might also move the war on doping to a stage of technical sophistication that might make it financially difficult to sustain. In addition, the broader social interest at stake with respect to gene transfer technology would give a new perspective to the question of what kinds of performances are legitimate in sport and how this ties in to concepts of equity, fair-play and deserved merit.

What are the Risks of Leaving Doping Choices to the Athlete?

Even though it is presently unrealistic to abolish anti-doping in sport, let us briefly discuss what the hypothetical consequences would be if the use of doping were allowed. Would there be an important increase in death rate among athletes? Would there be many (more) athletes willing to take deadly risks? Would there be more chronic illness and shorter life span after cessation of an athletic career? If doping were allowed under the conditions we discuss, including an ethical framework based on the principle of non-maleficience, we would probably see an increase in the use of ergogenic drugs, but this need not to lead to an increase in morbidity and mortality. The example of the widespread use of doping in the former East- German republic (Franke & Berendonk 1997; Tuffs 2002) reflects the secret and coercive nature of state mandated doping, a framework widely different from the one we propose. Our proposal for monitored performance enhancement would ensure that athletes are better informed about the risks they take and transparency of these practices would limit the possibilities for a given nation from taking advantage of their athletes. Furthermore, taking doping out of hiding may have positive effects beyond the restricted world of elite sports. Indeed, the practices in the amateur sports world might become less hazardous and thus overall incidence of health problems from doping use might actually decrease. Unfortunately, it seems impossible to test this hypothesis in the current political climate, since there is hardly any interest in re-evaluating the ethical foundation of doping. Moreover,

as Houlihan demonstrates (1999), there has been no sustained open discussion of the ethical foundations of anti-doping since it began in the 1960s. If one were to compare this with other policy debates in science, medicine and technology, the situation is radically inadequate.

What should the Physician's Role in Elite Sports be?

Suggestions about anti-doping reform have specific implications for medical professionals working with athletes. Yet, even within the present framework of anti-doping, problems arise that invite critical scrutiny of the established model. The current ethical framework of competitive sports is not without problems for the sports physician. As early as 1983, Thomas H. Murray, president of The Hastings Center (a leading institute for ethics), former United States Olympic Committee adviser, and present Chair of WADA-AMA's Ethical Issues Review Panel, argued that the conditions surrounding the physician's involvement with elite sport place undue pressure on their decision making capacities (Murray 1983). Often, the coach's or sponsor's interests take precedence over the physician's professional judgement about what is best for the athlete. On this basis, Murray argues that standards of best practice are often unclear or non-existent.

We believe that, in agreement with prevailing ethics of the medical profession, the role of the physician involved in the athlete's health supervision should be one of preserving the athlete's autonomy, which entails a balance between ensuring that treatment leads to the highest degree of present and future health, while acknowledging the athlete's interest to maintain a chosen style of life. Inevitably, there will be situations in which performance optimisation will conflict with the preservation of health just as it is already present today when therapeutic measures are applied to keep an athlete in the game despite an existing injury. Ethical reasoning should be based on proportionality, assessing the benefits and risks as objectively as possible. Admittedly, this is not an easy task, since it requires a process of negotiation to face the difficult question about what kinds of health risks are acceptable for an athlete to take. While further elaboration on this is beyond the scope of this paper, we would suggest that the solution lies partly in the structures of sport that permit such risk taking. Nevertheless, we believe that by carefully helping an athlete enhance her performance (by utilising currently banned methods), in keeping with the principle of autonomy, using any safe technology available, the physician should again become the direct partner of the athlete in pursuit of ever increasing performance. As a result, a physician in the role of caring performance enhancer should be accountable for ill effects from the use of any medical technology. This would be analogous to the usual role of physicians. They are free in their choice of intervention, pharmacologic

or other, as long as these are in agreement with current medical knowledge and without disproportionate iatrogenic ill effects. Rather than speculate on anti-doping test procedures, resources should be invested into protecting the integrity of physicians who make such judgements. Without clear regulation, it is possible that coaches could appoint 'performance inclined' physicians to ensure maximum competitiveness in their athletes. Waddington (2000) recognises that much more thought is needed to establish principles of good practice concerning the role of sports physicians. Perhaps independent physicians whose status is comparable to other sports officials, is the most suitable strategy through which to develop this more ethically rigorous requirement.

Conclusion

Clearly, further questions need addressing to more fully explore our criticisms of current anti-doping and our proposal for alternatives. For instance, one might ask which athletes would qualify for doctor-assisted doping, whether there would be age limits or limits to performance levels. Moreover, it is necessary to explore matters of control and regulation and whether an organisation like the WADA-AMA remains the most suitable model. Sports are increasingly important for economic and political reasons. To a sizeable extent, elite sport is a self-sustaining enterprise, with significant financial returns from advertisement, media and audience revenues. As such, it could be argued that the war on doping is an internal matter of the sports community, provided that it foots the whole bill for anti-doping control. But in fact considerable public funds go into sports too, for fundamentally sound reasons such as health promotion. The increasingly expensive doping control is also paid by governmental sources, and not only by the sports enterprise itself. Moreover, the ethical foundations of sport are also a matter for public debate and, like for other ethical policies in society, there should be mechanisms ensuring accountability of policy to the broader public. For each of these reasons, the war on doping becomes a public issue as well. Hence, its consequences have to be seen from a public health perspective. We believe that current anti-doping does not adequately prevent damage from doping in sports, that it creates health problems of its own, and diverts health-care resources from more worthwhile pursuits. In addition, the role of the physician in sports and in doping control poses serious ethical dilemmas. We believe that allowing medically supervised doping rather than absolute bans would provide a sounder foundation for sports physicians to exercise their responsibility and maintain their health care obligations.

References

Aitken C, Delalande C & Stanton K (2002) Pumping iron, risking infection? Exposure to hepatitis C, hepatitis B and HIV among anabolic-androgenic steroid injectors in Victoria, Australia. *Drug and Alcohol Dependence* 65:303-308.

Alaranta A, Alaranta H, Holmila J, Palmu P, Pietila K & Helenius I (2006) Self- reported attitudes of elite athletes towards doping: differences between type of sport. *International Journal of Sports Medicine* 27:842-6.

Ama PF, Betnga B, Ama MV & Kamga JP (2003) Football and doping: study of African amateur footballers. *British Journal of Sports Medicine* 37:307-310.

Banerjee R, Palumbo MA & Fadale PD (2004) Catastrophic cervical spine injuries in the collision sport athlete, part 1: epidemiology, functional anatomy, and diagnosis. *American Journal of Sports Medicine* 32:1077-1087.

Berlin B (1999) Steroids. Building a better you? *New Jersey Medicine* 96:49-51.

Beullens M, Delanghe JR & Bollen M (2006) False-positive detection of recombinant human erythropoietin in urine following strenuous physical exercise. *Blood* 107:4711-4713.

Booth FW, Fluck M, Tseng BS & Carson JA (1998) Molecular and cellular adaptation of muscle in response to physical training. *Acta Physiologica Scandinavica* 162:343-350.

Campos DR, Yonamine M & Moraes Moreau RL (2003) Marijuana as doping in sports. *Sports Medicine* 33:395-399.

Dennis C (2005) Rugby team converts to give gene tests a try. *Nature* 434:260-260.

DuRant RH, Rickert VI, Ashworth CS, Newman C & Slavens G (1993) Use of multiple drugs among adolescents who use anabolic steroids. *New England Journal of Medicine* 328:922-926.

Fost N (1986) *Banning Drugs in Sports A Skeptical View.* Hastings Centre Reports 16:5-10.

Fost N (1998) Ethical dilemmas in medical innovation and research: distinguishing experimentation from practice. *Seminairs in Perinatology* 22:223-232.

Franke WW & Berendonk B (1997) Hormonal doping and androgenization of athletes: a secret program of the German Democratic Republic government. *Clinical Chemistry* 43:1262-1279.

Gomez J (2005) Use of performance-enhancing substances. *Pediatrics* 115:1103-1106.

Gusfield JR (1963) *Symbolic crusade status politics and the American temperance movement Urbana*, University of Illinois Press, Champaign, IL, USA.

Jordan BD (2000) Chronic traumatic brain injury associated with boxing. *Seminairs in Neurology* 20:179-185.

Junge A & Dvorak J (2004) Soccer injuries : a review on incidence and prevention. *Sports Medicine* 34:929-938.

Haisma HJ & de Hon O (2006) Gene doping. *International Journal of Sports Medicine* 27:257-266.

Handelsman DJ (2004) Designer androgens in sport: when too much is never enough. *Sci STKE* 2004:e41
http://stke.science mag.org/cgi/content/abstract/stke.2442004pe41.

Hartgens F & Tuffs A (2002) Doped East German athletes to receive compensation. *British Medical Journal* 324:1544.

Houlihan B (1999) Anti-doping policy in sport: The politics of international policy co-ordination. *Public Administration* 77:311-334.

Kennedy D (2004) Here come the Olympics. *Science* 305:573.

Loland S (2002) *Fair play in sport a moral norm system.* London, Routledge.

Knight J (2003) Drugs bust reveals athletes' secret steroid. *Nature* 425:752.

Koch JJ (2002) Performance-enhancing: substances and their use among adolescent athletes. *Pediatrics Review* 23:310-317.

Kuipers H (2004) Effects of androgenic-anabolic steroids in athletes. *Sports Medicine* 34:513-554.

Laure P (2000) [Doping: epidemiological studies]. *Presse Medicale* 29:1365-1372.

Laure P, Lecerf T, Friser A & Binsinger C (2004) Drugs, recreational drug use and attitudes towards doping of high school athletes. *International Journal of Sports Medicine* 25:133-138.

Mehlman MJ, Banger E & Wright MM (2006) Doping in sports and the use of state power. *Saint Louis University Law Journal* 15-73.

Medras M, Tworowska U, Jozkow P, Dumanski A & Dubinski A (2005) Post-operative course and anabolic-androgenic steroid abuse – a case report. *Anaesthesia* 60:81-84.

Melia P, Pipe A & Greenberg L (1996) The use of anabolic-androgenic steroids by Canadian students. *Clinical Journal of Sport Medicine* 6:9-14.

Miah A (2005) Doping and the child: an ethical policy for the vulnerable. *The Lancet* 366:874-876.

Miah A & Eassom SB (2002) Sport Technology: History, Philosophy & Policy. *Research in Philosophy & Technology.* Oxford, Elsevier Science. 55.

Midgley SJ, Heather N, Best D, Henderson D, McCarthy S & Davies JB (2000) Risk behaviours for HIV and hepatitis infection among ana- bolic-androgenic steroid users. *AIDS Care* 12:163-170.

Murray TH (1983) The coercive power of drugs in sports. Hastings Centre Reports 13:24-30.

Naranjo OJ, Centeno Prada RA & Carranza M (2006) Use of beta-2 agonists in sport: are the present criteria right? *British Journal of Sports Medicine* 40:363-366.

Parens E (1998) *Enhancing Human Traits: Ethical and Social Implications.* Georgetown University Press, Washington D.C., USA.

Parkkari J, Kujala UM & Kannus P (2001) Is it possible to prevent sports injuries? Review of controlled clinical trials and recommendations for future work. *Sports Medicine* 31:985-995.

Parssinen M, Kujala U, Vartiainen E, Sarna S & Seppala T (2000) Increased premature mortality of competitive powerlifters suspected to have used anabolic agents. *International Journal of Sports Medicine* 21:225-227. 44.

Pipe A (2001) The adverse effects of elite competition on health and well-being. *Canadian Journal of Applied Physiology* 26 Suppl:S192-S201.

Rankinen T, Perusse L, Rauramaa R, Rivera MA, Wolfarth B & Bouchard C (2004) The human gene map for performance and health-related fitness phenotypes: the 2003 update. *Medicine and Science in Sports and Exercice* 36:1451-1469.

Rohrbough JT, Altchek DW, Hyman J, Williams RJ & Botts JD (2002) Medial collateral ligament reconstruction of the elbow using the docking technique. *American Journal of Sports Medicine* 30:541-548.

Savulescu J, Foddy B & Clayton M (2004) Why we should allow performance enhancing drugs in sport. *British Journal of Sports Medicine* 38:666-670.

Schumacher YO & Ashenden M (2004) Doping with artificial oxygen carriers: an update. *Sports Medicine* 34:141-150.

Schweizer C, Saugy M & Kamber M: Doping test reveals high concentrations of salbutamol in a Swiss track and field athlete. *Clinical Journal of Sport Medicine* 14:312-315.

Shapiro M (2004) The technology of perfection: performance enhancement and the control of attributes. *Southern California Law Review* 1991:11-113.

Simon R (1991) *Fair play sports, values, and society.* Westview Press, Boulder, CO, USA.

Sheridan H, Pasveer B & Van Hilvoorde I (2006) Gene-talk and sport-talk: A view from the radical middle ground. *European Journal of Sport Science*, 6:223-230.

Space-tech at the Paralympics - Czyz takes Gold in 100 m sprint (2007) [http://www.esa.int/esaCP/SEM16S9DFZD_FeatureWeek_0.html].

Thiblin I & Petersson A (2005) Pharmacoepidemiology of anabolic androgenic steroids: a review. *Fundamental Clinical Pharmacology* 19:27-44.

Tokish JM, Kocher MS & Hawkins RJ (2004) Ergogenic aids: a review of basic science, performance, side effects, and status in sports. *American Journal of Sports Medicine* 32:1543-1553.

Voy R (1991) *Drugs, Sport and Politics.* Leisure Press, Champaign, IL, USA.

Waddington I (2000) *Sport, Health and Drugs: A Critical Sociological Perspective.* Routledge, London, UK.

Wilber RL (2001) Current trends in altitude training. *Sports Medicine* 31:249-265.

Swiss Olympic (2007) [http://www.swissolympic.ch].

IOC (2007) [http://www.olympic.org].

UCI (2007) [http://www.uci.ch].

WADA-AMA (2006) The Stockholm declaration [http://www.wada-ama.org/en/dynamic.ch2?pageCategory.id=530]

WADA-AMA (2007) [http://www.wada-ama.org].

USADA (2007) [http://www.usantidoping.org].

Comments on this paper since its publication

In the article, 'Current anti-doping policy: a critical reappraisal', that my co-authors and I published in 2007, we critiqued modern anti-doping policy. The article was written in reaction to the recent inception, at that time, of WADA and its early efforts towards the globalisation of anti-doping. The main reasons for writing it were, firstly, the extent of the crackdown on (potentially doping) athletes (i.e. the introduction of the strict liability principle, the whereabouts rule, the urine sampling procedure and the harsh penalties in cases where a forbidden substance was found in the sample); secondly, our inkling that these quite extra-ordinary measures were imposed for questionable reasons anchored in misguided ideology; and thirdly, our concern that globalisation of the modern anti-doping movement causes (in part unintended) important side effects carrying considerable societal risks.

Since its publication, the article has been frequently cited[1], and there are roughly three types of reactions to the article: neutral, confirmatory and counter. Even though the first two interestingly make up the majority of mentions, the latter are of more interest since they allow an analysis of what are possible or perceived flaws in our reasoning. The critiques mainly concern our writing on 1) the fairness / level-playing-field argument; 2) the health argument; 3) the role model argument; and 4) the 'spirit of sport' argument. For each of those points, the presented arguments do not go beyond what we already discussed in the article, so that any further discussion here would seem superfluous, and the reader is referred to the general discussion in the concluding chapter of this thesis. Two important points are generally *not* addressed in the critiques: first, our observation that the so-called 'pure', 'clean' and therefore only 'real' sport, as defended by the anti-doping movement, is a cultural construct and not necessarily universal nor fixed; and second, more importantly, that current anti-doping policies have important actual and potential side-effects that need to be taken into account when discussing the future of doping and anti-doping [as a counter example, these points are discussed very much in detail by Dimeo & Møller (2018), but in line with much of our reasoning except for their proposals for changes to anti-doping policies].

On one important point our thinking about doping and anti-doping has evolved since the publication of this article. We concluded the article by stating that 'medically supervised doping rather than absolute bans would provide a sounder foundation for sports physicians to exercise their responsibility and maintain their health care obligations'. We still stand by this statement but find that there are limitations to what can be permitted and what not, given the extreme

[1] 243 times as of May 2018, according to scholar.google.com.

stakes in professional sport. Even though the 'Goldman dilemma', which states that many athletes would be willing to ingest a magic pill if it could make them an Olympic champion, even if it would kill them within a year (Goldman 1984), has been shown to be a myth (Christensen & Møller 2007; González *et al.* 2018; Woolf *et al.* 2017), it is not unlikely that some athletes and their entourage would be tempted to go beyond what might be considered reasonable health risk, just for the sake of winning. This point is developed further in chapters six and seven.

References

Christiansen AV & Møller V (2007) *Mål, medicin og moral: om eliteatleters opfattelse af sport, doping og fairplay.* Syddansk Universitetsforlag, Odense, Denmark.

Dimeo P & Møller V (2018) *The Anti-Doping Crisis in Sport.* Routledge, London, UK.

Goldman B (1984) *Death in the Locker Room.* Icarus Press, Indiana, USA.

González JM, Johnson FR, Fedoruk M, Posner J & Bowers L (2018) Trading health risks for glory: A reformulation of the Goldman Dilemma. *Sports Medicine*, 1–8. http://doi.org/10.1007/s40279-018-0881-9

Woolf J, Mazanov J & Connor J (2017) The Goldman Dilemma is dead: what elite athletes really think about doping, winning, and death. *International Journal of Sport Policy and Politics*, 9(3), 453–467. http://doi.org/10.1080/19406940.2016.1194875

Chapter 3

What if we relaxed the anti-doping rule: towards a Red Queen effect?

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Abstract

One of the arguments advanced in favour of anti-doping is that allowing doping would eventually lead to a uniform increase in performance in comparison to no doping. The assumption is that if all athletes would use doping, this would just shift the playing field to a higher level without a change in ranking, but at a higher health cost, because of the dangerousness of doping. In this paper, we critique this contention. We first develop our theoretical framework, with reference to the so-called Red Queen effect. We then argue that, if doping were allowed, Red Queen effects would not be the rule. We also show that to some extent Red Queen effects would occur, but these would not necessarily be morally problematic. We end by developing an argument in favour of a more liberal approach of doping, since such would allow escaping from today's runaway effects of anti-doping efforts and carries promise to enrich the spectacle of modern elite sport.

1. Introduction

Doping, prominently presented in the media as a threat to sport, is vilified mainly because considered an unfair distortion of the playing field and a threat to the athlete's health. Despite increasingly repressive anti-doping efforts under the guidance of the world anti-doping agency (WADA) doping remains prevalent in elite sport. According to WADA, based on proven transgressions of the no-doping rule, 1-2% of elite athletes use doping. Indirect evidence suggests that actual prevalence is likely higher, by an order of magnitude or even more, depending on the method of measurement and varying between sports and countries (Ulrich *et al.* 2017; de Hon, Kuipers & van Bottenburg 2015; Petróczi *et al.* 2008). Anti-doping thus does not attain its goal of eradication of doping, despite far-reaching – and sometimes morally problematic – surveillance of athletes whom have to report their 24hr whereabouts all-year round to allow unannounced urine collection by doping officers who visually identify the correct anatomical origin of the sample. Anti-doping calls for additional resources for more stringent repression along an end-justifies-the-means prohibitionist discourse. Critical analysis of the arguments in favour of current anti-doping policies is therefore warranted since it may provide insight for developing alternative ways of dealing with doping in sport.

One of the arguments against doping is that allowing doping would eventually lead to a uniform increase in performance in comparison to no doping (e.g. Chwang 2012). The assumption is that if all athletes would use doping, this would just shift the playing field to a higher level without a change in ranking,

but at a higher health cost, because of the dangerousness of doping. In this paper, we critique this contention. We first develop our theoretical framework, with reference to the so-called Red Queen effect. We then argue that, if doping were allowed, Red Queen effects would not be the rule. We also show that to some extent Red Queen effects would occur, but these would not necessarily be morally problematic. We end by developing an argument in favour of a more liberal approach of doping, since such would allow escaping from today's runaway effects of anti-doping efforts and carries promise to enrich the spectacle of modern elite sport.

2. The Red Queen

In Lewis Carroll's 'Through the Looking Glass, and What Alice Found There', Alice and the Red Queen are running very fast but there is no change in their position relative to their environment. 'Now, here, you see, it takes all the running you can do, to keep in the same place' [original emphasis], is the answer of the Red Queen to panting Alice's observation of their apparent stasis, in spite of her intense physical effort (Carroll 1871). In 1973, evolutionary biologist Leigh Van Valen used the Red Queen's race as a metaphor to make sense of his observation that the fossil records showed constant extinction rates for subtaxa of a large number of taxa (Van Valen 1973). Van Valen coined the Red Queen effect for the co-evolutionary process in which the benefits of a new and costly adaptation of one species (S1) are in parallel offset by new and costly adaptations developed by that species' ecological predator, prey, host, parasite or competitor (S2), in response to the adaptations of S1. For example, when S1 got faster, S2 also became faster, leading to escalation and loss of ecological balance, pushing the two species towards extinction. In other words, both species would have been better off if they had not been caught up in such an evolutionary arms race. Evolutionary biology now uses the Red Queen effect to describe both inter and intra-species runaway dynamics. As an example of the latter one can think of the increasing size of antlers in male deer, a costly male adaptation for competition for reproduction with females, that may have played a role in the extinction of the 'Irish Elk' whose palmate antlers had increased up to a span of 3.6 m (Worman and Kimbrell 2008).

2.1. Red Queen effects

Van Valen originally conceptualized the Red Queen effect as a macro-evolutionary trend to explain a general pattern in biological evolution. Soon, others used the Red Queen dynamics that Van Valen had sketched to explain escalation patterns on much shorter time scales. For example, it was argued

that humans developed specialized cheater detection mechanisms in response to the development of sophisticated cheating mechanisms in conspecifics (Cosmides & Tooby 2008). The Red Queen effect has also been used to explain similar dynamics outside the context of evolutionary biology. For instance, Gali (1994) has argued that conspicuous consumption is best explained as a Red Queen effect: people consume conspicuous goods in order to 'keep up with the Joneses'. In the end, nobody improves their relative social rank, while everybody spends resources on things one does not need such as swimming pools or SUVs. In The Economic Naturalist, Robert Frank suggests that the costs of such dynamics are not just financial, but can involve health costs as well (Frank 2007). Women may wear high heels to grab the attention of men, but when many women go along with this, at least part of the aesthetic advantage of wearing high heels is lost, while knee and ankle problems increase (Liu *et al.* 2015; Dawson *et al.* 2002). Although the term Red Queen effect is not often used in debates on doping (see (Danaher 2012) for an exception), the concept is. It is often argued and generally believed that if doping were allowed, all athletes would consider doping as a requirement for their success in sport. Ubiquitous doping would then result in an invariant overall ranking, while morbidity and mortality would increase because of doping's side-effects. Chwang coined this a positional treadmill effect and assumed its validity for his argument in favour of anti-doping (Chwang 2012). If one would allow doping, athletes would either start using doping or drop out. In that sense, all elite athletes wanting to compete would be obliged to take doping. Our main concern here is not with how engaging in doping can be seen as a prisoner's dilemma. Rather, we are interested in two special characteristics of the doping related prisoner's dilemma that anti-doping advocates highlight, and that we connect with the Red Queen effect. The first of which is that everybody would be better off if no-one used doping (Chwang 2012). We think there are good reasons to think that in general at least someone is better off. First, the ubiquity of interaction effects makes it unlikely that the athletic value ratio between two athletes will remain identical before and after the doping use. Second, even if the hierarchy remained the same, Red Queen effects could be beneficial for some of the stake holders (and not just for those who produce and distribute the doping).

3. Overview

In the next sections, we argue that a liberal doping policy is unlikely to lead to uniform Red Queen type escalation. Our argument rests on the debunking of several assumptions that underlie the fear for dramatic Red Queen effects in sports if doping were allowed. The first assumption is that allowing everyone to use doping would not change anything sport-relevant (section 4). The second

assumption is that allowing doping would lead to a true arms race in which the doping use of every athlete would dangerously escalate (section 5). We then argue that allowing doping might bring valuable variance to sports (section 6), before discussing the limitations to our approach and formulating concluding remarks (section 7).

4. Would doping change nothing sport-relevant?

The first assumption we address is that a liberal doping policy would not change anything sport-relevant, because of a uniform upward shift of the playing field. This posit hinges on two assumptions. First that the effect of a given doping technology is the same for all. We hereunder show that this assumption is fatally flawed. We discuss what is known about the determinants of elite performance and interventions other than doping such as training on performance enhancement and then show that similar non-uniform patterns can be expected for doping. The second argument we contest is that sports are primarily or only about ranking. This argument ignores that aesthetics are a very important ingredient for sports too.

4.1. Interactions

The exercise-physiologist Per-Olof Åstrand allegedly once quipped that in order to become an Olympic athlete one should choose one's parents wisely. Talent has a high heritability and a good potential for elite excellence can, on the condition of exposure to the right environment, be transformed into optimal performance, increasing one's chances in elite competition (Sanchis-Gomar *et al.* 2016; Tucker & Collins 2012; Moran & Pitsiladis 2016; Issurin 2017). In the discussion of potential Red Queen effects in doping dynamics one should take into account the extent of inter-individual variation in this interaction between a given genetic endowment and a particular environment. Talent is to some extent heritable and hence unevenly distributed. Take aerobic capacity, a prime determinant of endurance performance. The greater the aerobic capacity, the greater the sustainable metabolic rate, the greater the energy available for muscle contraction and hence the greater the potential for endurance performance. In the Family Heritage Study, Claude Bouchard and colleagues studied the role of genotype in the cardiorespiratory and metabolic responses to aerobic exercise training. 742 healthy sedentary subjects with varying degrees of kinship, 17 to 65 years old, were tested, exercise-trained in the laboratory under supervision with the same program for 20 weeks, and re-tested. The response to endurance training was found to be 50% heritable. While the average increase in aerobic capacity for an identical training stimulus

was 19%, about 5% of the subjects had little or no change (<5%) while about 5% had an increase of 40%, and some even >50%, of their aerobic capacity (Bouchard *et al.* 1999). 29 genes predicted training response and 11 particular SNPs (single nucleotide polymorphism, a signature of genetic difference for a given gene between individuals of a species) captured 50% of the estimated variance attributable to genetic differences (Timmons *et al.* 2010). Not only the response to training, but also responses from interventions such as nutritional strategies vary importantly between individuals because of their genetic make-ups (e.g. Pigeyre *et al.* 2016; Baar 2014). Another illustrative example of different responses between athletes to a given intervention is altitude training, a common practice among endurance athletes. The underlying rationale is the following. The lack of oxygen from the thinning air at altitude induces low oxygen blood levels. These stimulate the production of erythropoietin (EPO), a hormone which drives the production of new red blood cells. These increase the oxygen carrying capacity of the blood, a main determinant of aerobic capacity, and therefore endurance performance upon descent to low altitude. There is important individual variation in the effects of an identical altitude exposure (responders and non-responders, (Sinex & Chapman 2015; Lundby *et al.* 2012)). It is unknown what the underlying mechanisms are but they are likely genetic. Instead of using altitude exposure to stimulate the organism's EPO production, EPO can also be injected. When EPO appeared on the market, endurance athletes were quick to adopt its use, because it circumvented the complexity of altitude training. Again it was observed that the effects of EPO not only varied with dosage but also between individuals, and a debate on its effectiveness for elite performance is still ongoing (Heuberger *et al.* 2017; Hardeman *et al.* 2014; Clark *et al.* 2017). EPO is not the only medication with different effects between persons. In fact, it is true for many pharmaceuticals that some respond well to them, some do not respond, some develop stronger side-effects. These interactions are so important that a separate field has emerged that studies how drugs affect individuals differently because of their particular genetic make-up. This field is called Pharmacogenomics and the goods it will deliver encompass the possibility to individually tailor more effective and safer medication strategies. This burgeoning scientific field also holds promise for the development of personalized medicine approaches in order to adapt choice and dosage of pharmacology to the individual genotype and phenotype (see e.g. Filipski *et al.* 2016). There is all reason to expect that such variation in effects also applies to doping substances, and even that performance relevant three-way interactions between doping substances, training intensity and genes are not rare. In other words, it is naïve to assume that doping use by all elite athletes would not affect the ranking.

4.2. Aesthetics

Anti-doping advocates make a distinction between competitive sport and other human endeavour such as musical performance [e.g. Chwang (2012)]. It is argued that sport is about ranking while music is about quality and beauty. But aesthetics are a very important ingredient for sports too [e.g. Edgar (2013)]. Certainly, for those disciplines in which aesthetics are an integral part of the way the ranking is established (gymnastics, figure skating, diving), but also in general because the public is sensitive to aesthetics in sports for which it is not used for ranking (100m dash, cycling, tennis, soccer). It can be expected that non-uniform effects of doping technology, for instance affecting the rate of fatigue development impacting on locomotion, would affect aesthetic aspects of performance, for the better or the worse. Most spectators are not only interested in the final score of the game or in the ranking after a competition. Most people who watch sports are also, and often even primarily attracted to the aesthetics of the sport of their choice. The power, endurance, and even the suffering of athletes contribute to the passive sporting experience. The aesthetic experience of seeing a cyclist climb almost effortlessly the Tour de France-mountains is real and certainly adds to the appeal of cycling. People could be absolutely mesmerized by Lance Armstrong's performances, while at the same time believing that Armstrong and even all of his contenders were doped. We do not argue that knowledge about the origin of an aesthetically pleasing performance does not alter our aesthetic appreciation, nor do we argue that it shouldn't alter it. It is perfectly legitimate to think that the semblance of athletic virtuosity should lead to less aesthetic appreciation when one knows that the athlete can only exhibit this virtuosity because he used doping, and not solely because of (the interaction between) genetic talent and intensive training. We do maintain, however, that aesthetic pleasure can be found in 'doped' athletic performances, as in doping-free performances of the same athlete. To use an artistic metaphor: all else being equal, fakes and forgeries tend to be lesser valued than authentic work, but that does not entail that all authentic works of art are and/or should be seen as better works of art than all forgeries and fakes.

4.3. Performance enhancement for a dynamic playing field

It follows from the preceding subsections that the assumption of a uniform upward shift of the playing field is unwarranted. Quite the contrary, we posit that allowing doping would lead to a more complex and dynamic playing field because of unevenly distributed effects on performance ranking and aesthetics.

We discuss in section 6 what the possible implications of such dynamics could be.

5. Escalation

The next assumption we address is that allowing doping would lead to a true arms race in which every athlete would dangerously escalate her use of substances so as to incur significant health risk. We present three arguments that question this assumption. We first make a distinction between escalations of amount and of risk, and then question the use of game theory to predict that what has not yet come, runaway catastrophe. We then show that some runaway effects can nevertheless be expected.

5.1. Escalation of amount and escalation of risk

Anti-doping proponents argue that a liberal doping policy would lead to runaway effects of dosage since more is believed to be better. For any pharmacological substance there are three questions that need to be answered: What is the magnitude of effects (beneficial or adverse) from a given dose? How quickly will any given effects occur? and How long will these effects last? (Wright, Winter & Duffull 2011) For any substance used for performance enhancement the answers to these questions vary according to the specific pharmacology and physiology of the substance. Importantly, the effects of a substance do not scale linearly with its dosage (Wright, Winter & Duffull 2011). Drug-drug interactions further add to the complexity of the non-linear nature of dosage-effect relationships (Koenig, Mueller & Fromm 2013). It thus follows that the argument of escalation of amount simply because more is better does not hold, even though this would not prevent an athlete taking more than an optimal dose of some doping substance. The second part of the escalation argument states that athletes are prone to taking more than a reasonable amount of a doping substance. They therefore risk significant health harm and should be protected from themselves. To bolster this argument the anti-doping literature frequently cites the so-called Goldman dilemma. It states that a majority of athletes is willing to ingest a magic pill if it could make them an Olympic champion, even if it would kill them in 5 years (Goldman & Klatz 1992). Christiansen and Møller (Christiansen & Møller 2007) tried to find the original research by Mirkin, cited in Goldman's book, and concluded that the study was probably never formally conducted. Since then several published studies have rejected Goldman's claims (Connor, Woolf & Mazanov 2013; Connor & Mazanov 2009; Woolf, Mazanov & Connor 2017). There is therefore no reason to believe the dramatic postulate of Mirkin and Goldman which should be seen as conjecture. There is also no

good epidemiological evidence for excessive morbidity and mortality before the advent of modern anti-doping, when doping was supposedly frequent, for example in professional cycling. Anecdotal cases such as that of the death of Knud Enemark Jensen in the Rome Olympics of 1960 and that of Tom Simpson during the 1967 Tour de France are repeatedly cited as proof [even though the role of doping in their deaths is unclear (Møller 2005; López 2013)], but overall there is no indication of excess morbidity or mortality among athletes in the heyday of doping (with an exception for state-imposed doping of - especially female - athletes with anabolic steroids in East-Germany). In contrast, there is good evidence that longevity is better among former Olympians and Tour de France cyclists (Teramoto & Bungum 2010; Marijon *et al.* 2013; Clarke *et al.* 2015). The anti-doping discourse frequently predicts catastrophe if doping were allowed. In the article 'It will be a disaster! How people protest against things which have not yet happened' Mathieu Quet analysed the structure of predictions and discursive strategies according to which social actors predict a disaster in the making, taking the threat of gene-doping as an example (Quet 2015). According to historian Lopez such anti-doping discourse is an example of fear mongering at the service of a social control and surveillance agenda and is the evidence base for an excessive dangerousness of doping often shallow (López 2013; López 2016).

5.2. Predicting runaway effects

The best arguments for the risk of escalation in doping use build upon game theoretical approaches and insights [e.g Shermer (2008), Breivik (2016) and Strulik (2012)]. Van Valen already thought of the Red Queen effect in terms of game theory, with each species taking part in a zero-sum game against the other species in which no species can ever win, and where new adversaries 'grinningly replace the losers' (Van Valen 1973). Applied to doping the simplest game theory scenario is as follows. If athlete A refrains from doping, then athlete B will gain an advantage by doping. If athlete A uses doping, it is also in the interest of athlete B to use doping, to try and keep up. It follows that since B does not know for sure what athlete A is doing, it is a better idea to use doping than not to. The same reasoning accounts for athlete A and the end-result tends therefore towards pervasive doping. Here, doping use is the strategy of a rational athlete confronted with a simple prisoner's dilemma. The Red Queen effect thus occurs where defecting is not just the rational choice, but where ever more defecting is rational and escalation towards ever more doping would thus be expected. This shift, towards doing what the other is suspected to be doing to improve performance, is not uncommon; the same mechanism is at work for other means used to gain an edge over the opponent, such as better exploiting the possibilities of training, nutrition, material, etc. Chwang also

uses a game theoretical approach in his plea in favour of anti-doping. He starts from the premise that doping is harmful to dopers (Chwang 2012). Reasoning that allowing doping would shift the playing field uniformly up if all athletes engaged in doping (prisoner's dilemma) he then posits that athletes would prefer not to dope because of its harm and lack of a competitive advantage (Red Queen effect). An impartiality premise then states that one should not allow some athletes to dope but not others. A beneficence premise, that we should give athletes what they want (i.e. a preference for no doping), then leads Chwang to conclude that one should therefore ban doping (Chwang 2012). We already demonstrated that the premise of a uniform shift of the playing field is flawed and that Red Queen effects would not be the rule when doping were allowed. Equally important is that we have serious doubts that the game theoretical models adequately model and predict the behaviour of athletes. Game theoretical models attempting to explain or predict doping behaviour cannot be tested against empirical data because of the covert nature of the behaviour, respectively for fear of catastrophe if doping were allowed. However, the literature on the psychology and sociology of doping suggests a rich pattern of factors influencing doping behaviour where rational choice is not the rule (see e.g. Elbe & Barkoukis 2017; Smith 2016; Ring *et al.* 2017). Human decision making exhibits a suite of biases when making economic decisions. For example, it is not uncommon to take (unreasonable) long term risk for short term return (Jolls, Sunstein & Thaler 1998). Given that we share some of these biases with our close cousins apes there is good reason to believe that irrational choice has an evolutionary base (Santos & Rosati 2015). Likewise, although the most rational strategy in a 'war of attrition'-like auction is to bid more than the value of the product that one is bidding for, people are rarely willing to pay a million dollars for a dollar in a so-called dollar auction, even that is what they would end up doing if they made all rational choices (Teger 2017). Given the complex determinants of human behaviour, it is therefore difficult to predict what would happen under a liberal doping policy, and game theory will often generate the wrong predictions. Or, as game theorist and economist Ariel Rubinstein put it: 'There are those who believe that the goal of game theory is ultimately to provide a good prediction of behaviour in strategic situations [...]. I am not sure on what this vision is based. Most situations can be analysed in a number of ways, which usually yield contradictory "predictions" '. (Rubinstein 2007) We acknowledge that due to the extreme stakes in elite sports, some athletes would decide to use substances in excess of reasonable health risks if doping were allowed, similarly to the important other health risks related to their sport that athletes are willing to take. But optimum of doping use is not the same as maximum of doping use. Even if game theory would suggest the potential for escalation of health risk from escalation of doping use, this is not necessarily the case, as illustrated by what was the case before the advent of

modern anti-doping. We therefore conclude that pervasive escalation of dosage among athletes would not be the rule but acknowledge that some athletes (and support personnel) might believe that more is better and would be willing to take excessive risk.

5.3. Substance risk assessment

So far our reasoning concerned doping substances considered to be objectively dangerous. Athletes and the public at large mostly assume that substances on WADA's 'Prohibited List' are performance enhancing and dangerous. But WADA does not communicate the reasons for adding a particular substance to its List. In general, three criteria are used of which at least two have to be met: 1) enhancing, or having the potential to enhance, performance; 2) posing an actual or potential health risk; and 3) being contrary to the spirit of sport. Apart from its catch-all approach due to the inclusion of 'the spirit of sport', it is clear that for many substances on the List there is no good evidence that they enhance performance or cause harm. The List contains substances for which dangerousness can be considered acceptable or even absent, even though the adage 'the dose makes the poison' is correct (even water can be deadly when taken in excess). The ban on doping and how WADA decides the List maintains general ignorance, with unintended but potentially harmful effects (Milot 2014). For instance, athletes may take substances that actually do not enhance performance but might cause harm. In the context of escalation, it is important to note that the List includes non-harmful substances. This entails that even if the use of these substances escalates, the negative health effects of the escalation will sometimes be less than the negative health effects of escalating training and dieting practices.

6. Potential for enhancement of competition through doping?

As demonstrated above there is good evidence that the effects of interventions to improve performance, be it training, nutrition, or (il)licit substance use, vary importantly between individuals and that a non-uniform stimulus-response is the rule. This observation invalidates the argument that pervasive doping would just shift the performance level uniformly up, leading to a zero sum result. Quite the contrary, these varying responses to training, to nutrition, but also to pharmacology, can be expected to add to the variation in performance between individuals, and thus to the contrast on the playing field. Today's elite playing field can be understood as bringing together individuals with similar phenotype (i.e. sharing a similar level of performance), based on an unusual but given and undeserved genetic background, brought to optimal expression in a certain

environment (Issurin 2017). It is precisely this interaction between genes and environment which brings about the outlying exceptional performance. Elite athletes are engaged in a continuous tweaking of their environmental exposure to obtain optimal responses (by means of training, nutrition, supplements, psychology, etc.) and performance has become a highly technological endeavour with many people involved in athlete preparation (coach, trainer, psychologist, nutritionist, physiologist, doctor, etc.). Adding doping as an additional means for tweaking would further add variance to performance. The genetic lottery brings some (free) advantages for some, by giving them for example an exceptionally high baseline aerobic capacity, while it may provide others an extraordinary response to training, or a particularly useful reaction to certain pharmacological substances. The point is that the merit (or absence of it) of these (innate) traits appears similar. Allowing doping, in addition to all other means for performance tweaking, might thus very well lead to a somewhat different ranking of the top layer of athletes as compared to the situation today, because the effects of doping vary between individuals. The best among the non-doped might not anymore be the best among the doped. Of course, this could be turned into an argument against the liberalization of doping. On this view, the doping ban would be legitimate because allowing doping would result in winners who would have no chance if they wouldn't take doping. To some extent, we are willing to bite that bullet. Yet, one could also argue that there is some moral value in the fact that there are people who thanks to doping can be given the chance to compete with others. It would allow those with lesser base capital in one currency to exploit their larger base capital in (a hitherto forbidden) currency. Furthermore, because of the complexity of getting the tuning right, one could value this difficult endeavor as much as the hardship of training and optimal athlete support, giving it greater value than the free but undeserved baseline talent. Seen in this way doping could thus be expected to change something sport relevant in a way that is not necessarily negative.

7. Discussion

Current anti-doping is prohibitionist and aimed at abstinence from a 'zero-tolerance' standpoint. What would be the effects of a policy change allowing doping within a health surveillance perspective? Without detailing the undoubtedly complex operationalisation, two different scenarios can be envisaged: i) open, i.e. with no cut-off for any given intervention, leaving it to the athlete and her support team to decide on how to exploit any performance enhancement means; ii) closed, with a cap to some (patho-)physiological effect, if beyond such a cut-off the health risk would be deemed excessive by some regulating instance (even though one could develop arguments against such

a paternalistic stance). An example of an open scenario would be to take substances off the List such as meldonium. Athletes would be allowed to use meldonium at their discretion, but would be monitored to study the effects (good and bad). An example of a closed scenario would be to allow the use of EPO or similars, but up to a maximum level of red-cell content of blood (i.e. haematocrit) of 50%, a measure that was already introduced by the UCI (International Cycling Union) in 1997 on the basis of the idea that beyond 50% the health risk would increase irresponsibly (Neumayr *et al.* 2002). In the open model the varying frequencies and intensities of interventions chosen by the athletes, combined with the varying effects of such interventions between them, would exclude a Red Queen effect but instead add variance to the playing field. In the closed model, some Red Queen effects could be expected to the extent that e.g. an identical haematocrit (red blood cell content) would put all athletes on par for that specific variable, even though it can still be expected that the interaction with various other varying parameters would not eliminate overall variance of performance. Indeed, it is not a given that for a given fixed level of some physiological parameter, e.g. haematocrit, or plasma growth hormone concentration, the overall physiological effect on performance would be identical between athletes. The contrary is much more likely, since such parameters always interact with many others in a complicated dynamic. But because of anti-doping measures, it has become very difficult to discover the performance and health effects of substances on the List, which also entails limitations for our approach. We have discussed the potential for doping runaway effects taking into account the (incomplete) empirical data available, making assumptions as realistic as possible. But the state of ignorance on the effects of doping, good and bad, that modern anti-doping has created necessarily renders arguments about any health risks of doping speculative. Still, we believe that the central claims of our paper rest on solid foundations. We contend that the argument that allowing doping would lead to a uniform increase in performance does not hold and should not be used anymore in arguments in favour of anti-doping policy. In sports, some limited Red Queen effects occur, but only up to the level that changes in behaviour of one's opponent (training, diet, supplements, doping) may lead to some level of adoption of such behaviour in the other athlete. But because of the varying effects to identical stimuli between athletes, the outcome will not level out, but instead will introduce further variance of performance. If the anti-doping rule would be relaxed, it would then be expected that the playing field would remain at least as dynamic as of today, opening the way towards valuing the exploitation of baseline talent by all means.

For now anti-doping is asking for the contrary, more means in order to eradicate doping. Recently the CEO of the world association of Olympians suggested to implant a chip into all athletes world-wide (Kelner, 2017). Extension of nootropic drug testing to coaches was recently proposed (Rodenberg and Holden

2017). This dynamic is akin to the advent of the general 'war on drugs', which was eventually proven to be a miserable and costly failure (Room and Reuter 2012). We find that modern anti-doping policy itself shows Red Queen like runaway dynamics. It is engaged in a spiralling 'war on doping' that does not and presumably cannot attain its goal, eradication of doping in elite and amateur sport.

References

Baar K (2014) Nutrition and the adaptation to endurance training. *Sports Medicine* 44(1), 5–12. doi:10.1007/s40279-014-0146-1.

Bouchard C, An P, Rice T, Skinner J S, Wilmore JH, Gagnon J, Pérusse L, Leon AS & Rao DC (1999) Familial aggregation of VO2max response to exercise training: results from the HERITAGE family study. *Journal of Applied Physiology* 87(3), 1003–1008.

Breivik G (2016) Doping games a game theoretical exploration of doping. *International Review for the Sociology of Sport* 27(3), 235–253. doi:10.1177/101269029202700303.

Carroll L (1871) *Through the Looking-Glass, and What Alice Found There.* Project Gutenberg. http://www.gutenberg.org/ebooks/12, accessed March 2018.

Christiansen AV & Møller V (2007) *Mål, Medicin Og Moral: Om Eliteatleters Opfattelse Af Sport, Doping Og Fairplay.* Syddansk Universitetsforlag, Odense, Denmark.

Chwang E (2012) Why athletic doping should be banned. *Journal of Applied Philosophy* 29(1), 33-49. doi:10.1111/j.1468-5930.2011.00547.x/pdf.

Clark B, Woolford SM, Eastwood A, Sharpe K, Barnes PG & Gore CJ (2017) Temporal changes in physiology and haematology in response to high- and micro-doses of recombinant human erythropoietin. *Drug Testing and Analysis* 9(10), 1561-1571. doi:10.1002/dta.2176.

Clarke PM, Walter SJ, Hayen A, Mallon WJ, Heijmans J, & Studdert DM (2015) Survival of the fittest: retrospective cohort study of the longevity of Olympic medallists in the modern era. *British Journal of Sports Medicine* 49(13), 898–902. doi:10.1136/bjsports-2015-e8308rep.

Connor JM & Mazanov J (2009) Would you dope? A general population test of the Goldman dilemma. *British Journal of Sports Medicine* 43(11), 871–872.

doi:10.1136/bjsm.2009.057596.

ConnorJM, Woolf J, & Mazanov J (2013) Would they dope? Revisiting the Goldman dilemma. *British Journal of Sports Medicine* 47(11), 697–700. doi:10.1136/bjsports-2012-091826.

Cosmides L & Tooby J (2008) Can a General Deontic Logic Capture the Facts of Human Moral Reasoning? How the Mind Interprets Social Exchange Rules and Detects Cheaters. In Sinnott-Armstrong W (Ed.) *Moral psychology, Vol. 1. The Evolution of Morality: Adaptations and Innateness*, pp. 53-119. MIT Press, Cambridge, MA, USA.

Danaher J (2012) Doping and Competitive Advantage: Chwang's Argument (Part One)." doi:10.1111/j.1468-5930.2011.00547.x/abstract.

Dawson J, Thorogood M, Marks SA, Juszczak E, Dodd C, Lavis G & Fitzpatrick R (2002) The prevalence of foot problems in older women: a cause for concern. *Journal of Public Health Medicine* 24(2), 77–84.

de Hon O, Kuipers H & van Bottenburg M (2015) Prevalence of doping use in elite sports: a review of numbers and methods. *Sports Medicine* 45(1), 57–69. doi:10.1007/s40279-014-0247-x.

Edgar A (2013) The aesthetics of sport. *Sports, Ethics and Philosophy* 7(1), 80–99. doi:10.1080/17511321.2013.761885.

Elbe AM & Barkoukis V (2017) The psychology of doping. *Current Opinion in Psychology* 16, 67–71. doi:10.1016/j.copsyc.2017.04.017.

Filipski KK, Pacanowski MA, Ramamoorthy A, Feero WG & Freedman AN (2016) Dosing recommendations for pharmacogenetic interactions related to drug metabolism. *Pharmacogenetics and Genomics* 26(7), 334–339. doi:10.1097/FPC.0000000000000220.

Frank RH (2007) *The Economic Naturalist : in Search of Explanations for Everyday Enigmas*. Basic Books, New York, NY, USA.

Gali J (1994) Keeping up with the Joneses: consumption externalities,pPortfolio choice, and asset prices. *Journal of Money* 26 (1): 1. doi:10.2307/2078030.

Goldman B & Klatz R (1992) *Death in the Locker Room*. Elite Sports Medicine Pubns, Chicago, IL, USA.

Hardeman M, Alexy T, Brouwer B, Connes P, Jung F, Kuipers H & Baskurt OK (2014) EPO or PlacEPO? Science versus practical experience: panel discussion on efficacy of erythropoetin in improving performance. *Biorheology* 51(2-3), 83–90. doi:10.3233/BIR-140655.

Heuberger JA, Rotmans JI, Gal P, Stuurman FE, van 't Westende J, Post TE, Daniels JM, *et al.* (2017) Effects of erythropoietin on cycling performance of well trained cyclists: a double-blind, randomised, placebo-controlled trial. *The Lancet Haematology* 4(8), e374–e386. doi:10.1016/S2352-3026(17)30105-9.

Issurin VB (2017) Evidence-based prerequisites and precursors of athletic talent: a review. *Sports Medicine* 47(10), 1993–2010. doi:10.1007/s40279-017-0740-0.

Jolls C, Sunstein CR & Thaler R (1998) A Behavioral approach to law and economics. *Stanford Law Review* 50(5), 1471. doi:10.2307/1229304.

Koenig J, Mueller F & Fromm MF (2013) Transporters and drug-drug interactions: important determinants of drug disposition and efects. *Pharmacological Reviews* 65(3), 944–966. doi:10.1124/pr.113.007518.

Liu X, Zhou L, Pan F, Gao Y, Yuan X & Fan D (2015) Comparison of the postoperative incidence rate of capsular contracture among different breast implants: a cumulative meta-analysis. *PloS One* 10 (2): e0116071. doi:10.1371/journal.pone.0116071.

López B (2013) Creating fear: the 'Doping Deaths', risk communication and the anti-doping campaign. *International Journal of Sport Policy and Politics*, 6(2), 213-225. doi:10.1080/19406940.2013.773359.

López B (2016) From needle phobia to doping phobia: can the fear of injections help us understand anti-dopism? *Drugs: Education, Prevention, and Policy* 24(3), 314–320. doi:10.1080/09687637.2016.1266299.

Lundby C, Millet GP, Calbet JA, Bartsch P & Subudhi AW (2012) Does 'Altitude Training' increase exercise performance in elite athletes? *British Journal of Sports Medicine* 46(11), 792–795. doi:10.1136/bjsports-2012-091231.

Marijon E, Tafflet M, Antero-Jacquemin J, El Helou N, Berthelot G, Celermajer DS, Bougouin W, *et al.* (2013) Mortality of French Participants in the Tour De France (1947-2012). *European Heart Journal* 34(40), 3145–3150. doi:10.1093/eurheartj/eht347.

Milot L (2014) Ignorance, harm, and the regulation of performance-enhancing substances. *Harvard Journal of Sports and Entertainment Law* 91, 91–146. doi:10.1037/e603962013-065.

Moran CN & Pitsiladis YP (2016) Tour de France champions born or made: where do we take the genetics of performance? *Journal of Sports Sciences* 35(14), 1411–1419. doi:10.1080/02640414.2016.1215494.

Møller V (2005) Knud Enemark jensen's death during the 1960 Rome Olympics: a search for truth? *Sport in History* 25(3), 452–471.

doi:10.1080/17460260500396319.

Neumayr G, Pfister R, Mitterbauer G, Gaenzer H, Joannidis M, Eibl G & Hoertnagl H (2002) Short-term effects of prolonged strenuous endurance exercise on the level of haematocrit in amateur cyclists. *International Journal of Sports Medicine* 23(3), 158–161. doi:10.1055/s-2002-23169.

Petróczi A, Mazanov J, Nepusz T, Backhouse SH & Naughton DP (2008) Comfort in big numbers: does over-estimation of doping prevalence in others indicate self-involvement? *Journal of Occupational Medicine and Toxicology* 3(1), 19. doi:10.1186/1745-6673-3-19.

Pigeyre M, Yazdi FT, Kaur Y & Meyre D (2016) Recent progress in genetics, epigenetics and metagenomics unveils the pathophysiology of human obesity. *Clinical Science* 130(12), 943–986. doi:10.1042/CS20160136.

Quet M (2015) It will be a disaster! How people protest against things which have not yet happened. *Public Understanding of Science* 24(2), 210–224. doi:10.1177/0963662514533752.

Ring C, Kavussanu M, Simms M & Mazanov J (2017) Effects of situational costs and benefits on projected doping likelihood. *Psychology of Sport and Exercise*, 34, 88-94. doi:10.1016/j.psychsport.2017.09.012.

Rodenberg RM & Holden JT (2017) Cognition enhancing drugs ('Nootropics'): time to include coaches and team executives in doping tests? *British Journal of Sports Medicine* 51(18), 1316–1316. doi:10.1136/bjsports-2015-095474.

Room R & Reuter P (2012) How well do international drug conventions protect public health? *The Lancet* 379(9810), 84–91. doi:10.1016/S0140-6736(11)61423-2.

Rubinstein A (2007) Afterword. In *Theory of Games and Economic Behavior*, p. 634.

Sanchis-Gomar F, Pareja-Galeano H, Rodriguez-Marroyo JA, de Koning JJ, Lucia A & Foster C (2016) Olympic genes on the podium? *International Journal of Sports Physiology and Performance* 11(7), 973–974. doi:10.1123/ijspp.2016-0421.

Santos LR & Rosati AG (2015) The evolutionary roots of human decision making. *Annual Reviews* 66(1), 321–347. doi:10.1146/annurev-psych-010814-015310.

Shermer M (2008) The doping dilemma. *Scientific American* 298(4), 82–89.

Sinex JA & Chapman RF (2015) Hypoxic training methods for improving endurance exercise performance. *Journal of Sport and Health Science* 4(4),

325–332. doi:10.1016/j.jshs.2015.07.005.

Smith C (2016) Tour du Dopage: confessions of doping professional cyclists in a modern work environment. *International Review for the Sociology of Sport* 52(1), 97–111. doi:10.1177/1012690215572855.

Strulik H (2012) Riding high: success in sports and the rise of doping cultures. *The Scandinavian Journal of Economics* 114(2), 539–574. doi:10.1111/j.1467-9442.2012.01698.x.

Teger A (2017) *Too Much Invested to Quit*. Elsevier, Amsterdam, Netherlands.

Teramoto M & Bungum TJ (2010) Mortality and longevity of elite athletes. *Journal of Science and Medicine in Sport* 13(4), 410–416. doi:10.1016/j.jsams.2009.04.010.

Timmons J A, Knudsen S, Rankinen T, Koch LG, Sarzynski M, Jensen T, Keller P, *et al.* (2010) Using molecular classification to predict gains in maximal aerobic capacity following endurance exercise training in humans. *Journal of Applied Physiology* 108(6), 1487–1496. doi:10.1152/japplphysiol.01295.2009.

Tucker R & Collins M (2012) What makes champions? a review of the relative contribution of genes and training to sporting success. *British Journal of Sports Medicine* 46(8), 555–561. doi:10.1136/bjsports-2011-090548.

Ulrich R, Pope HG, Cléret L, Petróczi A, Nepusz T, Schaffer J, Kanayama G, Comstock RD & Simon P (2017) Doping in two elite athletics competitions assessed by randomized-response surveys. *Sports Medicine* 45, 1–9. doi:10.1007/s40279-017-0765-4.

Van Valen L (1973) A new evolutionary law. *Evolutionary Theory* 1, 1–30.

Woolf J, Mazanov J & Connor J (2017) The Goldman dilemma is dead: what elite athletes really think about doping, winning, and death. *International Journal of Sport Policy and Politics* 9(3), 453–467. doi:10.1080/19406940.2016.1194875.

Worman O'Driscoll C & Kimbrell T (2008) Getting to the hart of the matter: did antlers truly cause the extinction of the Irish elk? *Oikos* 117(9), 1397–1405. doi:10.1111/j.0030-1299.2008.16608.x.

Wright DF, Winter HR & Duffull SB (2011) Understanding the time course of pharmacological effect: a PKPD approach. *British Journal of Clinical Pharmacology* 71(6), 815–823. doi:10.1111/j.1365-2125.2011.03925.x.

Kelner M (2017) Call for athletes to be fitted with microchips in fight against drug cheats. The Guardian. http://www.theguardian.com/sport/2017/oct/10/call-for-athletes-to-be-fitted-with-microchips-fight-against-drug-cheats, accessed

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Chapter 4

On the presumption of guilt without proof of intentionality and other consequences of current anti-doping policy

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The globalisation of anti-doping

The use of performance-enhancing substances has been endemic in elite sports since the very beginnings. In the first half of the twentieth century, sports organisations such as the IOC and the IAAF responded little to doping practices among athletes, probably because of the limited pressure from public opinion and the limited means available at that time to impose a ban and to control athletes for the use of doping. In the second half of the twentieth century, increasingly powerful biomedical inventions with potential performance-enhancing effects were quickly adapted to and adopted by elite sports (for example, recombinant human EPO[1] in the 1980s and 1990s). Following a series of widely publicized doping scandals and public outrage, in the last decades of the twentieth century an increasingly strong movement advocating doping-free sports has developed. One probable reason for the increasingly negative public opinion of athletes who dope is the similarity between the image of the doped athlete and the negative image of the illicit psychotropic drug user. Anti-doping accelerated with the inception of the World Anti-Doping Agency (WADA), which celebrated its 10-year anniversary at the end of 2009. WADA aims at harmonizing anti-doping practices worldwide and is helped by the fact that an increasing number of UN member states now have signed a UNESCO anti-doping convention (UNESCO 2005).

The symbolism of harmonized anti-doping

The objective of anti-doping efforts is to rid elite sports of the use of doping. Anti-doping policy at the international level is typically punitively focused. Mainly based on surveillance, in-competition testing and unannounced out-of-competition testing for substances in urine or blood, the objective is to identify all cheats and to exclude them from competition for the benefit of the 'clean' athletes and the spectators. For the system to be successful, it needs to catch all offenders and to exclude false accusations of 'clean' athletes. In the end, the IOC, which is a main driving force behind this globalization of anti-doping efforts, wants to be certain that the public only admires 'clean' athletes winning Olympic medals. At first glance, the objective of doping-free sports seems rather noble, and the globalization of anti-doping policy governed by WADA the appropriate means to reach that objective. But, as Amos concludes:

[1] EPO: erythropoietin, a pleiotropic hormone that stimulates the production of red blood cells by the bone marrow.

> 'Anti-doping policy is fraught with confusion and ambiguity, even in the most basic and fundamental issues. To look at anti-doping policy today, with its universal code and a level of governmental agreement and cooperation not often seen, it is easy to assume that no such problems exist. The degree of consensus is largely a result of unity in public opinion regarding the issue of performance enhancing substances in sport. This unity of public opinion is, in turn, largely a result of the power of symbolism in doping discourse'. (Amos 2009, p. 316)

Amos argues, then, that the public validation of anti-doping is in part skewed by the public's grasp of the issues, which are themselves mediated by WADA. The symbolism of harmony has its roots in the strong negative image that public opinion has of the user of illicit psychotropic substances, which has been transferred on to that of the doping athlete. One problem that threatens to undermine this symbolism of harmony is that current antidoping policy has a number of operational problems that lead to unintended negative side effects. As Amos shows, the definition of doping in public discourse is different from the operational definition of doping by WADA in the World Anti-Doping Code. The code defines doping in a much broader way. One consequence of this arises when, for example, WADA punishes athletes found to have doping substances in their body, regardless of whether they had intended to improve their performance via the forbidden substances. In contrast, it is reasonable to suppose that public opinion would not condemn athletes in such circumstances.

The application of the code is sufficiently problematic that it warrants critical analysis of the reasons for current anti-doping policy and reflection on possible alternatives. In previous publications, I have, with co-authors, developed arguments undermining the basis for present anti-doping policy in elite sports, and the reader is referred to those papers (Kayser *et al.* 2005, 2007; Kayser & Smith 2008; Kayser 2009). The aim of the present essay is to further highlight some limits and side effects of present anti-doping policy rarely discussed in the extant literature.

Consequences of current operational doping and antidoping definitions

At first glance, developing and implementing anti-doping policy in elite sports seem simple. All that is required is a definition of doping, a no-doping rule, methods to make athletes obey that rule, and the imposition of sanctions when they do not. However, there are difficulties in defining what doping is, and

the methods used to impose the rule are inherently limited in what they can achieve. As Møller commented, in its main document, the code, WADA uses a circular definition of what doping in sports is:

> 'Doping is defined as the occurrence of one or more of the anti-doping rule violations [. . .] Doping is simply defined as infringement of WADA's doping regulations. In other words, doping is whatever WADA at any moment assesses it to be'. (Møller 2009, p. 4)

Methods and substances that are not allowed are listed on the Prohibited List, which is updated on an annual basis by WADA. WADA uses three criteria, of which at least two must be met, for inclusion on the prohibited list: the method or substance must have performance-enhancing effects; it must pose a health risk or at least have the potential for such; and it must be against the 'spirit of sport'. These criteria lack clear-cut boundaries, and especially the 'spirit of sport' argument is heavily influenced by timedependent cultural specificity. For instance, if these three criteria had been used at the beginning of sport in Victorian times in England, physical training would not have been allowed, because it was at that time against the 'spirit of sport' (training was considered cheating: a form of ungentlemanly conduct), it has performance enhancing effects and, if used in excess, it potentially poses a health risk. The inclusion of the 'spirit of sport' criterion allows WADA the flexibility to include substances on the list that do not, or only partially, comply with the two other criteria, such as, for example, derivatives of cannabis (marihuana, hashish).

An illustrative example of what the consequences of present anti-doping policy can be for athletes is the story of Zach Lund, an American skeleton athlete (head-first sleighing), who was prevented from participation in the 2006 Turin Winter Olympics when finasteride was found in a urine sample in late 2005. On the basis of scientific evidence from WADA-funded research published later (Thevis *et al.* 2007), early in 2005, WADA put finasteride on the list of forbidden products as it was thought to be useful in masking anabolic steroid use. Lund had been using finasteride since 1997 because of hair loss (alopecia) and had always informed the doping control officers of his use of this compound. He was not aware of the inclusion of finasteride on the list of forbidden substances in 2005. Interestingly, he was repeatedly tested in 2005 after the inclusion of the drug on the list and never found positive, but, in November 2005, he was. When the USA anti-doping agency decided to treat Lund leniently because there was clearly no intention to dope, WADA appealed and asked the international Court of Arbitration in Sport (CAS) in Lausanne in Switzerland to judge the case just prior to the beginning of the Turin Winter Games, where Lund was a likely medal contender, in order to exclude him from participation. The CAS judgment stated that it was unlikely that Lund had intended to use finasteride

to hide steroid use and that Lund was not in any way 'performance enhanced' because of his use of finasteride. The CAS nevertheless declared Lund guilty of a doping offence, even though it expressed its own uneasiness with this ruling (CAS 2006). Lund was sent home on the very opening day of the Turin Games with his name tarnished. In 2008, WADA then decided to take finasteride off the list again, stating that new laboratory techniques had rendered finasteride useless as a masking agent. Lund's request that his record be cleared was refused, leaving the possibility that, upon a second offence, he could be banned from sport for life. This case shows how the strict application of anti-doping policy can cause harm to athletes who did not intend to dope. Even though WADA, in a document published a posteriori, regrets this aspect of its fight against doping, it prefers to remain firm:

> 'While WADA can understand the discomfort of those athletes who neglected to obtain a TUE [therapeutic use exemption] and consequently were sanctioned for taking alpha reductase inhibitors [e.g. finasteride], one has to keep in mind that the List is prepared on existing science and that anti-doping science progresses quickly for the benefit of clean athletes worldwide [. . .] As in every area of society, one has to abide by the rules in force at the time of the particular event'. (WADA 2009a, p. 2)

This case is not an isolated one. Similar cases happen regularly. Pluim (2008) analysed doping cases over a 5-year period (2003–7), published by the International Tennis Federation. WADA uses the principle of 'strict liability', where an athlete is responsible for the presence of a forbidden substance in her/his urine or blood, no matter how the substance came into the body. In this way, there can be no excuses, and the procedure of accusation of doping is greatly simplified. On the other hand, this simplicity comes at a price: it may lead to damage to what will widely be conceived of by public opinion as innocent athletes. For the majority (68 per cent) of the forty doping cases in tennis over that period, it was ruled by the sanctioning bodies that there was no intent to enhance performance or no (significant) fault or negligence (Pluim 2008). Nevertheless, sanctions were applied, with significant negative impact for the players with regard to their notoriety, income and career. These examples show how the operational definition of doping by WADA, which includes the principle of strict liability, regularly leads to the conviction of athletes who had no intent to improve their performance by using forbidden substances or methods. These are athletes who are punished who are not 'guilty' (in the sense of actually being performance enhanced) and without direct intentionality (in the sense that they willingly used forbidden substances to improve their performance). It thus seems as if, in the name of the 'spirit of sport', the sports

establishment considers it justified to sacrifice in principle innocent athletes (innocent in the sense that they were not per - formance enhanced, nor had any intent to become performance enhanced). Furthermore, today's anti-doping policy tends to reverse the 'innocent until proven guilty' rule, as presumption of innocence is replaced by suspicion of doping for any extraordinary athletic achievement.

Surveillance in sports

Another controversial aspect of present anti-doping policy is the obligation of elite athletes to inform the anti-doping authorities for one hour a day, 365 days a year, where they will be, to allow unannounced out-of-competition testing. Athletes have to inform four times a year, for three months in advance of their plans, and use electronic and paper-based means to inform the authorities of any changes. According to WADA, this 'whereabouts' rule is an essential cornerstone of anti-doping, as it prevents out-of-competition doping in preparation for competition. In order to force athletes to comply, a rule states that three missed tests within an 18-month period consitute a doping offence. Athletes regularly have problems keeping the authorities well informed, and cases of suspension because of three missed tests are not uncommon.

The case of Yanina Wickmayer, a talented young tennis player from Belgium, is an example of the problems that may arise. At the end of 2009, she was suspended for a year when she failed three times to inform about her whereabouts when she entered the Women's Tennis Association Top 50 and thus became obliged to inform about her whereabouts. She was able to defend herself in a Belgian court, pointing out the shortcomings and administrative errors of the official bodies overseeing her whereabouts obligations and had the ban overturned, allowing her to play again, but her image was probably tainted forever (BBC 2009).

There are other examples of athletes who were judged to have committed a doping offence because of three missed tests, some of whom probably tried to escape doping controls but others were athletes who just failed to be sufficiently meticulous. The whereabouts rule may now also apply to non-adult athletes. In 2009, in the Netherlands, a talented 13-year-old girl speed skater, Dominique Lommers, was told to enter the Dutch whereabouts programme when her 15-year-old brother was provisionally found guilty of a doping offence. The parents refused to enter the whereabouts programme, while accepting regular doping controls, but Dominique Lommers was nevertheless excluded from participating in junior level competitions, a decision that was later overturned (NRC 2009).

Generally, the whereabouts rule seems accepted by athletes, although they obviously have no choice. In fact, many athletes agree with the principles behind the rule, even if they do not like it (Hanstead & Loland 2009). Critical voices are regularly heard, as in early 2009, when several high-level athletes such as Rafael Nadal publicly voiced their discontent about the whereabouts rule, complaining about its excessive intrusion into the athlete's private sphere and the practical difficulties of keeping one's information up to date. WADA's reasoning is pragmatic, arguing that it is a free choice for the athlete either to abide by the rules or to choose another activity. However, since being an athlete has become a profession, its regulation should also abide by general law regulating other professional activities. Currently, discussions are underway between the European Commission and WADA to study the whereabouts rule's potential incompatibility with European law.

The limits of laboratory testing technology

A further problem of current anti-doping policy concerns the testing for for bidden substances in bodily specimens. The ideal situation would be black and white: the forbidden substance is present or is not present. Those two extreme cases exist, but there is, depending on the substance, often a large area of uncertainty. This is true for most biomedical tests in general, including those used for clinical reasons. A test can be positive (showing the presence of a substance) when it is indeed present (true positive) or not present (false positive); conversely, a test can be negative when there is indeed no substance present (true negative) or when in fact the substance is present (false negative).

The basic descriptors of a test are, hence, sensitivity (proportion of actual positives that are correctly identified as such) and specificity (proportion of negatives that are correctly identified, e.g. the percentage of samples without the substance that are identified as not having the substance present). Antidoping policy enforcers need to keep false positives as low as possible, while striving for the highest sensitivity possible. The problem is that the probability for false positives rises with the number of tests performed, as well as with a drop in prevalence of actual doping (Pitsch 2009). It is very likely possible that false positives have already occurred, even though there is animated debate between scientists on the level of certainty for that statement (Beullens *et al.* 2006; Berry 2008; Lundby *et al.* 2008). WADA does not want to publish the results of the quality of the tests used by the WADAaccredited laboratories. It argues that this would permit athletes to tailor their doping practices to the available testing technology. At first sight, this seems reasonable, but, at the same time,

it leaves room for doubt about the impartial nature of anti-doping testing. The absence of transparency is not a good gatekeeper for quality assurance.

In order to overcome some of the limits of the single tests that just compare the findings to some pre-set level based on cross-sectional population data, individualized longitudinal blood analysis has been introduced under the name 'blood passport' (Sottas *et al.* 2010). The idea is that doping can be recognized from certain patterns of change in blood values over time. In late 2009, the first case of an athlete accused of doping on indirect evidence from her blood values was announced. Claudia Pechstein, a very successful German speed skater, was frequently tested throughout her career, but never failed a test. On the basis of fluctuations in the number of young red blood cells in her blood, she was declared guilty of doping (CAS 2009). This case is interesting because it is the first time that an athlete has been considered guilty of doping on indirect evidence indicating the use of a substance that, in itself or its metabolites, was not identified, even though there remains quite some scientific doubt on the probability that Pechstein did indeed use forbidden substances or methods. Although the blood passport approach will certainly add to the pressure on athletes not to dope, there probably will also be athletes who find ways to get away with it. In any case, the blood passport will also, by definition, be limited in what it can detect. Recent findings indicated, for example, that the measurement of total haemoglobin mass with CO rebreathing[2] is unable to detect 50 per cent of those on EPO maintenance treatment (Lundby & Robach 2010), making it a questionable means of surveillance or detection. As EPO testing in urine also poses quite some challenges, leaving leeway to get away with a well-dosed regime (Lundby et al. 2008), it remains uncertain how much can be gained with the longi - tudinal testing, while it may, at least in theory, further expose athletes to the risk of false accusations.

As one can see, with present anti-doping policy, athletes who try to play the game according to the anti-doping rule risk significant harm, whereas there very likely still are athletes who dope but get away with it. Of course, today's anti-doping policy has certainly changed doping practices. Certain types of doping cannot be used anymore because they would be uncovered, but other types can still remain undiscovered. The purpose of anti-doping, the celebration of 'clean' athletes with a strong degree of confidence or even certainty, thus remains an unreached objective. Rather perversely, then, one is forced to question still whether the champions are 'clean'; a question that will unfortunately remain unanswered. It could be argued that public opinion has become even

[2]CO rebreathing: by having a subject inhale a known small amount of carbon monoxide, a gas that strongly binds to the oxygen-carrying molecule in the blood's red cells, i.e. haemoglobin, one can calculate total haemoglobin mass from the resulting relative amount of CO–haemoglobin measured in a blood sample.

more sceptical about the 'cleanliness' of today's champions, which would be contradictory to WADA aims.

How many dopers are actually caught? According to WADA statistics, about 1–2 per cent of tests are positive, a proportion that has not changed much over the last 10 years. A recent study, however, indicates that prevalence might be much higher (Striegel *et al.* 2009). That paper reported data from Germany indicating less than 1 per cent of doping, according to official test results, but an actual prevalence of doping eight times higher when estimated by using a randomized response technique, which allowed the bias introduced by ordinary questionnaires on sensitive issues to be circumvented. Anti-doping advocates thus find themselves in a difficult position with regard to the efficient achievement of their goals. The objective of present policy is to be certain that winners are 'clean', but this objective cannot be fully reached. Because of the limits of surveillance and laboratory testing, one cannot be sure that winners are 'clean'. The fact that it is impossible to be sure that the winners are 'clean' sets doping apart from other transgressions in society. Society can accept transgression as long as it continues functioning, the prevalence of transgression remains limited, the cost of repression is acceptable, and the rule is generally accepted by the population. Drunk driving is repressed, and rightly so, but not totally eradicated. The cost of alcohol for society can be considered high, but a pragmatic approach, with a strong harm-reduction component, allows that cost to the individual and society to remain as low as possible.

The claim that the 'war on doping' is increasingly successful is likely to be correct in elite sports. Even if we accept this proposition, however, it remains problematic that the possibility that, among the winners of competitions, there may still be dopers who were simply not discovered can never be fully excluded. In fact, the media and the public increasingly suspect that any extraordinary performance is not just the result of rule-abiding training and 'clean' competitive effort. Indeed, being a successful top athlete today often implies bearing a lasting burden of potential guilt. However, being forced to doubt the 'cleanliness' of our champions directly undermines the goal of elite sports, the celebration of 'clean' champions, a central tenet of the 'spirit of sport'.

Elite sports and general society

WADA and the IOC continuously try to find ways to increase the pressure on athletes not to dope. The whereabouts rule was one such way. Another way being used now is to oblige countries that would like to host the Olympics to comply with a series of conditions that include the introduction of specific doping

laws. In some countries, doping has become a transgression of criminal nature that comes with law enforcement practices including house visits, searches, stiff fines and imprisonment. Present anti-doping policy is centred on zero-tolerance and repression. According to anti-doping policymakers, a combination of information, education and repression will lead to drug-free, elite sports competition.

WADA believes that a long-term solution to preventing doping is through effective values-based education programs that can foster antidoping behaviours and create a strong anti-doping culture (WADA 2009b). One problem for the creation and maintenance of a strong anti-doping culture anchored in anti-doping legislation and law enforcement is the gap that comes to exist between this specific social practice (elite sports) and what happens elsewhere in society.

In general, in society performance enhancement is becoming rather common. For example, a poll in 2008 by the premier scientific journal *Nature* reported that one in five of the 1,400 readers who participated in the poll used or had used performance enhancing drugs (Maher 2008). The drug methylphenidate (Ritalin) was the most popular, with 62 per cent of users, while 44 per cent reported taking modafinil (Provigil). Reasons advanced were focus, attention, long working hours or jet lag. To illustrate the variation in how society views performance and other enhancement behaviour, Table 1 lists several common examples. With the exception of the cyclist, who is clearly transgressing the current no-doping rule in his sport, the other cases are more complex. Concepts such as fairness vs. cheating, natural vs. unnatural, or healthy vs. unhealthy are not easily applied to several of these examples to classify them as either acceptable or unacceptable. As it is very likely that biomedical searches for new therapies will yield more substances and technologies also having extra-therapeutic potential, their extra-therapeutic use is to be expected, especially if the side effects were to remain limited (Cakic 2009). It is both simplistic and illusory to declare that all extra-therapeutic use of substances is illegitimate. Rather, a pragmatic approach is needed, based on regulation of use at the lowest cost to the individual and to society.

Zero-tolerance for doping in sport is thus in contrast with the rather lenient position of general society with regard to cognitive and other types of performance enhancement outside sport. In this regard, it is of interest that the scope of anti-doping policy does not appear to remain restricted only to elite sports and may have consequences outside elite sport. Anabolic steroid use has risen over recent decades but was forced underground with the criminalization of its trade and dangerous practices, akin to what can be observed for psychotropic illicit drug use (Kayser 2009). Anti-doping also leads to excessive surveillance practices, it may be causing more (unintended) harm to society than it prevents, and it might present a slippery slope towards the generalization of anti-doping

Table 4.1: Performance enhancement in and outside sport: some examples.

Case	**Evidence for performance enhancement**	**Evidence for health risk**	**Against the (spirit of sport)**	**Comments**
Jane, 21 yrs, medical student, active life style, takes methylphenidate, when preparing difficult exams.	Methylphenidate may have a slight effect, more in those whom are somewhat limited.	Occasional use of methylphenidate is probably without much health risk.	Forbidden in competitive sports, not outside sports. But in some countries voices are heard asking to introduce compulsory testing in students.	Jane is an example of a modern achiever, conscious of her limits, eager to succeed; she has adopted a healthy life style with a balanced diet and regular physical activity. She is a coffee drinker aware of its performance enhancing effects. She is an informed occasional user of a performance enhancing drug. The effectiveness of methylphenidate is probably limited, especially in the intellectually gifted and placebo effects are likely to play a role.

Daniel, 23 yrs, professional cyclist, takes multivitamins, magnesium, iron, caffeine, and low dose EPO, to keep an edge and be at the front.	Multivitamins are probably not a good idea, magnesium is probably unnecessary, iron is possibly necessary, caffeine and EPO both have a proven performance enhancing effect.	It is not well known what the effects are of long-term use of any of these compounds. Iron can be dangerous. High dose EPO is very dangerous, risk of long term use of low dose in healthy subjects is unknown.	Any use of a compound on the list of forbidden substances is a breach of the no-doping rule and hence a violation of the spirit of sport.	Daniel is not an exception but rather quite a typical example of a sub-elite cyclist. The actual prevalence of doping in cycling is unknown, but anecdotal and indirect information indicates that doping continues, albeit at 'lower' intensity now that regular testing prevents certain classic 'gross' types of practice.

Joseph, 32 yrs, commercial, fitness club member, takes anabolic, steroids for appearance purposes	Anabolic steroids amplify training induced muscle growth.	Excessive use of anabolic steroids can potentially be dangerous but this risk has been exaggerated. It is possible that low dose use comes with acceptable risk.	Not so long as users do not participate in competitions falling under WADA anti-doping rules. However, there are frequent calls to test for anabolic steroid use in students and fitness clients. Anti-doping Denmark has already introduced testing of fitness clients.	The use of anabolic steroids is frequent in the body-building milieu. The main problem is its medically unsupervised nature and the uncertain origin of the substances that are used. Present ways to deal with the potential health problems related to anabolic steroid use vary between exclusion from health services to special steroid clinics and syringe exchange programs.
Harry, 45 yrs, manager, inactive, obese, takes sildenafil, for his sex-life	Sildenafil (Viagra) is a succes. It clearly helps men with erectile problems.	Sildenafil has systemic effects and can be very dangerous in subjects with underlying cardiovascular disease.	WADA is currently observing sildenafil because of its potential performance enhancing effects for endurance exercise in hypoxia but it is not on the list of forbidden substances yet.	Harry has an unhealthy life-style which probably is a reason for his need for sildenafil. Because of his unhealthy lifestyle he is at increased cardiovascular risk and sildenafil exacerbates this risk. The best for Harry would be to change his life-style.

Catherine, 52 yrs, scientist, takes modafinil when needing to work hard and concentrated on papers or grants.	Modafinil is used to treat narcolepsy but helps healthy subjects to stay awake.	Modafinil has few side-effects and is generally well-tolerated.	Modafinil is forbidden in competitive sports.	Catherine is an achiever. As a successful scientist she is under continuous pressure to produce high level science. Regular deadlines for grant proposals have led her to integrate some controlled use of modafinil into her life. She thinks it helps her more than drinking coffee, also because coffee makes her tremble and induces arrhythmia. She is an informed user.

Paula, 65 yrs, retired, takes female hormones, for menopause symptoms.	Hormone replacement therapy is effective for many of the symptoms of menopause	Hormone replacement increases the risk of breast cancer, heart disease and stroke and regular medical control is necessary.	The hormones used here are not forbidden.	Hormone replacement therapy is mostly for the comfort of women who go into menopause and experience hot flashes and vaginal dryness. It also helps against osteoporosis. Its use is prevalent in affluent society. It is an example of the use of medication where it is not so evident to distinguish between therapeutic vs. non-therapeutic use and natural vs. unnatural.

John, 75 yrs, retired, amateur athlete, takes testosterone, growth hormone, and EPO, to continue competition in good shape, participates in the world masters games.	At his age the use of testosterone, GH and EPO certainly has an important performance enhancing effect.	There is not enough known about such use at an advanced age.	Yes. The world masters games adhere to the WADA anti-doping code and some testing has been introduced in 2009.	This case is rather exemplary of what the evolution of performance enhancement in society may look like in the future. On balance it would seem that a combination of regular physical training, a healthy diet and well-chosen and medically supervised pharmacological anti-aging treatments is probably a better scenario than that of the general behaviour of the aging population the majority of whom have an inactive lifestyle, an unhealthy diet and suffer from associated chronic disease like diabetes and cardio-vascular disease.

practices in society at large. Perhaps it is useful to underline that those involved in anti-doping are full of good intentions and driven by positive ideals. To strive for utopia is, of course, to act in a wonderful cause. The problem is that it may well be possible that, in the context of present anti-doping policy, striving for a (utopian) cure may turn out to be worse than the disease and lead to dystopia.

Doping is cheating

On a final note, one of the arguments often made is that doping is cheating and therefore cannot be permitted. Apart from the fact that rules can change, and the anti-doping rule can therefore change too, the cheating argument would seem valid, as sport involves playing by rules, and not playing according to the rules undermines the very nature and purposes of the game. However, the moral outcry over doping offences is in great contrast to how sports organizations and the public deal with other forms of cheating in sports. In fact, cheating is also part of sport. Good examples are the famous 'hand of God' goal of Diego Maradona in 1986 and the control of the ball using his hand by Thierry Henry, which allowed France to qualify for the 2010 Football World Cup in South Africa at the expense of Ireland. In both cases, the players got away with it, as the referee did not see the hand-ball, and the rule is that the referee has the last word. Cheating in sports as such thus seems not to be such morally reprehensible behaviour. But doping cases are treated much more aggressively, probably because of the strong emotional value of the image of the doping athlete and its similarity with that of the drug addict (Amos 2009). Indeed, it seems as if the 'war on doping' and the 'war on drugs' are, in fact, part of the same endeavour, anchored in a public opinion strongly condemning any behaviour that looks similar to using illicit psychotropic drugs. However, the most successful way of dealing with psychotropic drug use in society is not to strive for full eradication but rather employ harm-reduction approaches and regulate use (Wood *et al.* 2009). By contrast, current antidoping policy, punitively conceived, is in danger of becoming so radical that it appears justifiable to use any means to reach its goals. It would be a terrible setback for the pragmatic regulation of illicit psychotropic drug use in general society if the anti-doping approach were to become an inspiration for the control of drug use in society in general. This prospect is not as far-fetched as it may seem. One can think of urine controls for students, to check for cognitive-enhancement drugs, or for fitness clients, for anabolic steroids. I doubt that this is the best way to go. I call on anti-doping policymakers to become more pragmatic and to choose regulation and harm-reduction strategies to replace the presumption of guilt without proof and other side effects of current anti-doping policy.

References

Amos A (2009) *Anti-doping policy: rationale or rationalisation?* Thesis, Faculty of Law, University of Sydney, Australia. https://ses.library.usyd.edu.au/bitstream/2123/5437/1/am-amos-2009-thesis.pdf, accessed May 2018.

BBC (2009) Belgian court clears Yanina Wickmayer & Xavier Malisse. Available online at: http://news.bbc.co.uk/sport2/hi/tennis/8412855.stm (accessed 30 May 2010).

Berry DA (2008) The science of doping. *Nature* 454(7205), 692–3.

Beullens M, Delanghe JR & Bollen, M (2006) False-positive detection of recombinant human erythropoietin in urine following strenuous physical exercise. *Blood* 107(12), 4711–13.

Cakic V (2009) Smart drugs for cognitive enhancement: ethical and pragmatic con- siderations in the era of cosmetic neurology. *Journal of Medical Ethics* 35(10), 611–15.

CAS (2006) WADA vs. USADA, USBSF and Zach Lund 2006. Available online at: http://jurisprudence.tas-cas.org/sites/CaseLaw/Shared%20Documents/OG001.pdf (accessed 31 May 2010).

CAS (2009) Pechstein vs. International Skating Union and Deutsche Eisschnelllauf Gemainschaft vs. International Skating Union 2009. Availabe online at: www.tas- cas.org/d2wfiles/document/3802/5048/0/FINAL%20AWARD%20PECHSTEIN.pdf (accessed 31 May 2010).

Hanstad DV & Loland S (2009) Elite athletes' duty to provide information on their whereabouts: justifiable anti-doping work or an indefensible surveillance regime? *European Journal of Sport Science* 9(1), 3–10.

Kayser B (2009) Current anti-doping policy: harm reduction or harm induction? In Møller V & McNamee M (Eds.) *Elite sport, doping and public health.* University Press of Southern Denmark, Odense, Denmark.

Kayser B, Mauron A & Miah A (2005) Viewpoint: legalisation of performance-enhancing drugs. *The Lancet* 366(Suppl. 1), S21.

Kayser B, Mauron A & Miah A (2007) Current anti-doping policy: a critical appraisal, *BMC Medical Ethics* 8, 2.

Kayser B & Smith AC (2008) Globalisation of anti-doping: the reverse side of the medal, *British Medical Journal* 337, a584.

Lundby C, Achman-Andersen NJ, Thomsen JJ, Norgaard AM & Robach P (2008)

Testing for recombinant human erythropoietin in urine: problems associated with current anti-doping testing. *Journal of Applied Physiology* 105(2), 417–19.

Lundby C & Robach P (2010) Assessment of total haemoglobin mass: can it detect erythropoietin-induced blood manipulations? *European Journal of Applied Physiology* 108(1), 197–200.

Maher B (2008) Poll results: look who's doping. *Nature* 452(7188), 674–5.

Møller V (2009) *The ethics of doping and anti doping.* Routledge, London, UK.

NRC (2009) KNSB schorst jeugdige schaatster. Available online at: www.nrc.nl /sport/article2414248.ece/KNSB_schorst_13-jarige_schaatsster (accessed 31 May 2010).

Pitsch W (2009) "The science of doping" revisited: fallacies of the current anti-doping regime. *European Journal of Sport Science* 9(2), 8.

Pluim B (2008) A doping sinner is not always a cheat. *British Journal of Sports Medicine* 42(7), 549–50.

Sottas PE, Robinson N & Saugy M (2010) The athlete's biological passport and indirect markers of blood doping. *Handbook of Experimental Pharmacology* (195), 305–26.

Striegel H, Ulrich R & Simon P (2009) Randomized response estimates for doping and illicit drug use in elite athletes. *Drug and Alcohol Dependence* 106(2–3), 230–2.

Thevis M, Geyer H, Mareck U, Flenker U & Schanzer W (2007) Doping-control analysis of the 5alpha-reductase inhibitor finasteride: determination of its influence on urinary steroid profiles and detection of its major urinary metabolite. *Therapeutic Drug Monitoring* 29(2), 236–47.

UNESCO (2005) International convention against doping in sport. Available online at: http://unesdoc.unesco.org/images/0014/001425/142594m.pdf, accessed March 2018.

WADA (2008) Q&A: status of finasteride. Available online at: www.wada-ama.org/ rtecontent/document/QA_Finasteride.pdf, accessed March 2018.

WADA (2009a) World Anti-Doping Code. Montreal, p. 19. Available online at: www.wada-ama.org/Documents/World_Anti-Doping_Program/WADP-The-Code/ WADA_Anti-Doping_CODE_2009_EN.pdf, accessed March 2018.

WADA (2009b) Education & awareness. Available online at: www.wada-ama.org/ en/Education-Awareness/, accessed March 2018.

Wood E, Werb D, Marshall BD, Montaner JS & Kerr T (2009) The war on drugs: a devastating public-policy disaster. *The Lancet* 373(9668), 989–90.

Comments on this paper since its publication

This chapter presented an analysis of some regulatory and legal aspects of anti-doping in elite sport and its (unintended) consequences (Kayser 2011). It identified four types of consequences: 1) those caused by the lack of clarity in operational doping and anti-doping definitions; 2) those related to anti-doping surveillance in sports; 3) those referring to the limits of urine and blood testing technology and 4) those concerns raised about the relationship between sports and society as a whole. After the publication of this chapter other scholars have addressed one or the other of these points. Dimeo and Møller (2018) list an impressive number of these unintended consequences of modern anti-doping, leading them to conclude that these could cause a major crisis, potentially (and paradoxically) jeopardizing Olympic sports.

For example, WADA uses the principle of 'strict liability', which holds that athletes are responsible for the presence of a forbidden substance in their body, even if they are minors (Teetzel & Mazzucco 2014). No matter how it came into their blood or urine samples the athletes are directly responsible; intentionality is considered irrelevant. There are perhaps good practical legal/regulatory reasons to do this, but nevertheless, this has created an exception for sports, given that for the majority of transgressions in democratic societies, intentionality plays a significant part in the way the legal system treats transgressions. State agents, such as the European Union, are aware of this, and are engaged in discussions with WADA. The 2015 version of the Code was thus modified after input from the EU, and further scrutiny of the compatibility of the Code with EU laws and regulations is ongoing. Points of interest are the principle of presumption of innocence, which is practically absent in anti-doping, and importantly, WADA's Code seemingly supersedes national law (Kornbeck 2015)[3]. A recent analysis by Geeraets (2017) from a legal perspective concluded even that two main arguments of WADA to justify its tough approach, the 'spirit of sport' and the 'voluntary' consent of athletes to abide to WADA's rules, 'are in fact ideological in nature. The specific aim of these arguments is not to be correct, but rather to distort social reality, because in this way they can be used to ward of any critical discussion of the Code. We conclude that WADA's interest is to create a façade of justice, not in serving justice itself'. In agreement with this contention de

[3]Kornbeck ends his analysis from a legal point of view with 'That athletes suspected of doping [...] should enjoy lesser procedural protection than suspected house burglars or suspected murderers is hard to apprehend, let alone to accept.'

Hon (2016), upon analysis of WADA's juridical database of the years 2010-2012 for eight sports, found that for up to 40% of the ADRVs[4], the disciplinary sanction was less than the standard. This suggests that there were mitigating circumstances questioning whether the athlete knowingly engaged in doping for performance-enhancement purposes.

A further development is the world-wide introduction of national anti-doping law upon calls by WADA (Dimeo & Møller 2018). For example, because of the doping among Kenyan athletes, WADA issued a statement in February 2016, noting 'the Kenyan Government's failure to pass the appropriate legislation and provide adequate funding' by a deadline set by WADA, that indicated that 'the matter has been referred to WADA's independent compliance review process.'[5] This led to a Kenyan bill drafted in May 2016 resulting from the work of a joint WADA-Kenya team that was deemed potentially Code-compliant by WADA. This situation shows how soft power is wielded to introduce principles of Olympism into national law. Calls for the introduction of criminal[6] anti-doping laws are also heard [e.g. Sumner (2017) critically discussed by Kornbeck & Kayser (appendix C); see also Anderson (2013) and Geeraets (2017) for further critical appraisals from a legal-ethical perspective].

A further area of vivid discussion surrounds everything related to the search for direct or indirect proof of doping with the analysis of what WADA calls 'matrices', i.e. urine, blood, hair, etc. by the official accredited anti-doping laboratories. It is problematic that WADA does not publish its rationales for adding or removing specific substances or methods from the List. Even more problematic even is that laboratory techniques and algorithms are also not public. It is, for example, difficult to accept that a statistical algorithm based on

[4] Anti-Doping Rule Violations.

[5] WADA. Statement on Kenyan NADO. https://www.wada-ama.org/en/media/news/2016-02/wada-statement-on-kenyan-nado, accessed January 2018

[6] The criminalisation of doping is an interesting matter for further study. In law, a distinction is made between *malum in se*, i.e. transgressions that are intrinsically 'bad', and *malum prohibitum*, i.e. transgressions because a law determines them to be so. The former is linked to what is understood under natural law, i.e. law that finds its source in nature or the Judeo-Christian western heritage. The latter is linked to what is called positive law, i.e. the express law of a given society to regulate its functioning, in principle, according to the wishes of all its citizens. One could liken the rules of sports to positive law and its transgressions to *malum prohibitum*. In soccer touching the ball with a hand is not allowed for field players; doing so is punished with a free kick or a penalty if in the goal surface area. This reasoning would apply for any rule in sport. An exception would be purposefully breaking an opponent's leg with a sliding / tackle in soccer. Regarding doping, the principle of *malum prohibitum* would seem to apply, but doping is increasingly seen as really bad, a *malum in se*, a moral turpitude. The question is why, given the historical fact that for most of the history of modern sport, this was not the case. There clearly is a shift towards more national legislation (instead of leaving it to the sport, as for other rules). Additionally, the division between tort and criminal law, which echoes the *malum in se / malum prohibitum* dichotomy, leads to a shift towards categorising doping in criminal offences.

Bayesian logic is used to monitor longitudinal variations in blood parameters[7] to single out athletes to accuse them of doping practices indirectly without sharing the statistical code with the wider scientific (and general) community. The reason advanced by WADA and others for this secrecy, that publishing the code would allow athletes to better circumvent doping control, does not weigh up against the importance of transparency in cases where innocent athletes can be put into situations where they risk being sacrificed for the sake of the 'cleanliness' of the sport, as illustrated by some of the examples I have listed in this chapter and the sobering above mentioned findings of de Hon (2016). In their book *The Anti-Doping Crisis in Sport*, Paul Dimeo and Verner Møller present an impressive series of further examples in which the rigid application of the Code and its strict liability principle led to the exclusion from competition of athletes in whom it was clear that there was no case of performance enhancement to be made, an observation sometimes even acknowledged by the CAS[8] in its final verdict that punished the athletes anyways (Dimeo & Møller 2018). Further aggravating circumstances come from the (repeated) observation that the (in part commercial) anti-doping laboratories fail to comply with the principles of indisputable integrity, illustrated by a recent case where an international scientific journal received threats of withdrawal of advertising income from anti-doping laboratory equipment vendors (Boye *et al.* 2017). Anti-doping has become an industry. WADA outsources sample testing for doping to private WADA-accredited laboratories whose subsistence heavily depends upon the number of tests. This paves the way for expansion to testing not only recreational athletes, which has already begun, but also to testing society at large in circumstances as where drug use might be seen as giving the user an unfair competitive advantage, or as a potential threat to health and public safety. Students, police officers, doctors, scientists, pilots, drivers, etc. may be next in line to see their autonomy sacrificed on the altars of fairness and public health (Kayser & Møller, appendix B).

References

Anderson J (2013) Doping, sport and the law: time for repeal of prohibition? International *Journal of Law in Context*, 9(02), 135–159. http://doi.org/10.1017/s1744552313000050

[7]So-called longitudinal profiling of biological markers, collected in an Athlete Biological Passport, allow for the calculation of probabilities that given variations in these markers may be the result of doping, without the actual doping being directly evidenced (Mavromati 2012).

[8]Court of Arbitration for Sport, located in Lausanne: http://www.tas-cas.org/en/index.html, accessed May 2018.

Boye E, Skotland T, Østerud B & Meyer JN (2017) Doping and drug testing: Anti-doping work must be transparent and adhere to good scientific practices to ensure public trust. *EMBO Reports*, 18(3), e201643540–354. http://doi.org/10.15252/embr.201643540

de Hon OM (2016) *Striking the Right Balance : Effectiveness of Anti-Doping Policies*. Thesis. Utrecht University, Utrecht, Netherlands. https://dspace.library.uu.nl/bitstream/handle/1874/341580/dHon.pdf, accessed March 2018.

Dimeo P & Møller V (2018) *The Anti-Doping Crisis in Sport*. Routledge, London, UK.

Geeraets V (2017) Ideology, Doping and the Spirit of Sport. *Sport, Ethics and Philosophy*, 57(4), 1–17. http://doi.org/10.1080/17511321.2017.1351483

Kayser B (2011) On the presumption of guilt without proof of intentionality and other consequences of current anti-doping policy. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport*, Routledge, London, UK.

Kornbeck J (2015) The EU, the revision of the World Anti-Doping Code and the presumption of innocence. *The International Sports Law Journal*, 15(3-4), 1–27. http://doi.org/10.1007/s40318-015-0082-8

Kornbeck J & Kayser B (2018) Do public perception and the *'spirit of sport'* justify the criminalisation of doping? A reply to Claire Sumner. *The International Sports Law Journal*, 1–18. http://doi.org/10.1007/s40318-018-0120-4

Mavromati D (2012) Indirect detection methods for doping from a legal perspective: the case of the Athlete Biological Passport. *International Journal of Sport Policy and Politics*, 6(2), 241-258. http://doi.org/10.1080/19406940.2012.698999

Teetzel S & Mazzucco M (2014) Minor problems: the recognition of young athletes in the development of international anti-doping policies. *The International Journal of the History of Sport*, 31(8), 914–933. http://doi.org/10.1080/09523367.2013.854774

Chapter 5

Doping and performance enhancement: harms and harm reduction

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In Møller V, Waddington I & Hoberman J (Eds.) *Routledge Handbook of Drugs and Sport*. Routledge, London, UK (2015).

Introduction

In the scholarly and lay literature, contemporary doping in sports is generally discussed along two diametrically opposed discourses. The prevailing discourse is that of a zero tolerance approach, enforced in elite competitive sport by repression and surveillance and overseen, since 1999, by the World Anti-Doping Agency (WADA). The opposing discourse finds anti-doping illogical and calls for liberalization of doping using an athlete's health-centred approach (Savulescu *et al.* 2004). We find these two positions are extremes that both have practical limits. Prohibition based on a zero-tolerance stance may lead to (unintended) side effects, while total liberalization of currently forbidden substances appears unfeasible in modern society. In agreement with Kirkwood's (2009) proposals, we argue in this paper for an alternative approach, based on public health principles and including a harm reduction strategy. Such a policy has repeatedly proven to be effective in reducing the burden associated with illegal and legal substance use, as well as other aspects of potentially harmful human behaviour.

There are several other areas where the global efforts against illegal drugs and those against doping in sports show similarities. In both cases, as also argued by Coomber (2013), the rhetoric used by those in favour of prohibition is rich in arguments attributing terrible consequences to the use of various substances, arguments frequently devoid of solid scientific evidence and often anchored in myths[1]. Both tend towards a 'the ends justify the means' approach in an arms race between users and controllers, enforced by excessively strong repressive and surveillance measures. Both are unable to attain their declared objective, eradication of illegal psychotropic drug use and doping in elite sports, respectively. Both have unintended side effects, with a high cost to society, certainly so for the war on drugs (GCDP 2013), possibly so for the war on doping (Kayser and Smith, 2008). Finally, they tend to merge, as illustrated by the inclusion of non-performance-enhancing recreational psychotropic drugs such as marihuana on WADA's list of prohibited substances (Kayser & Broers 2012; INHDR 2013) and, in some countries such as the USA, the classification of anabolic steroids as illegal drugs on a par with psychotropic drugs such as cocaine (Barceloux & Palmer 2013).

As with any attempt to regulate human behaviour with (potentially) dangerous consequences for the individual and society, a pragmatic balance needs to be found between prevention and regulation of harmful behaviour and their respective costs, which should include any negative consequences of the measures themselves. Harm reduction measures are part of such policies. Below, we first explain what harm reduction is and is not.

[1] We use the word myth in its contemporary meaning of a widely held but false belief or idea.

Defining harm reduction

The International Harm Reduction Association (IHRA) defines harm reduction as follows:

> 'Harm Reduction' refers to policies, programmes and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug consumption. Harm reduction benefits people who use drugs, their families and the community'. (IHRA 2009)

Harm reduction is based on human rights and public health principles, and can be considered as a means of health promotion. In the field of illegal psychoactive drugs, harm reduction 'came of age' in the early 1990s with the initial phase of the HIV-epidemic, which was closely related to the sharing of contaminated injection material. Exemplary, needle and syringe exchange programmes have been well studied and shown to be (cost) effective for HIV prevention without increasing illegal drug use (Ritter *et al.* 2006). The principle of such harm reduction strategies for illegal drugs is now recognized and supported by major United Nations programmes, including the Joint United Nations Programme on HIV/AIDS, the United Nations Office on Drugs and Crime, and the World Health Organisation (Wodak 2009), as well as by the Global Commission on Drug Policy (GCDP 2012).

Other examples of harm reduction measures in the field of illicit drugs are safe use facilities, overdose prevention measures (e.g. education and field naloxone distribution for neutralizing overdoses), and on-site chemical analysis of party drugs. Harm reduction interventions are also effective for licit drugs such as alcohol, for example by regulating access to alcohol, which reduces traffic accident related trauma (Ritter *et al.* 2006). The electronic cigarette may become a potential harm reduction measure for tobacco smokers who have difficulty in quitting (Polosa *et al.* 2013). The principle of harm reduction has also been accepted and has proven effective beyond the realm of psychotropic substances. The introduction of safety belts and airbags in cars led to important reductions in the individual and collective burden of traffic accidents, and the use of condoms for sexual intercourse to a reduction of sexually transmitted infections. In the UK so-called steroid clinics provide low-threshold access to medical care for anabolic steroid users and needle exchange schemes for injection of such steroids have become common (Hope *et al.* 2013). Harm reduction can thus be seen as a pragmatic way of dealing with aspects of human behaviour

that can have dangerous consequences for the individual and the community, while accepting that the behaviour at issue cannot be fully prevented.

What is harm reduction not

Some pretend harm reduction is 'harm induction', saying it would encourage substance use. However, the vast majority of evaluations of harm reduction interventions show that such measures do not increase drug use (Ritter *et al.* 2006). A recent report from Vancouver suggested that combining different harm reduction measures (needle exchange, safe injecting facilities, overdose prevention) with low threshold access to treatment is 'more effective than federal law enforcement measures at reducing illegal drug use and improving public health and safety' (UHRI 2013).

Second, harm reduction is not an indirect way to legalize illegal drugs. It focuses on risks and harms of all substances, legal and illegal, and certain kinds of human behaviour. As the Global Commission on Drug Policy pointed out (GCDP 2012), the 'war on drugs fuels the HIV and hepatitis C epidemic', reminding us that a major part of the harms of illegal drugs is actually related to the consequences of their illegal status and not to the effects of the drugs themselves. A coherent drug policy should include a consideration of alternatives to the war on drugs, but harm reduction measures retain their relevance when drugs (or doping) are, and would, remain illegal. Recent initiatives such as the decriminalization of drug use in Portugal, and the legalization of cannabis in certain states of the USA and in Uruguay might allow us to see whether some harms related to formerly illegal drug commerce and use can be decreased.

Harm reduction is thus a targeted approach that focuses on specific risks and harms. The IHRA proposes:

> 'Politicians, policymakers, communities, researchers, frontline workers and people who use drugs should ascertain: What are the specific risks and harms associated with the use of specific psychoactive drugs? What causes those risks and harms? What can be done to reduce these risks and harms'? (IHRA 2009)

Drawing on this analogy, in this chapter we discuss the specific risks and harms of performance enhancement practices, what causes them, and what could be done to reduce these risks and harms. We propose to start with some reflections on the facts and myths of doping-related harms.

Harms or myths of harms?

When discussing harm reduction in the realm of doping in sport one has to look at the risks and harms that doping in sport causes or may cause. One can distinguish several types of harms. These include harm that the doping athlete inflicts on her/himself, on other athletes, on the sport, on the spectators and on society in general (Danaher 2011). We first focus on the general perception of the potential for doping practices in elite sport to lead to significant health risks for the athletes themselves. Perhaps somewhat surprisingly, and contrary to what anti-doping advocates say and the perception of the general public, the actual evidence for serious doping-related health problems in elite competitive sports is, in fact, rather shallow and mainly anecdotal.

The war on doping is accompanied by strong rhetoric on the excessive dangers of performance-enhancing drugs. (In)famous examples include the frequently cited deaths of cyclists Arthur Linton, Knud Enemark Jensen and Tom Simpson, and the Dutch/Belgian epidemic of sudden death in cyclists from erythropoietin (EPO) use. These stories are widely used in scholarly and lay publications as examples of why doping is such a hazardous activity (see e.g. Baron *et al.* 2007; Sjoqvist *et al.*, 2008). However, the historian Lopez has investigated the evidence base linking the deaths of these athletes to doping. He deconstructed the links, showing that these stories are largely myths devoid of any solid evidence (Lopez 2011; 2012a; 2012b; 2013). Lopez concludes that they are 'perfect examples of a discourse of fear, or risk communication at the service of a social control and surveillance agenda', very much akin to that used to justify the general war on drugs. Lopez ends one of his articles by stating:

> 'The issue of 'doping deaths' has become a baseless cliche in the expert literature as well as in the lay press, serving an ideological agenda: the one promoted by anti-dopism in order to advance its stance on performance-enhancing substance intake in elite sport, and to ensure a broad acceptance of a 'politics of fear' to eradicate it'. (Lopez 2013, p. 2)

Even in the scholarly literature, doping is often discussed within this framework and, as a consequence, the interpretation of suspected harms of doping is not always straightforward (see also Møller (2005), who analysed the construction of the myth of the cause of the death of cyclist Knud Enemark Jensen as a pertinent example).

Since data on the health of former elite athletes who regularly took doping substances during their careers are currently not publicly available, it is difficult to provide evidence-based counter-arguments. However, the recent revelations

of decades of large-scale long-term EPO and other substance use by professional cyclists suggest that more or less institutionalized doping in elite cycling was possible without major health consequences since this practice was, as shown by Lopez (2011), not accompanied by an epidemic of casualties.

Although difficult to measure, it is thought that doping has been, and continues to be, widespread in many sports, well beyond the 1–2 per cent of cases discovered by the (inefficient) official doping controls (Simon *et al.* 2006; Lentillon-Kaestner & Ohl 2011; Dietz *et al.* 2013; Loraschi *et al.* 2013; Dimeo & Taylor 2013). If, until very recently, a high proportion of the cyclists participating in the Tour de France over the course of its history were doping – a statement for which there is no proof but a lot of circumstantial evidence (de Mondenard 2011) – the morbidity and mortality rates in former elite cyclists would be expected to reflect the consequences of such widespread doping. However, athletes in fact live longer than the general population (Teramoto and Bungum 2010). This is the case for French cyclists who participated in the Tour de France between 1947 and 2012 (Marijon *et al.* 2013) and even professional American football players (Baron *et al.* 2012), even though the prevalence of neurodegenerative disease in the latter is higher, probably as the consequence of repeated (sub)clinical head trauma during play of this full contact sport (Lehman *et al.* 2012).

Of course, such observations are subject to biases such as the healthy athlete (worker) effect, but the overall picture is that, until today, high level sports careers, with or without doping, have not been accompanied by a significantly higher prevalence of premature deaths as compared to the general population; indeed, quite the opposite. Whether this will change with an ageing population of former elite athletes who were competing in the 1990s and later, when modern doping with EPO, growth hormone, anabolic steroids, and other drugs became prevalent, remains an interesting open question.

These observations put another famous and repeatedly cited myth, dating from the 1970s and attributed to Dr Gabe Mirkin, in a different light. This myth states that athletes would be willing to ingest a magic pill if it could make them an Olympic champion, even if it would kill them within a year. Goldman in his book Death in the Locker Room (1984) reported similar results. Christiansen and Møller (2007) tried to find the original research by Mirkin and concluded that that study was probably never conducted. Since then two papers have been published in scientific journals, with editorial policy, clearly rejecting Goldman's claims (Connor & Mazanov 2009; Connor *et al.* 2013). There is therefore no reason to believe the dramatic postulate of Mirkin and Goldman.

The only documented evidence of significant doping-induced health harm in elite athletes beyond anecdotal cases is that of the East German state-run doping programme (Franke & Berendonk 1997), which forced young female

athletes to ingest non-physiological quantities of anabolic steroids with dramatic consequences. Such coercion of young athletes into doping is inexcusable, but it is important to understand that the discovery of this state supervised systematic doping led to its subsequent mythification and use for anti-doping rhetoric, as shown by a critical reappraisal by Dimeo & Hunt (2012). The recent allegations that at that time similar doping practices were probably also prevalent on the western side of the Berlin wall add to the complexity of the problem.

The myths discussed above are reminiscent of the scaremongering used to defend the war on drugs in the USA, based on a discourse of the extraordinary power of illegal drugs to transform users into incontrollable dangerous persons jeopardizing the normal functioning of society (Coomber 2013; Hart 2013). It is beyond the scope of this chapter to discuss the advent and failure of the war on drugs (Room & Reuter 2012). However, as we have argued above and elsewhere (Kayser & Broers 2012), there is considerable similarity and overlap between the war on drugs and the war on doping. Fundamental to the war on drugs is its discourse on the extraordinary danger of illegal drugs such as cocaine, heroine, methamphetamine or cannabis. But critical appraisal of the scientific evidence for this position shows that this evidence is shallow. For example, the argument that methamphetamine is much more dangerous than amphetamine, and crack more dangerous than cocaine, is devoid of good scientific evidence and seems mostly fabricated using anecdotal information or animal research (Hart *et al.* 2012). Overall, the scientific evidence on the effects of illegal psychotropic drug use rather suggests that controlled use of such substances is possible for most users and that regular illegal drug users remain capable of making rational decisions (Hart 2013; Hart *et al.* 2000; 2012).

Another distortion of mythical proportions concerns the prevalence of doping and enhancement. With regard to doping and doping-like behaviour outside elite sport, the prevailing discourse mentions increasing prevalence and major health problems that allegedly menace public health (see e.g. Baron *et al.* 2007; Sjoqvist *et al.* 2008). This includes, for example, the use of anabolic steroids by bodybuilders or cognitive enhancement substances by students. Even if we do not have as clear arguments as for the myths cited previously, we believe that this again represents an exaggerated picture taking on mythical proportions. If in elite sports the actual prevalence of doping is difficult to quantify, this is even more so in amateur sport and among the general population. This is increasingly so, since such behaviour is more and more confined to clandestine settings because of the rising legal pressure from new doping legislation, extending its breadth to the general population. In Denmark, for example, anti- doping legislation requires fitness clients in gyms to undergo unannounced drug testing, risking exclusion from the club and any other organized sports if they are found to be doping, even if these clients only train for fitness and aesthetics, but not

competition (Christiansen 2011).

In summary, and as in the case of illegal psychotropic drugs, the anti-doping movement within sport uses myths and exaggerations to justify its excessive repressive and surveillance measures.

Harm to the individual athlete

A major argument for anti-doping is the protection of the athlete's health. As Hanstad and Waddington (2009) and others have pointed out (Kayser *et al.* 2007), this argument is confused. In addition to the direct, well-accepted but often non-negligible baseline risks and harms of the sport itself for the athlete's health, many so-called 'natural performance enhancement techniques' that are permitted, such as special training regimes and diets, sleeping in hypoxic tents, or the use of legal supplements and drugs, can also put the athlete's health at risk. The doping health argument is also overly paternalistic and contrasts with what is considered a matter of individual autonomy for the general citizen (Kayser *et al.* 2007). Nevertheless, it is perfectly reasonable to suspect that some doping substances, when taken in certain quantities and conditions, can be dangerous for health reasons. But this is also the case for the use or excessive use of many other legal substances such as painkillers, tranquilizers and supplements (Larson *et al.* 2005; Billioti de Gage *et al.* 2012; Bjelakovic *et al.* 2013).

Harms of doping for the athletes can be divided into consequences directly related to the effect of the performance-enhancing substances or methods, or indirect consequences. It is important to make this distinction, since the direct consequences are functions of the substance itself, while the indirect consequences are mostly functions of the circumstances in which the substance is used, which are, as in the case of psychotropic drugs, in large part determined by the surveillance and repression measures.

Direct harms

As an example of the direct harm from a substance, anabolic steroids can induce liver damage and hormonal changes, depending partly on dosing schemes and individual risk factors. It is beyond the scope of this chapter to describe in detail all possible direct consequences of anabolic steroids or other performance-enhancing substances and means. Several recent reviews have attempted to aggregate what is known and what is not known about the direct health risks of certain substances (see e.g. Barceloux & Palmer 2013). For anabolic steroids

a recent review by Angell and colleagues (2012) found that the risk for cardiovascular disease is not well known or understood because the data are mainly case-based and lack good scientific design such as randomized controlled trials. Recent observational epidemiological data would suggest that testosterone use might increase the risk of non-fatal myocardial infarction in male patients older than 65 years and in male patients with a history of myocardial infarction younger than 65 years. Unfortunately, no data on either lifestyle or the reason for prescription of testosterone were available and extrapolation of such data to younger individuals with a healthy lifestyle seems unwarranted. Overall it seems correct to state that the use of non-physiological quantities and/or combinations of various steroids, as has been reported in bodybuilders and in the East German doping scandal, is indeed hazardous (Franke & Berendonk 1997; Hope *et al.* 2013). On the other hand, it appears that episodic use of more physiological quantities of anabolic steroids may be possible without any major adverse health consequences (Piispa & Salasuo 2012; Morley 2013). Unfortunately, because of the illegal status of anabolic steroid use it is hard to quantify the type of use that does not lead to health problems, since only those who encounter serious health problems will consult a physician. These problems were illustrated by a short communication in *The Lancet* titled 'The dire consequences of doping', which pictured the thorax of a bodybuilder with extensive scarring from steroid-induced acne (Gerber *et al.* 2008). In their nuanced response Evans-Brown and colleagues nicely illustrated the problems with such case-reporting:

> ' [..] when extrapolating the data presented by Gerber and colleagues, we must exercise caution, for if we overstate these risks, despite our best intentions, we serve to create a credibility gap – and hence distrust – between users and health professionals. This, ultimately, limits our ability to engage with this population to reduce harm and promote health'. (Evans-Brown *et al.* 2008)

Echoing these remarks of Evans-Brown and colleagues, authors of a recent report from a nation-wide study of doping and steroid use in Finland demonstrated that it is a marginal activity involving 1 per cent of the population and that it does not necessarily carry a high health risk (Piispa & Salasuo 2012). Their conclusion was that:

> 'Risks and potential health harms are linked to doping. However, in the light of this study, they do not appear in Finland to the extent medical research suggests. Health harms linked to fitness doping share similar features with cannabis harms advanced in the 1960s and 1970s. In both phenomena, harms related to the consumption

> of very important quantities are presented as if they applied to all users [...]. This leads to a situation, from the point of view of preventive policies that users do not believe in the information supplied by authorities. Consequently, cultural instructions arise and they are passed on from one user generation to another. Today, they circulate in the Internet, in particular. Cultural instructions are often very precise and can effectively prevent harm. Their handicap is, nevertheless, that they cannot offer help with acute health risks. In addition, many users do not fully trust them and prefer to ask doctors for advice'. (Piispa & Salasuo 2012)

As is the case for anabolic steroids, for many other doping substances there are no good data on the short-term or long-term direct consequences for young healthy athletic persons with a generally healthy lifestyle and who have no traditional risk factors. There are many reviews, but these are often written from a clearly condemnatory perspective and often use anecdotal and animal research evidence in order to justify the arguments underlying anti-doping efforts.

Indirect harms

The indirect consequences of doping can be considered at different levels:

1. harms related to the way substances are used: e.g. local abscesses due to poor hygiene, or hepatitis C infection in case of injecting drug use with contaminated syringes (Cherubin & Sapira 1993). These typical problems of injecting psychotropic drug users have now also been described in users of injected anabolic steroids (Hope *et al.* 2013), with an HIV prevalence as high as that among intravenous drug users in the UK;
2. harms related to impure or mislabelled uncontrolled substances from the black market (Barceloux & Palmer 2013). In order to avoid being caught, users may move to less tested and riskier substances, as the established substances become more detectable by drug tests (Kirkwood 2009);
3. consequences of the regulations of anti-doping for the athlete, in terms of loss of autonomy, having to accept a paternalistic attitude, as well as the practical consequences of the 'whereabouts rule' for daily life. For example, Overbye & Wagner's study (2013) on Danish athletes' perceptions of WADA's whereabouts reporting system (ADAMS) suggests this time-consuming obligation to report one's day and night time location year-round interferes negatively in everyday life, induces fear and, for some,

decreases the pleasure of being an athlete; similar findings in Dutch athletes were reported by Valkenburg and colleagues (2013). Pluim (2008) also showed how tennis players are punished without proof of intentional doping for performance enhancement;

4. consequences of the rules of sports federations or clubs for 'punishing' athletes who are tested positive on doping tests. Bennet (2013) showed how far-reaching the consequences can be of the punishment of American football players who, following a positive doping test, are suspended from employment with loss of pay, even for the use of non-sports related recreational use of marihuana.

Harm to other athletes

One of the other arguments of anti-doping is that of harm to other athletes who do not use doping. The main point of the argument is that of coercion: doping, it is suggested, forces all athletes to engage in doping and to run the risks associated with it. But coercion is very common in sports endeavour in general and it is not self-evident where and why to draw a line between what is acceptable and what is not. A second point concerns bodily harm that can be inflicted on one's opponent because of the effect of doping. The reasoning is that, for example, anabolic steroids increase aggressiveness, which may be turned on one's opponent in competition and lead to bodily harm. A distinction is made between necessary and unnecessary risk. For example, in boxing harm from punches to the head are allowed and regularly lead to significant harm but anabolic steroids are not allowed since they might increase the risk of such harm. The distinction between other permitted techniques, such as physical and mental training or the use of permitted substances aimed at enabling boxers to hit harder, and the prohibition of steroids would seem arbitrary, especially since the evidence for this alleged increased aggressiveness (so-called 'roid-rage') is rather shallow. The only well designed randomized controlled trial with supra-physiological doses of testosterone found no effect on healthy training men without pre-existing psychopathology (Tricker *et al.* 1996).

Harm to the image of sport

It goes beyond the scope of this chapter to discuss in detail risks and harms with regard to what doping means for sports *per se*, that is, whether doping fundamentally changes some intrinsic aspect of what is perceived as essential

to sports (see e.g. Murray 1983; Savulescu *et al.* 2004; WADA 2009; Loland & Hoppeler 2011). Modern competitive sport celebrates differences between individuals along the motto of the Olympics: *'Citius, Altius, Fortius'*. WADA, in its 'Code', uses the 'Spirit of Sport' as one of the three criteria for inclusion on the list of forbidden substances and procedures (WADA 2009). This 'Spirit of Sport' condition allows the inclusion of, for example, marihuana on the list. The use of this 'catch all criterion' has been criticized (Waddington *et al.* 2013) but also defended as a means to allow a zero tolerance approach (Loland & Hoppeler 2011).

It takes talent, training and an appropriate environment to become a successful athlete. Athletic prowess is made possible through physical and mental training modalities, dietary interventions, intake of legal drugs and supplements, and the use of technology such as simulated or real altitude training. All of this is aimed at improving performance and can thus be seen as performance enhancement. Performance enhancement is essential to sport. According to Savulescu and colleagues (2004), the exclusion of performance-enhancing substances is illogical. They assert that performance enhancement is the essence of sport, irrespective of the means used. As Lopez (2013), rephrasing Møller, stated: 'doping as personal behaviour and/or a cultural phenomenon does not need to be explained: it is self-explanatory or self-evident in the sense that it is a logical consequence of the tenets of modern sport and, more widely, modernity'.

Harm to society outside sport

It might be argued the wide coverage in the media of doping scandals in elite sport, together with the inclusion of many substances and methods on WADA's Prohibited List, may induce a growing belief among amateur athletes and the general population that 'doping works', thus stimulating the use of performance-enhancing substances in the wider society (Kayser 2009). It should be noted that, if this were true, it would be more a consequence of anti-doping policy than of doping per se. Do we know whether this assumption is true? The data on harm from doping by amateur athletes or harm to those who use anabolic steroids for aesthetic reasons is very limited as these are hidden populations. But the general impression is that anabolic steroids seem to be increasingly used for aesthetic and performance enhancement reasons. Simon and colleagues (2006) studied a cohort of 500 people from 49 fitness centres and found that 12.5 per cent used anabolic steroids. In addition, the study revealed similar prevalence for illegal drug use (cocaine). However, on a population level the problem is much less dramatic (Piispa & Salasuo 2012), and there are no data to confirm a causal link between doping in elite sports and an increase in prevalence

of performance-enhancing drug use in other groups. Furthermore, performance enhancement in the larger sense of the word may be seen as an increasingly 'normal' societal phenomenon. For example, Greely and colleagues (2008) consider the use of cognitive enhancers in students and others as a 'welcome new method of improving brain function', as a logical result of innovating research and as evidence that our 'uniquely innovative species tries to improve itself'.

Another (anti-)doping-related harm to society concerns international organized crime. There are important black and grey markets in different substances such as human growth hormone, EPO, anabolic steroids and insulin (Paoli & Donati 2013). Even if the doping market is less visible in society than the illegal drugs market, organized crime often induces violence and feelings of insecurity, leads to corruption, adds to parallel money circuits, and finances mafia and wars (Dijk 2007).

What causes those harms?

As we have explained above, much of the harm of doping – whether for the individual athlete, other athletes, the image of sport or the wider society – seems to be more related to anti-doping than to the use of the performance-enhancing methods or substances as such. This is also the case in the illegal drug field (GCDP 2011), even if the reasons for using the drugs are not similar. Whereas psychoactive substance users will use their chosen substance for the desired psychotropic effect or because they are dependent, athletes may turn to doping substances for the anticipated benefits of winning: enormous salaries, the status of a star, and all that for a relatively short time of an athlete's career. From this line of reasoning one can develop the argument that modern doping and anti-doping are consequences of the evolution of Olympism from its initial amateur status to the highly professionalized activity of today. The pressure on athletes to perform, the almost religious admiration for successful athletes and the huge financial incentives for the winners can be considered indirect causes of harm (Kirkwood 2009).

What can be done to reduce these risks and harms?

In the field of illegal drugs, the three reports of the Global Commission on Drug Policy report how most of the indirect harms of drugs (HIV, HCV, deaths from overdose and criminality, consequences in drug-producing countries) are 'fuelled' by the war on drugs (GCDP 2011; 2012; 2013). This war on drugs

has thus introduced more harm to society than it prevents (Room & Reuter 2012). We think that the same may apply for the war on doping (Kayser & Broers 2012). Of course, we all prefer a world without wars, drugs or doping. But daily reality is quite different. The use of legal and illegal psychoactive substances is among the leading causes of preventable death across cultures and continents. Although prevalence of illegal substance use is much lower than prevalence of legal substance abuse (e.g. alcohol, tobacco), 50 years of the war on drugs has had little effect on this prevalence but has had many negative consequences. Consequently, we should start testing and evaluating alternative policies. The alternative proposed here is regulation of drug use, based on human rights and public health principles, with a combination of pragmatic policies including harm reduction, taking into account local socio-cultural and economic specificities, and continuously adapted to on-going developments (e.g. as is currently done in Uruguay and several states in the USA with the legalization of cannabis use). We believe that these principles apply also to the field of performance enhancement and we list below some ideas to foster the debate in the field of performance enhancement.

Outram (2013) stated that we may not know enough about performance enhancement to be certain of what we are currently regulating. We agree and find that any alleged performance enhancing and/or adverse effects of substances need to be investigated with well-designed research protocols. Any regulation of substance use needs to be based on solid evidence, not on speculations fuelled by moral issues.

WADA's list of illicit substances and methods is all-inclusive and can be interpreted – quite wrongly – as implying 'if it is on the list it works'. For many substances on the list, it is unknown whether there is any performance-enhancing effect. Furthermore, there are also drugs on the banned list that appear to have few, if any, side effects. By contrast, many other drugs that can be legally used in the sporting context have well documented and potentially serious side effects. We therefore favour simplifying the list. For instance, we suggest removing so-called recreational drugs from the list of banned substances. Just by taking cannabis off the list a large number of 'adverse findings' of testing would disappear. A summary of the good reasons to exclude 'recreational' drugs was recently published elsewhere (Waddington *et al.* 2013).

The use of substances or methods, including pharmacology, to enhance performance, should be seen as a logical consequence of elite sports endeavour and should not be rejected on the basis of a utopian and ideological 'spirit of sport' concept. We also favour abandoning the 'spirit of sport' criterion for the inclusion of substances and methods on the Prohibited List. We would however, maintain the health argument, in keeping with the general ambiguous relationship between sport and health (Hanstad and Waddington, 2009). Elite

sport comes with a significant health risk that is not considered acceptable in other professional endeavours but that is considered acceptable within sport, since it is intrinsic to sport. Within certain limits of reasonable health risks some performance enhancement could therefore be allowed. For health monitoring purposes and the surveying of some upper limits of the result of certain doping practices such as blood levels of haemoglobin, some form of urine/blood testing might be of help without going all the way as today's testing. One problem here is that WADA does not share the details of testing technology. This lack of transparency and honesty does not help their cause. We believe it is time to give honest and clear information about performance- enhancing substances and methods, accepting that those wishing to dope will use such information. But risk from doping practice should be limited. For that, elite and amateur athletes should have access to clear and objective information on the advantages and risks of performance enhancement practices and substances. Targeting populations with documented risks such as anabolic steroid users, providing access to sterile injecting equipment, hepatitis B vaccination and screening for HIV and viral hepatitis should be proposed. Access to medical care should be made possible; physicians should be knowledgeable and have a non-judgemental attitude towards performance-enhancing substances and methods. Athletes and non-athletes with problems in quitting substance use should have low threshold access to care.

We also suggest that athletes who test positive for doping should not be publicly stigmatized. As a pragmatic example of an alternative policy for the use of illegal psychotropic drugs such as cannabis by top athletes, Bennet (2013) recently proposed the introduction of a harm reduction strategy for the NFL (USA-based National Football League that organizes professional American football). Today the NFL uses a conventional punitive drug policy to protect its brand. Players who test positive for cannabis are punished and qualify as symbolic scapegoats, whose punishment reinforces the public view of the proper moral image of the NFL, but results in suboptimal access to treatment, loss of the right to work, and loss of income for the athlete. Eliminating the stigma and providing low threshold access to expertise would likely result in less damage for the athlete, his club and the NFL as well.

What can be difficulties and obstacles for an introduction of harm reduction approaches in the realm of doping? First, since a majority of UN member states now have signed the UNESCO convention against doping in sport, it has gained universal status and revising it will be difficult because of inertia. Second, the IOC requests anti-doping legislation of countries wishing to organize the games, adding further inertia. Third, anti-doping, like elite sport has become an enterprise with vested interests. Fourth, despite some individual athletes' critical voices, there is lack of an organized 'users movement'. Finally, it is not

clear who or what could take leadership for pushing for change. Currently, it is mostly among academics that today's anti-doping policies are criticized and voices pleading for change can be heard.

Conclusions

We have discussed the possibility that performance enhancement, doping and anti-doping can induce harms at different levels. We have argued that these harms are not well evaluated and often based on myths. More data are needed on the harms (and effects) of performance-enhancing practices as well as on the real prevalence of use and actual (and not imagined) public health impact of these practices.

Harms are significantly related to anti-doping policy and related regulations. We suggest that any doping and performance-enhancement policy should include a consideration of possible harm reduction measures. Harm reduction should not be a stand-alone intervention, but part of a coherent policy that protects the health of the athletes. As in psychotropic drug policy, this can include measures to reduce the demand for, and the supply of, doping substances. Of course, alternative policies should be tested and their impact evaluated. Even if we cannot change anti-doping policy now, harm reduction measures should be considered in order to protect the health of athletes. This is not a final solution, but a pragmatic balancing act, as we explained elsewhere:

> 'The choice between fighting doping by all means vs. regulation and harm reduction is difficult, since neither will solve the problem; no ultimate solution exists, it will remain 'messy'. In our view, regulation and harm reduction may come with less cost to society and the individual, as compared to a zero-tolerance approach, and therefore merits to be considered. We do not have a ready-made blueprint to offer; if an easy way existed it would already have been in place'. (Kayser & Broers 2012, p. 33)

Finally, one can see today's doping and anti-doping as consequences of Olympism, its motto (*'Citius, Altius, Fortius'*), its commercialization and the professionalization of sports. An athlete who aims as fast, high and strong as possible will naturally be inclined to balance any decisions on what means to employ to attain those objectives on a cost-benefit analysis. Given the stakes at hand – gold medals, glory and fortune – it would seem understandable that many athletes, who are just as human as any other members of society, will decide to take the risk. Considering that a possible 'de-sanctification' of elite

sport will take time, that anti-doping will not be able to eradicate doping and the likelihood that doping will continue in amateur and elite sport, with the winners including some of the best dopers, we believe that more pragmatic approaches, as set out above, deserve serious consideration.

References

Angell M P, Chester N, Green D, Somauroo J, Whyte G & George K (2012) Anabolic steroids and cardiovascular risk. *Sports Medicine* 42(2), 119–134.

Barceloux DG & Palmer RB (2013) Anabolic-androgenic steroids. *Disease-a-Month* 59(6), 226–248. doi:10.1016/j.disamonth.2013.03.010

Baron D, Martin D & Abol Magd S (2007) Doping in sports and its spread to at-risk populations: an international review. *World Psychiatry* 6(2), 118–123.

Baron S L, Hein MJ, Lehman E & Gersic CM (2012) Body mass index, playing position, race, and the cardiovascular mortality of retired professional football players. American *Journal of Cardiology* 109(6), 889–896. doi:10.1016/j.amjcard.2011.10.050

Bennett D (2013) Harm reduction and NFL drug policy. *Journal of Sport & Social Issues* 37(2), 160–175. doi:10.1177/0193723512458929

Billioti de Gage S, Begaud B, Bazin F, Verdoux H, Dartigues JF, Peres K, *et al.* (2012) Benzodiazepine use and risk of dementia: prospective population based study. *British Medical Journal* 345(sep27 4):e6231–e6231. doi:10.1136/bmj.e6231

Bjelakovic G, Nikolova D & Gluud C (2013) Meta-regression analyses, meta-analyses, and trial sequential analyses of the effects of supplementation with beta-carotene, vitamin A, and vitamin E singly or in different combinations on all-cause mortality: do we have evidence for lack of harm? *PloS One* 8(9), e74558. doi:10.1371/journal.pone.0074558

Cherubin CE & Sapira JD (1993) The medical complications of drug addiction and the medical assessment of the intravenous drug user: 25 years later. *Annals of Internal Medicine* 119(10), 1017–1028.

Christiansen AV (2011) Bodily violations. Testing citizens training recreationnaly in gyms. In McNamee M & Møller V, *Doping and Anti-Doping Policy in Sport*. Routledge, London, UK.

Christiansen AV & Møller V (2007) *Mål, medicin og moral: om eliteatleters*

opfattelse af sport, doping og fairplay. Syddansk Universitetsforlag, Odense, Denmark.

Connor JM & Mazanov, J. (2009). Would you dope? A general population test of the Goldman dilemma. *British Journal of Sports Medicine* 43(11), 871–872. doi:10.1136/bjsm.2009.057596

Connor J, Woolf J & Mazanov J (2013) Would they dope? Revisiting the Goldman dilemma. *British Journal of Sports Medicine* 47(11), 697–700. doi:10.1136/bjsports-2012-091826

Coomber R (2013) How social fear of drugs in the non-sporting world creates a framework for doping policy in the sporting world. *International Journal of Sport Policy and Politics* 6(2), 171-193. doi:10.1080/19406940.2012.756824

Danaher J (2011, December 29). Philosophical Disquisitions: Overview of the Arguments Against Doping in Sport (Part One). Retrieved January 30, 2014, from http://philosophicaldisquisitions.blogspot.ch/2011/12/overview-of-arguments-against-doping-in.html

de Mondenard J-P (2011) *Tour de France, 33 Vainqueurs Face au Dopage, entre 1947 et 2010.* Hugo et Compagnie, Paris, France.

Dietz P, Striegel H, Ulrich R, Dalaker R, Franke AG, Lieb K & Simon P (2013) Associations between Physical and Cognitive Doping – A Cross-Sectional Study in 2.997 Triathletes. *PloS One* 8(11), e78702. doi:10.1371/journal.pone.0078702

Dijk J (2007). Mafia markers: assessing organized crime and its impact upon societies. *Trends in Organized Crime* 10(4), 39–56. doi:10.1007/s12117-007-9013-x

Dimeo P & Hunt TM (2012) The doping of athletes in the former East Germany: A critical assessment of comparisons with Nazi medical experiments. International Review for the *Sociology of Sport* 47(5), 581–593. doi:10.1177/1012690211403198

Dimeo P & Taylor J (2013) Monitoring drug use in sport: The contrast between official statistics and other evidence. *Drugs: Education* 20(1), 40–47. doi:10.3109/09687637.2012.713412

Evans-Brown M, Dawson R & McVeigh J (2008) The dire consequences of doping? *The Lancet* 372(9649), 1544. doi:10.1016/S0140-6736(08)61651-7

Franke WW & Berendonk B (1997) Hormonal doping and androgenization of athletes: a secret program of the German Democratic Republic government. *Clinical Chemistry* 43(7), 1262–1279.

GCDP (2011) Report of the Global Commission on Drug Policy. Globalcommissionondrugs.org. Retrieved February 13, 2014, from http://www.globalcommissionondrugs.org/Report

GCDP (2012) The War on Drugs and HIV/AIDS. Globalcommissionondrugs.org. pp. 1–24.

GCDP (2013) The Negative Impact Of The War On Drugs On Public Health: The Hidden Hepatitis C Epidemic. Retrieved February 13, 2014, from http://www.globalcommissionondrugs.org/hepatitis/gcdp_hepatitis_english.pdf

Gerber PA, Kukova G, Melle, S, Neumann NJ & Homey B (2008) The dire consequences of doping. *The Lancet* 372(9639), 656. doi:10.1016/S0140-6736(08)61278-7

Goldman B (1984) *Death in the Locker Room.* Icarus Press, Indiana, USA.

Greely H, Sahakian B, Harris J, Kessler RC, Gazzaniga M, Campbell P & Farah MJ (2008) Towards responsible use of cognitive-enhancing drugs by the healthy. *Nature* 456(7223), 702–705. doi:10.1038/456702a

Hanstad DV & Waddington I (2009) Sport, health and drugs: a critical re-examination of some key issues and problems. *Perspectives in Public Health* 129(4):174-82. doi:10.1177/1466424008094806

Hart C (2013) *High Price.* Harper Collins, New-York, NY, USA.

Hart C, Haney M, Foltin RW & Fischman MW (2000) Alternative reinforcers differentially modify cocaine self-administration by humans. *Behavioural Pharmacology* 11(1), 87–91.

Hart C, Marvin CB, Silver R & Smith EE (2012) Is cognitive functioning impaired in methamphetamine users? A critical review. *Neuropsychopharmacology* 37(3), 586–608. doi:10.1038/npp.2011.276

Hope VD, McVeigh J, Marongiu A, Evans-Brown M, Smith J, Kimergård A, *et al.* (2013) Prevalence of, and risk factors for, HIV, hepatitis B and C infections among men who inject image and performance enhancing drugs: a cross-sectional study. *British Medical Journal Open* 3(9), e003207. doi:10.1136/bmjopen-2013-003207

IHRA (2009) IHRA_HRStatement.pdf. Retrieved February 16, 2014, from http://www.ihra.net/files/2010/05/31/IHRA_HRStatement.pdf

INHDR (2013) INHDR statement on regulating non-performance enhancing drugs in sport. *Performance Enhancement & Health* 2:39-40. doi:10.1016/j.peh.2013.05.001

Kayser B (2009) Current anti-doping policy: harm reduction or harm induction? In Møller V, McNamee M, Dimeo P *Elite Sport, Doping and Public Health.* University Press of Southern Denmark, Odense, Denmark.

Kayser B & Broers B (2012) The Olympics and harm reduction? *Harm Reduction Journal* 9(1), 33. doi:10.1186/1477-7517-9-33

Kayser B & Smith ACT (2008) Globalisation of anti-doping: the reverse side of the medal. *British Medical Journal* 337, a584.

Kayser B, Mauron A & Miah A (2007) Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8, 2. doi:10.1186/1472-6939-8-2

Kirkwood K (2009) Considering harm reduction as the future of doping control policy in international sport. *Quest* 61(2), 180–190. doi:10.1080/00336297.2009.10483609

Larson AM, Polson J, Fontana RJ, Davern TJ, Lalani E, Hynan LS *et al.* (2005) Acetaminophen-induced acute liver failure: Results of a United States multicenter, prospective study. *Hepatology* 42(6):1364–1372. doi:10.1002/hep.20948

Lehman EJ, Hein MJ, Baron SL & Gersic CM (2012) Neurodegenerative causes of death among retired National Football League players. *Neurology* 79(19), 1970–1974. doi:10.1212/WNL.0b013e31826daf50

Lentillon-Kaestner V & Ohl F (2011) Can we measure accurately the prevalence of doping? *Scandinavian Journal of Medicine and Science in Sports* 21(6), e132–42. doi:10.1111/j.1600-0838.2010.01199.x

Loland S & Hoppeler H (2011) Justifying anti-doping: The fair opportunity principle and the biology of performance enhancement. *European Journal of Sport Science* 12(4), 347-353. doi:10.1080/17461391.2011.566374

Loraschi A, Galli N & Cosentino M (2013) Dietary supplement and drug use and doping knowledge and attitudes in Italian young elite cyclists. *Clinical Journal of Sport Medicine* 24(3), 238-244.

López B (2011) The Invention of a "Drug of Mass Destruction": Deconstructing the EPO Myth. *Sport in History* 31(1), 84–109. doi:10.1080/17460263.2011.555208

López B (2012a) Creating fear: The social construction of human Growth Hormone as a dangerous doping drug. *International Review for the Sociology of Sport* 48(2), 220-237. doi:10.1177/1012690211432209

López B (2012b) Doping as technology: a rereading of the history of performance-enhancing substance use in the light of Brian Winston's interpretative model for technological continuity and change. *International Journal of Sport Policy and Politics* 4(1), 55–71. doi:10.1080/19406940.2011.627361

López B (2013) Creating fear: the "doping deaths," risk communication and the anti-doping campaign. *International Journal of Sport Policy and Politics* 6(2), 213-225. doi:10.1080/19406940.2013.773359

Marijon E, Tafflet M, Antero-Jacquemin J, Helou El N, Berthelot G, Celermajer DS, *et al.* (2013) Mortality of French participants in the Tour de France (1947-2012). *European Heart Journal* 34(40), 3145–3150. doi:10.1093/eurheartj/eht347

Morley JE (2013) Scientific overview of hormone treatment used for rejuvenation. *Fertility and Sterility* 99(7), 1807–1813. doi:10.1016/j.fertnstert.2013.04.009

Murray TH (1983) The coercive power of drugs in sports. Hastings Center Report 24–30.

Møller V (2005) Knud Enemark Jensen's death during the 1960 Rome Olympics: a search for truth? *Sport in History* 25(3), 452–471. doi:10.1080/17460260500396319

Outram SM (2013) Discourses of performance enhancement: Can we separate performance enhancement from performance enhancing drug use? *Performance Enhancement & Health* 2(3), 94–100. doi:10.1016/j.peh.2013.08.015

Overbye M & Wagner U (2013) Experiences, attitudes and trust: an inquiry into elite athletes' perception of the whereabouts reporting system. *International Journal of Sport Policy and Politics* 6(3), 407-428. doi:10.1080/19406940.2013.791712

Overbye M, Knudsen ML & Pfister G (2013) To dope or not to dope: Elite athletes' perceptions of doping deterrents and incentives. *Performance Enhancement & Health* 2(3), 119-134. doi:10.1016/j.peh.2013.07.001

Paoli L & Donati A (2013) The supply of doping products and the potential of criminal law enforcement in anti-doping: an examination of Italy's experience. Retrieved February 13, 2014, from http://www.wada-ama.org/Documents/News_Center/News/2013-Paoli-Donati-Report-Executive-Summary-EN.pdf

Piispa M & Salasuo M (2012) Perspectives to Doping Substance Use outside Elite Sports in Finland. Finnish Youth Research Network and Finnish Youth Research Society. Helsinki. Retrieved February 13, 2014, from

http://www.nuorisotutkimusseura.fi/julkaisuja/doping_en.pdf

Pluim B (2008) A doping sinner is not always a cheat. *British Journal of Sports Medicine* 42(7), 549–550.

Polosa R, Rodu B, Caponnetto P, Maglia M & Raciti C (2013) A fresh look at tobacco harm reduction: the case for the electronic cigarette. *Harm Reduction Journal* 10(1), 19. doi:10.1186/1477-7517-10-19

Ritter A & Cameron J (2006) A review of the efficacy and effectiveness of harm reduction strategies for alcohol, tobacco and illicit drugs. *Drug and Alcohol Review* 25(6), 611–624. doi:10.1080/09595230600944529

Room R & Reuter P (2012) How well do international drug conventions protect public health? *The Lancet* 379(9810), 84–91. doi:10.1016/S0140-6736(11)61423-2

Savulescu J, Foddy B & Clayton M (2004) Why we should allow performance enhancing drugs in sport. *British Journal of Sports Medicine* 38(6), 666–670. doi:10.1136/bjsm.2003.005249

Sjöqvist F, Garle M & Rane A (2008) Use of doping agents, particularly anabolic steroids, in sports and society. *The Lancet* 371(9627), 1872–1882. doi:10.1016/S0140-6736(08)60801-6

Striegel H, Simon P, Aust F, Dietz K & Ulrich R (2006) Doping in fitness sports: estimated number of unreported cases and individual probability of doping. *Addiction* 101(11), 1640–1644. doi:10.1111/j.1360-0443.2006.01568.x

Teramoto M & Bungum TJ (2010) Mortality and longevity of elite athletes. *Journal of Science and Medicine in Sport* 13(4), 410–416. doi:10.1016/j.jsams.2009.04.010

Tricker R, Casaburi R, Storer TW, Clevenger B, Berman N, Shirazi A & Bhasin S (1996) The effects of supraphysiological doses of testosterone on angry behavior in healthy eugonadal men–a clinical research center study. *Journal of Clinical Endocrinology and Metabolism* 81(10), 3754–3758. doi:10.1210/jcem.81.10.8855834

UHRI (2013) Drug Situation in Vancouver. Vancouver. Retrieved February 16, 2014, from http://uhri.cfenet.ubc.ca

Valkenburg D, de Hon O & van Hilvoorde I (2013) Doping control, providing whereabouts and the importance of privacy for elite athletes. *The International Journal on Drug Policy* 25(2):212-218. doi:10.1016/j.drugpo.2013.12.013

WADA (2009) World anti-doping code. http://wada-ama.org.

Waddington I, Christiansen AV, Gleaves J, Hoberman J & Moller V (2013) Recreational drug use and sport: Time for a WADA rethink? *Performance Enhancement & Health* 2(2), 41-47. doi:10.1016/j.peh.2013.04.003

Wodak A (2009) Harm reduction is now the mainstream global drug policy. *Addiction* 104(3), 343–345. doi:10.1111/j.1360-0443.2008.02440.x

Comments on this paper since its publication

This chapter, originally written for the *Routledge Handbook of Drugs and Sport* (Kayser & Broers 2015), provided an analysis of the similarities and overlaps between the 'war on drugs' and the 'war on doping'. It discussed the actual and potential harms of doping and argued that these are not well evaluated and are often based on myths. It then further identified in detail more of the (largely unintended) harms related to anti-doping. It ended with a first sketch of an alternative way for dealing with doping, and performance enhancement in general, arguing that doping and performance-enhancement policies could include harm reduction measures protecting the person's health. Since it was only recently published and in an (expensive) omnibus, there have been so far not been many comments in more recent scholarly work. The idea of introducing a harm reduction approach for doping in sport had been previously presented (Kayser & Broers 2012 and 2013; see also Kirkwood 2009, and Anderson 2013). Harm reduction in sport has also received criticism [e.g. Fry (2017); Murray (2015)]. These points are further discussed in chapters six and seven of this thesis.

References

Anderson J (2013) Doping, sport and the law: time for repeal of prohibition? *International Journal of Law in Context* 9(2), 135-159.

Fry CL (2017). The case for and against harm reduction approaches to drugs in sport. *Journal of Medical Ethics* 43(5), 280–281. http://doi.org/10.1136/medethics-2017-104310

Kayser B, & Broers B (2012) The Olympics and harm reduction? *Harm Reduction Journal* 9(1), 33. http://doi.org/10.1186/1477-7517-9-33

Kayser B, & Broers B (2013) Anti-doping Policies: Choosing Between Imperfections. In Tolleneer J, Sterckx S & Bonte P (Eds.) *Athletic Enhancement, Human Nature and Ethics : Threats and Opportunities of Doping*

Technologies 52, 271–289). Springer Netherlands, Dordrecht, Netherlands. http://doi.org/10.1007/978-94-007-5101-9_15

Kayser B, & Broers B (2015) Doping and Performance Enhancement: Harms and Harm Reduction. In Møller V , Waddington I & Hoberman J (Eds.), *Routledge Handbook of Drugs and Sport*. Routledge, London, UK.

Kirkwood K (2009) Considering harm reduction as the future of doping control policy in international sport. *Quest*, 61(2), 180–190. http://doi.org/10.1080/00336297.2009.10483609

Murray TH (2015) Doping and anti-doping: an inquiry into the meaning of sport. In McNamee MJ & Morgan WJ (Eds.) *Routledge Handbook of the Philosophy of Sport*. Routledge, London, UK.

Chapter 6

Ethics of a relaxed anti-doping rule accompanied by harm-reduction measures

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Abstract

Harm-reduction approaches are used to reduce the burden of risky human behaviour without necessarily aiming to stop the behaviour. We discuss what an introduction of harm reduction for doping in sports would mean in parallel with a relaxation of the anti-doping rule. We analyse what is ethically at stake in the following five levels: 1) What would it mean for the athlete (the self)? 2) How would it impact other athletes (the other)? 3) How would it affect the phenomenon of sports as a game and its fair play basis (the play)? 4) What would be the consequences for the spectator and the role of sports in society (the display)? and 5) What would it mean for what some consider as essential to being human (humanity)? For each level, we present arguments for and against doping and then discuss what a harm-reduction approach, within a dynamic regime of a partially relaxed anti-doping rule, could imply. We find that a harm-reduction approach is morally defensible and potentially provides a viable escape out of the impasse resulting from the impossibility of attaining the eradication of doping. The following question remains to be answered: Would a more relaxed position, when combined with harm-reduction measures, indeed have less negative consequences for society than today's all-out anti-doping efforts that aim for abstinence. We provide an outline of an alternative policy, allowing a cautious step-wise change to answer this question and then discuss the ethical aspects of such a policy change.

Introduction

Doping in sports is not a recent phenomenon. In the Tour de France, doping was common for most of the race's century-long history, during the first half quite openly (de Mondenard 2010; Dimeo 2008). In the 1960s, doping was more openly condemned; however, it was hardly combatted. Contemporary anti-doping, labelled a 'war on doping' (Abbot 2000), is a recent development. Due to the 1998 Festina affair, which is when systematic doping was discovered on the Tour de France (Lentillon-Kaestner 2013), the World Anti-Doping Agency (WADA) now strives for the globalisation of anti-doping across sports and the strengthening of surveillance and repression. This is ongoing and not an immediate success, as illustrated by the evidence that doping is still rife (de Hon *et al.* 2015).

Contemporary media generally present doping as intrinsically evil, but the rationale behind the anti-doping rule is not self-evident nor universally accepted. There is an ongoing academic debate about the rule, its effects and alternatives (see e.g. Savulescu & Foddy 2011; Savulescu 2016; Shuster & Devine 2013;

Loland & Hoppeler 2012; McNamee 2016; Camporesi & Knuckles 2014). This debate generally opposes two discourses, in their extreme versions, as follows: 'Conservative' refers to the stance that defends strict prohibition enforced by surveillance and punitive repression (Loland & Hoppeler 2012; Murray 2015; Pound 2006), and 'liberal' refers to the stance that finds anti-doping illogical and calls for the liberalisation of doping (Savulescu *et al.* 2004; Mauron 2011; Brown 2009). Kayser and Broers (2015) find these positions defend non-realizable idealistic goals. The liberalisation of doping is deemed politically not feasible, while today's prohibition is unsuccessful since doping continues (de Hon *et al.* 2015). The latter is problematic because the objective of anti-doping, eradicating doping to guarantee 'clean' champions, cannot be met because of limits to testing technology and surveillance density (Berry 2008; Delanghe *et al.* 2014). This imperative distinguishes doping from other transgressions for which such an ideal does not exist. Furthermore, anti-doping has side effects. For example, the relegation of doping behaviour into clandestine behaviour, a consequence of repression, increases health risks (e.g., greater risk-taking among competitive cyclists (Fincoeur *et al.* 2013) or increased prevalence of human immunodeficiency virus [HIV] infection among fitness clients who inject anabolic steroids) (Hope *et al.* 2013)). Thus, we can identify the following three concurrent dynamics: 1) Doping poses potential harm to the user. 2) Doping is insufficiently deterred by prohibitive policies. 3) The risk to the user is exacerbated by prohibitive policies (Kirkwood 2009). This is very similar to the effects of the repression of illicit recreational drugs (Wood *et al.* 2009). Nevertheless, under pressure from WADA, increasingly punitive legislation is introduced, in several countries in the form of a criminal law (a law also applicable to non-athletes), even though there are also arguments in favour of differentiated regulation inside and outside competitive sports (see e.g. Douglas 2007). The extension of anti-doping outside competitive sports (e.g., in fitness centres) can result in increased harm (Christiansen 2011; Van de Ven 2016). Similar to the consequences of the 'war on drugs', a 'war on doping' (anchored in international conventions obliging national governments to combat doping inside and outside of elite sports) may lead to greater societal harm than it prevents (Kayser & Broers 2015). This leads to the following question: How much of the present harm of doping, for the athlete and the wider society, might be related to anti-doping policy rather than to the use of the performance-enhancing methods or substances per se?

There is, therefore, a rationale for a debate on alternative policies. Based on experience with illicit drugs, for which experimenting with alternative policies with harm-reduction strategies have come of age and proven their societal benefits (Wodak 2009), several scholars (Kayser & Broers 2015; Kirkwood 2009; Smith & Stewart 2015; Lippi *et al.* 2008) have argued in favour of relaxing the anti-doping rule and accompanying it with harm-reduction strategies. The

general stance is essentially a consequentialist one, but a more detailed explicit analysis of ethical aspects of a harm-reduction approach for doping in sports had not been undertaken yet. However, we attempt this type of analysis here.

An alternative doping policy?

What we have in mind is the following framework: 1) The anti-doping rule is relaxed within boundaries of acceptable health risks. 2) The athlete's health is monitored. 3) Some urine and blood testing subsists using pragmatic evidence-based cut-off levels to control risk. For this to be possible, among the three WADA criteria for the inclusion of methods and substances on the List (WADA 2017), the health risk argument is retained, while the spirit of sport and the performance-enhancing criteria are dropped. These conditions being met it then follows that instead of today's continuous yearly inclusion of more and more methods and substances on the List, WADA can do the opposite (i.e., progressively take methods and substances off the List, one by one, while monitoring the outcomes). As a test case, one could allow cannabis use. The health effects of cannabis are acknowledged; these effects are not different between the general population and athletes, causing one to question the ban for athletes (Waddington *et al.* 2013). Another candidate would be to allow erythropoietin (EPO), keeping a to be determined haematocrit no-start cut-off, while monitoring its use and athlete's health (Lundby & Olsen 2011; Hardeman *et al.* 2014). Another test case would be to allow meldonium, which was recently added to the List, since there are no documented risks with this drug. There is a precedent. Caffeine was put on the List and then removed, but it is still monitored (Del Coso el al. 2011). Contrary to present practice, the selection for exclusion, but also the selection for (re-)inclusion, should become a transparent procedure based on democratic principles. This would result in a dynamic that, if the overall health consequences would prove acceptable, could in theory regress to voiding the List entirely; however, it would more likely result in creating a simplified list accompanied by pragmatic cut-off values for particular parameters. This dynamic could be specific to individual sports to allow for specificities and for the time necessary for a cautious approach. Why not opt for full liberalisation? Due to the extreme stakes in elite sports without safety margins, all athletes could (but more importantly some athletes likely would) decide to use substances in excess of reasonable health risks (Kirkwood 2009). Why would partial prohibition be better than full prohibition? In the beginning, the system would be as costly, complicated and imperfect as it is today. However, if the List was shortened, we expect improvement. We contend that given the unsurmountable negative consequences of anti-doping today, it is worthwhile to experiment if our scenario results in a better overall end-result.

In this analysis, we explore ethical dimensions of an anti-doping rule relaxation accompanied by harm-reduction strategies. We do this in accordance with Tolleneer and Schotsmans' model (Tolleneer & Schotsmans 2012). They contrasted the conservative and liberal positions on five levels, according to what is ethically at stake when one decides to dope or not to dope: 1) the athlete (self), 2) the opponent (other), 3) the sport (play), 4) the spectator sport (display) and 5) being human (humanity). Our analysis responds to criticisms of harm reduction for doping, such as that the only stakeholders considered so far were the athlete and any (medical) advisors (Mazanov 2015); however, there is certainly more at stake (Murray 2015; Tolleneer & Schotsmans 2012). We first draw on the literature of harm reduction elsewhere in society, specifically in the realm of (il)licit 'recreational' drugs; we then explore the introduction of such principles for doping according to Tolleneer and Schotsmans' model.

Harm reduction explained

For (il)licit 'recreational' drug use, the fundamental assumption of harm reduction is that it is important to reduce drug-related harm, while not necessarily requiring individuals to reduce or abstain from drugs, even if reducing or abstaining might sometimes be the best choice. Harm reduction mitigates the negative consequences of drugs for the user and society. It is a pragmatic and balanced approach that deals with the fact that drugs have always been there and always will be there, no matter what. Christie *et al.* (2008) discussed whether or not harm reduction for illicit drug use is ethically justified (since individuals are not required to abstain from, or at least try to abstain from, these types of drugs). They concluded that harm reduction is justified on consequential grounds since harm-reduction policies produce the greatest good for the greatest number (e.g. Wodak 2009). Christie *et al.* (2008) further suggested that the virtue of compassion allows policymakers to include harm reduction in their policymaking. Abstinence-only based policies can be seen as too 'hard' and having insufficient positive effects. In addition, these policies can have significant (unintended) negative side effects that outweigh the intended effects, if any. However, the introduction of harm reduction benefits both drug users and society without leading to increased use or overall health burdens (Wodak 2009). We acknowledge the differences between illicit drugs and their risk of addiction and doping methods and substances and their specific effects in competitive sports. We also acknowledge the differences between competitive and non-competitive sports, such as fitness training in which the fair play argument does not apply, at least not in the same way [This is a notion that makes the grey zone of fitness training interesting for further ethical analysis in line with the abovementioned approach by Douglas (2007)] However, we contend

that harm reduction is a general, pragmatic and valid approach to limit the consequences of any potentially dangerous human behaviour, including doping in non-competitive and even competitive sports.

Harm-reduction measures are typically context-dependent and dynamic measures in order to react to changes in behaviour and their consequences. Therefore, these measures must be tailored for doping practices not only in sports but also outside of sports. An example would be the steroid clinics in the United Kingdom where fitness clients and body builders who use anabolic steroids can consult with health professionals (e.g., to prevent outbreaks of blood-borne virus infections as a consequence of needle sharing) (Hope *et al.* 2013). Such low-threshold access to medical expertise lowers the overall burden of such behaviour. The extension of such gateways for any performance-enhancing substances and methods towards an accompaniment instead of a repression of any doping-like behaviour, together with information and prevention campaigns, would allow keeping the overall burden low. In elite sports, medical supervision is already present. Our proposal provides fertile ground for further work, detailing such a dynamic framework and also taking into account difficult problems, such as dealing with non-adult athletes. Since our proposal starts from today's unsatisfactory situation, there would be time to reflect on the consequences of simplifying the List and to propose amendments in order to progressively move away from full prohibition. We believe such a pragmatic dynamic conventionalist-intermediate stance is viable and would allow for the escape from the cornelian choice between the negative effects of prohibition and the potential spiralling towards excessive negative effects of liberalisation. Our proposal has the important advantage of being highly malleable, allowing to dynamically react upon adverse outcomes. We discuss the ethical aspects of such an intermediate stance in the following sections.

Five-level approach

Tolleneer and Schotsmans (2012) discussed arguments for and against doping, scrutinizing respect and moral responsibility on the following five levels: 1) What does doping mean for the athlete (the self)? 2) How does it impact other athletes (the other)? 3) How does it affect the phenomenon of sports and its fair play basis (the play)? 4) What are the consequences for the spectator and the role of sports in society (the display)? 5) What does it mean for being human (humanity)? On the liberal side, sample arguments include that doping helps in fulfilling personal aspirations (self), guarantees equal opportunities (other), aligns sports with other cultural phenomena (play), reinforces the heroic character of sports (display) and fulfils the mission to push frontiers (humanity).

On the conservative side, sample arguments are that doping threatens one's health (self), reduces the opponent's chances (other), undermines the spirit of sports (play), creates negative role models (display) and defiles human nature (humanity) (Tolleneer & Schotsmans 2012). For each level, we discuss what a more intermediate stance of a relaxed anti-doping rule with a harm-reduction approach could mean.

Self

At this level, the conservative stance believes doping is dangerous. The athlete should be prevented from harm. The liberal stance believes that this is a matter of autonomy and self-realisation. Elsewhere, there is freedom to behave dangerously (e.g., horseback riding, off-piste skiing, mountain biking, drinking alcohol, smoking, eating unhealthy foods and being sedentary) within some constraints (e.g., wearing helmets and following age restrictions). Athletes wanting to fulfil their aspirations, and therefore their well-being, should be allowed to balance this with health risks from doping (Savulescu *et al.* 2004; Mauron 2011; Brown 2009). How could an intermediate harm-reduction-based stance be articulated on this level? Harm reduction would limit the health impact of doping for the individual, while allowing the athlete to employ (within certain measurable boundaries of acceptable health risks) certain performance-enhancing techniques. These techniques could range from training methods to responsible and medically supervised methods, which currently are labelled as doping. On the conservative side, one argues this would imply admitting defeat and suggest the beginning of a spiral towards 'universal' doping and overall more health problems (e.g. Holm 2007). From a consequential perspective, given a relaxed anti-doping rule accompanied by harm-reduction strategies, the question then concerns the net global effect, which is at present an unknown. In this context, it is useful to recall that the health risks of doping vary between forbidden substances and methods. For many, the risk is limited. Looking back at periods when doping was the unofficial norm (e.g., in cycling), there is no solid epidemiological evidence base suggesting that 'informed' doping came with excessive risk, despite rumours and anecdotes (Kayser & Broers 2015). The comparison of the paternalist discussion with the liberal discussion on the extent of autonomy granted to the (adult) athlete is important in this regard. With the exception of East Germany, where adolescent athletes were coerced into a dangerous state-run doping scheme (Dimeo & Hunt 2012), the history of doping in sports would suggest that doping did not lead to excessive morbidity or mortality in comparison to the risk of participating in sports per se or other risk-taking behaviours in general (Kayser & Broers 2015). To stay primarily on the cautious side, it would seem prudent to place some safeguards to prevent

excess use, which is exactly what we propose. Therefore, on the level of the self, relaxation of the rule accompanied by harm-reduction strategies would seem to be an alternative, allowing an individual to engage in doping within a framework of reasonable risk, potentially with a general balanced outcome that is better than the current situation. It would allow the doping athlete to behave morally, since (some) doping would be allowed, and to fully self-realise by showing additional commitment, courage and dedication to the sport enterprise.

Other

The individual doping behaviour of an athlete has meaning for the athlete's opponent. The conservative stance rejects doping because it diminishes the winning chances for the non-doping opponent. The doping athlete further exerts pressure on the other athlete to engage in similar behaviour. This pressure on the other athlete to give in is labelled as coercion. It does indeed deprive the other athlete of the possibility to compete among 'clean' opponents, but the other athlete can still freely pull out of the game, so there is no actual coercion (such as being forced at gunpoint), at least according to Lev in his article on coercion, competition and inducement (Lev 2016). The concept of 'undue inducement' and its relation with coercion might need further scrutiny in this specific context. Nevertheless, the liberal stance further argues that pressure to engage in extreme behaviour exists anyway. This also comes with health risks, such as those associated with strenuous training routines and diets. What would a relaxation of the anti-doping rule with harm-reduction strategies imply for the non-doping athlete? Harm-reduction proponents argue that it would put the non-doping athlete on par with the doping athlete because the non-doping athlete would be allowed to and enabled to engage in similar behaviour, while being protected from excessive risks because of a similar harm-reduction setting. The conservative side still prefers no doping because no risk is better than use under medical surveillance. However, since it is likely that doping continues and comes with risk despite today's repression (Fincoeur *et al.* 2013; Hope *et al.* 2013; Van de Ven 2016), the question again rises regarding whether or not the overall increase in health risks from a relaxation would be offset by the reduction in risks by a simultaneous harm-reduction approach within a medically supervised setting. Thus, on the level of the other, the principle of greatest good is not necessarily met. A relaxation of the anti-doping rule accompanied by harm-reduction measures needs to be tested to see if it would decrease the overall negative impact of doping in sports and society at large. If the anti-doping rule were relaxed, the non-doping athlete would be able to engage in allowed doping since the athlete would not be acting immorally. An athlete might not want to participate in doping because of a personal moral

belief that doping is wrong, but the athlete would be free to choose not to dope, similar to refusing to engage in any other extreme behaviour necessary for elite athletic careers.

Play

The conservative position says that violating the anti-doping rule is cheating and, therefore, immoral. Not playing with the official lusory means equates to not playing the game. Doping is called non-lusory, and it is against the equal opportunities principle. The liberal side argues that the distinction with other inequalities, like talent and access to technology, is blurred at best and that the argument fails when abrogating the rule. The introduction of a more relaxed stance would imply a change in the anti-doping rule. The play would continue but under a different rule set. For some sports (e.g., cycling, baseball and athletics), this would be a de facto return to their former states (when doping was common and tacitly accepted by a majority as the norm) before today's anti-doping efforts. Doping as such, independent of its rule breaking (formal fair play), is also labelled as immoral because it goes against the spirit of sport (informal fair play) [see also McNamee (2012) in defence of the spirit of sport criterion]. However, dropping the spirit of sport criterion would obviate this point. The objection that this would profoundly change the nature of the play is only correct to the extent that such changes are not uncommon; strict amateurism in the Olympics was only abandoned approximately 40 years ago because unworkable. The amateur rule was undermined by state-sponsored amateurs. It is time to change the anti-doping rule for the same reason. The result would likely be viable and functional play, similar to that played for most of the time in the past, but cheating would still remain possible for the substances and methods that would remain on the List. Therefore, surveillance and repression cannot be done away with fully. The dynamic resulting from what we propose would not necessarily imply a weakening normative force; it would provide a basis for what Morgan called 'a balancing of the moral books [..] necessary if we are going to find some way out of the impasse created by the current struggle between dopers and regulators' (Morgan 2015).

Display

The conservative view says doping devalues the image of a sport for spectators and society. The athlete is expected to be an exemplary role model. Doping is bad, and a doping athlete is immoral (Pound 2006). The liberal view says athletes participating in modern sports are all about personal sacrifice aimed at

superior performance. If doping improves performance, it increases spectator experience, which is a reason that turns the role model argument around. What would be the consequence of introducing a more relaxed stance with harm reduction? Doping as a concept is recent, and its public perception is dynamic (Schneider 2015). If a growing fraction opposes doping today (Engelberg & Moston 2012), echoing the lay press discourse, there is also a sizeable, more liberal fraction (Vangrunderbeek & Tolleneer 2011). Given the increasing role of technology in sports, an extension of the methods and substances that are forbidden today would seem viable. The argument that this would transform the display into something similar to Formula-1 car racing fails, exactly because elite sports are already a technological enterprise. Athletes are surrounded by support personnel and sports scientists who program performance enhancement by any admitted means imaginable. If one would also allow (some) doping, this could be considered laudable because aiming at the good, the search for good display. It would be ethical because aiming at a balanced way for preservation or improvement of the spectacle of sports. One could further defend that allowing doping to an extent would strengthen the positive heroic image of athletes, adding to the value of display. Finally, since doping is a staple of sports media consumption, selling it to the public would be a matter of rebranding the sporting product along these lines.

Humanity

As recognised by Tolleneer and Schotsmans (2012), the doping debate reaches beyond sports because it concerns the general human enhancement debate (Mehlman 2009). The conservative standpoint says doping is short changing humanity and defiling human nature. The liberal stance says that improving human performance with technology exemplifies the natural human tendency for seeking out and moving boundaries. The transhumanist movement strongly argues in favour of exploiting technology for the betterment of humanity in general through human enhancement. Surely, prudence would seem required, but 'just say no' evidently is not a viable option. Inescapably, human invention impacts the future of humanity in one way or another. Perhaps, sports is a good place to experiment? Are elite athletes modern heroes at the front of human enhancement? The debate on doping ties in with the wider debate on transhumanism and posthumanism. In his analysis *'The Price of Perfection'*, Mehlman (2009) highlights the links between the 'war on doping' and the 'war on drugs' and questions whether or not today's anti-doping policy in sports is the correct approach for controlling the use of biomedical enhancements outside of sports. He finds prohibition to be ill-informed and says we need better ways to minimise potential harmful effects of biomedical enhancements.

Instead of pragmatic dealings with the potential of biomedical invention, today's anti-doping is a slippery slope towards the generalisation of surveillance and repression in a society with dystopian characteristics. This is illustrated by the extension of anti-doping laws in Denmark and Belgium to include the repression of anabolic substance use by fitness clients, the inclusion of anabolic steroids on lists together with illicit drugs in the United Kingdom and the United States and the increased use of drug testing in schools in the United States.

Conclusions and perspectives

Our analysis suggests that a partial relaxation of the anti-doping rule accompanied by harm-reduction measures on all five levels of Tolleneer and Schotsmans' model seems ethically defensible. The analysis is incomplete because it does not fully take into account the inevitable, complicated, messy environment of real life and needs to be spelled out. For example, the adult athlete's capacity to autonomously make well-informed decisions is obviously not a given. Furthermore, athletes' careers often start before adulthood, and different clear-cut (and enforced) rules are necessary for non-adults. Given how we deal with other 'adult only' activities in life, this seems feasible even if accompanied by some inescapable muddied interface between age groups. The strength of our idea is that it allows progressive experimenting, monitoring and adapting, similar to how experiments are happening that deal with illicit drugs in ways other than repression only. The main question to be answered is as follows: Do today's abstinence-based anti-doping policies indeed have greater negative consequences for society than a more relaxed position combined with harm reduction? We believe our analysis provides a fertile basis for further reflexion on what might be called a pragmatic athlete-centred drug use perspective. We believe that the proposed alternative framework potentially provides an escape from the present, which is spiralling towards a criminalisation of doping and doping-like behaviour in society. It is time to start discussing the practical details of such a policy change and to start experimenting.

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References

Abbott A (2000) What price the Olympian ideal? *Nature* 407, 124–7. doi:10.1038/35025272

Berry DA (2008) The science of doping. *Nature* 454, 692–3. doi:10.1038/454692a

Brown WM (2009) The case for perfection. *Journal of Philosophy and Sport* 36, :127-139.

Camporesi S & Knuckles JA (2014) Shifting the burden of proof in doping: lessons from environmental sustainability applied to high-performance sport. *Reflective Practice* 15, 106–18. doi:10.1080/14623943.2013.869203

Christiansen AV (2011) Bodily violations. Testing citizens training recreationnaly in gyms. In McNamee M & Møller V, *Doping and Anti-Doping Policy in Sport*. Routledge, London, UK.

Christie T, Groarke L & Sweet W (2008) Virtue ethics as an alternative to deontological and consequential reasoning in the harm reduction debate. *International Journal of Drug Policy* 19, 52–58. doi:10.1016/j.drugpo.2007.11.020

de Hon O, Kuipers H & van Bottenburg M (2014.) Prevalence of doping use in elite sports: A review of numbers and methods. *Sports Medicine* 45, 57-69. doi:10.1007/s40279-014-0247-x

de Mondenard J-P (2011) *Tour de France, 33 vainqueurs face au dopage, entre 1947 et 2010*. Hugo et Compagnie, Paris, France.

Del Coso J, Muñoz G & Muñoz-Guerra J (2011) Prevalence of caffeine use in elite athletes following its removal from the World Anti-Doping Agency list of banned substances. *Applied Physiology, Nutrition and Metabolism* 36, 555–561. doi:10.1139/h11-052

Delanghe JR, Maenhout TM & Speeckaert MM (2014) Detecting doping use: more than an analytical problem. *Acta Clinica* 69, 25–29. doi:10.1179/0001551213Z.0000000009

Dimeo P & Hunt TM (2012) The doping of athletes in the former East Germany: A critical assessment of comparisons with Nazi medical experiments. *International Review for the Sociology of Sport* 47, 581–593. doi:10.1177/1012690211403198

Dimeo P (2008) *A History of Drug Use in Sport: 1876 – 1976*. Routledge, London, UK.

Douglas T (2007) Enhancement in sport, and enhancement outside sport. *Studies in Ethics of Law and Technology* 1:ukpmcpa2293.

Engelberg T & Moston S (2012) Public perception of sport anti-doping policy in Australia. *Drugs: Education, Prevention and Policy* 19, 84–87. doi:10.3109/09687637.2011.590556

Fincoeur B, Frenger M & Pitsch W (2013) Does one play with the athletes' health in the name of ethics? *Performance Enhancement and Health* 2, 182–93. doi:10.1016/j.peh.2014.08.002

Hardeman M, Alexy T, Brouwer B, *et al.* (2014) EPO or PlacEPO? Science versus practical experience: panel discussion on efficacy of erythropoetin in improving performance. *Biorheology* 51, 83–90. doi:10.3233/BIR-140655

Holm S (2007) Doping under medical control–conceptually possible but impossible in the world of professional sports? *Sports* 1, 135–45. doi:10.1080/17511320701425116

Hope VD, McVeigh J, Marongiu A, *et al.* (2013) Prevalence of, and risk factors for, HIV, hepatitis B and C infections among men who inject image and performance enhancing drugs: a cross-sectional study. *British Medical Journal Open* 3:e003207.
doi:10.1136/bmjopen-2013-003207

Kayser B & Broers B (2015) Doping and Performance Enhancement: Harms and Harm Reduction. In: Møller V, Waddington I & Hoberman J (Eds.) *Routledge Handbook of Drugs and Sport.* Routledge, London, UK.

Kirkwood K (2009) Considering Harm Reduction as the Future of Doping Control Policy in International Sport. *Quest* 61, 180–90. doi:10.1080/00336297.2009.10483609

Lentillon-Kaestner V (2011) The development of doping use in high-level cycling: From team-organized doping to advances in the fight against doping. Scandinavian Journal of *Medecine and Science of Sports* 23, 189-197 doi:10.1111/j.1600-0838.2011.01370.x

Lev O (2016) Biomedical cognitive enhancements: coercion, competition and inducements. *The Law and Ethics of Human Rights* 9, 1–22. doi:10.1515/lehr-2015-0004

Lippi G, Banfi G, Franchini M, *et al.* (2008) New strategies for doping control. *Journal of Sports Sciences* 26, 441-445. doi:10.1080/02640410701624556

Loland S & Hoppeler H (2011) Justifying anti-doping: The fair opportunity principle and the biology of performance enhancement. *European Journal of*

Sport Science 1, 1–7. doi:10.1080/17461391.2011.566374

Lundby C & Olsen NV (2011) Effects of recombinant human erythropoietin in normal humans. *Journal of Physiology* 589, 1265–71. doi:10.1113/jphysiol.2010.195917

Mauron A (2011) Le dopage et (est??) l'esprit du sport. *Les Cahiers du Centre Georges Canguilhem* 5, 125–39. doi:10.3917/ccgc.005.0125

Mazanov J (2015) Beyond antidoping and harm minimisation: a stakeholder-corporate social responsibility approach to drug control for sport. *Journal of Medical Ethics* 42, 220-223 doi:10.1136/medethics-2015-102661

McNamee M (2016) Doping scandals, Rio, and the future of anti doping ethics. Or: what's wrong with Savulescu's recommendations for the regulation of pharmacological enhancement in sport. *Sport, Ethics and Philosophy* 10, 113-116. doi:10.1080/17511321.2016.1203095

McNamee MJ (2012) The spirit of sport and the medicalisation of anti-doping: empirical and normative ethics. *Asian Bioethics Review* 4, 374–392.

Mehlman MJ (2009) *The Price of Perfection.* Johns Hopkins University Press, Baltimore, MD, USA.

Morgan WJ (2015) A Glimpse Into The Morally Ambiguous Future Of Elite Sport: The Lance Armstrong Story. In Vanden Auweele Y, Cook E & Parry J (Eds.) *Ethics and governance in sport: the future imagined.* Taylor and Francis, London, UK. p. 158–166. doi:10.4324/9781315679501

Murray TH (2015) Doping and anti-doping: an inquiry into the meaning of sport. In: McNamee MJ, Morgan WJ (Eds.) *Routledge Handbook of the Philosophy of Sport.* Routledge, London, UK.

Pound RW (2006) *Inside dope : how drugs are the biggest threat to sports, why you should care, and what can be done about them.* Wiley and Sons, Mississauga, Ont., Canada.

Savulescu J, Foddy B & Clayton M (2004) Why we should allow performance enhancing drugs in sport. *British Journal of Sports Medicine* 38, 666–70. doi:10.1136/bjsm.2003.005249

Savulescu J & Foddy B (2011) Le Tour and Failure of Zero Tolerance: Time to Relax Doping Controls. In: Savulescu J, Meulen RT & Kahane G (Eds.) *Enhancing Human Capacities.* John Wiley and Sons, Oxford, UK.

Savulescu J (2016) Doping Scandals, Rio and the future of human enhancement. *Bioethics* 30, 300–3. doi:10.1111/bioe.12268

Schneider AJ (2015) The concept of doping. In Møller V, Waddington I, Hoberman JM (Eds.) *Routledge Handbook of Drugs and Sport.* Routledge, London, UK. p. 9–19.

Shuster S & Devine JW (2013) The banning of sportsmen and women who fail drug tests is unjustifiable. *Journal of the Royal College of Physicians Edinborough* 43, 39–43. doi:10.4997/JRCPE.2013.110

Smith ACT & Stewart B (2015) Why the war on drugs in sport will never be won. *Harm Reduction Journal* 12, 53. doi:10.1186/s12954-015-0087-5

Tolleneer J & Schotsmans P (2012) Self, Other, Play, Display and Humanity: Development of a Five-Level Model for the Analysis of Ethical Arguments in the Athletic Enhancement Debate. In Tolleneer J, Sterckx S & Bonte P (Eds.) *Athletic Enhancement, Human Nature and Ethics : Threats and Opportunities of Doping Technologies.* Springer Netherlands, Dordrecht, Netherlands. p. 21-43. doi:10.1007/978-94-007-5101-9-2

Van de Ven K (2016) "Blurred lines": Anti-doping, national policies, and the performance and image enhancing drug (PIED) market in Belgium and The Netherlands. *Performance Enhancement and Health* 4:94-102 . doi:10.1016/j.peh.2016.03.003

Vangrunderbeek H & Tolleneer J (2011) Student attitudes towards doping in sport: Shifting from repression to tolerance? *International Review for the Sociology of Sport* 46, 346–57. doi:10.1177/1012690210380579

WADA (2015) World anti-doping code. https://www.wada-ama.org/en/what-we-do/the-code. Accessed March 2018.

Waddington I, Christiansen AV & Gleaves J (2013) Recreational drug use and sport: Time for a WADA rethink? *Performance Enhancement and Health* 2, 41–7. doi:10.1016/j.peh.2013.04.003

Wodak A (2009) Harm reduction is now the mainstream global drug policy. *Addiction* 104, 343–5. doi:10.1111/j.1360-0443.2008.02440.x

Wood E, Werb D, Marshall BDL, *et al.* (2009) The war on drugs: a devastating public-policy disaster. *The Lancet* 373:989–90. doi:10.1016/S0140-6736(09)60455-4

Comments on this paper since its publication

This article provided a more detailed ethical analysis of harm reduction strategies when applied to doping in elite sport. Using the five-level model developed by Tolleneer and Schotsmans (2012), arguments for and against the introduction of a partial relaxation of the anti-doping rule and the introduction of harm reduction measures were discussed at the level of the athletes themselves, the opponents in competition, the sport at stake, the spectators, and humanity. The conclusions were that such a change in policy can be ethically defended. This article is also too recent for much commentary. Of interest is that it was cited in an annual review written by three prominent anti-doping laboratory directors, suggesting that within the anti-doping industry, our arguments for seeking alternatives for the present unsuccessful all-out quest for a doping-free elite sport find at least some favourable reception (Thevis, Kuuranne & Geyer, 2017).

The article was part of a mini-symposium published in the *Journal of Medical Ethics*, which was composed of three contributions (Breitsameter 2016; Kayser & Tolleneer 2017; Mazanov 2016) and a commentary by Craig Fry (2017). The commentary acknowledged the usefulness of the three contributions to the complex debate on the problem of doping in sport and then raised several points that, according to Fry, would merit more attention. Firstly, an allegedly increasing support from athletes and general public for more severe doping punishments; secondly, the special case of sport and its 'agreed rules and the often criticised "spirit of sport" '; and thirdly, the posit that despite a declared 'zero tolerance' discourse, present anti-doping is too 'soft', followed by the question what 'if we were to trial a strict substantive form of zero tolerance policy that uses harsher non-criminal sanctions (e.g. longer competition bans, automatic life bans) for proven cases of doping and performance enhancing drug use?' (Fry 2017) Regarding the first point, this would seem unjustified. Taken together, the (limited) scholarly literature reporting public opinion about doping shows a rather chequered pattern, with younger people and especially those closer to sport having a more lenient position towards doping than older people [e.g. Engelberg & Moston (2012)]. A Swiss study among adults indicated a shift to a somewhat stricter stance over time (Stamm *et al.* 2008), while another analysis among Flemish sports students showed, on the contrary, that their opinion about doping became more nuanced and liberal over the years (Vangrunderbeek & Tolleneer 2011). An online survey in Flanders found that cycling fans are less negative towards doping in cycling than non-fans (Van Reeth & Lagae 2013). Fry's premise of generalised public opprobrium thus seems not warranted, or at least, to be lacking a sufficient evidence base. This public perception argument also does no justice to the history of doping in

sport, which was commonplace for a long time without being ostracised by a majority of the interested public [see also Møller & Kayser in appendix B and Kornbeck & Kayser in appendix C]. Also, public opinion is under the influence of the prevailing public discourse and can be expected to change if policy changes were to be introduced in an intelligible way. Regarding athlete opinion, there is paucity of good data for easily discernible reasons. Few are the athletes who dare to express their openness to debate given the present settings, while other 'clean' athletes can be very vocal about their strong stance against doping (also including athletes who doped!) (Dimeo & Møller 2018). The second point is interesting because it begs the question of whether the myth of modern Olympic sport is a greater universal good of such importance that it merits an exceptional status even if this comes at a stiff price. Within some constraints (such as human rights) this can perhaps be defended, but only if Olympic sport were just one of several definitions of sport. Given that Olympic sport is a cultural construct embedded in myths it would be difficult to defend its uniqueness priming above any other definition of what 'pure' sport is. Thirdly, Fry's call for trying to crack down harder on doping athletes, to see if that might work better sounds rather frightening given the quite extra-ordinary harshness already in place today.

Dimeo & Møller (2018) rebut our proposal for a harm reduction approach, but miss the point of how we would put this into practice (see the general discussion in chapter seven). They formulate some other proposals for change, such as a return to amateurism, a reform of the business model of sport (with salary caps, etc.), WADA-accredited medical staff, no more TUE's[1], health checks prior to competition, information and education, and even 24-hour-a-day chaperones, proposals that are interesting for the sake of the debate, even though several of them would rather be difficult to implement. What is important to restate here is that the model we propose is a progressive easing of the anti-doping rule while monitoring. At first, nothing would change practically, except that of the three criteria to put something on the List, only the health criterion would be retained (i.e. the performance enhancement and the 'spirit of sport' criteria would be dropped) while controls would at first continue unabated, but would be accompanied by a radically different discourse (stating that performance enhancement *is* the 'spirit of sport', but that health comes first). Then, progressively compounds would be taken off the List, or some cut-off levels would be introduced for some compounds, all the while monitoring what happens, and adapting if necessary. The strength of this proposal is its progressiveness and adaptability upon any need for change over time.

An important finding of our ethical analysis using the five-level model developed

[1] TUE: Therapeutic Use Exemption, the possibility for an athlete to obtain upon a request to be treated for a real health problem with a normally forbidden compound.

by Tolleneer and Schotsmans (2012) was that a partial relaxation of the anti-doping rule together with an introduction of harm reduction measures can be ethically defended. This insight opens the way for discussions about how such a policy change might be implemented.

References

Breitsameter C (2017) How to justify a ban on doping? *Journal of Medical Ethics* 43(5), 287–292. http://doi.org/10.1136/medethics-2015-103091

Dimeo P & Møller V (2018) *The Anti-Doping Crisis in Sport.* Routledge, London, UK.

Engelberg T & Moston S (2012). Public perception of sport anti-doping policy in Australia. *Drugs: Education, Prevention and Policy* 19(1), 84–87. http://doi.org/10.3109/09687637.2011.590556

Fry, C. L. (2017). The case for and against harm reduction approaches to drugs in sport. Journal of Medical Ethics, 43(5), 280–281. http://doi.org/10.1136/medethics-2017-104310

Kornbeck J & Kayser B (2018) Do public perception and the *'spirit of sport'* justify the criminalisation of doping? A reply to Claire Sumner. *The International Sports Law Journal*, 1–18. http://doi.org/10.1007/s40318-018-0120-4

Mazanov J (2016) Beyond antidoping and harm minimisation: a stakeholder-corporate social responsibility approach to drug control for sport. *Journal of Medical Ethics* 42(4), 220–223. http://doi.org/10.1136/medethics-2015-102661

Stamm H, Lamprecht M, Kamber M, Marti B & Mahler N (2008) The public perception of doping in sport in Switzerland, 1995 – 2004. *Journal of Sports Sciences* 26(3), 235–242. http://doi.org/10.1080/02640410701552914

Thevis M, Kuuranne T & Geyer H (2017) Annual banned-substance review: Analytical approaches in human sports drug testing. *Drug Testing and Analysis* 62, 11. http://doi.org/10.1002/dta.2336

Tolleneer J & Schotsmans P (2012) Self, Other, Play, Display and Humanity: Development of a Five-Level Model for the Analysis of Ethical Arguments in the Athletic Enhancement Debate. In Tolleneer J, Sterckx S & Bonte P (Eds.) *Athletic enhancement, human nature and ethics : Threats and opportunities of doping technologies.* Springer Netherlands, Dordrecht, Netherlands. 21-43. doi:10.1007/978-94-007-5101-9-2

Vangrunderbeek H & Tolleneer, J. (2011). Student attitudes towards doping in sport: Shifting from repression to tolerance? International Review for the Sociology of Sport, 46(3), 346–357. http://doi.org/10.1177/1012690210380579

Van Reeth D & Lagae W (2014) *Public opinion on doping in cycling: differences among population groups.* Master thesis, KULeuven, Leuven, Belgium. https://lirias.kuleuven.be/handle/123456789/462883, accessed May 2018.

Chapter 7

Discussion, conclusions and perspectives

Bengt Kayser

Introduction

Hardly a week goes by without mention of doping in the news. Regularly, 'scandals' surface that then trigger flurries of articles, documentaries and reactions in the (social) media, fuelling the anti-doping movement's quest for a 'clean' and 'pure' sport, free of doping. The general tone remains one of moral opprobrium. Doping is considered a particularly vicious way of cheating, and athletes caught doping are depicted as deviant and bad. Frequently these episodes are accompanied by requests for additional means for the repression of doping. Despite increasing means to combat doping, however, it remains rife. Nevertheless, anti-doping continues to cling to its objective, which involves only getting rid of this behaviour, even though it appears increasingly clear that this objective cannot be reached and that anti-doping comes with a considerable cost to society. There is, therefore, good reason to look for potentially better ways to deal with what some call the 'wicked' problem of doping (Kazlauskas 2014).

Thesis contributions

The general objective of this thesis was to contribute to the search for alternative policies for anti-doping. The specific aims were to:

1. Discuss some of the assumptions underlying anti-doping policy;
2. Highlight some of the (actual and potential) side effects of anti-doping;
3. Sketch the outlines of an alternative policy based on a relaxation of the anti-doping rule within a harm reduction perspective.

Assumptions underlying anti-doping policy

Regarding the first aim, in chapter two we critiqued modern anti-doping policy as it was shortly after the inception of WADA. We addressed the four main arguments used to defend contemporary anti-doping: 1) The fairness / level playing field argument; 2) the health argument; 3) the role model argument; and 4) the 'spirit of sport' argument. We argued that all four arguments have their merits but also their flaws, which are not necessarily fatal, but surely weaken the current moralistic anti-doping stance and its striving for universality.

We also made the point that the 'pure', 'clean' and therefore only 'real' sport, as defended by the anti-doping movement, is a cultural construct that is not

necessarily universal nor fixed. This questions the ongoing movement towards a unique and universal definition of what constitutes 'good' sport[1] and whom should be celebrated as its legitimate champions. It is acknowledged that hierarchical ranking plays a key role in sport, especially in elite sport events such as the Tour de France or the Olympics. Its point is to hierarchically grade people according to their ('virtuously perfected') inherited traits. The problem here is that the professionalisation and political instrumentalisation of elite sport have led to what can be described as distributive injustice on arbitrary grounds (Juengst & Moseley 2016). Some anti-doping proponents such as Murray would not seem to find this problematic since he writes that anti-doping is necessary so that (presumably) non-doping cyclists competing in the Lance Armstrong years 'wouldn't miss out on the rewards they deserved' (Murray 2018, p. 5).

Considering the point that talent is to some extent heritable, and hence unevenly distributed, in chapter three, Andreas De Block and I explored the question of whether a relaxation of the anti-doping rule would lead to an arms race, with similar increases in performance between individuals at the cost of an increased morbidity. Alternatively, it is possible that the individual effects of doping would vary between athletes, akin to the varying effects of therapeutic drugs, and thus would add to the variance in performance similarly to the varying effects of training. We explored how this might impact on health risk. Based on published evidence, we first debunked the former statement. We then argued that there is good reason to posit that a more liberal approach towards doping promises to enrich the spectacle of modern sport. This is a rather bold position, given the tendency of modern anti-doping policy for runaway dynamics in the opposite direction, i.e. engaging in a spiralling 'war on doping' that does not, and presumably cannot, attain its goal – the eradication of doping in elite and amateur sport.

There are other scholars who developed arguments pointing in a similar direction as the one I propose. For example, Kirkwood, in a very critical article, stated 'The Olympics have never been, nor ever will be, drug free' and then, using similar arguments, argued in favour of a harm reduction approach [Kirkwood (2009); see e.g. also Anderson (2013), for a similar plea]. One of the counter arguments is that such a change in policy would lead to a non-trivial increase in morbidity (or even mortality) in elite athletes. As discussed in chapter three and in chapter five, however, the (limited) epidemiological evidence to date, also covering periods when doping was rife, would seem to indicate longer and better life expectancy for former Olympic athletes and French Tour de France cyclists [see chapter five, and also see Kontro *et al.* (2018) for recent Finish observations] as compared to the general population (the spectators). As aptly analysed by Quet (2015) for the threat of gene doping ('a disaster in the making'), anti-

[1] *Good Sport* is the title of a recent book by Thomas Murray (2018).

doping discourse routinely uses scare-mongering in order to leverage good-will for its agenda of an increasingly harsh repression of doping [see also the work by Lopez (2011; 2012; 2013)]. In any case, as discussed in chapter six, we propose a prudent step-wise change in anti-doping policy, allowing for sufficient time to adapt to any adverse changes in epidemiology, and importantly, starting building an evidence base of what is and is not performance enhancing, and what the actual health risks are.

Side effects of anti-doping policy

Even though the arguments in favour of anti-doping have their limits, one might still accept that the world of elite sport continues to be treated as an exception – as an island in the general society, where special values, rules and governances apply, including today's anti-doping policy. In agreement, a recent European Court of Human Rights decision stated that anti-doping can use whereabouts for unannounced urine sampling procedures. The press release mentions: '[The ECHR] found that the reduction or removal of the relevant obligations would lead to an increase in the dangers of doping for the health of sports professionals and of all those who practise sports, and would be at odds with the European and international consensus on the need for unannounced testing as part of doping control'.[2] In its decision, the court did not mention any efficacy measures of the whereabouts rule and the urine sampling procedures to catch doping athletes, even though the efficacy of today's anti-doping policy is highly questionable (de Hon 2016; Moston & Engelberg 2016; Dimeo & Møller 2018).

The problem here is that current anti-doping policy, in its quest to attain its goal of celebrating 'clean' champions, uses means that come with non-negligible costs. These costs are not just monetary and include (mostly unintended) side-effects. The second aim of this thesis was to describe some of these side-effects in chapters two, four and five. We made the point that these actual and potential side-effects are sufficiently important to be considered when discussing the future of anti-doping. I and my colleagues formulated the hypothesis that current anti-doping policy may potentially introduce problems of greater impact than are solved. Whether this is already the case today is matter for interpretation and debate. Given the regular occurrence of 'affairs' such as the wide-spread

[2]ECHR (2018) No violation of Article 8 (right to respect for private and family life) of the European Convention on Human Rights. http://hudoc.echr.coe.int/eng-press?i=003-5977677-7646084, accessed May 2018.

and presumably state-sanctioned doping in Russia[3], the continuing problem of most likely innocent athletes being sanctioned (de Hon 2016; Dimeo & Møller 2018) and the inkling that many other athletes are still getting away with doping (de Hon 2016), this hypothesis cannot be easily rejected, leading to the notion that anti-doping may have immoral side effects.

In agreement, in their book *'The Anti-Doping Crisis in Sport'* Dimeo & Møller (2018) illustrate their compelling argument with an impressive series of case studies presenting the inhumane and far-reaching consequences of today's anti-doping policy. The strict liability principle used by anti-doping has led to a presumption of guilt instead of a presumption of innocence. Given the likelihood that an important fraction of athletes who dope get away with it (estimated doping prevalence is much higher than ADRVs suggest), that up to 40% of athletes with a documented ADRV may not have intended to dope (de Hon 2016) and the numerous accounts of unlucky innocent athletes being sacrificed for the sake of 'clean' sport (chapter four; Pluim 2008; Moston & Engelberg 2016; Dimeo & Møller 2018), one might indeed argue that the outcome of present anti-doping policy is immoral [see also Breitsameter (2017)]. Not only are innocent athletes sacrificed, but 'clean' athletes lose against doping athletes many of whom presumably remain undiscovered or use the excuse of a TUE[4] to obtain access to otherwise forbidden drugs. The recent turmoil over cycling icon Chris Froome, who was found to have high levels of the asthma medication salbutamol in a urine sample taken on the Vuelta 2017, illustrates the difficulty of dealing with illness in athletes and the imperfection of the TUE rule[5]. Similar to results from Denmark (Overbye & Wagner 2013), we recently found in a (limited) sample of French speaking athletes that 49% had low trust in TUE management by authorities, 47% suspected abuse by fellow athletes and 46% had refrained from medically justified treatment, illustrating the ambiguity of the TUE rule (Bourdon *et al.*, appendix A). The recent admission of the retired Dutch cyclist Lieuwe Westra of his use of cortisone with a TUE for non-existant knee problems and his statement of the pervasiveness of this practice among his fellow cyclists[6] illustrates the difficulty of separating medical treatment from doping and confirms the suspicion formulated by the athletes who participated in the Bourdon *et al.* study (appendix A).

[3]https://www.olympic.org/news/ioc-suspends-russian-noc-and-creates-a-path-for-clean-individual-athletes-to-compete-in-pyeongchang-2018-under-the-olympic-flag, accessed May 2018.

[4]Therapeutic Use Exemption, the possibility for athletes to obtain access to therapeutics in case of documented and medically warranted disease. See also Bourdon *et al.* appendix A

[5]See for example: https://www.theguardian.com/sport/2018/jan/11/inhaler-use-is-cheating-says-cyclist-who-pulled-out-of-tour-with-breathing-issues, accessed May 2018.

[6]https://www.nrc.nl/nieuws/2018/04/28/voormalig-wielrenner-westra-geeft-dopinggebruik-toe-a1601183, accessed May 2018.

More of the same, or ...

The anti-doping movement itself is also not satisfied with the outcomes of present anti-doping policy[7]. The reactions, however, are almost exclusively calls for more means for repression. These are fuelled by both benevolent thought and market forces. In a book chapter in press, Verner Møller and I argue that anti-doping has become a lucrative business for a host of stakeholders with an interest in expansion (Kayser & Møller, appendix B). Prospects of applying an anti-doping policy (and legislation) to the amateur athlete population or even the general population come with important societal risk as shown by past prohibition attempts (chapter five; Henning & Dimeo 2017; Kayser & Møller, appendix B).

In some countries, doping falls within the order of (in some cases, even criminal) law. This is for a good reason if the objective is to combat doping, since urine testing is not very successful (Moston & Engelberg 2016). For example, in Italy it is because of law enforcement that anti-doping could get somewhat of a handle on doping in elite sport (Paoli & Donati 2013). Furthermore, as compared to drug testing, it was shown to be more efficient, too. To strengthen the legal arm, there are regular calls for the criminalisation of doping [e.g. Moston & Engelberg (2016); Sumner (2017)]. It is reasoned that the threat of imprisonment could work as an effective deterrent. In appendix C, Jacob Kornbeck and I discuss in detail Sumner's plea for the criminalisation of doping in the UK legal order and show that it is ill-informed.[8] There are also calls for more forensic approaches, the profiling of athletes at risk of doping and regular interviewing of athletes about doping (i.e. using interrogation techniques) (Moston & Engelberg 2016) or the use of sniffer dogs to detect money or doping products.[9] This increasing pressure has already led to changes in doping behaviour with increased individual risk taking, akin to what has been observed during the crackdown on illicite psychotropic drugs during the heydays of the 'war on drugs' (Fincoeur *et al.* 2013).

Another recurring proposal is to equip athletes with geolocalisation devices

[7]e.g. WADA Working Group (2013) Report to WADA Executive Committee on Lack of Effectiveness of Testing Programs, prepared by a working group established following the Foundation Board meeting of 18 May 2012, https://www.wada-ama.org/sites/default/files/resources/files/2013-05-12-Lack-of-effectiveness-of-testing-WG-Report-Final.pdf, accessed March 2018)

[8]Since the publication of Sumner's paper, the Department for Digital, Media, Culture and Sport (the UK central government department in charge of sport) released a Review of Criminalisation of Doping in Sport which dismissed the idea of criminalisation. The DMCS sees the concept as failing the proportionality test, while also warning that strict liability "would be a barrier to effective criminalisation." (Kornbeck & Kayser, appendix C)

[9]https://www.independent.co.uk/sport/ukad-uk-anti-doping-strategy-plan-sniffer-dogs-a8309096.html, accessed May 2018.

to more easily locate them for unannounced urine sampling[10]. The head of UKAD[11], Nicole Sapstead, dismissed this proposal, though only for reasons of immature technology, leaving the door open for such measures in the future[12]. Prudently, WADA's ethics panel has, for the moment, taken the standpoint that replacing the whereabouts system with localisation technology should not be mandated nor implemented on a voluntary basis (Borry *et al.* 2018).

To summarise this section and to introduce the next one I quote from a chapter in press written together with Verner Møller:

> 'History allows us to explain what happened, but the prediction of future developments is hazardous; one can only imagine scenarios. To us anti-doping looks like an industry that has come of age and that aims its perpetuation and expansion. The war on drugs and the war on doping would seem to merge, leading to a framework of blanket testing of the wider population for the use of forbidden substances, decided on behind closed doors by a co-opted committee, substances considered to give someone unfair advantages over others. [...] The prospect of a blanket extension of sport's anti-doping policies to wider society would seem a bad idea. Based on the experience with illicit drugs, for which experimenting with alternative policies with harm reduction strategies have come of age and proven their societal benefits, a pragmatic non-essentialist approach of enhancement behaviour in general society applying principles of harm reduction would seem a more viable approach. Whether this would eventually lead to similar changes within competitive sport remains an open question'. (Kayser & Møller, appendix B)

[10]For example, the recent call by the chief executive of the World Olympians Association, Mike Miller, to equip athletes with GPS chips: https://www.theguardian.com/sport/2017/oct/10/call-for-athletes-to-be-fitted-with-microchips-fight-against-drug-cheats, accessed March 2018.

[11]UK Anti-Doping

[12]'In a statement, Sapstead said: "We welcome verified developments in technology which could assist the fight against doping. However, can we ever be sure that this type of thing could never be tampered with or even accurately monitor all substances and methods on the prohibited list? There is a balance to be struck between a right to privacy versus demonstrating that you are clean. We would actively encourage more research in whether there are technologies in development that can assist anti-doping organisations in their endeavours." ' http://www.independent.co.uk/sport/football/news-and-comment/ukad-comes-out-against-proposal-for-microchips-to-be-implanted-into-athletes-a7995481.html, accessed March 2018.

... a first sketch of an alternative policy

Given what current anti-doping policy brought and the bleak outlook of what it might be leading to, I and my colleagues have proposed a change to anti-doping policy using a harm reduction approach. This concept has evolved since its initial mentions [e.g. Kayser *et al.* (2007), Kirkwood (2009), and also Anderson (2013) and Paoli & Donati (2014)], moving away from liberal medicalised doping towards a more prudent approach. After introducing the harm reduction concept in chapter six, chapter seven provided a more detailed ethical analysis of harm reduction strategies when applied to doping in elite sport. Using the five-level model developed by Tolleneer and Schotsmans (2012), arguments for and against the introduction of a partial relaxation of the anti-doping rule and the introduction of harm reduction measures were discussed at the level of the athletes themselves, the opponents in competition, the sport at stake, the spectators, and humanity. The result of this analysis was that such a change in policy can be ethically defended. This is an important finding since it opens avenues for policy change despite the calls and arguments of those in favour of more stringent anti-doping measures.

The question is how to operationalise such a proposal for a policy change. WADA's Code stipulates that there are three criteria to put something on the List of forbidden substances and methods with the principle of a minimum of two out of three criteria to be met for inclusion.

These are:

1. Medical or other scientific evidence, pharmacological effect or experience that the substance or method, alone or in combination with other substances or methods, has the potential to enhance or enhances sport performance;

2. Medical or other scientific evidence, pharmacological effect or experience that the use of the substance or method represents an actual or potential health risk to the athlete;

3. WADA's determination that the use of the substance or method violates the 'spirit of sport' described in the introduction to the Code.

Our proposal is to drop criteria one and three and only keep the health criterion. The first criterion can be dropped by recognising that performance enhancement is the crux of athletic endeavour. It is exactly what the Olympic motto asks for: *'Citius, Altius, Fortius'*, which is Latin for 'faster, higher, stronger'. As argued in chapter three, there is reason to believe that providing more leeway for performance enhancement might benefit sport and would be more in keeping with

other societal trends in the realm of human enhancement. Some scholars even argued that in modern sport, based on a 'winner takes all' logic, performance enhancement *is* the 'spirit of sport' (e.g. Mauron 2011)[13].

The third criterion, the 'spirit of sport', can also be dropped because its fuzziness is problematic. Arguing that it is useful to keep drugs like cannabis derivates on the List because it is not done for athletes to indulge in a smoke while an increasing fraction of the world's population has (legal or illegal) access to the drug is more than questionable. There still is considerable debate on the inclusion of 'recreative drugs' such as cannabis on the List, with arguments pro (e.g. McNamee 2012; Henne *et al.* 2013) and con (e.g. Waddington *et al.* 2013; Kayser & O'Hare 2013), but given the global tendency for legalisation and regulation of the recreational use of cannabis derivates the pro argument would seem to begin to lose momentum.

WADA's Code presents the 'spirit of sport' criterion in the following way:

> 'Anti-doping programs seek to preserve what is intrinsically valuable about sport. This intrinsic value is often referred to as "the spirit of sport". It is the essence of Olympism, the pursuit of human excellence through the dedicated perfection of each person's natural talents. It is how we play true. The spirit of sport is the celebration of the human spirit, body and mind, and is reflected in values we find in and through sport, including:
>
> - 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

[13]See also Savulescu. 'Doping true to the spirit of sport', Sydney Morning Herald, August, 2007: https://www.smh.com.au/news/opinion/doping-true-to-the-spirit-of-sport/2007/08/07/1186252704241.html, accessed May 2018, and Lopez (2013) who, rephrasing Møller, has stated: 'doping as personal behaviour and/or a cultural phenomenon does not need to be explained: it is self-explanatory or self-evident in the sense that it is a logical consequence of the tenets of modern sport and, more widely, modernity'.

- Community and solidarity

> Doping is fundamentally contrary to the spirit of sport. To fight doping by promoting the spirit of sport, the *Code* requires each *Anti-Doping Organization* to develop and implement education and prevention programs for *Athletes*, including youth, and *Athlete Support Personnel*'.[14]

The 'spirit of sport' criterion is quite useful since it gives WADA the means to include about anything on the List of forbidden substances and methods. On the other hand, because of its fuzziness there are problems with the 'spirit of sport' concept. One concerns the problem of referral to it from anti-doping law. An increasing number of countries have been introducing specific anti-doping legislation, some countries even in the form of criminal law. In appendix C Jacob Kornbeck and I discuss the potential problems of an introduction of criminal anti-doping law in a country like the UK, as proposed by Sumner (2017). 'Of the three criteria the 'spirit of sport' represents a far more vague justification than those of performance enhancement and health risk, especially because the ['spirit of sport'] (unlike performance enhancement and health risk) may be affirmed without any recourse to scientific evidence, [...] drawing instead on "WADA's determination," [...] while "neither the slogan 'play true' nor the term 'Olympism' is defined in the body of the Code or in its Appendix of Definitions." [...] Although McNamee has taken the view that terminological vagueness is not a problem (McNamee 2012) it does pose a problem in relation to legal certainty, and thus to public policy and the idea of a criminal offence.' (Kornbeck & Kayser, appendix C) To us it thus seems highly problematic to lend universality to the 'spirit of sport' and oblige autonomous states to introduce legislation explicitly referring to it, which is exactly what is happening nowadays (e.g. the Kenya example discussed in Kornbeck & Kayser, appendix C).

A further problem concerns the mix of terminology used in the above cited description of the 'spirit of sport' as it appears in WADA's Code. The recent analysis of WADA's current anti-doping policy by Geeraets (2017) is of help here. Geeraets is a specialist of legal theory and his analysis probes WADA's justification of its anti-doping policy. The first justification for WADA's tough stance on doping is the 'spirit of sport' argument. The second is the voluntary consent of the competing athlete to accept WADA's anti-doping measures. With regard to the 'spirit of sport' argument Geeraets convincingly argues that it lacks consistency. None of the listed items can be used to argue non-ambiguously against the use of some doping technology. From a legal perspective this is

[14]See WADC (2015), Fundamental Rationale, p. 14. World Anti-Doping Code 2015. https://www.wada-ama.org/sites/default/files/resources/files/wada-2015-world-anti-doping-code.pdf, accessed May 2018.

highly problematic. Geeraets then also develops an argument against WADA's claim of voluntary consent. WADA curtails the options available to athletes to the extent that the only choice available to them is 'to choose to accept the Code or to end their career' (Geeraets 2017).

We propose to keep criterion two, the health argument, because without a minimum margin of safety, all athletes could (but more importantly some athletes likely would), decide to use substances in excess of reasonable health risks given the extreme stakes in elite sports (Kirkwood 2009). Given the important health risks of some sports it would be of interest to develop a general ethical framework of what can be considered acceptable risk taking in professional sport in general. Now that being an athlete has become a full-time profession for many, general principles with regard to job-related risk taking should be adapted to this particular type of work.

Prudence first

Thus our proposal is to keep only the health risk argument. Initially, anti-doping controls would be maintained in the same way as they exist today, to satisfy those who are sceptic about our proposal. To progress, beginning with the List as it is today, one could start experimenting with removing items one by one while monitoring the outcomes. One could consider any substance for which either health risk and/or performance enhancement are not known. By monitoring outcome, one could if necessary decide to use some cut-off values for some substances or even put them back on the list (see also chapter six). Why would partial the prohibition be better than full prohibition? In the beginning, the system would be as costly, complicated and imperfect as it is today. However, if the List is progressively shortened, one can expect an improvement with time. An important advantage of the proposed change would be that it would gradually take away the strong moralistic view of doping by changing an anti-doping rule violation into what could then rather be seen as a technical error, more akin to other rule transgressions in sport.

Importantly, we also propose that WADA introduces a transparency with regard to the work of its various panels, such as the one deciding what to put on the List, as well as that it publishes its technical documents on doping sample analysis and interpretation. Secrecy is not a good housekeeper for good governance. Finally, we also propose to introduce more democratic principles into anti-doping governance with a larger and elected athlete representation in order to better hear their voices. With the exception of some outspoken individual athletes very little is known about what athletes collectively think about doping. Overbye asked 775 elite Danish athletes from forty different sports about their opinion

on an imaginary scenario of legalised, medically supervised doping. The results show a chequered pattern with 58% interested in trying one of a list of 13 substances and 23% in trying either EPO, anabolic steroids, blood transfusions or growth hormone (Overbye 2018).

Obviously, this outline remains a rough sketch for a relaxation of the anti-doping rule and clearly needs to be further detailed, considering the various subpopulations concerned – not only adult elite athletes but also, for example, minors, amateurs, and special Olympics participants who should be the topic of future work.

Perspectives

In a chapter co-authored with Barbara Broers, titled *'Choosing Between Imperfections'* we wrote:

> 'What can be foreseen over the next decades if the central tenet of the anti-doping movement – eradication of doping – continues to drive a global agenda of surveillance and suppression of doping and doping-like behaviour? We expect that, in the short term, continued pressure from the WADA and the IOC, backed by the international UNESCO convention, will oblige an increasing number of nations to adopt specific anti-doping legislation, especially those who aspire to organise Olympic Games. There is an international tendency to combat doping and related activities like trafficking through criminal law [...], quite akin to what happened in the field of psychotropic drugs, thus criminalising the use, possession, traffic and commerce of doping substances. This development will be accompanied by increasingly repressive measures worldwide. Increasing numbers of citizens will have to comply with compulsory drug testing for an increasingly long list of substances. As mentioned before ordinary non-competitive fitness club members may have to comply with testing procedures for steroids and other illicit drugs, a procedure already introduced in Denmark and considered in several other countries [...]. This may be followed by testing of students for cognitive performance enhancing substances and other drugs and possibly others, like teachers, trainers, coaches, police personnel, etc. [...]. Increased surveillance and testing will lead to increased numbers of convictions with an important burden imposed on the judicial system and the families of the convicted. For simple reasons of stochastic and procedural error frequency, a greater number

> of tests will lead to a greater number of false positives wrongly accusing innocent citizens. The prospect of such a development has worrying characteristics of a dystopia of Orwellian kind. The mentioned compulsory testing of non-competitive gym users in Denmark, applying the WADA code to non-athletes, clearly points in such a direction [...]. It appears paradoxical that gym users, generally conscious about their health and complying with general preventive principles like regular exercise and a healthy diet, making a balanced decision on steroid use to aid them in attaining their aspired body form, are punished for steroid use, while the general population can freely engage in dangerous behaviour combining bad nutrition, lack of exercise, tobacco and alcohol use without much of a constraint'. (Kayser & Broers, 2013)

Are we, in turn, falling into the trap of fearing 'a disaster in the making', as described by Quet (2015)? Perhaps we see things in a too bleak perspective, but given what is already in place (whereabouts, criminalisation of doping, blanket universal anti-doping legislation applicable to the wider society, including the occasional jogger, etc.) and what is asked for (testing coaches, implanting GPS chips in athletes, forensic methods, etc.) this outlook would seem rather realistic. The recent analysis by Dimeo & Møller (2018) concluded that a major crisis is in the making. Anti-doping would seem to constitute a slippery slope towards a potential dystopia – a police state in which large fractions of the population including participants in any organised sport (amateur or elite), students, fitness club members, etc. would be subjected to regular urine and blood controls and run the risk of false positive or negative lab results.

As Jan Tolleneer and I stated in chapter six:

> ' [...] the doping debate reaches beyond sports because it concerns the general human enhancement debate [...]. The conservative standpoint says doping is short changing humanity and defiling human nature. The liberal stance says that improving human performance with technology exemplifies the natural human tendency for seeking out and moving boundaries. The transhumanist movement strongly argues in favour of exploiting technology for the betterment of humanity in general through human enhancement. Surely, prudence would seem required, but "just say no" evidently is not a viable option. Inescapably, human invention impacts the future of humanity in one way or another. Perhaps, sports is a good place to experiment? Are elite athletes modern heroes at the front of human enhancement'? (Kayser & Tolleneer 2017)

The dynamic around the difficult question of how to deal with doping in sport has led to the appearance of two opposing extremes, one asking for more means, the other asking for the liberalisation of doping. Both extreme positions in the doping debate, the pro-liberalisation and the prohibitionist ones, are built on beliefs in ideals. They can be seen as the result of utopian thinking, sprung from utopian minds. The liberalisation position's horizon is a world where autonomous responsible persons use doping in reasonable ways. The prohibitionist position's horizon is a doping-free world where nobody dopes anymore. Intuitively one immediately realises that there is something wrong with both aspirations, they just seem too unrealistic in today's (imperfect) world, and horizons cannot be reached. One expects that both prospects of betterment and striving for perfection, when forcefully pursued, would cause perhaps unintentional but likely unavoidable side-effects.

Nowadays the dream of a 'clean' sport has the overhand and is promoted with such a strong drive that it has a totalitarian ring to it, carrying a risk of spiralling towards dystopian features in a dynamic of what Dimeo labelled the 'dichotomy of "good anti-doping" up against "evil doping" ' (Dimeo 2008). It is not uncommon in the scholarly literature in favour of anti-doping to find hints of utopian thinking[15] Ideals, as models of excellence, of perfection, are drivers of change in an imperfect world. Even though laudable and also necessary, they also carry risk of an excessive agenda-setting in order to realise these ideals with a goal justifies the means stance. An example that some scholars would indeed seem to put (their) ideals above discussion of the actual and potential unintended consequences of the pursuit of such ideals, is Loland and Hoppeler's 2012 article on anti-doping in defense of the 'spirit of sport'. They write: 'Before proceeding, we ought to make clear that we do not address current anti-doping policies and whether or not their organisation and implementation are rational and cost-efficient. Our concern is the normative and scientific background of the position of anti-doping; the very idea that doping is against the "spirit of sport" '. Such a stance, negating or at least trivialising the side-effects of anti-doping contributes to its authoritarian trend. I would agree with Geeraets conclusion from his analysis of WADA's arguments for its strong anti-doping policy, that current anti-doping is ideologic: 'Lastly, we claim that WADA's arguments are not just bad arguments, but should be considered ideological in nature. And indeed it is ideology's ability to distort social reality that is the specific aim of these arguments because, in this way, they can be used to ward

[15]For example, in his defense of the 'spirit of sport' McNamee (2012) writes: 'Though WADA does not say this, I think it better to understand the Spirit of Sport as an ideal. [...] The moral discourse of anti-doping predicated is on the idea that sports are ethical enterprises. And this is rarely seriously accounted for outside sports philosophy. Nevertheless, the idea that doping athletes display deficiencies of character [...] and violate the fair opportunity principle [...] may be thought to underpin an ethical vision of sports'.

off any critical discussion of the Code' (Geeraets 2017).

A fundamental characteristic of utopian ideas is their promise of a final solution to something; in other words, utopias promise perfection. However, the cruel reality of things is that final solutions to many problems, such as doping in sport, cannot be realised. The question then becomes how far, and with what means, will we be satisfied. In a posthumous book, edited by Francis Dunlop, *'The Utopian Mind and Other Papers'*, the philosopher Aurel Kolnai critiqued utopianism as dangerous perfectionism, moving away from plurality and complexity toward a monistic and simplistic view of the world with people in a perfect infallible social order. Kolnai made the point that the promise of perfection, i.e. the imaginary situation where *is* and *ought* have merged, when the possibilities of betterment are exhausted, can lead to a dangerous 'end justifies the means' dynamic to get to that imaginary and illusory goal (Kolnai, 1995; see also review by McKenna, 1996). I agree with Kolnai's arguments but I also acknowledge that there is place and need for ideals and for what some call 'realistic utopias' (Böker 2017). Imagining horizons can contribute to critical and reflective capacity without necessarily slipping into dynamics leading to a new authoritarian force. In their Stanford Encyclopedia of Philosophy online article 'Human Enhancement', Juengst and Moseyman (2016) state that 'Between the extreme positions of prohibition or an open market is a moderate position', arguing that 'interventions capable of being used for enhancements will be inevitably invented and perfected as by-products of biomedical scientific progress, and their social control will have to focus on governing their dangerous, unjust or vicious uses [...] On the one hand, one can try to police and punish unauthorised uses of technology, or alternatively one can focus on protecting the interests of those disadvantaged by those uses.' Choosing practical, even if unstable, ways of dealing with such complex societal problems is not uncommon.

But as Andreas De Block and I stated in Chapter three:

> 'For now anti-doping is asking for the contrary, more means in order to eradicate doping. Recently the CEO of the world association of Olympians suggested to implant a chip into all athletes world-wide [...]. Extension of nootropic drug testing to coaches was recently proposed [...]. This dynamic is akin to the advent of the general 'war on drugs', which was eventually proven to be a miserable and costly failure [...]. We find that modern anti-doping policy itself shows Red Queen like runaway dynamics. It is engaged in a spiraling 'war on doping' that does not and presumably cannot attain its goal, eradication of doping in elite and amateur sport'.

One may want to brush these suggestions away, saying that they are just extreme

sides of a debate that will not be realised, anyways. Still, such a dynamic would seem to correspond to what Kolnai alluded to, and his warnings should perhaps be heeded. To conclude, the proposed imperfection (because steering between two opposing unrealisable perfections), i.e. a progressive relaxation of the anti-doping rule, together with harm reduction measures, must be seen in keeping with the imperfection of humankind. Perhaps that the imperfection of a practical dealing with performance enhancement within boundaries of acceptable risk in sport should be recognised as carrying promise. Paraphrasing Harari (2016) it might in the end allow sport to continue to enthuse us in a rapidly changing world where technology is pushing us beyond what we have been for most of our time on this planet as *homo sapiens* and what we appear to be heading towards, our transformation into *homo deus*.

References

Anderson J (2013) Doping, sport and the law: time for repeal of prohibition? International *Journal of Law in Context* 9(2), 135–159.

Bourdon F, Schoch L, Broers B & Kayser B (2014) French speaking athletes' experience and perception regarding the whereabouts reporting system and therapeutic use exemptions. *Performance Enhancement & Health* (2014) 3:153–158

Borry P, Caulfield T, Estivill X, Loland S, McNamee M, Knoppers BM, WADA Ethics Panel. (2018) Geolocalisation of athletes for out-of-competition drug testing: ethical considerations. Position statement by the WADA Ethics Panel. *British Journal of Sports Medicine*, bjsports–2017–098299–5. http://doi.org/10.1136/bjsports-2017-098299

Boye E, Skotland T, Østerud B & Meyer JN (2017) Doping and drug testing: Anti-doping work must be transparent and adhere to good scientific practices to ensure public trust. *EMBO Reports* 18(3), e201643540–354. http://doi.org/10.15252/embr.201643540

Böker M (2017) The concept of realistic utopia: ideal theory as critique. *Constellations* 24(1), 89-100. http://doi.org/10.1111/1467-8675.12183

Breitsameter C (2017) How to justify a ban on doping? *Journal of Medical Ethics* 43(5), 287-292. http://doi.org/10.1136/medethics-2015-103091

de Hon OM (2016) *Striking the Right Balance : Effectiveness of Anti-Doping Policies*. Thesis. Utrecht University.

Dimeo P (2008) *A History of Drug Use in Sport: 1876-1976.* Routledge, London, UK.

Dimeo P, & Møller V (2018) *The Anti-Doping Crisis in Sport.* Routledge, London, UK.

Engelberg T & Moston S (2012) Public perception of sport anti-doping policy in Australia. *Drugs: Education, Prevention and Policy* 19(1), 84–87. http://doi.org/10.3109/09687637.2011.590556

Fincoeur B, Frenger M, & Pitsch W (2013). Does one play with the athletes' health in the name of ethics? *Performance Enhancement & Health*, 2(4), 182–193. http://doi.org/10.1016/j.peh.2014.08.002

Fry CL (2017) The case for and against harm reduction approaches to drugs in sport. *Journal of Medical Ethics* 43(5), 280–281. http://doi.org/10.1136/medethics-2017-104310

Geeraets V (2017) Ideology, doping and the spirit of sport. *Sport, Ethics and Philosophy* 57(4), 1–17. http://doi.org/10.1080/17511321.2017.1351483

Harari YN (2016) *Homo Deus: A Brief History of Tomorrow.* Penguin Random House, New-York, USA.

Henne K, Koh B & McDermott V (2013) Coherence of drug policy in sports: Illicit inclusions and illegal inconsistencies. *Performance Enhancement & Health*, 1-8, 2, 48–55.

Henning AD& Dimeo P (2017) The new front in the war on doping: Amateur athletes. *The International Journal on Drug Policy* 51:128-136. http://doi.org/10.1016/j.drugpo.2017.05.036

Juengst & Moseley (2016) Human Enhancement: https://plato.stanford.edu/entries/enhancement/, accessed March 2018.

Kazlauskas A (2014) Making Sense of Complex Dynamic Spaces: the Wicked Problem of Doping Control in Sport. In Hasan H (Eds.) *Being Practical with Theory: A Window into Business Research* (pp. 131-138). THEORI, Wollongong, Australia. http://eurekaconnection. les.wordpress.com/2014/02/p-131-138-making-sense-of-complex-dynamic-spaces-theori- ebook_ naljan2014-v3.pdf

Kayser B (2011) On the Presumption of Guilt without Proof of Intentionality and Oher Consequences of Current Anti-Doping Policy. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport.* Routledge, London, UK.

Kayser B & Broers B (2012) The Olympics and harm reduction? *Harm Reduction Journal* 9(1), 33. http://doi.org/10.1186/1477-7517-9-33

Kayser B & Broers B (2013) Anti-doping Policies: Choosing Between Imperfections. In Tolleneer J, Sterckx S & Bonte P (Eds.) *Athletic Enhancement, Human Nature and Ethics : Threats and Opportunities of Doping Technologies* 52, 271–289. Springer Netherlands, Dordrecht, Netherlands. http://doi.org/10.1007/978-94-007-5101-9_15

Kayser B & O'Hare P (2013) Flawed reasoning for testing for recreational drugs in anti-doping. *Performance Enhancement & Health*, 2(2), 68–69. http://doi.org/10.1016/j.peh.2013.08.008

Kayser B & Broers B (2015) Doping and Performance Enhancement: Harms and Harm Reduction. In Møller V, Waddington I & Hoberman J (Eds.) *Routledge Handbook of Drugs and Sport*. Routledge, London, UK.

Kayser B & Møller V (2018) The Anti-Doping Industry Coming of Age: in Search of New Markets. In van de Ven K & McVeigh J (Eds.) *Human Enhancement Drugs*, Routledge, London, UK. In press.

Kayser B & Tolleneer J (2017) Ethics of a relaxed antidoping rule accompanied by harm-reduction measures. *Journal of Medical Ethics* 43(5):282-286. http://doi.org/10.1136/medethics-2015-102659

Kelner M (2017) Call for Athletes to Be Fitted with Microchips in Fight Against Drug Cheats. The Guardian. http://www.theguardian.com/sport/2017/oct/10/call-for-athletes-to-be-fitted-with-microchips-fight-against-drug-cheats, accessed January 2018.

Kirkwood K (2009) Considering harm reduction as the future of doping control policy in international sport. *Quest* 61(2), 180–190. http://doi.org/10.1080/00336297.2009.10483609

Kolnai A (1995) *The Utopian Mind and Other Papers* Dunlop F (Ed.) Athlone Press, London, UK.

Kontro TK, Sarna S, Kaprio J & Kujala UM (2018) Mortality and health-related habits in 900 Finnish former elite athletes and their brothers. *British Journal of Sports Medicine* 52(2), 89–95. http://doi.org/10.1136/bjsports-2017-098206

Kornbeck J (2015) The EU, the revision of the World Anti-Doping Code and the presumption of innocence. *The International Sports Law Journal* 15(3-4), 1–27. http://doi.org/10.1007/s40318-015-0082-8

López B (2011) The invention of a "Drug of mass destruction": Deconstructing the EPO Myth. *Sport in History* 31(1), 84–109.

http://doi.org/10.1080/17460263.2011.555208

López B (2012) Creating fear: The social construction of human Growth Hormone as a dangerous doping drug. *International Review for the Sociology of Sport* 48(2), 220-237. http://doi.org/10.1177/1012690211432209

López B (2013) Creating fear: the "doping deaths," risk communication and the anti-doping campaign. *International Journal of Sport Policy and Politics* 6(2), 213-225. http://doi.org/10.1080/19406940.2013.773359

McNamee MJ (2012) The spirit of sport and the medicalisation of anti-doping: Empirical and normative ethics. *Asian Bioethics Review*, 4(4), 374–392.

Mauron A (2011) Le dopage et (est??) l'esprit du sport. *Les Cahiers Du Centre Georges Canguilhem*, 5(1), 125–139. http://doi.org/10.3917/ccgc.005.0125

Mavromati D (2012) Indirect detection methods for doping from a legal perspective: the case of the Athlete Biological Passport. *International Journal of Sport Policy and Politics* 6(2), 241-258.
http://doi.org/10.1080/19406940.2012.698999

Mazanov J (2016) Beyond antidoping and harm minimisation: a stakeholder-corporate social responsibility approach to drug control for sport. *Journal of Medical Ethics* 42(4), 220–223. http://doi.org/10.1136/medethics-2015-102661

McKenna E (1996) Review of 'The Utopian Mind and Other Papers' by Aurel Kolnai and Francis Dunlop. *Utopian Studies* 7(1), 124–126. http://doi.org/10.2307/20719486

Moston S & Engelberg T (2016) *Detecting Doping in Sport*. Routledge, London, UK.

Murray T (2018) *Good Sport*. Oxford University Press, New York, USA.

Overbye M & Wagner U (2013) Between medical treatment and performance enhancement: An investigation of how elite athletes experience Therapeutic Use Exemptions. *International Journal of Drug Policy* 24(6), 579-588. http://doi.org/10.1016/j.drugpo.2013.03.007

Overbye M (2018) An (un)desirable trade of harms? How elite athletes might react to medically supervised "doping" and their considerations of side-effects in this situation. *International Journal of Drug Policy*, 55, 14–30. http://doi.org/10.1016/j.drugpo.2017.12.019

Paoli L & Donati A (2014) *The Sports Doping Market*. Springer Science & Business Media, New York, USA. http://doi.org/10.1007/978-1-4614-8241-3

Pluim B (2008) A doping sinner is not always a cheat. *British Journal of Sports Medicine* 42(7), 549–550.

Quet M (2015) It will be a disaster! How people protest against things which have not yet happened. *Public Understanding of Science* 24(2), 210–224. http://doi.org/10.1177/0963662514533752

Rodenberg RM & Holden JT (2017) Cognition enhancing drugs ('nootropics'): time to include coaches and team executives in doping tests? *British Journal of Sports Medicine* 51(18), 1316–1316. http://doi.org/10.1136/bjsports-2015-095474

Room R & Reuter P (2012) How well do international drug conventions protect public health? *The Lancet* 379(9810), 84–91. http://doi.org/10.1016/S0140-6736(11)61423-2

Stamm H, Lamprecht M, Kamber M, Marti B, & Mahler N (2008) The public perception of doping in sport in Switzerland, 1995 – 2004. *Journal of Sports Sciences* 26(3), 235–242. http://doi.org/10.1080/02640410701552914

Sumner C (2017) The spirit of sport: the case for criminalisation of doping in the UK. *The International Sports Law Journal* 9(2), 1–11. http://doi.org/10.1007/s40318-016-0103-2

Thevis M, Kuuranne T & Geyer H (2017) Annual banned-substance review: Analytical approaches in human sports drug testing. *Drug Testing and Analysis* 62, 11. http://doi.org/10.1002/dta.2336

Van Reeth D & Lagae W (2013) Public opinion on doping in cycling: differences among population groups. *Contemporary Research in Sports Economics. Proceedings of the 5th ESEA Conference* http://dx.doi.org/10.3726/978-3-653-04103-3

Vangrunderbeek H & Tolleneer J (2011) Student attitudes towards doping in sport: Shifting from repression to tolerance? *International Review for the Sociology of Sport* 46(3), 346–357. http://doi.org/10.1177/1012690210380579

Waddington I, Christiansen AV, Gleaves J, Hoberman J & Moller V (2013) Recreational drug use and sport: Time for a WADA rethink? *Performance Enhancement & Health* 2(2), 41-47. doi:10.1016/j.peh.2013.04.003

Appositions

Apposition 1

Seen from a public health perspective, an escalator in juxtaposition to a staircase in the public space is an error of design.[1]

Apposition 2

Proposing optional training to university professors to improve professionalisation only partly corrects the lack of formal teaching and management training requirements for tenure.[2]

Apposition 3

Virtual reality is real.[3]

[1] Vanuit een volksgezondheidsoogpunt gezien is een roltrap pal naast een trap in de publieke ruimte een ontwerpfout.

[2] Het aanbieden van optionele training aan hoogleraren om de professionalisering te verbeteren, corrigeert slechts ten dele het ontbreken van formele onderwijs- en managementtrainingseisen voor benoeming.

[3] Virtuele realiteit is echt.

Short CV

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Born the 5th of January 1956 in Utrecht, The Netherlands

Married, two children (‘94 and ‘96)

Swiss national (Chêne-Bourg, GE)

Current positions

Full professor at the Faculty of Biology and Medicine, Director of the Institute of Sports Sciences, University of Lausanne, Switzerland

Full professor at the Faculty of Medicine, University of Geneva, Switzerland

Training

1977-1986 Medicine, Faculty of Medicine, University of Amsterdam, Netherlands, 1983 MD, clinical residencies, 1986 Licenced Physician

1994 PhD in exercise physiology at the Free University of Amsterdam, Netherlands

2000 Fellow at the Harvard-Macy Institute of Harvard Medical International, Boston, USA

2016 Fellow at the Metaforum, Hollands College, KULeuven, Leuven, Belgium

Publications

>250 articles in peer reviewed journals and >20 chapters in books H-index: 48; I10-index: 132; total citations; 8035 (May 2018, Google Scholar)

Publications on doping and anti-doping

In reverse chronological order (included in this thesis and its appendices**)*

*Kayser B & De Block A (2018) What if we relaxed the anti-doping rule: towards a red queen effect? *Journal of the Philosophy of Sport*. In revision.

**Kayser B & Kornbeck J (2018) Do public perception and the 'spirit of sport' justify the criminalisation of doping? A reply to Claire Sumner. *International Sports Law Journal*. Pre-publication online. https://doi.org/10.1007/s40318-018-0120-4

**Kayser B & Møller V (2018) The Anti-Doping Industry Coming of Age: in Search of New Markets. In van de Ven K & McVeigh J, eds., *Human Enhancement Drugs*, Routledge, London, UK. In press.

*Kayser B & Tolleneer J (2017) Ethics of a relaxed anti-doping rule accompanied by harm-reduction measures. *Journal of Medical Ethics* 43:282.

Kayser B & Broers B (2016) La Politique Anti-Dopage: Regards Croisés. In Hauw D, ed., *Psychologie du Dopage*. De Boeck, Louvain-la-Neuve, Belgium.

Kayser B (2016) From Zero-Tolerance towards Risk Reduction of Doping: Learning from the Failure of the War on Drugs? In van den Auweele Y, ed., *The Future of Sport Imagined*. Routledge, London, UK.

*Kayser B & Broers B (2015) Doping and Performance Enhancement: Harms and Harm Reduction. In Møller V, Waddington I, & Hoberman J, eds., *The Routledge Companion to Sport and Drugs*. Routledge, London, UK.

**Bourdon F, Schoch L, Broers B & Kayser B (2014) French speaking athletes' experience and perception regarding the whereabouts reporting system and therapeutic use exemptions. *Performance Enhancement & Health* 3(3):153-158.

Kayser B & O'Hare P (2013). Flawed reasoning for testing for recreational drugs in anti-doping. *Performance Enhancement & Health* 2(2):68–69.

Kayser B & Broers B (2012) The Olympics and harm reduction? *Harm Reduction Journal* 9(1):33.

Kayser B & Broers B (2012) Anti-Doping Policies: Choosing between Imperfections. In Tolleneer J, Bonte P & Sterckx S, eds., *Athletic Enhancement, Human Nature and Ethics. Threats and Opportunities of Doping Technologies (The International Library of Law, Ethics, and the New Medicine)* Springer, Berlin, Germany.

*Kayser B (2011) On the Presumption of Guilt without Proof of Intentionality and other Consequences of Current Anti-Doping Policy. In McNamee M & Møller V, eds., *Doping and Anti-Doping Policy in Sport*, Routledge, London,

UK.

Kayser B (2011) La politique antidopage: un dilemme éthique. *Les Cahiers du Centre Georges Canguilhem*, Presses Universitaires de France, 1-5:107-123.

Kayser B (2010) Verbesserung der Leistung: vom Antidoping zur Doping Regulation. *Suchttherapie* 11:35-38.

Kayser B (2009) Anti-dopage: promesse utopique, avenir dystopique? *Dépendances* 37:20-22.

Kayser B (2009) Current Anti-Doping Policy: Harm Reduction or Harm Induction? In Møller V, McNamee M, & Dimeo P, eds., *Elite Sport, Doping and Public Health*. University Press of Southern Denmark, Odense, Denmark.

Kayser B & Smith A (2008) Globalisation of anti-doping: the reverse side of the medal. *British Medical Journal* 337:a584.

*Kayser B, Mauron A & Miah A (2007) Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8:2.

Kayser B, Mauron A & Miah A (2005) Viewpoint: Legalisation of performance-enhancing drugs. *The Lancet* 366 Suppl 1:S21.

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Conflict of Interest Statement

There are no relevant conflicts of interest to report.

Appendix A

French speaking athletes' experience and perception regarding the whereabouts reporting system and therapeutic use exemptions

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Abstract

The introduction of two anti-doping measures by the World Anti-Doping Agency (WADA) directly affect athletes lives: obligatory whereabouts reporting with the Anti-Doping Administration and Management System (ADAMS), and recorded applications for Therapeutic Use Exemption (TUE). French-speaking elite athletes (N=69) from France, Belgium and Switzerland responded to a web-based questionnaire about their perceptions and experiences under these two measures. The results showed a strong ambivalence towards the whereabouts system. Though 94% considered it necessary, and accepted it as part of an athlete's duties, 34% considered that it infringed too much on their private life, 54% felt that it reduced the pleasure of being an athlete, 74% felt to be under surveillance, 54% found it too time-consuming, 57% encountered technical hurdles, and 58% perceived its application between different countries and sports as unequal and unfair. Many athletes did not like the testing procedures and more than half felt that it causes anxiety. Trust in the system's capacity to detect doping in athletes was partial (83% of athletes under the whereabouts system trusted it, and 60% of athletes not under the system trusted it). Concerning the management of TUEs, 49% of athletes had low trust in their management by authorities, 47% suspected abuse by fellow athletes and 46% had refrained from medically justified treatment. Our findings suggest considerable dissatisfaction with the whereabouts system and TUE among French-speaking athletes. We conclude that there is a need to improve on the above aspects in order to increase athletes' satisfaction and adherence to WADA's anti-doping policies.

Introduction

Vocal anti-doping sentiment started half-heartedly in the 1960s, but was not accompanied by serious anti-doping measures, and doping tests were merely symbolic (Dimeo 2008; Houlihan 2004). After the Festina affair in 1998, the International Olympic Committee fostered the idea of harmonizing, globalizing and intensifying anti-doping efforts. This led to the inception of the World Anti-Doping Agency (WADA) in 1999. Since then, athlete surveillance for anti-doping purposes has progressively been intensified. WADA's anti-doping policy is outlined in the World Anti-Doping Code (the Code), which defines what doping is and what anti-doping measures are to be used to prevent doping (WADA 2015).

One important aspect of modern anti-doping is the whereabouts rule, introduced in 2004 to facilitate out-of-competition urine and/or blood controls with no advance notice. This rule obliges a pool of elite athletes, selected by their

international federation or national anti-doping organization, to report their whereabouts. The athletes have to give precise information about their home address, training times and venues, training camps, travel plans, competition schedule and any disability which might affect the control process (WADA 2015).

To aid in the gathering of localisation data, WADA created in 2005 the Anti-Doping Administration and Management System (ADAMS), a web-based database management system, with four functions. First, the whereabouts reporting, allowing athletes to submit and modify their whereabouts information from any place in the world with an Internet connection. Second, an information centre where the various laboratory results, therapeutic use exemptions (TUE), and violations of anti-doping rules are stored. Third, a database enabling the planning, coordination and initiation of controls, avoiding repetition. The fourth function facilitates online management of TUE requests, and online notification to those involved in the process. In 2009, the whereabouts system was revised and the obligations for athletes selected in the pool were extended. The main changes obliged athletes to provide more detailed information on where they will train, work, compete or conduct any regular activity in the upcoming three months, and to indicate their availability for urine and/or blood sampling one specific hour per day, at a specific location (WADA 2015). Any missed control - because the athlete failed to give the correct whereabouts information or was not present at the location he/she was supposed to be - is subject to a warning. Three warnings in a period of 12 consecutive months (reduced from 18 months in 2015) constitute a doping offence, punishable by a ban from competition for up to two years. This is also the case for an athlete with a 'true' positive control.

The obligation of elite athletes to provide information about their whereabouts on a daily basis is a controversial and debated element of the Code. It has been criticized by researchers, well-known athletes and athlete's organizations (Kayser, Mauron & Miah 2007; Møller 2011; Overbye & Wagner 2014; Waddington 2010). Furthermore, a few studies have investigated athletes' perception and experience with the whereabouts system in Norway (Hanstad, Skille & Thurston 2009; Hanstad, Skille & Loland 2010), the Netherlands (Valkenburg, de Hon & van Hilvoorde 2014), in Denmark (Overbye & Wagner 2014) and with TUEs in Denmark (Overbye & Wagner 2013). These studies suggest that elite athletes in principle approve of anti-doping testing and accept the whereabouts rules as part of their duty, but are critical of the whereabouts system's managerial aspects. Waddington (2010, p. 269) noted that 'given that athletes are commonly considered to be the main beneficiaries of anti-doping policies, both in terms of protecting their health and in terms of ensuring a level playing field for all athletes, WADA might have expected that athletes generally [...] would

have welcomed the new whereabouts system as a step towards achieving those goals.' However, these studies suggest that elite athletes' perceptions of the whereabouts system are ambivalent. This could be an obstacle to furthering anti-doping efforts, as athletes need to be engaged in the process.

The aim of our study was to investigate the perception of current anti-doping procedures, specifically the whereabouts system and TUE management, among elite French-speaking athletes, and to compare their opinion with those expressed in aforementioned studies. We invited a convenience sample of French-speaking elite athletes with and without whereabouts obligations to reply to an anonymous web-based questionnaire, in order to investigate their opinion on current anti-doping procedures, their attitudes, beliefs and trust in the whereabouts system. Athletes who belonged to a testing pool were asked about their experience with the whereabouts system. We further investigated how athletes use and perceive TUE. We used an existing questionnaire to enable comparison of results with a Danish study (Elbe & Overbye 2014; Overbye & Wagner 2013; 2014). We aimed at contributing more information around athletes' perceptions of the TUE-system as only one other study has explored this topic, and to fill in some of the gaps in knowledge around French speaking athletes' responses to the whereabouts system, experiences during a test, and TUEs.

Methods

Procedure

We used an online questionnaire based on the questionnaires from the Danish study on whereabouts (Overbye & Wagner 2014), TUEs (Overbye & Wagner 2013) and athletes' experiences during a urine doping control (Elbe & Overbye 2014). The questionnaire was obtained from the authors of the Danish study and translated into French. We tested the questionnaire first with eight athletes in order to verify that the questions conveyed the correct meaning and made some necessary changes. Questions were formulated in a neutral way. No specific technique to quantify response bias was used. Under Swiss legislation, given the nature of the study, formal ethical approval was not necessary. Athletes were free to participate and the questionnaire was anonymous.

Questionnaire

The questionnaire included 28 questions grouped into seven themes: Opinion on current anti-doping procedures; Experience with the whereabouts system for

athletes in the whereabouts pool; Attitudes and beliefs about the whereabouts system; Level of trust in the whereabouts system; Experience with TUE; Influence of TUE regulations on any use of prohibited substances permitted by a TUE; Trust in the way official bodies managing TUEs. Answers were given on a four-point scale ranging from 'Corresponds completely' to 'Does not correspond at all'. In addition, there was an 'I do not know' category. Each theme allowed for comments to be submitted, and a final open question encouraged suggestions for improvement of current anti-doping controls.

Participants

Invitations to participate in the survey and to fill out the questionnaire were sent out to French-speaking elite athletes from different countries (France, Switzerland, Belgium; and medium-size European countries allowing comparison with other studies) via e-mail and by word of mouth, using contacts in national sports federations, sports physicians, physiotherapists, coaches, trainers and athletes. We targeted athletes aged over 16 years who had been tested for doping before and/or who belonged to a registered testing pool. We counted on a 'snowball effect' to gather additional participants. The data collection started on February 3, 2014 and ended on May 11, 2014. Several email reminders were sent.

Data-analysis

Findings were presented in terms of descriptive statistics, reporting the percentage of athletes agreeing or disagreeing with specific statements. Free comments and answers to the open questions were transcribed as quotes and were used to complement or reinforce the quantitative results. They are presented as illustrative comments of the types of issues preoccupying the athletes, and not as representative of the group of respondents.

Results

We recruited 69 athletes, 28 of them women (41%). Because of our recruitment strategy we could not calculate a response rate. Half of the respondents belonged to the registered testing pool (n=35). The respondents chose from a list of age ranges: 17-18 yrs (n=3), 18-23 yrs (n=26), 24-30 yrs (n= 30) and >30 yrs (n=10). 49% were French (n=33), 43% Belgian (n=30), and 9% Swiss (n=6). 59% (n=40) of the athletes were involved in an endurance sport (road cycling,

mountain biking, athletics, swimming, ski-mountaineering or cross-country skiing), 22% (n=15) a muscular or sprint sport (weight-lifting, kayaking, tennis, rowing and sailing), 9% (n=6) a martial sport (judo, wrestling), 6% (n=4) a team sport (basketball, volleyball) and 4% (n=3) a precision sport (fencing, shooting, archery). In our study 48% (n=33) of the respondents declared having been tested between 1 to 3 times, 20% (n=14) 4 to 6 times; and 10% (n=7) more than 6 times in the last year. 7% (n=5) of respondents declared never having been tested and 14% (n=10) having already been tested but not in the last year.

(1) Opinion on current anti-doping procedures

In our sample almost all the athletes (94%, n=65) indicated that anti-doping tests are necessary; two did not agree while another two answered 'I don't know'. Half of the athletes (n=35) expressed feeling anxious during anti-doping controls, even if they had not taken any prohibited substance, 45% (n=31) did not feel anxious, 4% (n=3) indicated 'I don't know'. 33% (n=23) felt that belonging to the pool of tested athletes is a compliment, 39% (n=27) did not and 28% (n=19) indicated 'I don't know'. Being subjected to anti-doping controls at home was considered to be intrusive by 33% (n=23), 39% (n=27) did not find this intrusive and 28% (n=19) indicated 'I don't know'. It is important to note that the obligation to provide urine samples with a direct witness was found embarrassing by 56% (n=39) of athletes. 34% (n=23) did not find it so, while 10% (n=7) indicated 'I don't know'.

(2) Experience with ADAMS (n=35)

More than half of the athletes belonging to the registered testing pool (54%, n=19) felt that they spent too much time filling out their whereabouts. Belonging to the pool of tested athletes gave 74% (n=26) the impression of being under surveillance, while 26% (n=9) did not feel so. A majority of the athletes belonging to the registered testing pool (91%, n=32) were afraid to receive a warning for not being at the declared location upon an unannounced control. 54% (n=19) of athletes felt that belonging to the pool reduced their enjoyment of being an elite athlete; and 9% (n=3) indicated 'I don't know'. The majority of athletes (57%, n=20) reported technical problems or not understanding how to enter data into the system, while 33% (n=15) did not.

(3) Attitudes and beliefs concerning the whereabouts reporting system (n=35)

Over half of the athletes of the registered testing pool (57%, n=20) considered the whereabouts rules to be unequally implemented in the world, 33% (n=12) did not think so, and 9% (n=3) indicated 'I don't know'. 71% (n=25) perceived that entering data into the whereabouts reporting system is just another duty amongst others, 29% (n=10) did not agree. A large majority of the athletes (83%, n=29) agreed that a whereabouts reporting system is necessary to ensure a clean sport.

(4) Athletes' confidence in whereabouts implementation

Of the athletes, 57% (n=39) felt that there is a lack of information on the anti-doping system. There was no significant difference between athletes in the registered testing pool and those without whereabouts obligation. 77% of the athletes not belonging to the registered testing pool (20/26) thought management varies depending on the country in which the controls are done, and this figure rose to 82% (18/22) for those who had an experience with ADAMS. Note that 29% (n=20) of athletes said they had no idea about the anti-doping organisation in other countries. We asked the athletes if they expected that actively doping athletes belonging to the registered testing pool would be tested positive sooner or later. Just over half (54%, n=37) thought so. Still, a majority of our French-speaking athletes expressed confidence in the system (83% of athletes belonging to the registered testing pool and 60% of those not).

(5) Experience with TUE

Less than half (46%, n=32) of the athletes reported that they had at least refrained once from using medically justified pharmacological treatment in order to not have to apply for TUE. 20% (n=14) never had to do this, 4% (n=3) indicated 'I don't know'. For 29% (n=20) the dilemma had not presented yet. Nearly half of the athletes (49%, n=34) claimed not to need TUEs to compete on fair terms with other athletes in competitions, while 16% (n=11) claimed they had to use TUE to be on par with others. 41% (n=28) of the athletes felt that TUEs are slightly illegal, 35% (n=24) did not feel so. Of those who had been granted a TUE, 18% (n=6) indicated to have received comments from fellow athletes that TUEs are a form of cheating, 70% (n=23) had not and 12% (n=4) did not know; 28% (n=9) of them perceived it as being necessary to compete on equal terms with other athletes.

(6) Influence of regulations on the use of prohibited substances permitted with a TUE

Only two athletes had experienced rejection of an application for a TUE. To evaluate the importance of the TUE regulations on the use of prohibited substances we asked the athletes, as a hypothetical question, whether they would likely take a substance without a medical reason if they could obtain a TUE. 46% (n=32) answered that it would not have an influence on their final decision, but 20% (n=14) considered it would be extremely important.

(7) Trust in the authorities' management of TUE

Almost half of the athletes (49%, n=34) thought that other athletes in their sport are granted TUEs without medical justification; 22% (n=15) did not think so. 48% (n=33) believed that athletes in their discipline might abuse TUEs. 18% (n=12) did not know and 35% (n=24) declined to give their opinion. 70% (n=48) of athletes thought that it is unacceptable to have a TUE without medical justification. 19% (n=13) found it acceptable under certain conditions (not-specified). Similarly, 72% (n=50) did not accept excessive use of treatment in relation to justified medical prescription. 9% (n=6) accepted it under certain conditions and 3% (n=2) accepted it.

Discussion

We studied the perception and experience of the implementation of WADA's whereabouts and TUE anti-doping rules in a convenience sample of 69 French-speaking elite athletes, half of them with whereabouts obligations. There were two main findings. First, there was considerable dissatisfaction with the current whereabouts reporting system in several aspects: the infringement on private life, a perceived lack of equality in testing, and the personal experience of life as an athlete. Second, the athletes' perception and experience with TUE clearly indicated considerable dissatisfaction and ambivalence, strongly questioning present TUE management. Though the participants agreed on the necessity of doping controls, our results also clearly indicate ambivalence between the acceptance of the system for reasons of necessity and its intrusive nature. As commented by an athlete in our sample, who previously belonged to the registered testing pool: 'Finally they leave me alone!'.

Perception, belief and experience with obligation of whereabouts

There were similarities with the Danish study (Overbye & Wagner 2014) concerning the perceived necessity of anti-doping controls (Danish study 84%, our study 94%). Both groups also agreed that providing whereabouts data is part of one's duty as an elite athlete (Danish study 83%, our study 71%). These results corroborate earlier reports suggesting that in general athletes are in favour of anti-doping control (Sas-Nowosielski & Świątkowska 2007; Striegel, Vollkommer & Dickhuth 2002).

Though a majority of athletes declared acceptance of doping controls as a necessity, overall negative perceptions about its implementation prevailed. In our study, three-quarters of the athletes belonging to the pool with whereabouts obligations had the impression of being under surveillance and more than half found that it negatively impacted on their pleasure of being an elite athlete. One of our athletes suggested 'They could phone us 30 minutes or one hour before a control and fix a place to meet and stop fixing a mandatory slot of 60 minutes, because sometimes training sessions change and it is difficult to warn them at the last minute. Continue reporting where one sleeps, and the training weeks. This would mean fewer breaches and would be easier to manage by the athlete'. Danish athletes reported quite similar impressions (40% felt under surveillance and 41% experienced a decrease in the joy of being an elite athlete when complying with whereabouts obligations) (Overbye & Wagner 2014) and 25% of Norwegian athletes also considered that the whereabouts obligation negatively impacted their life as an elite athlete (Hanstad *et al.* 2009). Thus, the feeling that the whereabouts system had a negative impact on everyday life and privacy was relatively strong among French-speaking athletes. This might explain why only 28% of our respondents felt honoured to belong to the pool of elite athletes selected for controls testing whereas 77% of the Danes felt honoured. Other factors may also have played a role. The recruiting procedure of the study might have encouraged more athletes who are critical of the whereabouts reporting system to participate in the survey than the athletes satisfied with it.

We further found that being subjected to anti-doping controls at home was considered to be intrusive by one third of the respondents. One of them argued for 'More frequent tests during competitions and less testing at the athlete's home'. In the Danish study, 24% felt that the home tests had a negative effect on their private life. Those findings are consistent with a study in Dutch athletes, showing clear dissatisfaction with the whereabouts system in terms of physical privacy (Valkenburg *et al.* 2014). Hanstad *et al.* (2009) made similar observations in Norwegian athletes and showed that the intrusive nature of the

actual whereabouts system led to some athletes developing negative attitudes towards anti-doping efforts (Hanstad *et al.* 2010). Our study also revealed that the obligation to provide urine samples with a direct witness was considered to be embarrassing by more than half. This feeling was somewhat less strong among Danish athletes as only 15% of them felt that their personal integrity was violated because someone is watching them urinate (Elbe & Overbye 2014). Overall, our results are consistent with other publications and show that the whereabouts system is seen as an intrusion to personal freedom and infringing on athletes' civil liberties (Waddington 2010), and for having a potential dehumanizing and counter-productive nature (Møller 2011). This could be an obstacle to optimal anti-doping surveillance, as athletes themselves need to be engaged in this process. Furthermore, a majority (57%) reported technical problems or problems in understanding how to enter data into the whereabouts system. One of the athletes commented: 'They should explain more clearly to us how to use ADAMS. We receive a letter with some explanations and if we have questions, we have to send them by email. No one ever explained to us personally how to fill in our details'. Other studies, such as the one conducted by Hanstad and al. (2009) also show that athletes (35% of those having received a warning) face technical problems that prevented them from updating their whereabouts information. This suggests that the system's user-interface could be improved in order to increase satisfaction among athletes. Another important issue raised by the athletes in our study, the same raised by the Danish (Overbye & Wagner 2014) and Norwegian athletes (Hanstad *et al.* 2009), was the perception of inequality of testing and lack of harmonisation between countries. In our study 82% of those having had an experience with the whereabouts system perceived the implementation of the whereabouts system around the world to be unfair, similar to the result of the Danish study (95%). 20% of Danish athletes felt an injustice due to this disharmony, compared to 58% of French-speaking athletes. Norwegian (Hanstad *et al.* 2009) and British athletes (Waddington 2010) also felt the system was unfair because it is not implemented equally in all countries. In our study this perception of inequality was even perceived within the same country, as illustrated by the comment from a Belgian athlete: ' [...] in Belgium a French-speaking athlete cannot be tested at home if he lives in the Flemish area and vice versa: this is absurd and doesn't make sense'. There are effectively differences in the implementation of the WADA Code in the three language regions of Belgium. The report 'Implementation of the WADA Code in the European Union' (Siekmann & Soek 2010) mentioned that two of the Belgian National Anti-Doping Organisations (those of the German community and of the 'joint communities commission') were not in compliance with the code, whereas the Flemish and French Communities were. Differences between countries in terms of how key aspects of WADA policy are implemented have been reported before (Hanstad & Loland 2005); these points might have impacted our data as

our study included athletes from different countries.

To conclude on this point, our French-speaking athletes clearly voiced their dissatisfaction with the current whereabouts system. As one of our athletes suggested: 'Another, less restrictive, geo-localisation system should be implemented, to find out about training sessions, competitions via the federation [...] localising my mobile phone [...]'. Nevertheless, in our study a majority of the athletes expressed trust in the system's capacity for detecting the use of prohibited substances or methods, whether they belonged to the testing pool or not. This was not the case in Danish athletes, among whom it was observed that the distrust in the whereabouts system seemed to increase once they had personal experience with the system (Overbye & Wagner 2014).

Attitudes and beliefs on TUE

The principle of TUE is to allow the use of certain medications that are on the list of forbidden substances in sport, when justified by compelling medical reasons. As such, this principle seems justified, allowing athletes to profit from best practice medical care. However, an elite athlete's objectives may encourage him/her to ask for a TUE in order to compensate for any deficit, to quicken the healing of an injury, or to enhance performance. Our study enabled us to illustrate beliefs, motivations and environmental factors influencing the understanding and assumptions of these behaviours. We found, similarly to the Danish study (Overbye & Wagner 2013), that a large number of athletes believe that many of their opponents use forbidden substances under the 'excuse' of TUE. We also found that only 18% of the French-speaking athletes reported to have received comments that their TUE was a form of cheating, compared to 25% of Danish subjects.

Our French-speaking athletes felt uneasy about the way TUE is regulated and used. Many of them had even refrained from using medicines from the list, even though they had a therapeutic need, because they did not want to apply for a TUE (46%): 60% were French athletes, 31% Belgian and 9% Swiss. One athlete commented: 'It takes too long to obtain'. Only a few Danish athletes (7%) faced a similar situation (Overbye & Wagner 2013). The majority of the Danish athletes (85%) who had obtained a TUE perceived it as being necessary to compete on equal terms with other athletes; whereas in our study of French-speaking athletes only 28% of those who obtained a TUE declared so. Overall, it would appear that the Danish athletes had a different experience with TUE than French-speaking athletes. Taken together, these findings suggest that the perception and experience of TUE among athletes is suboptimal and differs between countries.

Thus, our study shows that some athletes suffer from finding it difficult to obtain the medication they need and from feeling that other athletes misuse the TUE system to receive medication on the list of prohibited substances. This shows distrust in TUE administration and suggests that TUE management should be improved in order to better meet the expectations of the athletes. Several of our study respondents also submitted comments indicating doctors had insufficient knowledge about authorised substances and the means to enable athletes to benefit from them: '[. . .] doctors do not always know if the substances they prescribe are allowed. It's still a long way to find out about it and not take any risk'. Another athlete proposed to have two or three randomly selected doctors attesting to the justification of a certain medication. Overall our findings suggest that the TUE rules are possibly not transparent enough and doctors are not sufficiently trained.

Imperfections and future perspectives

Our results show that the application of the whereabouts reporting system led to a great deal of dissatisfaction and reinforces the notion that the implementation of anti-doping policies requires improvement. First, better harmonisation and standardisation of the system between (and even within) countries is a recurrent wish of athletes. As one athlete commented: 'Sometimes the number of anti-doping controls is not the same in all countries. I do athletics and between two different countries, there is a huge difference: thousands of controls in France, a hundred in another, even when taking into account the size of the country'. Second, some elite athletes also call for better management of the ADAMS programme and a change in some of the whereabouts procedures: 'Find an alternative to the present working of ADAMS. Like a watch or geo-localisation bracelet, or only having to indicate one hour per day in ADAMS'. Furthermore, there is an impression of a lack of information about the detection procedures, inclusion in the pool, awareness of both authorised and prohibited substances: 'More information on drugs one can use outside of competition to be able to treat oneself correctly [. . .] . I only found out last year that there are certain drugs that I could take to treat myself outside of competitions'; 'How are the pools of athletes defined and on what basis? I have been part of it since I was 16 as a VTT competitor (Olympic cross country) but now that I am doing VTT downhill I haven't heard about it any more'. Finally, we found that the French-speaking athletes have little trust in the management of TUE by the authorities, which could affect the prevalence of misuse of TUE. One particular concern is that a large number of athletes consider that TUEs are misused. This could lead to a 'false-consensus' effect (Dunn, Thomas, Swif, & Burns 2012; Ross, Greene & House 1977). As athletes believe that other athletes are

misusing TUEs, they may become prone to start misusing TUEs themselves and this could create a vicious circle encouraging a culture of TUE misuse (Moston, Engelberg & Skinner 2015; Petróczi, Mazanov, Nepusz, Backhouse & Naughton 2008). It follows that the anti-doping authorities must improve the TUE system and train the professionals delivering TUEs, as well as the athlete's team. The trust elite athletes have in the system might influence their adherence to the programme.

Limitations and strengths

Our study had several limitations. First, the sample size of our group was small; the sample size in the Danish study was much larger. Second, selection bias cannot be excluded in our sample, since we recruited the athletes through contacts and then through a snowball effect and multiple reminders. Also, our recruitment method did not allow us to calculate a ratio of responses to questionnaires sent out. Thus the sample is not necessarily representative of all elite French-speaking athletes. This is all the more the case as athletes who had negative experiences or challenges with the whereabouts system might have been more inclined to reply to the survey. Third, response bias cannot be excluded. The truthfulness of the responses by the athletes could have been influenced by the answer that they thought we were expecting or because of the social desirability bias. The study's strengths are the following: it is one of few studies exploring the experiences to and perceptions of anti-doping as provided by the elite athletes themselves, the first one amongst elite French-speaking athletes, and the questionnaire had already been used in a Danish study, allowing comparison of results. It thus contributes knowledge around athletes' perceptions of the TUE-system as only one other study has explored this topic; and finally it filled some gaps in the knowledge around French-speaking athletes' responses to the whereabouts system, their experiences during a doping-test, and the TUE system.

Conclusions

Despite the limitations of this study, it supports a growing body of evidence on elite athletes' experience and perception with the whereabouts obligations, and the management and use of TUEs, suggesting potential for improvement of WADA's anti-doping policies. It shows ambivalent views on anti-doping: in spite of the fact that most of the responding athletes agree about the necessity for an anti-doping system and believe in its efficiency. Many athletes with personal experience of the whereabouts obligations find it has a negative impact

on their life as an athlete, due to the necessary time taken to report their whereabouts and technical problems encountered with data-entry, the feeling of being monitored, the anxiety it creates, and the intrusion into their private lives. In addition, there is the important issue of dissatisfaction amongst the athletes around the lack of harmonisation of the whereabouts system in various countries and sports disciplines. Several athletes reported to have refrained from medically justified TUE, while many athletes believed that TUEs are misused. We recommend regularly surveying a larger collective of elite athletes from different countries to acquire more representative conclusions on their experiences and perceptions. A broader international vision of the experience and feelings of elite athletes about the anti-doping system may be of benefit in improving anti-doping in elite sport.

References

Dimeo P (2008) *A History of Drug Use in Sport: 1876 - 1976.* Routledge, London, UK.

Dunn M, Thomas JO, Swift W & Burns L (2012) Elite athletes' estimates of the prevalence of illicit drug use: evidence for the false consensus effect. *Drug and Alcohol Review* 31(1), 27-32. http://doi.org/10.1111/j.1465-3362.2011.00307.x

Elbe AM & Overbye M (2014) Urine doping controls: the athletes' perspective. *International Journal of Sport Policy and Politics* 6(2), 227-240. http://doi.org/10.1080/19406940.2013.801361

Hanstad DV & Loland S (2005) What is efficient doping control? (pp. 1-77). Retrieved from http://www.nih.no/Documents/Bibliotek/E-BOK/What%20is%20efficient%20doping%20control.pdf

Hanstad DV, Skille, EA & Thurston M (2009) Elite athletes' perspectives on providing whereabouts information: a survey of athletes in the Norwegian registered testing pool. *Sport Und Gesellschaft* 6, 30-46.

Hanstad DV, Skille EÅ & Loland S (2010) Harmonization of anti-doping work: myth or reality? *Sport in Society* 13(3), 418-430. http://doi.org/10.1080/17430431003588036

Houlihan B (2004) Civil rights, doping control and the world anti-doping code. *Sport in Society* 7(3), 420-437. http://doi.org/10.1080/1743042000291712

Kayser B, Mauron A & Miah A (2007). Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8, 2. http://doi.org/10.1186/1472-6939-8-2

Moston S, Engelberg T & Skinner J (2015) Self-fulfilling prophecy and the future of doping. *Psychology of Sport and Exercise* 16, 201-207. http://doi.org/10.1016/j.psychsport.2014.02.004

Møller V (2011) One step too far - about WADA's whereabouts rule. International Journal of *Sport Policy and Politics* 3(2), 177-190. http://doi.org/10.1080/19406940.2011.579145

Overbye M & Wagner U (2013) Between medical treatment and performance enhancement: An investigation of how elite athletes experience Therapeutic Use Exemptions. *International Journal of Drug Policy* 24(6), 579-588. http://doi.org/10.1016/j.drugpo.2013.03.007

Overbye M & Wagner U (2014) Experiences, attitudes and trust: an inquiry into elite athletes' perception of the whereabouts reporting system. *International Journal of Sport Policy and Politics* 6(3), 407-428. http://doi.org/10.1080/19406940.2013.791712

Petróczi A, Mazanov J, Nepusz T, Backhouse SH & Naughton DP (2008) Comfort in big numbers: Does over-estimation of doping prevalence in others indicate self-involvement? *Journal of Occupational Medicine and Toxicology* 3(1), 19. http://doi.org/10.1186/1745-6673-3-19

Ross L, Greene D & House P (1977) The "false consensus effect": An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology* 13(3), 279-301. http://doi.org/10.1016/0022-1031(77)90049-X

Sas-Nowosielski K & Świątkowska L (2007) The knowledge of the world anti-doping code among Polish athletes and their attitudes toward doping and anti-doping policy. *Human Movement* 8(1), 57-64.

Siekmann R & Soek J (2010) The implementation of the WADA code in the European Union. Asser Institute, Netherlands. http://www.asser.nl/upload/documents/9202010_100013rapport%20Asserstudie%20(Engels).pdf, accessed March 2018.

Striegel H, Vollkommer G & Dickhuth HH (2002). Combating drug use in competitive sports. An analysis from the athletes' perspective. *The Journal of Sports Medicine and Physical Fitness* 42(3), 354-359.

Valkenburg D, de Hon O & van Hilvoorde I (2014) Doping control, providing whereabouts and the importance of privacy for elite athletes. *The International Journal on Drug Policy* 25(2), 212-218. http://doi.org/10.1016/j.drugpo.2013.12.013

WADA (2015) World anti-doping code. http://wada-ama.org.

Waddington I (2010) Surveillance and control in sport: a sociologist looks at the WADA whereabouts system. *International Journal of Sport Policy* 2(3), 255-274. http://doi.org/10.1080/19406940.2010.507210

Appendix B

The anti-doping industry coming of age: in search of new markets

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Abstract

We describe the evolution of an anti-doping mind-set, paving the way for an unprecedented runaway surveillance regime that became a lucrative business for a host of stakeholders holding an interest in expansion. We shed light on the development of this control regime and show how it now extends beyond the controlling of elite athletes to the much larger group of recreational athletes and the general population, and discuss the potential prospects of this development for the wider society.

Introduction

Today's media coverage of doping cases in elite sports is usually accompanied by strong rhetoric. Within the blink of an eye a widely celebrated hero is vilified and forced to identify with the image of a pariah. Dopers and assisting personnel are labelled deviant and excluded from organized sports, temporarily, or even for life. This chasing of doping athletes has been labelled a 'war on doping' (Mendoza 2002), reminiscent of the general 'war on drugs' (Wood, Werb, Marshall, Montaner & Kerr, 2009), with which it is connected (Coomber 2013; Alexander 2014; McDermott 2016). The competitive nature of elite sport makes it unsurprising that it has a long history of use of performance enhancing means and methods. For most of its past, attempts to increase strength and stamina with substances, or to fight fatigue, were common and barely questioned (Dimeo 2008). Even in the 1960's, when early anti-doping pioneers began to ask for doping controls, the problem was marginal. This changed at the turn of the century when the World Anti-Doping Agency (WADA) was formed and anti-doping began its globalization. This movement progressively led towards introduction of anti-doping legislation, in several countries in the form of criminal law also applicable to the general population (Henning & Dimeo 2017). The scope of this chapter is to show how anti-doping changed, from being a minor issue to becoming globalized, and how this spawned an industry that gained sufficient weight to strive for market expansion for reasons disconnecting from its original invention. We do not discuss those reasons here (see e.g. Kayser, Mauron & Miah 2007), but instead focus on the evolution of an anti-doping mind-set, paving the way for an unprecedented runaway surveillance regime that became a lucrative business for a host of stakeholders holding an interest in expansion. We shed light on the development of this control regime and show how it now extends beyond the controlling of elite athletes to the much larger group of recreational athletes and the general population, and discuss the potential prospects of this development for the wider society.

The advent of anti-doping: creating the demand

An early event providing impetus for change was the death of cyclist Knud Enemark Jensen at the 1960 Rome Olympics (Møller 2005). Immediately rumours spread that it was caused by amphetamine use. This soon became the 'truth', although the post-mortem summary sent to the Danish police by the Italian authorities only mentioned heatstroke as cause of death. In reaction, that same year the Council of Europe adopted a resolution on doping, followed up in 1963 with a definition of doping and a list of banned substances (Mazanov & McDermott 2012). There apparently was an understanding of sport as a healthy and educational phenomenon of sufficient societal value to be politically potent: because Jensen died during the Olympics, the world's biggest sporting event, the political reaction to the tragedy was amplified.

Before the Jensen tragedy it was not a secret that doping was part and parcel of professional cycling. During the 1924 Tour de France, cyclist Henri Pélissier and his brother Francis abandoned the race in anger after Henri was informed that he would be penalised for having discarded a jersey instead of carrying it to the stage finish, as regulations required. When journalist Albert Londres found them in a café shortly after they pulled out, they complained about the way the Tour treated them. In the article 'The Slaves of the Road' in Le Petit Parisien, Londres described the riders' dealings with their suffering. The brothers showed Londres the cocaine and chloroform containing pills and phials they used: 'In short, we are running on dynamite!' (Mignon 2003). The article infuriated Tour director Desgrange who felt that it devalued the Tour's grandeur. He dismissed the affair by explaining that the Tour was an extraordinary strenuous race, so of course the riders used drugs (Jakobsen 2004). This rejection of the Pélissier brothers' complaints on the Tour's harshness while endorsing their drug use did not cause any political outcry or interference and the race continued unaffected.

Three decades later, during the 1955 Tour, Jean Malléjac collapsed ten kilometres before the summit of Mont Ventoux. He only survived because of competent roadside treatment by race doctor Pierre Dumas. The symptoms were akin to amphetamine overdosing, and Dumas asked the team doctors to become more careful. The experience made Dumas an early outspoken anti-doping proponent (Dimeo 2007). The distance Dumas had to go in order to convince the sport's management that doping was a serious threat was evinced by Tour director Goddet's coverage of the situation in an editorial the following day. His vivid description of the drama suggested approval, rather than a PR catastrophe:

> 'On this accursed ground, the battle raged, while all along the fiery mountains men fell by the wayside, beaten down by sunstroke, empty, drunk with the effort and the struggle, heaps of brave men

> who were once so solid and so resolute ... Nothing stops the rhythm of the 1955 Tour de France.' (Fotheringham 2007 p. 200)

Twelve years later, in the wake of Tom Simpson's demise on the same climb, Goddet maintained his cool, observing that recently nine mountain climbers and automobile racers had died while exercising their sport. Co-organiser Lévitan complained that some critics took advantage 'of the slightest incidents to blow them up disproportionately". The Tour does not kill, he argued. 'Had not hundreds of racers negotiated Mont Ventoux without health problems? Did not other sports hold competition in terrible weather?' (Thompson, 2008 p. 239).

Nonetheless, momentum for anti-doping built up during the 1960s, thanks to concerned physicians like Dumas and political concern about young people's drug use in general. Gradually sports leaders' and politicians' attitudes towards the issue started to change. In 1965 the French parliament passed a law against drugs in sport, and the following year doping controls were introduced in the Tour. Interestingly, the riders protested against this perceived attack on their right to self-determination. Also, the organisers response to the political legislative initiative was interesting. Lévitan welcomed the doping testing, claiming that the Tour:

> 'had been in favor of testing for several years before the 1965 law was passed and described the tests as "an honour" for the race, a contribution in the "crusade" to prevent athletes from drugging themselves and young fans from emulating them.' (Thompson 2008 p. 239)

The discrepancy between Lévitan's affirmation of the organisers' support for anti-doping and his response to the critics who used Simpson's drug related death to shed light on the inhuman demands of the Tour de France and to call for reform, is striking. While anti-doping pioneers were motivated by sincere interest in protecting athletes' health, the organisers' motivation seemed more ambiguous. For them the Tour was first and foremost a spectacle invented to sell newspapers. It meant business and their interest was in protecting it. Anti-doping crusaders were a threat to the integrity of the race. If they would successfully lobby politicians to pass laws against drugs in sport, they might even decide to ban the Tour. The organisers' vocal support of doping controls demonstrated that they took the health issue serious and thus associated the Tour with the public-health crusade, working their image from cynic exploiters to concerned guardians. They were walking a thin line, because the lure of the race was its perceived demand for 'superhuman' performances. Historian Christopher Thompson wrote:

> 'how could they reconcile their professed commitment to discourage doping, by reforming the Tour, with the race's much-celebrated extreme image which they, like Anquetil and other racers, understood was the foundation of its popularity and economic viability.' (Thompson 2008 p. 240)

This dilemma made them on the one hand baulk at riders like Anquetil and his insistence on self-determination and accept doping controls and mild reform, but on the other hand to endorse 'the administration of certain non-toxic products' (Thompson 2008 p. 241). Nevertheless, after this introduction of some doping controls, it was back to business as usual. The riders doping habits changed little, and sanctions in case of a positive test remained remarkably mild, in comparison to today's. The most severe sanction, in the wake of the 1998 Festina doping scandal, was a six months suspension of French riders Rous, Brochard, and Moreau. They were banned from December 1998 to end of April 1999. Since the race season began in late March with the classic Milan-San Remo, the effective suspension lasted not more than one month.

Ten years earlier, when Ben Johnson had tested positive for stanozolol after winning the 100 meters dash at the Seoul Olympics, everything already seemed in place to make a sharp turn. But even though Antonio Samaranch, International Olympic Committee (IOC) president, did not hesitate to call the news of Johnson's positive test worse than if somebody had died, the IOC contained the damage by isolating the problem to Johnson, who was vilified as a unprincipled cheat (Pound 2006). The Canadian Dubin inquiry that followed revealed that Johnson was not a deviant, since drug use was widespread in athletics. But the Johnson scandal remained a Canadian problem. Justice Dubin's report resulted in 1991 in the establishment of a Canadian anti-doping organisation, but failed to make the world follow suit.

However, if the world's sports leaders did not already know, the Dubin report clearly exposed that drug use in elite sport was rife. So, when in 1998 the Festina affair revealed that professional cycling teams organised systematic drug use it could not have come as a surprise. The main concern therefore was again how to address the problem without harming sport's business. Interestingly, Samaranch immediately applied similar rhetorical tactics as Tour managers Lévitan and Goddet used in the wake of Simpson's death. In an interview with 'El Mundo', in July 1998 while the Festina scandal unfolded, he reasoned:

> 'Doping is any product which, first damages the health of the sportsman and, second artificially increases his performance. If it produces only this second condition, for me that's not doping. If it produces the first it is. [...] The current list of [banned] products

> must be drastically reduced. Anything that doesn't act against the athlete's health, for me that's not doping.' (Toohey& Veal 2007 p. 188)

It finally was the search of Festina 'soigneur' Willy Voet's car at the Belgian-French border that accelerated the movement. French Customs found several hundred doses of doping products, including EPO and growth hormone. In defence, Festina's sporting director Bruno Roussel admitted that he had personally organized drug use under medical supervision, claiming to follow a strategy of risk reduction (Mignon 2003). The new French minister for youth and sport, Marie-George Buffet, member of the Communist Party, then decided to crack down on the Tour. Echoing the opinion of the Pélissier brothers, she viewed the riders on the Tour as exploited workers in need of protection from the Amaury Group, organizer of the Tour. Possibly, conflicts between this press group, the publishing union and the Communist Party, triggered these strong-arm tactics (Mignon 2003). Police squads descended on the Tour to search team cars and hotel rooms. This led the athletes to engage in a strike during one of the stages. They put their bikes down and sat in the middle of the road, asking 'to be left alone so that they could do their job'. But the media pressure was such that the riders had to give in and play along with the new rules. It thus took the breadth of the French state authorities' anti-doping operation, the sheer amounts of drugs revealed and the intense media furore that did not die down but lasted longer than the duration of the Tour, to make it clear to the sports' governing bodies that there was an urgent need to take the doping issue much more seriously than previously. Sports' independent status was at stake.

The inception of WADA

A further attempt to limit direct government interference was evident from the IOC's invitation to the first World Conference on Doping in Sport in Lausanne in February 1999. The IOC prepared the agenda, excluding outside parties from proposing items to be discussed. It even prepared a detailed set of regulations that was 'designed to ensure that all aspects of the conference remained firmly under the control of the IOC' (Hanstad, Smith & Waddington 2008 p. 234). Despite the IOC's effort to maintain control, government representatives from some of the world's stronger nations voiced concern about the IOC's credibility and honest interest in leading a 'clean' sport mission. Corruption in the organisation, its non-democratic nature, and the growing commercial exploitation of the five rings symbol, questioned whether anti-doping should remain under the auspices of the IOC. Instead of towing the IOC line,

government representatives called for a truly independent anti-doping body controlled by the governments. A compromise finally led to the inception of WADA later that year. The agency was to be half-funded by the IOC and half by the world's governments, and the outcome was therefore not a truly independent organisation. Nevertheless, with governments' commitment to the cause, the initiative was strong enough to alter the previous paradigm of making light of the doping problem and a new more heavy-handed approach became the norm. Testament to that was the WADA Code's introduction of two years ineligibility for first time doping rule violations and lifetime for second time violations, except for 'specified substances which are particularly susceptible to unintentional anti-doping rule violations because of their general availability in medicinal products' (WADA 2003 p. 27). If the new agenda was bad news for sports leaders who valued sports' independence, it opened opportunities for other agents. In fact, it paved the way for a whole new multifaceted industry.

Anti-doping - a new business

First, a new bureaucracy overseeing anti-doping operations had to be built. In 2002 WADA took office in Montreal, Canada, with 34 employees. Each nation state then had to establish a national anti-doping organisation (NADO) in order to remain eligible for the Olympics. By 2014 WADA employed 78 people, and the number of NADO employees also increased over the years, as did the combined funding of the global anti-doping operation (Martensen & Møller 2017). In 2016 there were 141 NADOs (WADA 2016). Not all these NADO's are big and well-funded; the marked differences between the wealth of nations are reflected in the funding and bureaucratic strength of NADOs. There is no end to the calls for further resources despite the fact that increased funding has not led to success, while it remains doubtful if it ever can (Martensen & Møller 2017). In 2012 then director general David Howman 'warn[ed] that lack of funding was hampering its fight against increasingly sophisticated cheating.' He drew a comparison: 'With $25-30 million (20-24 million euros) of funding a year, WADA's budget is less than some European footballers earn' (AFP, 2012). In the wake of the 2016 Russian doping scandal WADA President Craig Reedie followed suit:

> 'I have heard ever-more vociferous calls for a slice of the millions of dollars that are paid for sport television revenue to be provided to the anti-doping cause. This is a bold idea. I put it to the leading sport federations and broadcasters. Now is the time to look at this seriously. I also think that major sport sponsors should start to consider how they might help fund clean sport.' (BBC-Sport, 2016)

If WADA manages to persuade the big sports organisations and sponsors to allocate a slice of sport's commercial revenues for anti-doping, all facets of the global anti-doping operation could grow immensely. But there is some doubt that the individual sports organisations would be easily persuaded, because to them anti-doping is as much an unwanted interference as it is a necessary evil (Haugen & Popela 2015). Typically, except from the IOC, those sports organisations who have the highest revenues from broadcast and endorsement deals, have since the beginning of the negotiations of the Code been the most sceptical and several are still not Code compliant.

Football (soccer) is a striking example. In 2003, when the first Code was to be adopted world-wide, FIFA refused to sign up. Football was close to be dropped from the Athens 2004 Olympics before a compromise was struck (Waddington & Smith 2009). In 2007 FIFA again challenged WADA by refusing that doping-sanctioned players were not allowed to train with their teammates while suspended (Kelso 2007). In 2009 FIFA again took issue with WADA, refusing the whereabouts rule[1] , which obliges players to provide WADA location information (FIFA.com 2009). The conflict continues and in 2017 WADA complained that FIFA and UEFA declined to help the Spanish anti-doping authority when it was declared non-compliant after their Madrid-based testing facility was suspended. Other international sports organisations had stepped in to ensure that a code-compliant testing programme was carried out in their respective sports in Spain. But the football organisations refused to do the same, resulting in a 12 months period with no testing in the Spanish Football League (Malyon 2017). In light of this long-running conflict between WADA and the powerful international football organisations, WADA is unlikely to get a slice of football's television and sponsor revenues anytime soon, unless the world governments join forces to push it through. And the governments' commitment to anti-doping notwithstanding, it is hard to see that happening. Still, the anti-doping authorities continue at any given opportunity to push for extra funding. Thus, when 17 NADO's from the Western world (Australia and Singapore included) convened for a 'special summit' in Copenhagen in the wake of the Russian doping scandal, one of the main outcomes was, unsurprisingly, a proposal that: 'the World Anti-Doping Agency (WADA) be strengthened through improved independence, transparency and increased investment'. (ADD, 2016). Notably, football is not alone, professional sport federations in North-America such as the NFL, NBA and NHL have also been very slow in introducing the principles of the Code.

[1]The whereabouts rule obliges elite athletes to provide location information, in advance on a quarterly basis, to allow unannounced doping controls out of competition. Three missed controls within a period of one year count as an anti-doping rule violation.

Failing to deliver

Despite increasing resources for this anti-doping industry, it has failed to deliver to its declared objectives. The 2003 WADA Code stated that the purpose was 'to protect the Athletes' fundamental right to participate in doping-free sport and thus promote health, fairness and equality for Athletes worldwide'. But twenty years later doping is still rife. According to WADA, 1-2% of elite athletes are caught doping. But actual prevalence is likely much higher, depending on the sport and the country (Petróczi, Mazanov, Nepusz, Backhouse & Naughton 2008; de Hon, Kuipers & van Bottenburg 2015; Ulrich *et al.* 2017). Despite surveillance of athletes whom have to report their 24hr whereabouts all-year round to allow unannounced urine collection under direct looks by doping officers, anti-doping does not attain its goal of eradication of doping. Anti-doping has even been counter-productive as some athletes are severely punished for dubious anti-doping offences while other athletes are celebrated because of not being caught doping. Seven-time Tour de France winner Lance Armstrong is testament to the latter as he was only found out after retiring from racing, because federal agent Jeff Novitzky took interest in him after Floyd Landis revealed drug use at the US Postal team. A counter example is Alberto Contador, handed a two-year suspension after a minuscule amount of clenbuterol was found in his urine sample, that Contador claimed came from contaminated beef. Later, other athletes were sentenced to shorter bans or exonerated, despite far greater amounts in their samples. These two examples illustrate that doping-free sport, as much as equality and fairness for all athletes is illusory. They also demonstrate that the second purpose of the World Anti-Doping Programme: 'To ensure harmonized, coordinated and effective anti-doping programs at the national and international levels with regards to detection, deterrence and prevention', has likewise failed to be achieved. Nevertheless, anti-doping continues to ask for more means for repression. Beyond the morally problematic whereabouts system and sampling procedures there are calls for longitudinal profiling (blood values, performance measures), for denouncing others and for the extension of anti-doping controls to coaches and trainers (Rodenberg & Holden 2017).

New markets

Tellingly, Brian Mikkelsen, then Danish minister for culture, who represented the world governments as elected vice-president of WADA, used the anti-doping momentum to propose that the scope of anti-doping in Denmark should go beyond the focus on elite sport and include testing in fitness milieus as well. Thus, in 2003, Denmark became the first country to use the WADA Code as a

lever for a wider agenda. If the law were applied by the letter, people dependent on medication for illness and training in gyms for health reasons would have to apply for Therapeutic Use Exemptions[2]. If they would not and fail a test, they would have to be excluded from participation in any kind of organised sport for a two-year period, which would potentially have negative effects on their health status. Clearly people on medication were never meant to be a target, but steroid users were. This shows that the Code does not fit outside competitive sport. Because no-one dares to be seen as soft on drugs, the Danish doping testing in fitness centres programme has never been questioned by politicians since its introduction, despite its glaring irrationalities. Quite the contrary, several other countries have taken inspiration from the Danish model namely Norway, Belgium, and Romania, according to the European Commission's Study on Doping Prevention (European Commission 2014). Anti-doping has recently started also to expand into amateur sport [e.g. Henning & Dimeo (2017)]. USA Cycling (USAC) and the New York Road Runners (NYRR) now test amateur athletes and there are calls for further expansion. This extension represents an enormous market for anti-doping. But, yet again, there is reason to think that this expansion is a bad idea. Given the harsh rules of anti-doping, with its principle of strict liability, and the introduction of criminal law in several countries, the risk for repeating the errors of the general war on drugs with its excessive societal cost is high.

The reification of anti-doping

As any bureaucracy, WADA and the world-wide net of NADOs and RADOs (regional anti-doping organisations) have a self-preserving interest. In the unlikely event politicians in one or more countries would realise that it is not only unsuccessful, and thus a waste of money, but also, with the insensitive testing procedure, increased number of tests, blood-profiling, and the requirements related to the whereabouts system, an untenable intrusion on athletes' privacy, it is foreseeable that the anti-doping system would lobby intemperately against it. Because, as Niccolò Machiavelli so poignantly explains in The Prince:

> 'It must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders

[2]Therapeutic Use Exemptions (TUE) allow the treatment of athletes for illness with substances on WADA's List of forbidden substances. A well-documented and reasoned request must be submitted to a TUE Committee (TUEC), which decides if the request can be granted.

> in all those who would profit under the new order.' (Machiavelli 1921 (1515), p. 21)

When we observe the anti-doping bureaucracy through the lens of Machiavelli we see that it built strong alliances by liaison with disparate partners. For example, WADA has outsourced testing to private WADA-accredited laboratories. These labs' subsistence heavily depends on anti-doping and the number of tests. Hence, they support the cause and any expansion of it. These laboratories collaborate with industry and schemes of funding for meetings or access to technology are frequent [see Kayser & Broers (2012) for an example]. WADA funds research for improving testing methods and emerging doping threats. Since 2001 the agency has committed US$ 69 million to such research (WADA 2017). Researchers who receive funding are therefore likely to commit to the cause too, all the more because WADA only funds research that is aimed at improving anti-doping. So, it is unsurprising that WADA related doping researchers voice their concern about drug use in sport. Since 2005 the organisation also offers small grants for social science research, to improve preventive anti-doping programmes. The total amount of funding to 2017 was US$ 3 million, which covered 79 projects, thus clearly not a top priority. Yet the programme was a strategically wise move. Because social sciences scholars are trained to be critical, much criticism of anti-doping comes from social scientists. A global trend in universities is to value funding from external sources for promotion, but funds for critical research are difficult to obtain. As a consequence, WADA social research grants attract researchers and work wonders in terms of keeping critical voices low and counter-balanced by more positive peers. These interdependencies between WADA, private laboratories, researchers and handfed scholars makes an effective bulwark against reformists behind which the organisation can continue its expansion. Hence, it should not come as a surprise if WADA paves the way for testing not only recreational athletes, which has already begun, but in wider society in general, when drug use can be seen as giving the user an unfair advantage or as a danger to health and public safety. Students, police officers, doctors, scientists, pilots, drivers etc. may be next in line to see their right to privacy sacrificed on the altars of fairness and public health.

And, as hard as it is to imagine any political challenge of the current anti-doping system for the foreseeable future, it is equally difficult to expect the political system to curb anti-doping stakeholders expansive ambition. A challenge of the current system would imply admittance that the international organisation they initiated and thus are partly responsible for, has been unsuccessful in practice. Furthermore, it would require that the world's governments agree that WADA is a failure, and get together to negotiate a new and better way forward for international sports in an ever more technologically and medically advanced world. So, the realpolitik seems almost to guarantee status quo on the matter.

Or that politicians will continue their backing of WADA by committing to strengthen the organisation further as indicated by WADA Executive Committee Government representative of Europe Thorhild Widvey following the Executive meeting in Lausanne 2016. Despite a growing number of 'critical views regarding WADA and the system' she began 'let me start by saying that WADA must be strengthened as the Leader of Clean Sport' (Widvey 2016). We do not see any reason why this strengthening could not be extended to areas outside sport, especially as anti-doping is bio-politics and there are numerous other fields where politicians have proven willing to implement legislation that is supposed to protect their citizens from harming themselves. If, for instance, police violence can be linked to steroid use, or surgeons' mistakes can be linked to the use of cocaine why not take advantage of the anti-doping system in place to oppose that. Because it violates police officers' or surgeons right to privacy? Sport has been used as a battering ram to break down the respect for privacy. Those who have condoned anti-doping testing of athletes with all what it implies will find it hard to produce a consistent argument against the introduction of a similar invasive control regime of themselves.

Conclusions and perspectives

History allows us to explain what happened, but the prediction of future developments is hazardous; one can only imagine scenarios. To us anti-doping looks like an industry that has come of age and that aims its perpetuation and expansion. The war on drugs and the war on doping would seem to merge, leading to a framework of blanket testing of the wider population for the use of forbidden substances, decided on behind closed doors by a co-opted committee, substances considered to give someone unfair advantages over others. Such a development negates the rapid societal developments that technology causes. Bio-medical and engineering invention rapidly advance and unleash important potential beyond therapeutic use. It is probably just a matter of time until many of these techniques will be used by many, for various reasons. Of course, these developments come with important ethical questions concerning equity, equality, and need, that must be addressed. However, in light of the human appetite for improvement, that we have already witnessed by the growth in plastic surgery, liposuction surgery, and even bone extension operations to gain height etc., it is unimaginable that bio technological advances that for instance increase people's longevity by genetically improving their cardio-pulmonary function will be banned in order to protect outdated ideas about clean sport. Much less that athletes would leave them unexploited when they became available. Today's misinformed refusal by the sports world to admit that the principles of anti-doping are not only flawed but also dangerous for

general society need to be addressed. Elite sport was and is a human activity in which performance enhancement is essential. The Olympic motto is exemplary in this regard: higher, faster, stronger. Athletes adopt behaviour that helps them performing better in their sport by means of training schemes, nutrition, supplements, psychology, and technology, and may well sooner or later engender post-human athletes. Today doping is not allowed, but continues because its repression proves impossible while causing unintended side-effects. This leads to the question on how much of the present harm of doping - for the athlete and the wider society - might be related to anti-doping policy rather than to the use of the performance-enhancing methods or substances as such. The prospect of a blanket extension of sport's anti-doping policies to wider society would seem a bad idea. Based on the experience with illicit drugs, for which experimenting with alternative policies with harm reduction strategies have come of age and proven their societal benefits, a pragmatic non-essentialist approach of enhancement behaviour in general society applying principles of harm reduction would seem a more viable approach. Whether this would eventually lead to similar changes within competitive sport remains an open question.

References

ADD (2016) NADO Leaders Propose Series of Reforms to Strengthen Global Anti-Doping Efforts. http://www.antidoping.dk/om-add/aktuelt/2016/08/nado leaders propose series of reforms to strengthen global anti-doping efforts (Accessed January 2018).

AFP (2012) World anti-doping agency says 'lacks funding'. Retrieved from https://www.sportskeeda.com/cycling/world-anti-doping-agency-says-lacks-funding (Accessed January 2018).

Alexander BR (2014) War on drugs redux: welcome to the war on doping in sports. *Substance Use& Misuse* 49(9), 1190-1193. http://doi.org/10.3109/10826084.2014.904119

BBC-Sport (2016) Russian whistleblowers who exposed doping scandals forced to move locations again. http://www.cbc.ca/news/world/stepanov-russian-sports-doping-hacking-1.3719792 (Accessed January 2018)

Coomber R (2013) How social fear of drugs in the non-sporting world creates a framework for doping policy in the sporting world. *International Journal of Sport Policy and Politics* 6(2), 171-193. http://doi.org/10.1080/19406940.2012.756824

de Hon O, Kuipers H & van Bottenburg M (2015) Prevalence of doping use in elite sports: a review of numbers and methods. *Sports Medicine* 45(1), 57-69. http://doi.org/10.1007/s40279-014-0247-x

Dimeo P (2007) *A history of drug use in sport 1876-1976: beyond good and evil.* Routledge, London, UK

European Commission (2014) Study on Doping Prevention - A map of Legal, Regulatory and Prevention Practice Provisions in EU 28. Retrieved from Brussels: http://ec.europa.eu/assets/eac/sport/news/2014/docs/doping-prevention-report_en.pdf (Accessed January 2018)

FIFA.com (2009) FIFA and UEFA reject WADA "whereabouts" rule. http://www.fifa.com/development/news/y=2009/m=3/news=fifa-and-uefa-reject-wada-whereabouts-rule-1040455.html

Fotheringham W (2007) *Put Me Back on My Bike - In Search of Tom Simpson.* Yellow Jersey Press, London, UK.

Haugen KK & Popela P (2015) Why sports officials may choose not to fight performance-enhancing drugs. *European Journal of Sport Studies* 3(2), 32-39

Hanstad DV, Smith A & Waddington I (2008) The establisment 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.

Henning AD & Dimeo P (2017) The new front in the war on doping: Amateur athletes. The *International Journal on Drug Policy.* 51(1), 128-136. http://doi.org/10.1016/j.drugpo.2017.05.036

Jakobsen J (2004) *Le Tour.* Gyldendan, Copenhagen, Denmark.

Kayser B & Broers B (2012) The Olympics and harm reduction? *Harm Reduction Journal* 9(1), 33. http://doi.org/10.1186/1477-7517-9-33

Kayser B, Mauron & Miah A (2007) Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8, 2. http://doi.org/10.1186/1472-6939-8-2

Kelso P (2007) Wada chief faces challenge from Fifa over ban The Guardian. Retrieved from https://www.theguardian.com/football/2007/nov/20/sport.comment6 (Accessed January 2018)

Machiavelli N (1515). *The Prince.* Oxford University Press, London, UK.

Malyon E (2017) Wada 'deeply disappointed' that Uefa and Fifa didn't step in to prevent Spanish football's drug-testing crisis. Independent. Retrieved from http://www.independent.co.uk/sport/football/european/wada-

deeply-disappointed-uefa-fifa-spanish-footballs-anti-doping-drugs-testing-crisis-a7573016.html (Accessed January 2018)

Martensen CK & Møller V (2017) More money - better anti-doping? *Drugs: Education, Prevention and Policy* 24(3), 286-294. doi:10.1080/09687637.2016.1266300

Mazanov J & McDermott V (2012) The Case for a Social Science of Drugs in Sport. In Mazanov J (Ed.) *Towards a Social Science of Drugs in Sport* Routledge, London, UK.

McDermott V (2016) *The War on Drugs in Sport: Moral Panics and Organizational Legitimacy.* Routledge, London, UK.

Mendoza J (2002) The war on drugs in sport: a perspective from the front-line. *Clinical Journal of Sport Medicine* 12(4), 254.

Mignon P (2003) The Tour de France and the doping issue. *The International Journal of the History of Sport* 20(2), 227-245. http://doi.org/10.1080/0952360412331305703

Møller V (2005) Knud Enemark Jensen's death during the 1960 Rome Olympics: a search for truth? *Sport in History* 25(3), 452-471. http://doi.org/10.1080/17460260500396319

Petróczi A, Mazanov J, Nepusz T, Backhouse SH & Naughton DP (2008) Comfort in big numbers: Does over-estimation of doping prevalence in others indicate self-involvement? *Journal of Occupational Medicine and Toxicology* 3(1), 19. http://doi.org/10.1186/1745-6673-3-19

Pound D (2006) *Inside the Olympics: A Behind-the-Scenes Look at the Politics, the Scandals and the Glory of the Games.* Wiley,Toronto, Canada.

Rodenberg RM & Holden JT (2017) Cognition enhancing drugs ("nootropics"): time to include coaches and team executives in doping tests? *British Journal of Sports Medicine* 51(18), 1316-1316. http://doi.org/10.1136/bjsports-2015-095474

Thompson CS (2008) *The Tour de France: a cultural history* University of California Press, Berkeley, CA, USA.

Toohey K & Veal AJ (2007).*The Olympic Games: A Social Science Perspective.* CABI, Cambridge, MA, USA.

Ulrich R, Pope HG, Cléret L, Petróczi A, Nepusz T, Schaffer J, *et al.* (2017) Doping in two elite athletics competitions assessed by randomized-response surveys. *Sports Medicine* 45, 1-9. http://doi.org/10.1007/s40279-017-0765-4

WADA (2003, 2009) WADC, World Anti-Doping Code.

WADA (2016) Code Signatories. https://www.wada-ama.org/en/code-signatories (Accessed January 2018)

WADA (2017) Research. https://www.wada-ama.org/en/research (Accessed January 2018)

Waddington I & Smith A (2009) *An Introduction to Drugs in Sport: Addicted to Winning?* Routledge, London, UK.

Widvey T (2016) OpEd: WADA Must Be Reinforced and Publicly Supported. Retrieved from http://aroundtherings.com/site/A___57616/Title___OpEd-WADA-Must-Be-Reinforced-and-Publicly-Supported/292/Articles (Accessed January 2018)

Wood E, Werb D, Marshall BDL, Montaner JSG & Kerr T (2009) The war on drugs: a devastating public-policy disaster. *The Lancet* 373(9668), 989-990. http://doi.org/10.1016/S0140-6736(09)60455-4

Appendix C

Do public perception and the 'spirit of sport' justify the criminalisation of doping? A reply to Claire Sumner

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Abstract

We critically discuss a recent paper in favour of criminalising doping in the legal order of the UK. We revisit the arguments put forward and put them in context with regard to their political, ethical and legal implications. On this basis we then address the question whether drawing upon the 'spirit of sport' as defined in the World Anti-Doping Code is warranted in view of supporting the idea of criminalising doping, and finally present counter arguments that plead against the criminalisation of doping.

Purpose: a reply to Claire Sumner

In a recent paper published in this journal[1], Sumner develops arguments in favour of criminalising doping in the legal order of the UK. Sumner posits that "[c]reating a criminal offence could operate as a deterrent and also satisfy the public that justice has been and is being done and therefore alter the public's perception of the veracity of sporting performance."[2] Instead of drawing on arguments related to public and individual health[3], usually relied upon by many democratic governments around the world, to intervene in this traditionally self-regulated sub-sector, Sumner uses the "spirit of sport" [SoS] from the World Anti-Doping Code [WADC][4] as a basis for her plea to criminalise what has hitherto been merely a sporting misdemeanour sanctioned through the private system of the sports world. Several aspects and challenges, we find, were left untouched in Sumner's paper, including the function of criminal law as ultima ratio in (at least liberal) societies' responses to unwanted behaviour and the

[1] Summer (2017)

[2] *Ibid.*, p. 218.

[3] The relevant section "3.3 Health" is a short one which does not quote one single medical paper, and its function in relation to the overall purpose of her paper is entirely ancillary. See Sumner (2017), pp. 221-222.

[4] "Anti-doping programs seek to preserve what is intrinsically valuable about sport. This intrinsic value is often referred to as 'the spirit of sport.' It is the essence of Olympism, the pursuit of human excellence through the dedicated perfection of each person's natural talents. It is how we play true. The spirit of sport is the celebration of the human spirit, body and mind, and is reflected in values we find in and through sport, including: 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; and Community and solidarity. Doping is fundamentally contrary to the spirit of sport. To fight doping by promoting the spirit of sport, the Code requires each Anti-Doping Organization to develop and implement education and prevention programs for Athletes, including youth, and Athlete Support Personnel." See WADC (2015), Fundamental Rationale, p. 14. World Anti-Doping Code 2015. https://www.wada-ama.org/sites/default/files/resources/files/wada-2015-world-anti-doping-code.pdf. (Accessed 27 July 2017)

anchoring of a new legal framework in an ill-defined SoS concept. We here critically revisit the arguments put forward by Sumner; put them in context with regard to their political, ethical and legal implications; on this basis, address the question whether drawing upon the SoS is warranted in view of supporting the idea of criminalising doping; and present counter-arguments that plead against the criminalisation of doping.

Main claims made by Sumner

According to Sumner, her "article examines public perceptions of doping in sport, critically evaluates the effectiveness of current anti-doping sanctions and proposes the criminalisation of doping in sport in the UK as part of a growing global movement towards such criminalisation at national level."[5] Sumner advances two main reasons to consider the criminalisation of doping. She begins by stating that the general public's perception is that doping is rife and that this results "in the public's loss of faith in the performances it sees and the loss of the [SoS]."[6] She then posits that this is due to a lack of efficacy of the current anti-doping policy, alternatively proposing that the criminalisation of doping could act as a deterrent sufficient to bring about such a drop in doping prevalence as to restore to the public "its faith in the truth of the performances it sees."[7] We first comment on two arguments that Sumner advances: that these alleged perceptions justify criminal sanctions for anti-doping rule violations (section 3.1) and that an ineffectiveness of the anti-doping system further supports the view that a criminal offence should be introduced in the UK legal order (section 3.2). We then discuss the (in)appropriateness of anchoring a criminal legal framework in the SoS (sections 4) before formulating our conclusions and discussing perspectives (section 5).

Public perception

Justifying criminal sanctions on the basis of purported public perception?

Contrary to what is stated in her article, Sumner does not actually 'examine' public perceptions of doping in sport. A supposedly negative perception of the

[5] *Ibid.*, p. 217.
[6] *Ibid.*, p. 218.
[7] *Ibid.*, p. 219.

general public is posited as self-evident, but no actual evidence is provided, and the extant scientific literature is not cited. In our opinion, Sumner's positing of a blanket loss of faith in elite sports performance by the public confuses what is depicted in the media and communicated by anti-doping authorities and their allies, with what the general public's (largely undescribed) opinion actually is. There are only a few scientific publications reporting public opinion about doping, and these rather show a chequered pattern, with perhaps an age effect: younger people, and especially those closer to sport, might have a more lenient position towards doping than older people.[8] A Swiss study among adults indicated a shift to a somewhat stricter stance over time,[9] while another recent analysis among Flemish sports students showed on the contrary that their opinion about doping became more nuanced and liberal over the years.[10] An online survey in Flanders found that cycling fans are less negative towards doping in cycling than non-fans.[11] It would thus seem that Sumner's premise of generalised public opprobrium is not warranted. Her statement may reflect more her own opinion and that of organised sport and politics, widely echoed in the media, than that of society as a whole; at least her paper does not provide evidence to the effect that these actually are the views of the general population. Sumner's use of the public perception argument also does no justice to the history of doping in sport. In several sports, doping was always present, for a long time without being ostracised by a majority of the interested public. For example, in the Tour de France, at least until the 1998 Festina affair and its aftermath, doping was considered not problematic by most of the public and the media. Famous cycling champions more or less openly talked about their practices and defended their use of doping as being part of their job, even though some other voices were also heard condemning doping.[12] More fundamentally, public perceptions alone cannot suffice to justify a legislative change, especially not if this would lead to new criminal sanctions, criminal law being, across the liberal-democratic world,[13] the ultima ratio of a society's response to unwanted behaviour. Drawing on Feinberg,[14] "the classic study" on this problem, Chan and Simester note that "[w]hen contemplating whether to prohibit conduct, one should not only consider the magnitude and seriousness of the harms involved. One should also consider the value of the conduct to be prohibited and the impact of its proscription upon the freedom of citizens."[15] Because the threshold for criminalising such behaviour necessarily must be high, unverified perceptions

[8]Engelberg, Moston (2012); Solberg, Hanstad, Thoring (2010); Stamm *et al.* (2008).
[9]Stamm *et al.* (2008).
[10]Vangrunderbeek, Tolleneer (2011).
[11]Van Reeth, Lagae (2014).
[12]Dimeo (2008); Mondenard (2000).
[13]See e.g. Abel Souto (2013); Gómez Tomillo (2013); Husak (2004); Jong (2012); Kaiafa-Gbandi (2005); Klip (2012); Öberg (2011a); Öberg (2011b).
[14]Feinberg (1984).
[15]Chan, Simester (2011), p. 395.

cannot be relied upon in lieu of verifiable empirical evidence. Legal scholars must not accept references to perceptions (whether individual or collective) as satisfying the usual requirements for justifying legislative proposals. With regard to Sumner's paper, an additional aggravating circumstance is that the purported public perceptions remain undocumented.

Purported public perceptions of ineffectiveness?

The second argument, that present anti-doping is not working, is also ill-informed, although interestingly enough, WADA itself acknowledges having a problem with the effectiveness of its anti-doping programme.[16] But the introduction of contemporary anti-doping policy clearly did have effects. For example, doping practices that in professional cycling reigned rather freely before the Festina affair are not possible anymore, owing as much to the whereabouts regime,[17] which allows unannounced out-of-competition doping controls, as to advances made in laboratory technology. But because of the limits of surveillance and of laboratory technology, the use of adapted technology helps to keep some types of doping under the radar; as a consequence, a 'clean record', even upon multiple anti-doping controls, will never be a guarantee for a genuinely 'clean' athlete. This inevitably leads the media and therefore the public to question any extraordinary performance. This perverse paradoxical effect can be seen as a direct consequence of the intensification in applying the anti-doping rule. Sumner gives an example by mentioning Froome and his second Tour de France win in 2015, which came under fierce pressure when his performance was analysed from a physiological perspective, a performance considered by some as only possible with the help of doping. Sumner writes that the "successes of Bradley Wiggins winning both gold in the time trial at the Olympics and the Tour de France in the same year vastly enhanced participation in road cycling with all the health benefits that ensue, but subsequent revelations of large-scale doping at the 2012 Olympics have marred its legacy. Clean wins and the belief in clean wins are an essential part of the 'Wiggins effect' and must be protected,"[18] because apparently, "clean teams such as Sky will not employ

[16]WADA Working Group (2013) Report to WADA Executive Committee on Lack of Effectiveness of Testing Programs prepared by Working Group Established following Foundation Board meeting of 18 May 2012, https://www.wada-ama.org/sites/default/files/resources/files/2013-05-12-Lack-of-effectiveness-of-testing-WG-Report-Final.pdf (Accessed 27 July 2017). Note however that the report contains several "Recommendations" addressed to governments which amount to invitations to take legislative action, sometimes on a wide scale. As the outcome of a report having identified serious weaknesses in WADA's work, these "Recommendations" are somewhat surprising.

[17]Art. 2.4, 5.6, 7.1.2, 7.6, 10.3.2 WADC.

[18]Sumner (2017), p. 224.

dopers."[19] Apart from the fact that statements like "clean teams such as" are biased, risky and should be avoided in an academic paper, since the publication of Sumner's article the questioning of the "purity" of the Sky cycling team and of "clean" Wiggins' performances in the press would seem to exemplify our reasoning.[20] We explicitly do not take position about whether or not Wiggins, Froome or the Sky team at large were, and are competing "clean", simply because it is impossible to know, despite frequent anti-doping controls. That is the paradox of today's anti-doping policy: it creates a climate of suspicion and eternal doubt that cannot be overcome by evermore surveillance and testing, while there are doubts about its efficiency.[21]

It thus seems that Sumner's paper does not provide an examination of public perceptions but rather argues in favour of the prevailing institutional stance. It is equally open to discussion about an alleged ineffectiveness of current anti-doping policies, at least if this is meant to imply a systematic review drawing on available empirical knowledge. What the paper does provide, however, is a plea in favour of criminalisation of doping in the UK, though it remains unclear to what extent the paper manages to demonstrate that such a move would effectively be "part of a growing global movement towards such criminalisation at national level,"[22] as Sumner does not discuss what legislative initiatives other countries may have taken. Her paper remains to a large extent programmatic, though it does lead to a recommendation - which we discuss in section 4 - that criminalisation is warranted in the protection of the SoS.

Sumner considers that "the current system of anti-doping sanctions are [sic] ineffective in efficiently reducing doping and that this results in the public's loss of faith in the performances it sees and the loss of" the SoS.[23] In view of recent revelations involving Russian athletes in particular, the "public's perception that doping is rife" should be changed "by providing retributive justice and satisfying the public that athletes have had their 'just deserts'."[24] In other

[19] *Ibid.*, p. 221.

[20] See e.g. Sir Bradley Wiggins will not be quizzed by MPs over doping in sport. Last Updated: 02/03/17 2:41pm. http://www.skysports.com/cycling/news/15264/10787197/sir-bradley-wiggins-will-not-be-quizzed-by-mps-over-doping-in-sport (Accessed 27 July 2017). See also The Guardian view on doping in cycling. The Guardian editorial. Sunday 5 March 2017 00.04 GMT. https://www.theguardian.com/commentisfree/2017/mar/05/british-cycling-team-sky-doping-david-brailsford-bradley-wiggins (Accessed 27 July 2017): "It's worth remembering that many cycling greats - indeed most - have been dopers. Eddy Merckx, the greatest: a doper. Tom Simpson, whose memorial on the slopes of Mont Ventoux in Provence has become a place of pilgrimage: a doper. Lance Armstrong, the "most sophisticated" doper. The problem stretches back to the 1880s: doping, doping, doping. There is a blindness or cognitive dissonance among many of the sport's fans to this fact."

[21] For an economist's view on the return on investment, see Maennig (2014).

[22] Sumner (2017), p. 218.

[23] *Ibid.*, p. 218.

[24] *Ibid.*, p. 218.

words, some social practice needs to be fixed, but just why does this mean that criminalisation is the answer? Sumner states: "Creating a criminal offence could operate as a deterrent and also satisfy the public that justice has been and is being done and therefore alter the public's perception of the veracity of sporting performance."[25] Thus, the introduction of a new criminal offence is advocated in order to change the public perception of sporting performances: the criminal law is invoked to allow some - undoubtedly unusual - occurrences to appear in a more authentic light, as it were. Sumner correctly cites Anderson[26] for noting that the public wants "world record times [...] or [...] unprecedented acts of endurance,"[27] though Anderson's paper does not advocate criminalisation of doping. Anderson rather specifically advocates a harm-containment approach, much in line with Kayser and Broers[28], and though Sumner explicitly does not support this outcome of Anderson's paper, she nevertheless infers that this "impact on the sporting public's attitude to doping is agreed, but can be used as an argument to support criminalization of doping rather than as justification for allowing it."[29] But what is actually known about public perceptions of sporting performances?

Purported public perceptions of sporting performances and sponsorship

According to Sumner, "the current system of penalties imposed by the WADA Code is insufficient to deter athletes from doping, does not do enough to satisfy the public that performances are clean, and therefore, the [SoS] is being lost"[30], because "current penalties fail to give confidence to the public that clean athletes are really clean."[31] We doubt whether such confidence can ever be instilled to the satisfaction of the public. The presumption of innocence is the bedrock of the Western tradition of protecting the rights of the accused, whether in a formal criminal court setting or not. No procedure - not even an authoritarian one, and not even one drawing on strict liability[32] (instead of the presumption of innocence) and "comfortable satisfaction"[33] (as a standard of proof allowing to dispense with "beyond reasonable" doubt) can ever provide such assurance: of course not, and this for epistemological reasons which are

[25] *Ibid.*, p. 218.
[26] Anderson, (2013), p. 144.
[27] Sumner (2017), p. 219.
[28] Kayser, Broers (2012).
[29] Sumner (2017), p. 220.
[30] *Ibid.*, p. 222.
[31] *Ibid.*, p. 222.
[32] Art. 2 WADC.
[33] Art. 3(1) WADC.

fundamental. Even a system extracting information and confessions from athletes using methods which would be illegal under ECHR[34] and EU[35] law would still not be able to "prove" that un-convicted athletes are "clean": besides being illegal and unethical, violating such standards would not guarantee a truthful outcome of investigations. Sumner cites Anderson for saying that the "stigmatisation of athletes" leads to a generalised "assumption, or even presumption, of cheating,"[36] much in line with our analysis. Apart from the fact that, to be able to convincingly demonstrate the need for (let alone the lawfulness and legitimacy of) an anti-doping criminal offence, more solid evidence than mere public perception would be required; it seems unclear why Sumner thinks that such - basically flawed - expectations (whether or not they can be proven empirically) can support criminal sanctions.

Sumner states that criminalisation "could operate to satisfy the public that retributive justice has been and is being done and restore lost confidence"[37]. That criminal law can provide retribution is undisputed, just like it can have a preventive role as well. But the argument why it should be called upon to do so in this case would seem critically flawed. Criminalisation of doping is advocated to "punish doping with a stigmatic deterrent and to alter public belief in the truth of sporting performance,"[38] yet without properly addressing the issues of necessity and proportionality. A press article[39] is quoted as saying that the "reaction of sponsors to Maria Sharapova's failed drugs test indicates their perception that the public wants clean sport."[40] The only time when an empirical piece of scholarship is quoted to support the recurrent claims of "public perception" is when Sumner refers to Solberg and colleagues for saying that the public had " 'no tolerance of pure doping substances, such as EPO, amphetamines and anabolic steroids", thereby concluding that 'sponsors[41] [. . .] represent the derived demand for sport' and 'commit resources to sport because of direct demand, i.e. from the general public' as 'an overwhelming majority of respondents supported tough reactions from sponsors towards the athletes/teams involved in doping scandals, for example, a reduction in sponsor support.' "[42] Sumner does not mention that the Solberg paper actually did not advocate the criminalisation of doping, nor does she credit the study for having

[34] Art. 3 ECHR (prohibition of torture and inhuman or degrading treatment or punishment).
[35] Art. 7 CFR (prohibition of torture and inhuman or degrading treatment or punishment).
[36] Sumner (2017), p. 222.
[37] Ibid., p. 223.
[38] Ibid., p. 223.
[39] Gibson O (2015) Russia accused of "state-sponsored doping" as Wada calls for athletics ban. The Guardian, 9 Nov 2015. https://www.theguardian.com/sport/2015/nov/09/wada-iaaf-russia-dick-poundbanned. (Accessed 27 July 2017) See Sumner (2017), p. 223.
[40] Sumner (2017), p. 223.
[41] *Emphasis added.*
[42] Solberg, Hanstad, Thoring (2010); Sumner (2017), p. 223.

shown that fans were more likely to condone doping than the general public; but even so, the narrow focus on sponsors' interest to have their commercial interests protected by the state would seem rather curious in this context. The international conference organised in Lausanne in February 1999, which sought to respond to the Festina scandal of the 1998 Tour de France, and which led to the inception of the World Anti-Doping Agency (WADA) as a Swiss foundation in November 1999, initially considered specifically reserving some of the seats on its board for sponsors[43]. Yet, just how can this commercial interest in criminal law provisions, on the part of a few business operators, justify the claim that criminalisation is needed on account of "public perception"?

There is not much scholarly literature about sponsorship and doping, and that which exists seems to show little effect of doping cases on sponsors. The fallout of the Landis case for sponsor Phonak was actually found to be positive.[44] A recent analysis of pro-cycling teams showed no negative effect of doping cases on the sponsors of those the teams in which the doping occurred;[45] the same argument was made by the Armstrong defence, in *Landis v. Tailwind Sports Corporation*, [46] that the commercial operations of the US Postal Service (USPS) did not suffer from its association with Armstrong. The US District Court (District of Columbia) concluded that "Armstrong indeed makes a persuasive case that USPS received substantial value from the positive media coverage of the team, which, after all, was one of the Postal Service's central objectives in entering into (and renewing) the sponsorship."[47] The Court concluded that sponsoring the USPS Pro Cycling team had "generated millions of dollars in free advertising for the Postal Service" and represented "a first-class deal by any measure."[48] According to a USPS spokesperson, "the free advertising they received 'is way more than we ever spent' to sponsor it". Former USPS Senior Vice President Gail Sonnenberg recalled that "even after USADA formally charged Armstrong with using and trafficking PEDs," she "maintained her positive assessment of the net value of the sponsorship," noting that "USPS got

[43] According to Laure (2004), p. 240, at one day of the first World Anti-Doping Conference (Lausanne, February 1999), the IOC's proposal to reserve certain seats on the board of the future WADA led governments to leave the plenary. While governments discussed among themselves, the IOC amended its draft and dropped this proposal, so that the WADA could be incorporated a few months later (November 1999).

[44] Leeds (2010).

[45] Danylchuk (2016).

[46] Landis v. Tailwind Sports Corporation, Civil Action No. 2010-0976 (D.C. 2017) District Court, District of Columbia. UNITED STATES ex rel. LANDIS, Plaintiffs, v. TAILWIND SPORTS CORP., *et al.*, Defendants. Case No. 1:10-cv-00976 (CRC). CHRISTOPHER R. COOPER. United States District Judge. Date: February 13, 2017. https://ecf.dcd.uscourts.gov/cgi-bin/show_public_doc?2010cv0976-547. (Accessed 27 July 2017)

[47] *Ibid.*, p. 32.

[48] *Ibid.*, p. 31.

more than it paid for and is not a victim of fraud."[49] These examples clearly question the assumption that alleged and even confirmed doping behaviour automatically triggers a loss in sponsors. Yet such insight did not have a bearing on Sumner's paper. According to Sumner, the "absence of an independent and credible enforcement programme has affected public perception of sport as a whole."[50] Some sponsors and some holders of intellectual property rights related to sports operations appear convinced of a causality to their detriment. "A rationale broader than" that explicitly set out in the WADC "is at work," according to Hayes, while the "commercial objectives of promoters, broadcasters and sports" appear to "also support the strict anti-doping regime."[51] According to this analysis, the WADC helps to protect "the commercial interests of TNCs [transnational corporations] invested in the Olympic movement, by ensuring that the IOC can deliver a unique 'sporting product' to broadcasters and sponsors."[52] To the uninitiated, this might read like conspiracy theories developed by socially subversive, business-hostile activists; yet Sumner's paper includes an abundance of references to the rights of sponsors,[53] whose decision to withdraw their support is seen as an inefficient deterrent in more serious cases, leading up to her proposal that "incarceration is a real possibility."[54] According to Hayes, "[h]istorically and contrary to the established rhetoric," WADA has "never been truly independent" and there never was "an equal partnership between the IOC and governments,"[55] in part because WADA's legal personality as a private-law foundation makes it more flexible and less transparent than a government agency, while the IOC understands its modus operandi better than governments do.[56] The ambitions identified by Hayes can be further seen in the attempt, in 1998, to reserve sponsors seats on WADA's Foundation Board:[57] an attempt that governments successfully resisted. Yet, apart from the question whether or not the causality can be proven - a question which remains open in the light of the above-mentioned *Landis v. Tailwind Sports Corporation*[58] -

[49] *Ibid.*, p. 31: : "She summed up her opinion in an email to former Postmaster General Henderson in August 2012: 'I agree that the sponsorship was hugely successful for USPS; that real $ sales value was established; that media/pr $ value was proven; that the link to the cycling team across the country helped improve the stodgy image of USPS; and that it was a source of pride for USPS. We also agree that we would have taken swift action if we had ever known of a positive test (in fact at least one rider was kicked off due to test) or systemic doping. But bottom line: USPS got more than it paid for and is not a victim of fraud.' "

[50] Sumner (2017), p. 223.

[51] Hayes (2016), p. 269.

[52] *Ibid.*, p. 274.

[53] Sumner (2017), pp. 218, 223 (several times), 225 (several times).

[54] *Ibid.*, p. 223.

[55] Hayes (2016), p. 280.

[56] *Ibid.*, p. 281.

[57] *Ibid.*, p. 288. Also reported by Laure (2004), p. 240.

[58][59], Civil Action No. 2010-0976 (D.C. 2017) District Court, District of Columbia. UNITED STATES ex rel. LANDIS, Plaintiffs, v. TAILWIND SPORTS CORP., *et al.*, Defendants. Case

it provides insufficient justifications for any public policy response, let alone the use of criminal law measures. A recent legislative change in Australia[60] appears, according to Hickie, to have jeopardised a range of fundamental rights, including the procedural privilege against self-incrimination (right to silence), with The Greens acquiescing in the Senate "on the basis that, at least, it 'won't force individuals to self-incriminate'."[61] Anderson notes that the juridification of anti-doping work, which may not always be helpful in reaching its purported aims, started long ago: following a self-perpetuating logic, criminalisation might simply be "the next step."[62] But since "a process of juridification, once begun, is very difficult to stop,"[63] governments should ensure they choose the right approach from the onset - one which does not violate fundamental rights.

Purported public wish for retributive justice?

The "absence of an independent and credible enforcement programme," as purported by Sumner, remains unsupported by evidence, though it might apply to the anti-doping work of international federations, failing any substantial segregation of powers and an objective potential for conflicts of interests; at least this seems a workable hypothesis. Yet, to the national anti-doping organisations (NADOs) of some countries, whose governments have worked hard to ensure their financial and operational independence, Sumner's statement reads like a (hopefully unintended) slur. It is against this backdrop, however, that Sumner advocates the criminalisation of doping which, "enforced through the criminal justice system," "would involve the independence of the police and the judicial system. The rigour of this system could instil public belief in the process of sanctions for doping offences and satisfy the public that offending athletes have received their 'just deserts'."[64] This is a more interesting contention, relying as it is on the integrity of the British judiciary, but also because it seems rather unlikely that law courts would apply strict liability[65] (as opposed to the presumption of innocence) and comfortable satisfaction[66] (as opposed to "beyond reasonable doubt"). Rather, this could lead to a strengthening of the rights of accused athletes, which are currently curbed by the absence of an

No. 1:10-cv-00976 (CRC). CHRISTOPHER R. COOPER. United States District Judge. Date: February 13, 2017. https://ecf.dcd.uscourts.gov/cgi-bin/show_public_doc?2010cv0976-547. (Accessed 27 July 2017)

[60] Hickie is referring to the Australian Sports Anti-Doping Bill and the revised Australian Sports Anti-Doping Authority Act 2006 - C2016C00232.

[61] Hickie (2016), 58.

[62] Anderson, (2016), p. 264.

[63] *Ibid.*, p. 260.

[64] Sumner (2017), p. 223.

[65] Art. 2 WADC.

[66] Art. 3(1) WADC.

effective presumption of innocence[67], and it might well lead to fewer sanctions being confirmed - presumably not the sort of outcome which Sumner had in mind when writing her article. But can it be taken for granted that the public actually is craving for retributive justice to be delivered against dopers? But the question of which population needs to be protected from what form of extreme misbehaviour, with criminal law habitually taking the place of ultima ratio, is not addressed. Sumner also does not engage in a systematic conversation with the Anderson's paper she cites from, in which, by drawing on an impressive amount of output from legal as well as empirically-criminological research, Anderson identifies three major flaws of the current anti-doping system, demonstrating that these share similarities with other misconceived exaggerated responses to moral-panic-like dynamics, such as the US-style "war on crime" and "war on drugs." The first flaw concerns a decisiveness coupled with a disregard for evidence, which Anderson finds "beguiling, and especially appeals to policymakers as a fast-acting antidote to corrosive anti-social behaviour, which they claim is having a wider adverse societal effect,"[68] even though evidence of causality and effectiveness is clearly lacking. This flaw takes on special acuity in connection with the WADC's disregard for the presumption of innocence.[69] The second flaw, echoing Lum's observations of self-reinforcing "abuses of authority,"[70] is an authoritarian trend towards curbing fundamental rights.[71] The "frequency with which amendments are made to anti-doping regulations makes such rules susceptible to the argument that athletes cannot reasonably be expected to have constructive notice of what substance or method is prohibited at a given time, and thus opens the system as a whole to the

[67] Kornbeck (2016a).

[68] Anderson, (2013), p. 145.

[69] *Ibid.*, p. 146: "In application to sport, the recent extension and frequency of WADA's testing regime notwithstanding, the proportionately low incidence of positive tests (with only around 2 per cent of athletes testing adversely for prohibited substances) casts significant doubt over the efficacy of that regime. Moreover, it is argued that the current approach, based on the presumed fault of athletes, has become an idée fixe for sports administrators, distracting from more nuanced, long-term solutions such as identifying broader risk factors in the susceptibility of athletes to PEDs."

[70] Lum (2009), p. 794.

[71] Anderson (2013), p. 146: "Second, the authoritarian and puritanical nature of zero-tolerance-led policies means that policymakers often get caught in what might be described as a[n] 'adherence spiral'. This spiral can result in breaches of fundamental legal rights, and ultimately corrupts the core objective of the original policy by way of 'abuses of authority, illegal use of force, and a transformation of policing culture into one that could be inflexible or overly repressive' [Lum (2009), p. 794]. In terms of anti-doping regulation, this adherence spiral can be seen in recent policies which at best can be described as 'peculiar' in nature [McNamee, Tarasti (2010)], and at worst are so intrusive and dogmatic in consequence that they are difficult to reconcile with the (bodily and reputational) integrity of athletes, with athletes' social, economic and human rights, including privacy, and even with the fundamental principle of proportionality which underpins the current 'presumed fault' approach to the sanctioning of athletes."

criticism that it is arbitrary in nature, lacks clarity and is at odds with the principle of legal certainty."[72] The latter observation ought to be observed particularly by UK legislators, as a criminal law provision would most probably have to link up with the definitions found in WADA's WADC, International Standards and the Prohibited List. The third flaw is WADA's zero-tolerance approach and, echoing Simon, its underlying "populist punitiveness."[73] Drawing on Garland[74] and quoting from Simon, Anderson identifies a "contemporary crime control mentality," which "stresses personal responsibility, rather than collective risk spreading," "with a harshly enforced, highly moralistic criminal law promising almost total protection against crime, while emphasizing how dangerous the world is despite these much-needed measures."[75] Though politely phrased, Anderson's critique is harsh and potentially devastating; yet, it is grounded in a solid review of the extant literature. It represents a serious challenge to Sumner's argument, but is, however, not tackled by Sumner in her paper, which fails to deliver a comparable literature review, too often quoting only news reports and programmatic statements.

Doping as fraud

It is against this backdrop that Sumner argues that the "existing crime of fraud by false representation, s.2[76] Fraud Act 2006[77] could be used in its current format to allow fraud charges to be brought where an athlete uses doping and by competing dishonestly makes the false representation that they are doing so clean."[78] Sumner's assessment is based on the assumption that doping is primarily used to access prize money or sponsorships, thereby potentially causing monetary damage to co-competitors or sponsors[79]. The argument is

[72] *Ibid.*, p. 146.

[73] Simon (2007), p. 23.

[74] Garland (2001).

[75] Anderson (2013), p. 147.

[76] Fraud by false representation (1) A person is in breach of this section if he- (a) dishonestly makes a false representation, and (b) intends, by making the representation- (i) to make a gain for himself or another, or (ii) to cause loss to another or to expose another to a risk of loss. (2) A representation is false if- (a) it is untrue or misleading, and (b) the person making it knows that it is, or might be, untrue or misleading. (3) "Representation" means any representation as to fact or law, including a representation as to the state of mind of- (a) the person making the representation, or (b) any other person. (4) A representation may be express or implied. (5) For the purposes of this section a representation may be regarded as made if it (or anything implying it) is submitted in any form to any system or device designed to receive, convey or respond to communications (with or without human intervention).

[77] Fraud Act 2006. 2006 c. 35. An Act to make provision for, and in connection with, criminal liability for fraud and obtaining services dishonestly.

[78] Sumner (2017), p. 225.

[79] This is also a simplification. Doping also occurs in amateur sport when there are no monetary incentives and for some athletes even no chances to make the podium.

based on a balance-sheet reasoning which cannot be assumed to apply in all cases where doping occurs, though Sumner contends that each case may need to be submitted to the common law Ghosh test,[80] which asserts that it is "dishonest for a defendant to act in a way which he knows ordinary people consider to be dishonest," while failing to satisfy this means that "that is the end of the matter and the prosecution fails." If the Ghosh test amounts to something like an implicit presumption of innocence, Sumner nevertheless feels reassured that "the test for objective dishonesty will be easily satisfied and make it difficult for a doper to deny an awareness of these standards. Dishonesty is unlikely therefore to be a barrier to convictions."[81] This seems a surprising statement given that the views of the general public remain unaccounted for, which certainly makes it methodologically very difficult to ascertain what "objective dishonesty" would look like. The material indicators of behaviour susceptible of meeting the requirements defined in s.2 Fraud Act 2006 would be rather difficult to assess objectively, given that the definition of "representation" is a broad one[82], particularly if applying the Ghosh test.[83] The faulty character of the behaviour under investigation would need to be assessed in court[84], as would the intention to "make a gain for himself [sic] or another," or "to cause loss to another or to expose another to a risk of loss."[85] Yet, applying the Ghosh test to doping-prone or doping behaviour would leave many lines of defence open to challenge. In Ghosh, the Court found it to be "dishonest for a defendant to act in a way which he knows ordinary people consider to be dishonest," which, however, in relation to doping, poses problems, as the views of "ordinary people" are not well known - unlike for offences like manslaughter, rape or house burglaries. The Ghosh principle has the potential to set the bar very high because of the difficulty of defining what an "ordinary" reasonable person is. Given the increasing pervasiveness of doping-like behaviour in general society, ranging from caffeine to methylphenidate (sold under various trade names such

[80] [1982] EWCA Crim 2. Case No.: 2359/B/81.

[81] Sumner (2017), p. 225.

[82] See s. 2 (3) (a)-(b) and sec. 5 Fraud Act 2006.

[83] See in particular the concluding considerations of the Court in R v Ghosh: "[. . .] In determining whether the prosecution has proved that the defendant was acting dishonestly, a jury must first of all decide whether according to the ordinary standards of reasonable and honest people what was done was dishonest. If it was not dishonest by those standards, that is the end of the matter and the prosecution fails. If it was dishonest by those standards, then the jury must consider whether the defendant himself must have realised that what he was doing was by those standards dishonest. In most cases, where the actions are obviously dishonest by ordinary standards, there will be no doubt about it. It will be obvious that the defendant himself knew that he was acting dishonestly. It is dishonest for a defendant to act in a way which he knows ordinary people consider to be dishonest, even if he asserts or genuinely believes that he is morally justified in acting as he did." For a discussion of (dis)honesty, from the perspective of a sport philosopher, using the Armstrong case to discuss the relevance of the "rule of the game", see Moore (2017).

[84] See s. 2 (2) Fraud Act 2006.

[85] See s. 2 (1) (b) (i)-(ii) Fraud Act 2006.

as Ritalin®) or modafinil (sold as Provigil®), this could be expected to become problematic.[86] The court might need, then, to commission an empirical study, the results of which might well be so inconclusive that the defendant would need to be acquitted.

Dismissal of alternatives

Sumner dismisses a harm reduction approach, mentioning that it "has been argued that a harm reductionist approach to doping would be dangerous to the health of athletes with youth participants being of particular concern,"[87] however without providing any references to support this view, while Kayser and others are known to have developed compelling reasoning in favour of such alternatives.[88] Sumner goes further, stating that criminal sanctions "would be a stronger deterrent to athletes than current sanctions, and retributive justice administered by the independent criminal justice system could alter the public's perception of sport's highest achievers."[89] This in itself may prompt legal-philosophical reflections as whether the law should be legitimately used to alter perceptions, yet Sumner further takes the view that since "an anti-doping stance is necessary to uphold the values of fair-play and equality which underpin the ethos of sport," the "public's reaction to the best sporting achievements could shift from 'doping but not caught' to 'clean because not prosecuted', bring back faith in the truth of the greatest sporting moments and revive the [SoS]."[90] This means that, apart from drawing extensively on almost entirely undocumented claims regarding the perceptions and views of the public, Sumner further narrows her argument to depend almost exclusively on the SoS. The aim of section 3 of this article is to lay out the main reasons why we believe such an approach is fatally flawed.

[86] See e.g. Cakic (2009).
[87] Sumner (2017), p. 226.
[88] Kayser, Broers (2012); Kayser, Mauron, Miah (2007); Kayser, Tolleneer (2017)
[89] Sumner (2017), p. 226.
[90] *Ibid.*, p. 226.

Relying on the spirit of sport [SoS] to criminalise doping

Why criminalise doping? From evidence to legal provisions

In section 3 of this article, we showed how Sumner's paper unduly relies on assumed public perceptions to advance its argument in favour of a criminal offence. Yet, Sumner's reliance on public perceptions needs also to be considered in conjunction with her equally outspoken reliance on the SoS. The current SoS ideology was not part and parcel of sport in the past; rather, it is a very recent addition underpinning current policies, rules and practices. If UK legislators were to heed Sumner's advice and embrace the SoS as the basis for a doping criminalisation bill, they ought to be made aware of this incongruence between current and past approaches to doping, especially because the SoS argument, as set out in the WADC, includes a direct and explicit reference to "Olympism,"[91] thus drawing on a potentially flawed reading of the Ancient Games.[92] If UK legislators were to follow the wishes of sports and anti-doping organisations as regards the SoS concept and the way it borrows from the Olympic tradition, they ought to do so in full recognition of the fact that the way in which the WADC draws on "Olympism" wilfully eclipses some unwelcome yet well-established academic historical knowledge.[93]

More problematic though is how WADA decides what doping is. The "2/3 rule" of the WADC offers three justifications for doping bans (whether or not these are backed by legislation), as it allows WADA to include substances and methods on the Prohibited List if two of the following criteria are met: "has the potential to enhance or enhances sport performance;"[94] "represents an actual or potential health risk to the Athlete;"[95] "violates the [SoS] described in the introduction to the Code."[96] The SoS is central to our analysis because it represents a far more vague justification than those of performance enhancement and health risk, especially because the SoS (unlike performance enhancement and health risk) may be affirmed without any recourse to scientific evidence,[97] drawing instead on "WADA's determination,"[98] while "neither the slogan 'play true' nor the term 'Olympism' is defined in the body of the Code or in its Appendix

[91] WADC (2015), Fundamental Rationale, p. 14.
[92] See e.g. Finley, Pleket (1976).
[93] Ritchie (2014).
[94] Art. 4.3.1.1 WADC.
[95] Art. 4.3.1.2 WADC.
[96] Art. 4.3.1.3 WADC.
[97] For a discussion see Kornbeck (2013).
[98] Art. 4.3.1.3 WADC.

of Definitions."[99] Although McNamee has taken the view that terminological vagueness is not a problem *per se*,[100] it does pose a problem in relation to legal certainty, and thus to public policy and the idea of a criminal offence. Given the WADC's "underlying premise of the Code for sport is that fault does not have to be proved," and "[a]part from the arguable unfairness of imposing absolute liability which prevails in much of the Code [...], the Code may soon be heading in an even more questionable direction,"[101] if anti-doping legislation introduces coercive powers, such as recently in Australia,[102] for offences which are justified and defined vaguely.

This vagueness, and the lack of solid evidence discussed in section 2, may together reinforce the bias encapsulated in "Goldman's dilemma," a recurrent argument used for decades in anti-doping debates. Comparably to many other anti-doping advocates, Sumner recycles such frequently used arguments despite them being debunked urban myths. The Goldman hypothesis[103] states that athletes would be willing to ingest a magic pill if it could make them an Olympic champion, even if it would kill them within 5 years. Christiansen and Møller researched and concluded that the study was probably never formally conducted.[104] Since then, Connor, Mazanov and Woolf published three papers in scientific journals with an editorial policy clearly rejecting Goldman's claims.[105] [106] Yet Goldman's bias, epitomised by his declared wish that his 1984 book would "be the catalyst to make people angry enough to do something about [the steroid epidemic],"[107] has entered the mainstream where it may have facilitated a "selective reporting of data to best promote its interests (known as tactical use of evidence in policy settings)."[108] While "Goldman's interest in promoting the anti-doping ideology creates a level of uncertainty about the validity of results,"[109] it would be dangerous to the rule of law if such bias were to guide legislative initiatives. Before considering such options, we should first look at whatever obligations the UK may or may not be facing regarding the criminalisation of doping.

[99] Hickie (2016), 44.
[100] McNamee (2012).
[101] Hickie (2016), 44.
[102] *Ibid.*, 44-45.
[103] Goldman, Bush, Klatz (1984); Goldman, Klatz (1992).
[104] Christiansen, Møller (2007).
[105] Connor, Mazanov (2009); Connor, Woolf, Mazanov (2013); Woolf, Mazanov, Connor (2017).
[106] Another urban myth which Sumner uses is that of the deadly side-effects of EPO-use during the so-called EPO epidemic in cycling. The historian López has debunked this myth convincingly by investigating the evidence base linking the deaths of these athletes to doping and finding none. In fact, the sudden-death incidence among cyclists at that time was quite the same as that of the general population of similar age. See López (2011), (2012a), (2012b), (2013).
[107] Goldman, Bush, Klatz (1984), p. xiii; cit. Woolf, Mazanov, Connor (2016), p. 3.
[108] Woolf, Mazanov, Connor (2017), p. 3.
[109] *Ibid.*, p. 3.

The UK's international obligations

While the WADC is the yardstick against which all WADA-approved anti-doping work is measured, it can hardly be relied upon to claim the need for an anti-doping offence in the national legal order. It appears quite exceptional to adopt standards created by an NGO as the basis for a law, all the more since the very same WADC specifically excludes governments from its standard-setting scope.[110] Regardless of the WADC's insistence on Stakeholders' "expectations" regarding "the involvement of Governments,"[111] it is only as State Parties to a UNESCO Convention that countries have been able to "recognise" the WADC at all, thus leaving it up to WADA to decide upon what exactly is written in the WADC. Looking at the UK's (and other countries') international law obligations, the picture is equally disappointing for the proponents of criminalisation. By ratifying the anti-doping conventions of the Council of Europe (1989)[112] and of UNESCO (2005)[113], governments of the UK and other countries have made certain commitments which, however, are generally less specific than obligations otherwise defined in international law conventions. The lack of substantive obligations probably accounts to a large extent for the unusual speed at which the UNESCO Convention reached as many as 185 accessions and ratifications worldwide by 23 March 2017.[114] While the UNESCO Convention was instrumental in achieving a certain level of recognition of the WADC by governments (despite the WADC's own limitations on the role of governments[115]), it did not give it legal force (a fact which may be obscured by the fact that some countries have passed national legislation giving such effect to rules enshrined in the WADC).[116] The WADC International Standards[117]

[110] See Art. 20, 22 and 23 WADC as well as the entry "Signatories" in Appendix I (Definitions), p. 140.

[111] Art. 22 WADC.

[112] Council of Europe: European Treaty Series - No. 135. Anti-Doping Convention. Strasbourg, 16.XI.1989, http://www.coe.int/t/dg4/sport/Source/CONV_2009_135_EN.pdf. (Accessed 27 July 2017)

[113] UNESCO: International Convention against Doping in Sport 2005. Paris, 19 October 2005, http://unesdoc.unesco.org/images/0014/001425/142594m.pdf#page=2. (Accessed 27 July 2017)

[114] See official list on UNESCO website: http://www.unesco.org/eri/la/convention.asp?KO=31037&language=E. (Accessed 27 July 2017)

[115] See Art. 20, 22 and 23 WADC as well as the entry "Signatories" in Appendix I (Definitions), p. 140.

[116] See Backhouse *et al.* (2014); Houlihan, Garcia (2012); Parzeller, Prittwitz *et al.* (2009); T.M.C. Asser Instituut (2010).

[117] Prohibited Substances and Methods (updated annually); International Standard for Testing and Investigations (ISTI); International Standard for Laboratories (ISL); International Standard for Therapeutic Use Exemptions (ISTUE); International Standard for the Protection of Privacy and Personal Information (ISPPPI), see https://www.wada-ama.org/en/international-standards. (Accessed 27 July 2017)

are annexed to the Convention, "reproduced for information purposes and are not an integral part of this Convention. The Appendices as such do not create any binding obligations under international law for States Parties."[118] States Parties merely "commit themselves to the principles of"[119] the WADC, their only obligation under international law being to "adopt appropriate measures at the national and international levels which are consistent with the principles of"[120] the WADC. Consequently, no provision in the UNESCO Convention obliges the UK or any other country to introduce criminal sanctions, and indeed, the same applies to the Council of Europe Convention. The breadth of the options available for meeting these - entirely soft - international obligations can be seen in a number of recent studies such as one lately conducted by Backhouse *et al.* on behalf of the European Commission. According to this study, 6 (21%) EU Member States (MS) have introduced some kind of legislation as the base of their national anti-doping policies and programmes,[121] while 13 MS (48%) have chosen to rely on various combinations of legislation and sports organisations' own regulations of federations (n=13) (48%)[122], and as many as 9 MS (31%) appeared, in 2014, to not yet have any anti-doping legislation at all.[123] But how many European countries have actually criminalised doping *per se*?[124] Only three come to mind: Austria,[125] Germany and Italy. Sumner mentions Germany and Austria, with detailed references to the Austrian penal code (but not the Austrian anti-doping act). She does not mention that the German anti-doping act has met with controversy since its inception, that some observers doubt its constitutionality and that, until this date, not a single criminal conviction has been reported,[126] despite there being enough candidates for a test case, and Germany being one of the very few countries to have investigation and prosecution units specialised in anti-doping.[127] Despite having introduced some

[118] UNESCO Convention, Article 4(2).

[119] *Ibid.*, Article 4(1).

[120] *Ibid.*, Article 3(1).

[121] AT, BE-FL, BE-FR, DK, EL, HR, HU, FR, IT, LT, LV, PL, SK. See Backhouse, *et al.* (2014), p. 47.

[122] CZ, DE*, EE, IE, FI, NL, SI, SE, UK. See *Ibid.*, p. 47.

[123] BG, CY, MT, PT, RO, ES. See *Ibid.*, p. 47.

[124] While legislation in this field is subject to constant change, the most recent survey covering such provisions (within the framework of a larger investigation) is that of Sloot, Paun, Leenes, McNally, Ypma (2017).

[125] *Ibid.*, 141: "Criminal Code (StGB): § 147 classifies doping in sport as a serious fraud and is threatened with up to ten years' imprisonment."

[126] Some convictions are however reported from Austria. See Murphy J (2013) Where in the world is doping a crime? (doping in sports pt. 6). Posted 24/04/2013. http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/FlagPost/2013/April/Where_in_the_world_is_doping_a_crime_doping_in_sports_pt_6. (Accessed 27 July 2017)

[127] Their work has until now been based on the well-established criminal offence of trade in doping substances, which does not pose the sort of questions linked with the offence of "doping *per se*".

criminal provisions as early as 1971, Italy appears to have changed its approach several times, including a depenalisation bill in 1981.[128] Governments should be careful about preserving their prerogatives, lest legislative initiatives be dictated by the wishes of NGOs. Recent WADA statements released on the legislation of Kenya suggest that governments could easily find themselves under arrangements of quasi-tutelage. In February 2016, WADA issued a statement, noting "the Kenyan Government's failure to pass the appropriate legislation and provide adequate funding" by a deadline set by WADA, informing that "the matter has been referred to WADA's independent compliance review process."[129] If this offered a discomforting read, already in May 2016, a Kenyan draft bill resulting from the work of a joint WADA-Kenya team had seen the light of day and been deemed potentially Code-compliant by WADA.[130] It is only to be hoped that this sort of soft power will not also be wielded in the future to promote the idea of using criminal sanctions against doping athletes. The executive, legislative and judiciary branches of governments of any country should remain mindful of the approach expressed through WADA's communication on the Kenya case.

Grounding the criminalisation of doping in the spirit of sport [SoS]

There is today only one simple, valid and coherent reason for anti-doping, and that is the anti-doping rule. Sport is play defined by rules. There is an anti-doping rule, and breaking that rule amounts to cheating. Breaking rules in sports, when discovered, is met by penalties, with the aim of keeping the play functional. But rules can be changed or even abandoned. The definition of

[128]See Paoli, Greenfield (2017), p. 251. "With Act 1099 of 1971, athletes' use of doping substances and the administration of such substances to athletes were criminalized, albeit as a misdemeanor, not a felony. These offences were depenalized in 1981 and a new specific bill on doping was not adopted until 2000 [. . .]. In the interim, other provisions of Italy's penal code and special statutes might have been applicable. Of particular relevance, we cite 'administration of drugs in a dangerous way for public health' (Article 445 of the Italian Penal Code, hereafter CP) and 'sporting fraud,' which was introduced with Act 401 of 1989. Over time, the latter has been used to prosecute crimes related to doping, albeit in a partially controversial manner [. . .]."

[129]February 22, 2016 WADA. Statement on Kenyan NADO. https://www.wada-ama.org/en/media/news/2016-02/wada-statement-on-kenyan-nado (Accessed 27 July 2017): "As of today, the draft bill, policy and regulations submitted by ADAK are not in line with the Code. The formal adoption of these three legal instruments should be done by the relevant Kenyan authorities only once they are considered by WADA to be in line with the Code. The matter will be reviewed by the independent Compliance Review Committee at its next meeting on 5 April, and consideration will be given to a possible recommendation of non-compliance to WADA's Foundation Board on 12 May."

[130]Kenya-WADA meet clears way for compliant Anti-doping law. May 18, 2016. http://www.aipsmedia.com/2016/05/18/18735/kenya-wada-doping-compliance. (Accessed 27 July 2017)

the no-doping rule is unusual. Art.1 of the 2015 version of The Code states: "Doping is defined as the occurrence of one or more of the anti-doping rule violations set forth in Article 2.1 through Article 2.10 of the Code". Art. 2.1 through 2.10 then list different breaches ranging from "Presence of a Prohibited Substance or its Metabolites or Markers in an Athlete's Sample" to "Prohibited Association". What is important is that these articles refer to the Prohibited List, which lists the forbidden substances and methods. This list is updated annually, with substances added, but sometimes also taken off the list. This implies that from one year to the other, a given substance may change its status from 'not doping' to 'doping', and vice versa. Sumner cites the case of Maria Sharapova, who was suspended for use of meldonium, which was added to the list just prior to a control. Zach Lund, an American skeleton athlete (head-first sleighing), could not participate in the 2006 Turin Winter Olympics when finasteride was found in a urine sample. Finasteride had just been added to the list of forbidden products as a potential masking agent for anabolic steroid use. Lund had been using finasteride since 1997, which he had always informed the doping control officers of, but was not aware of its recent inclusion on the Prohibited List. Lund was excluded from the Turin games on opening day. Then, in 2008, WADA took finasteride off the list again. How would criminalisation of doping work out for such cases? The fall-back position ought to be insisting on the presumption of innocence, the burden of proof defined as "beyond reasonable doubt" and the ban on retroactivity. If applied consistently, these essential safeguards against judicial blunders would have the potential to strengthen defendants' rights in anti-doping cases and might thereby lead to fewer sanctions.

To bolster her argument for criminalisation, Sumner advances that breaking the anti-doping rule is more than transgressing an ordinary rule, it is considered immoral. Doping is a deviant behaviour that should be met with harsh repression. But the underlying reasons for such a position are not outlined in detail by Sumner, other than its alleged fraud dimension and its dissonance with the SoS. Sumner's proposal to criminalise doping would seem to aim at the protection of the SoS. Arguing that criminalisation of doping in the UK would join a global movement, she thus attributes universal value to the SoS. Sumner also evokes a "loss of the SoS", which is historically incorrect, given its very recent definition. Difficulties in universally imposing the SoS would describe the dynamics more correctly. Again, professional road cycling, and especially the Tour de France exemplifies this contention, where doping was part and parcel of practice for all of its history until recently, and where the no-doping principle has not yet been adopted by all despite all the anti-doping effort. The SoS was coined at the time of the inception of WADA. The SoS is now defined in the WADC in

terms which are lacking in terminological clarity.[131] This SoS is the subject of much debate in academia, and there clearly is a plurality of opinion, with arguments in favour and against.[132] It is beyond the scope of this article to discuss the SoS in detail. Suffice here to mention that there is a good reason to see it as a continuation of the 'foundation myths' for the modern Olympic movement as started by Pierre de Coubertin.[133] The Olympic movement, with the help of WADA and other allies, are in the process of trying to impose the SoS as a universal principle. However, because of its vagueness, the application of the SoS outside Olympic-style elite sport in wider society, e.g. amateur sport, mass-sport and society in general, potentially leads to unintended side-effects.

Discussing the foundations of the anti-doping rule is also beyond the scope of this commentary. But on this subject, there is also an intense ongoing academic debate and a plurality of opinion. One troubling element is that of the level-playing field that would be distorted by doping. This contention bypasses all other sources of inequality such as talent and financial support. If athletes' access to performance-enhancing drugs ought to be harmonised, why do we tolerate unequal access to funding? According to research done by journalists from The Guardian, the average cost of a UK medal earned at the Rio Olympics was £5.5m, while sports that had received extra funding before Rio tended also to have earned more medals.[134] Not only is this investment considerable: it is largely covered by taxpayers, three-quarters of whom would prefer, according to a recent public poll in the UK, to see their money spent on sport for all rather than on elite competitive sport.[135] While we know that the criminalisation agenda corresponds with the wishes of many actors within the IOC[136] and WADA,[137] public authorities are sovereign to embrace or reject such expectations coming from NGOs. They should also be mindful of the history,

[131] See sec. 1 (supra).

[132] See e.g. Loland, Hoppeler (2012) and McNamee (2012) in defence of the SoS; With reference to the Olympic motto *citius, altius, fortius* Mauron argued that doping can also be seen as fully congruent with what is essential about elite competitive sport (2011).

[133] Ritchie (2014).

[134] Halliday J (2016) 'Brutal but effective': why Team GB has won so many Olympic medals. The Guardian, Monday 15 August 2016 12.26 BST, https://www.theguardian.com/sport/2016/aug/15/brutal-but-effective-why-team-gb-is-winning-so-many-olympic-medals. (Accessed 27 July 2017)

[135] Scott S (2017) Three-quarters of UK would rather money spent on grassroots sport than Olympic medals. ITV News, 24 February 2017 at 1:01am, http://www.itv.com/news/2017-02-24/three-quarters-of-uk-would-rather-money-spent-on-grassroots-sport-than-olympic-medals/. (Accessed 27 July 2017)

[136] See e.g. Herman M (2007) IOC says government must criminalise doping. Reuters, Tue Jul 24, 2007 | 5:04pm BST, http://uk.reuters.com/article/uk-olympics-doping-idUKSP15795820070724. (Accessed 27 July 2017)

[137] See e.g. WADA (2015) October 25, 2015. WADA Statement on the Criminalization of Doping in Sport. https://www.wada-ama.org/en/media/news/2015-10/wada-statement-on-the-criminalization-of-doping-in-sport.

structures and funding of WADA, which, according to some sources, make it almost a quasi-extension of the IOC,[138] whose pre-WADC code formed the template for the drafting of the first WADC 2003.[139] "For a private organisation and a private law foundation respectively, both the Olympic movement and WADA certainly have enormous influence,"[140] yet power needs to be checked and balanced by the law. Even when WADA goes counter to the wishes of the IOC, the IOC tends to remain impervious, as exemplified in the case of WADA's 2016 recommendations based on its independent McLaren report. Though the IOC may have been right in refusing to disqualify the entire Russian team (which could have been seen as a violation of the presumption of innocence), the example illustrates the limits to WADA's authority. Controversies over the role of the IAAF and Russia were triggered, in 2015-16, by two documentaries shown on Germany's ARD TV network; they did not originate from the anti-doping system. In March 2017, the journalist behind the ARD documentaries, Hajo Seppelt, published an even more controversial report suggesting that the IOC itself had "swept" test results "under the carpet" to protect Jamaican athletes.[141] If these allegations were to be proven true, with what right would then the IOC be able to continue advocating for criminal sanctions against doped athletes? Why does deliberate repression, rather than harm reduction,[142] shape the IOC's approach to anti-doping?

As observers of the current anti-doping system since its inception, we often watched and listened in disbelief when such expectations were put forward. Yet, what moral right does a governing body have to demand the use of criminal sanctions - the ultima ratio of society's response to unwanted behaviour - when the same governing body is not prepared to follow these rules at all times? Anti-doping sanctions are already very hard: they can ruin sporting careers, earnings and lives. Criminal sanctions are even harder; can they be justified just because of a largely undocumented assumption that the public wants its pound of flesh? "How much of the present harm of doping, for the athlete and the wider society, might be related to anti-doping policy rather than to the use of the performance-enhancing methods or substances *per se*,"[143] and is it not time to think about alternatives? Sumner's reference to a purported criminalising trend also seems questionable. "As more countries create criminal offences for doping, a de facto supranational law is formed."[144] Apart from the

[138] See Hayes (2016), p. 275.
[139] *Ibid.*, p. 278
[140] Hickie (2016), 44.
[141] Seppelt H, Neumann T (2017) IOC Sweeps Test Results under the Carpet. ARD, 02.04.2017, 15:00, http://www.sportschau.de/doping/doping-testergebnisse-englisch-100.html. (Accessed 27 July 2017)
[142] For a medical view, see Kayser, Broers (2012). For a legal perspective, see Milot (2014).
[143] Kayser, Tolleneer (2017).
[144] Sumner (2017), p. 2.

fact that the simultaneous introduction of potentially dissimilar legal provisions in different jurisdictions does not create any supranational law, the trend itself remains to be documented, as can be seen from the limited number of surveys of national legislation currently available.[145] More fundamentally, why should governments follow the draconian approach preferred by the IOC and its commercial partners if it is true, as assumed by Byrnes, that the "literature is replete with examples of rulings by national and international sports associations and [CAS] which appear to be harsh and to involve the application of stringent standards in an inflexible way, in many cases punishing athletes who do not appear to have been at fault and who have been innocent victims of mistakes that seem reasonably avoidable only in retrospect"?[146] Why should they tie their criminal law to a set of rules (the WADC and IS) and a legal tradition (the established body of decisions taken by anti-doping bodies and of doping-related CAS awards) which has no qualms about "the presumption of guilt without proof and intentionality",[147] sometimes insisting on strict liability even when scientific evidence has been unusually muddled, as in *Pechstein*[148], while some of its own protagonists consider "probabilistic methods" sufficient to establish guilt and denounce the established (criminal-law) standard of proof as a set of "archaic assumptions of absolute certainty"?[149] Why trust sports organisations, many of which have evident problems ensuring good governance,[150] while the recent Russian anti-doping scandal has shown that the WADC-based system does not deliver even according to its own standards,[151] with the protection of sports integrity, including by letting NGOs suggest changes to the criminal law of sovereign states?

Concluding remarks

This paper has provided a discussion of Sumner's paper by focussing in particular on her reliance on public perceptions and the WADC's SoS. Regarding public perceptions, these are too often purported but undocumented, as are many central claims regarding key empirical aspects of the problems addressed by Sumner, all of which is exacerbated by Sumner's choice to rely on the SoS, which raises important concerns regarding legal certainty. This, in turn, raises a raft of concerns over the rights of athletes suspected of doping, because the principle

[145]Backhouse *et al.* (2014); Houlihan, Garcia (2012); Parzeller, Prittwitz *et al.* (2009); T.M.C. Asser Instituut (2010).
[146]Byrnes (2016), p. 83.
[147]Kayser (2011).
[148]See e.g. McArdle (2011).
[149]Sottas, Robinson, Saugy (2010).
[150]See e.g. Masters (2013).
[151]See e.g. Duval (2017).

of legality under criminal law requires the subjects of the law to understand that a given behaviour is punishable, and also because this principle complements, and interacts with, the presumption of innocence. "Both rules derive their content from a shared belief that unwittingly convicting the innocent is a far more frightful harm than unwittingly acquitting the guilty,"[152] yet they are not held in high regard by the Olympic movement, as epitomised not only by the insistence on strict liability in the WADC but also by the CAS in *Quigley*,[153] referring to the "vicissitudes of competition, like those of life generally," which "the law cannot repair."[154] Yet, while such relaxed rules and arrangements may be more readily accepted within settings where private organisations are setting and applying their own rules (even if the acceptance of athletes and the general lawfulness of these rules and arrangements cannot be taken for granted), basing public policies on them seems highly questionable. Even a past WADA Chairman, John Fahey (2007-13), no doubt because of his long career in public service, had to admit, concerning the strict liability principle: "Most lawyers (me included) have had trouble in accepting this standard."[155] If criminalisation really is the way forward for anti-doping, then the standards used until now in the anti-doping fight must be abandoned as they do not afford accused athletes of safeguards compatible with those afforded to individuals accused of ordinary criminal offences. In that case, strict liability and comfortable satisfaction ought to belong to the past. Since the publication of Sumner's paper, the Department for Digital, Media, Culture and Sport (the UK central government department in charge of sport)[156] released a Review of Criminalisation of Doping in Sport which dismissed the idea of criminalisation. The DMCS sees the concept

[152]Westen (2007), p. 283: "Now there are two ways in which a state can, unwittingly, punish a person for a prohibited act or for a proscribed mental state of which he is innocent: by punishing him for an act or mental state that the statute at hand clearly proscribes, but that the person himself did not in fact commit or possess; or, alternatively, by punishing him for an act or mental state that he did in fact commit or possess, but that the statute at hand does not proscribe. The presumption of innocence addresses the risk of the first injustice; legality addresses the risk of the second. Both rules derive their content from a shared belief that unwittingly convicting the innocent is a far more frightful harm than unwittingly acquitting the guilty."

[153]CAS 94/129 *USA Shooting & Quigley v UIT*.

[154]Quigley, at 14: "It is true that a strict liability test is likely in some sense to be unfair in an individual case, such as that of Q., where the athlete may have taken medication as the result of mislabelling or faulty advice for which he or she is not responsible - particularly in the circumstances of sudden illness in a foreign country. But it is also in some sense 'unfair' for an athlete to get food poisoning on the eve of an important competition. Yet in neither case will the rules of the competition be altered to undo the unfairness. Just as the competition will not be postponed to await the athlete's recovery, so the prohibition of banned substances will not be lifted in recognition of its accidental absorption. The vicissitudes of competition, like those of life generally, may create many types of unfairness, whether by accident or the negligence of unaccountable persons, which the law cannot repair."

[155]Fahey (2016), p. vi.

[156]HM Government, Department for Digital, Media, Culture and Sport (2017).

as failing the proportionality test,[157] while also warning that strict liability "would be a barrier to effective criminalisation."[158] The approach consisting in framing doping as fraud is not supported, as the authors of the report have identified both legal and practical problems, encapsulated jointly in the challenge that the standard of proof would have to be that of criminal law (beyond reasonable doubt).[159] Crucially, the CMCS thinks that criminalisation "would not introduce significant additional deterrence,"[160] which is consistent given the views expressed in the report (based on legal assessment, empirical research literature and expert interviews) on the likelihood that criminalisation would actually be effective. While we might have greeted more explicit language on the unfairness of criminalisation, we certainly feel vindicated by this DMCS publication.

This paper has further highlighted several trends which lead us to believe that the rights of athletes as defendants would be potentially put under unduly pressure, should more countries choose the path of criminalisation, although a strict application of usual criminal law canons and criminal procedure also has the potential to raise standards and protect athletes better as compared with the *status quo*. The increasing surveillance practised in order to test athletes is controversial,[161] causing Anderson to ask "how much further does WADA think it can go in order to adhere to its current zero-tolerance approach, and how much further will the courts allow it to proceed in acting so invasively towards athletes?"[162] Although much is murky, the direction of thrust seems constant, with Sumner's paper essentially echoing WADA's expectations towards governments.[163] While the measures proposed are drastic and represent a departure from established policies, Sumner regardless does not actually demonstrate that "the public's response to doping revelations"[164] is such as to warrant a draconian public policy response in the shape of criminal sanctions. Sumner does not truly expect a UK criminalisation initiative to trigger a

[157] *Ibid.*, p. 21, sec. 91.

[158] *Ibid.*, p. 4, sec. 2; p. 10, sec. 11: p. 21, sec. 57.

[159] *Ibid.*, p. 27, sec. 96: "In practice it is very hard to enforce this, as discussed above there is the need to prove beyond reasonable doubt that the doping took place intentionally. Also, there would be a further need to show that there was intent for financial gain. It would be easy for a competent defence to defeat these cases. The review did not see any evidence of a successful prosecution for fraud as a result of an athlete abusing performance-enhancing drugs."

[160] *Ibid.*, p. 6, sec. 13 (g).

[161] When the data protection authorities of the EU and its MS suggested that extant and proposed future anti-doping policies might not comply fully with EU and national law, this was met with hostility from WADA; see Waddington (2010).

[162] Anderson (2013), p. 147.

[163] Sometimes, such expectations can only be fulfilled by through legislation or practices which may not be compatible with European fundamental rights, e.g. in the field of data protection; see Kornbeck (2016b).

[164] Sumner (2017), p. 225.

"harmonised" worldwide trend, but instead hopes for a "global movement towards the criminalization of doping."[165] Apart from the fact that Sumner's express prediction is for a piecemeal trend with potentially widely dissimilar national laws, she does not even envisage a high degree of legal certainty but rather increased deterrence and an intangible "improvement in public perception and belief in sporting performances worldwide."[166] This would almost certainly put British athletes at a disadvantage over competitors from many other countries: a point also made by a retired German federal constitutional judge over the expected outcome of Germany's recently introduced anti-doping act (AntiDopG).[167]

An additional reason for concern is the vague nature of the public policy goals guiding Sumner's advocacy of criminalisation. While zero-tolerance approaches to drugs sales, street violence, house burglaries or tax evasion may raise concerns with regards to necessity and proportionality, at least they have the merit of following clear objectives for which quantifiable and - above all - attainable benchmarks can be established. While the "war on drugs" may be unrealistic, its goal remains clear: the end of drug use. Yet, the anti-doping fight may have more in common with the "war on terror," if its guiding objective is the one proposed by Sumner: "an improvement in public perception."[168] What exactly would that mean, and when would the objective have been attained? While the eradication of doping is unlikely to be achieved, just how much would public perception need to be "improved" for the use of criminal sanctions to be justified? And how can criminal law be used effectively to achieve such a vague objective?[169] According to Anderson, a "circle of impotence" is haunting the current anti-doping system,

[165] *Ibid.*, p. 226: "A globally harmonised anti-doping programme seems impracticable and unfeasible given state autonomy, but as more states incorporate anti-doping offences into their criminal law, a global movement towards the criminalization of doping develops. The same arguments of deterrence and public perception, advanced in this article on a UK basis, apply globally. Whilst only a few countries have criminalized doping in sport, the issue of jurisdiction is important, but as more states criminalize doping, there will be an increased likelihood that a doper will be committing a crime."

[166] *Ibid.*, p. 226.

[167] Steiner (2016), p. 20: "The German legislator is protecting competitors from other countries against doping German athletes!" (translation: J.K.).

[168] Sumner (2017), p. 226.

[169] Anderson (2013), p. 148: "[. . .] current anti-doping policy, where the regulatory response is based on zero tolerance, where 'effective' prosecutorial and punitive discretion has been delegated to WADA and national anti-doping agencies, and where the 'law-making' voice speaks incessantly about the 'presumed fault' of athletes. In this, a weakness of the current system is revealed - its blunt uniformity. This bluntness, which is driven by a fear of giving excessive rights to 'cheaters', including a genuine apprehension of the lengthy and costly hearing that might result if a defendant's mens rea had to be considered, means that WADC regulations fail, at the critical prosecution or charging stage in the doping disciplinary process, to differentiate between 'committed' cheats, who intended to enhance their performance, and those who make mistakes either negligently or through no fault of their own. Again, this blunt uniformity has a stigmatising effect on athletes."

since "the constructed response to the perceived threat is based on exclusionary and intuitive notions of athlete morality and the social value of sport by the dominant administrative stakeholders in sport."[170] These stakeholders wield considerable power within WADA's governing structures.[171]

Borrowing concepts from Stewart *et al.*,[172] Anderson affirms that these stakeholders, "by stubbornly imposing this 'collective habitus' or 'ideological will' [...] on sport as a whole, have not just failed credibly to address the matter of doping but may in fact be aggravating it."[173] In this context, some recent developments lead us to assume that WADA's influence over individual sanctions might become even more pervasive in the future, with regulatory expectations being set out, not only in the WADC but increasingly in IS as well. Following the controversies surrounding the IAAF and the NADOs of Russia and Kenya, WADA has embarked upon a journey of using its compliance monitoring system also to take control of sanctions. That such use of compliance monitoring mechanisms may go to the heart of the legislative prerogative of states can be seen in the Kenya case.[174] The proposal made in the McLaren report[175] to ban all Russian athletes from the 2016 Rio Olympics amounted to a massive collective sanction, against individuals not even accused of any wrongdoing, and the IOC showed commendable courage in not heeding this advice,[176] yet this may only have been a prelude. In May 2017, the WADA Foundation Board resolved that the Fourth World Anti-Doping Conference would be held in Katowice (Poland) in 2019, but kept the question open of whether the WADC 2015 should be replaced after 2019. While the revision of the WADC 2009 may not have been as transparent as European governments might have preferred it to be,[177] lacking the detail of justifications usually required for parliamentary bills, a WADC revision is still far more transparent than IS amendments, as these "may be revised from time to time by the WADA Executive Committee

[170] *Ibid.*, p. 150.
[171] See Hayes (2016), as discussed in section 2.4 (*supra*).
[172] Stewart, Adair, Smith (2011), p. 242.
[173] Anderson (2013), p. 150.
[174] See sec. 3.2 (*supra*).
[175] The Independent Person Report. 18 July 2016. https://www.wada-ama.org/sites/default/files/resources/files/20160718_ip_report_newfinal.pdf. (Accessed 27 July 2017)
[176] See Decision of the IOC Executive Board concerning the participation of Russian athletes in the Olympic Games Rio 2016. 24 July 2016. https://www.olympic.org/news/decision-of-the-ioc-executive-board-concerning-the-participation-of-russian-athletes-in-the-olympic-games-rio-2016. (Accessed 27 July 2017)
[177] See Kornbeck (2016a), p. 183: "Throughout the text, the EU asked WADA to provide justifications (evidence) supporting proposed changes. Whereas WADA's proposals certainly did not meet such requirements as would apply in a parliamentary-legislative context, improvements were made over time [...]. Achieving a more evidence-based style in WADA's way of submitting quasi-legislative proposals to its stakeholders seems essential given the seriousness of the sanctions."

after reasonable consultation with the Signatories, governments and other relevant stakeholders."[178] On 1 June 2017, WADA launched a "stakeholder consultation process regarding [the] development of an International Standard for Code Compliance by Signatories."[179] While the proposed measures seem only to address Signatories (i.e. sports organisations), not governments, the consultation clearly was not limited to sanctions against organisations. By taking sanctions systems into the ambit of compliance monitoring, it seems set also to impose requirements regarding individual sanctions.[180] This raises issues such as collective sanctions and the presumption of innocence.

How far will the anti-doping fight have to go for the proponents of draconian measures to conclude that enough is enough? If perceived public perception is the yardstick, this will perhaps never be the case. Sumner shows concern that excessive sports performances are distrusted, even when athletes are not proven guilty, ominously noting that "there is still the perception, for some, that [their] successes are super-human, and cannot be achieved without cheating in some shape."[181] We doubt that today's runaway escalation of ever more repressive anti-doping efforts will be able to take away these suspicions. In conclusion, we find that the basis for Sumner's plea for the criminalisation of doping in the UK (and elsewhere) is fatally flawed. Our analysis further suggests that such criminalisation would be practically difficult to realise and can be expected to lead to unintended side-effects of such importance that we strongly recommend looking for alternatives, which could be deducted from the ongoing debate, on alternative, more pragmatic ways of addressing doping, in sports and society at large, from a public health perspective.

[178] WADC 2015, p. 12.

[179] See the following WADA publications and press releases: Proposed International Standard for Code Compliance by Signatories (ISCCS) - Version 1.0. https://www.wada-ama.org/sites/default/files/resources/files/wada-isccs-v1.0-en.pdf (Accessed 27 July 2017) May 18, 2017. WADA Foundation Board takes decisive action on the Way Forward for the Agency and for Clean Sport. https://www.wada-ama.org/en/media/news/2017-05/wada-foundation-board-takes-decisive-action-on-the-way-forward-for-the-agency-and. (Accessed 27 July 2017) June 1, 2017. WADA launches stakeholder consultation process regarding development of an International Standard for Code Compliance by Signatories. https://www.wada-ama.org/en/media/news/2017-06/wada-launches-stakeholder-consultation-process-regarding-development-of-an. (Accessed 27 July 2017)

[180] See e.g. (2017a), p. 52: "f) The imposition of a mandatory Provisional Suspension as soon as an Athlete is notified of an Adverse Analytical Finding for a Prohibited Substance that is not a Specified Substance, in accordance with Article 7.9 of the Code. g) The publication of the outcome and required details of all cases within twenty days of the decision being rendered, in accordance with Article 14.3 of the Code. h) The recognition and implementation of decisions rendered by other Signatories, in accordance with Article 15.1 of the Code. i) The establishment of a Therapeutic Use Exemption committee, and a documented process for Athletes to apply for the grant or the recognition of a Therapeutic Use Exemption, in accordance with the requirements of the International Standard for Therapeutic Use Exemptions."

[181] Sumner (2017), p. 217.

References[182]

Abel Souto M (2013) Money laundering, new technologies, FATF and Spanish penal reform. *J Money Laundering Control* 16(3), 266-284.

Anderson J (2013) Doping, sport and the law: time for repeal of prohibition? *Int J Law in Context* 9(2), 135-159.

Anderson J (2016) The Juridification and Criminalisation of Doping: time to revive the spirit of sport? In Haas U, Healey D (Eds.) *Doping in Sport and the Law* Oxford & Portland, Oregon USA. 251-268

Backhouse S, *et al.* (2014) Study on Doping Prevention: A map of Legal, Regulatory and Prevention Practice Provisions in EU 28. Luxembourg: Publications Office of the European Union. http://ec.europa.eu/sport/news/2014/docs/doping-prevention-report_en.pdf (Accessed 27 July 2017)

Byrnes, A (2016) Human Rights and the Anti-Doping Lex Sportiva- The Relationship of Public and Private International Law: 'Law Beyond the State' and the Laws of Nation States. In Haas U, Healey D (Eds.) *Doping in Sport and the Law* Oxford & Portland, Oregon, USA. 81-104

Cakic V (2009) Smart drugs for cognitive enhancement: ethical and pragmatic considerations in the era of cosmetic neurology. *J Med Ethics* 35(10), 611-615.

Chan W & Simester A (2011) Four functions of mens rea. *Cambridge Law J* 70(2), 381-396

Christiansen AV & Møller V (2007) Mål, medicin og moral: om eliteatleters opfattelse af sport, doping og fairplay. Odense: Syddansk Universitetsforlag

Connor J, Woolf J & Mazanov J (2013) Would they dope? Revisiting the Goldman dilemma. Brit *J Sports Med* 47, 697-700.

Connor JM & Mazanov J (2009) Would you dope? A general population test of the Goldman dilemma. *Brit J Sports Med* 43, 871-872.

Danylchuk K, Stegink J & Lebel K (2016) Doping scandals in professional cycling: impact on primary team sponsor's stock return. *Int J Sports Marketing and Sponsorship* 17(1), 37-55.

Dimeo P (2008) *A History of Drug Use in Sport: 1876 - 1976.* Routledge, London, UK.

[182]Press articles have been referenced in the relevant footnotes.

Duval A (2017) The Russian doping scandal at the court of arbitration for sport: lessons for the world anti-doping system. *Int Sports Law J* 16(3-4), 177-197.

Engelberg T & Moston S (2012) Public perception of sport anti-doping policy in Australia. *Drugs: education, prevention and policy* 19, 84-87.

Fahey J (2016) Foreword. In Haas U, Healey D (Edss) *Doping in Sport and the Law.* Oxford & Portland, Oregon, WA, USA, v-vii.

Feinberg J (1984) *Harm to Others: The Moral Limits of the Criminal Law* Oxford University Press, Oxford, UK.

Finley HW & Pleket MI (1976) *The Olympic Games: the first thousand years.* Book Club Associates, London, UK.

Garland D (2001) *The Culture of Control: Crime and Social Order in Contemporary Society.* University of Chicago Press, Chicago, IL, USA.

Goldman B, Bush P & Klatz R (1984) *Death in the Locker Room: steroids & sports.* Icarus Press, South Bend, IN, USA.

Goldman B & Klatz R (1992) *Death in the Locker Room II: drugs & sports.*Elite Sports Medicine Publications, Chicago, IL, USA.

Gómez Tomillo M (2013) Punitive damages: a European criminal law approach. State sanctions and the system of guarantees. *Europ J Criminal Policy Research* 19, 215-244

Hayes PJ (2016) The Commercial Rationale of the World Anti-Doping Code. In Haas U, Healey D (Eds.) *Doping in Sport and the Law.* Oxford & Portland, Oregon, WA, USA, 269-290.

Hickie T (2016) 'Do What I Say, Not What I Do': is this the 'play true' reality of the World Anti-Doping Code? In Haas U, Healey D (Eds.) *Doping in Sport and the Law.* Oxford & Portland, Oregon, WA, USA, 43-60.

HM Government, Department for Digital, Media, Culture and Sport (2017) Review of Criminalisation of Doping in Sport. October 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/654240/Review_of_Criminalisation_of_Doping_in_Sport.pdf

Houlihan B & Garcia B (2012) The use of legislation in relation to controlling the production, movement, importation, distribution and supply of performance-enhancing drugs in sport (PEDS). Loughborough: Institute of Sport and Leisure Policy. http://www.wada-ama.org/Documents/World_Anti-Doping_Program/WADP-Legal_Library/National_Legislation/UNESCO-Legislative-Research-Report-FINAL.pdf (Accessed 27 July 2017)

Husak D (2004) The criminal law as last resort. *Oxford J Leg Stud* 24(2), 207-235.

Jong D (de) 2012 Grenzen aan het Europees strafrecht. *Nederlands Juristenblad* 87(19), 1325-1329

Kaiafa-Gbandi M (2005) The Treaty Establishing a Constitution for Europe and Challenges for Criminal Law at the Commencement of 21st Century. *Europ J Crime, Criminal Law and Criminal Justice* 13(4), 483-514.

Kayser B (2011) On the presumption of guilt without proof and intentionality and other consequences of current anti-doping policy. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport: Ethical, Legal and Social Perspectives.* Routledge, London, UK, 84-99.

Kayser B & Broers B (2012) The Olympics and harm reduction? *Harm Reduction J* 9(33) [no pagination]

Kayser B, Mauron A & Miah A (2007) Current anti-doping policy: a critical appraisal. *BMC Medical Ethics* 8(2) [no pagination]

Kayser B & Tolleneer J (2017) Ethics of a relaxed antidoping rule accompanied by harm-reduction measures. *J Med Ethics* 43(5), 282-286.

Klip A (2012) Editorial: European criminal policy. *Europ J Crime, Criminal Law and Criminal Justice* 20(1), 3-12.

Kornbeck J (2013) The naked spirit of sport: a framework for revisiting the system of bans and justifications in the World Anti-Doping Code. *Sport, Ethics and Philosophy* 7(3), 313-330.

Kornbeck J (2016a) The EU, the Revision of the World Anti-Doping Code and the Presumption of Innocence. *Int Sports Law J* 15(3-4), 172-196.

Kornbeck J (2016b) Anti-doping governance and transparency: a european perspective. *Int Sports Law J* 16(1-2), 118-122.

Laure P (2004) *Histoire du dopage et des conduits dopants.* Vuibert, Paris, France.

Leeds MA (2010) Is bad news always bad? The impact of Floyd Landis's rise and fall on Phonak. *Applied Economics Letters* 17, 805-808.

Loland S & Hoppeler H (2011) Justifying anti-doping: The fair opportunity principle and the biology of performance enhancement. *Eur J Sport Science* 12(4), 347-353.

López B (2011) The Invention of a "Drug of Mass Destruction": Deconstructing the EPO Myth. *Sport in History* 31, 84-109.

López B (2012a) Creating fear: The social construction of human Growth Hormone as a dangerous doping drug. *Int Rev Sociol of Sport* 48(2), 220-237.

López B (2012b) Doping as technology: a rereading of the history of performance-enhancing substance use in the light of Brian Winston's interpretative model for technological continuity and change. *Int J Sport Policy and Politics* 4(1), 55-71.

López B (2013) Creating fear: the "doping deaths", risk communication and the anti-doping campaign. *Int J Sport Policy and Politics* 6(2), 213-225.

Lum C (2009) Community policing or zero tolerance: preferences of police officers from 22 countries in transition. *Brit J Criminology* 49(6), 788-809.

Maennig W (2014) Inefficiency of the anti-doping system: cost reduction proposals. *Substance Use & Misuse* 49, 1201-1120.

Masters A (2013) Corruption in sport: from the playing field to the field of policy. *Policy and Society* 34(2), 111-123.

McArdle D (2011) Longitudinal profiling, sports arbitration, and the woman who had nothing to lose: some thoughts on Pechstein v. the International Skating Union. In McNamee M & Møller V (Eds.) *Doping and Anti-Doping Policy in Sport: Ethical, Legal and Social Perspectives.* Routledge, New York, NY, USA, 50-65.

McNamee M (2012) Spirit of Sport and the medicalization of anti-doping: Empirical and normative ethics. *Asian Bioethics Review* 4(4), 374-392.

McNamee M &Tarasti L (2010) Juridical and ethical peculiarities in doping policy. *J Med Ethics* 36(3), 165-169.

Milot L (2014) Ignorance, harm, and the regulation of performance-enhancing substances. *Harvard Journal of Sports & Entertainment Law* 5, 91-146.

Mondenard JP de (2000) Historique et évolution du dopage. *Ann Toxicol Anal* XII(1), 5-18.

Moore E (2017) Did Armstrong cheat? *Sport, Ethics and Philosophy* 11(4), 413-427.

Öberg J (2011a) EU criminal law, democratic legitimacy and judicial review of union criminal lawlegislation in the wake of the Lisbon treaty. *Tilburg Law Review* 16(1), 60-82.

Öberg J (2011b) Union regulatory criminal law competence after Lisbon treaty. *Europ J Crime, Criminal Law and Criminal Justice* 19(4), 289-318.

Paoli L & Greenfield VA (2017) The Supply of Doping Products and the Relevance of Market-Based Perspectives: Implications of Recent Research in Italy. In Beckert J, Dewey M (Eds.) *Everything Legal? Interfaces between Legality and Illegality in Markets.* Oxford University Press, Oxford, UK, 245-267.

Parzeller M & Prittwitz C, *et al.* (2009) Rechtsvergleich der strafrechtlichen Normen und der strafprozessualen Verfolgung des Dopings im Leistungs- und Spitzensport in Deutschland, Italien, Frankreich, Schweiz und Spanien. *BISp-Jahrbuch - Forschungsförderung* 10, 315-326.

Ritchie I (2014) Pierre de Coubertin, Doped 'Amateurs' and the 'Spirit of Sport': The Role of Mythology in Olympic Anti-Doping Policies. *Int J History of Sport* 31(8), 820-838.

Simon J (2007) *How the War on Crime Transformed American Democracy and Created a Culture of Fear.* Oxford University Press, New York, NY, USA.

Sloot B (van der), Paun M, Leenes R, McNally P & Ypma P (2017) Anti-Doping & Data Protection: An evaluation of the anti-doping laws and practices in the EU Member States in light of the General Data Protection Regulation. Luxembourg: Publications Office of the European Union. https://publications.europa.eu/en/publication-detail/-/publication/50083cbb-b544-11e7-837e-01aa75ed71a1/language-en/format-PDF/source-44694285

Solberg HA, Hanstad DV & Thoring TA (2010) Doping in elite sport - do the fans care? Public opinion on the consequences of doping scandals. *Int J Sports Market Spons* 11(3), 2-16.

Sottas PE, Robinson N & Saugy M (2010) The athlete's biological passport and indirect markers of blood doping. *Handbook of Experimental Pharmacology* 195, 305-326.

Stamm H, Lamprecht M, Kamber M, *et al.* (2008) The public perception of doping in sport in Switzerland, 1995 - 2004. *J Sports Sciences* 26(3), 235-242.

Steiner U (2016) Die Bekämpfung der Sportmanipulation mit den Mitteln des Strafrechts aus verfassungsrechtlicher Sicht. In *Württembergischer Fußballverband (ed) 40 Jahre wfv-Sportrechtsseminare: 1975-2015. Nationales und internationales Sportrecht im Überblick.* Nomos, Baden-Baden, Germany, 17-30.

Stewart B, Adair D & Smith A (2011) Drivers of Illicit Drug Use Regulation in Australian Sport. *Sport Management Rev* 14(3), 237-245.

Sumner C (2017) The spirit of sport: the case for criminalization of doping in the UK. *Int Sports Law J* 16(3-4), 217-227.

T.M.C. Asser Instituut (2010) The implementation of the WADA Code in the European Union. The Hague: T.M.C. Asser Instituut. http://www.asser.nl/upload/documents/9202010_100013rapport%20Asserstudie%20(Engels).pdf (Accessed 27 July 2017)

Vangrunderbeek H & Tolleneer J (2011) Student attitudes towards doping in sport: Shifting from repression to tolerance? *Int Rev Sociology of Sport* 46(3), 346-357.

Van Reeth D & Lagae W (2014) Public opinion on doping in cycling: differences among population groups. In Budzinski O, Feddersen A (Eds.) *Contemporary Research in Sports Economics. Proceedings of the 5th ESEA Conference.* (Political Economics, Competition and Regulation; 14), 247-268. Peter Lang Frankfurt, Germany.

Waddington I (2010) Surveillance and control in sport: a sociologist looks at the WADA whereabouts system. *Int J Sport Policy and Politics* 2(3), 255-274.

Westen P (2007) Two Rules of Legality in Criminal Law. *Law and Philosophy* 26(3), 229-305.

Woolf J, Mazanov J & Connor J (2017) The Goldman Dilemma is dead: what elite athletes really think about doping, winning, and death. *Int J Sport Policy and Politics* 9(3), 453-467.

Postscriptum

Bengt Kayser

Cover art

Now that the reader has reached the end of this thesis and discovers the back cover of the booklet, (s)he may wonder about the choice of the art work on the front and back. Since the title of the thesis is 'Ethical Aspects of Doping and Anti-Doping', I chose the front cover to illustrate doping and the back cover anti-doping.

Front cover painting

The cyclist on the front cover raising his arms as he crosses the finish line on a stage of the Tour de France depicts Lance Armstrong[1]. Armstrong is wearing the yellow jersey, worn by the cyclist who leads on the Tour. Armstrong is here shown at the arrival of a stage that he won on one of his earlier successful Tours of his record 7-victory streak. I do not particularly like the painting, but it nicely illustrates the ambiguity of the doping debate, given the story of Armstrong's dramatic rise and fall. What I find particularly striking in this painting is Armstrong's facial expression. To me it seems to show a mix of determination and physical prowess, but, interestingly not much expression of joy or satisfaction. Furthermore, Armstrong's eyes are hidden behind dark glasses, shielding his look from our view. On purpose? The painting thus nicely conveys the paradoxes of the figure of Lance Armstrong. I find Armstrong to be an iconic figure of what modern sport can foster. He played the game to utter perfection, tuning his body with whatever means possible and using all of his physical and mental skills to control the (cycling) world for his domination, which earned him a nickname on the Tour, 'The Boss'. I would agree with the analysis of Eric Moore who concluded that when Armstrong won his seven tours his behaviour did not amount to cheating, giving the particular playing field he was a part of .[2] He perhaps deserves to be criticized for his bullish behaviour towards anyone standing in the way of his ambitions and in some ways his downfall can also be seen as the result of how the world 'decided' to punish him for his 'bad' character. I find his rise and fall represent a watershed for the further development of contemporary anti-doping and its globalisation. The painting, 'Finish Line' by the American artist Robert Hurst, stems from

[1]The painting was probably inspired from a photo taken on the finish line of the 12th stage of the 89th Tour de France in Plateau-de-Beille, on the 19th of July in 2002. Armstrong won the stage and retained his yellow jersey.

[2]Moore E (2017) Did Armstrong cheat? *Sport, Ethics and Philosophy* 11(4), 1–15. http://doi.org/10.1080/17511321.2017.1292306. See also Dimeo P (2014) Why Lance Armstrong? Historical context and key turning points in the "Cleaning Up" of professional cycling. *The International Journal of the History of Sport* 31(8), 951–968. http://doi.org/10.1080/09523367.2013.879858.

the heydays of Armstrong's career, and thus nicely illustrates the doping part of this thesis. Ironically, now that Armstrong's career is over, the painting was at one point in time valued at just one dollar cent on Robert Hurst's website, even though its value has increased since.

Back cover painting

The back cover represents a painting by Claus Carstensen, an engaging Danish contemporary artist living and working in Denmark[3]. When I was in Aarhus in 2015 for the biennial meeting of the International Network on Doping Research (INDR), I also visited the recently inaugurated ARoS museum in Aarhus, a beautiful example of modern architecture, where Carstensen had been invited to expose some of his more politically engaging work. The exhibition was titled 'What's left (is republican paint) - Nine sisters', and was announced as an exhibition on freedom of expression, intimacy and nakedness. The painting 'Untitled (Krystufek after Steen Møller Rasmussen)' was used as the backdrop for the exhibition's poster, and a huge reproduction hung from the ceiling in the entrance hall of the museum. It immediately struck me that this painting encapsulates so well the awkwardness of urine sampling for anti-doping purposes. It reminded me of the obligation to produce a urine sample under direct visual control of a doping officer. The two plastic cups in the forefront looked to me like the A and B samples that are prepared from the original sample produced. The black and white aspect of the painting reminded me of Dimeo's 'classic dichotomy of "good anti-doping" up against "evil doping" ', while the many (fifty?) shades of grey seemed to illustrate the inevitable blurriness of reality. The painting is based on a photograph by Steen Møller Rasmussen of a performance called the 'Golden Show' by the Austrian performance artist Elke Krystufek . She enacted this performance in 1997, clumsily putting on a striptease act that concluded with her peeing into a wine glass and then drinking its contents, taking the audience by complete surprise. In her work, Krystufek regularly challenges modern Western culture in strong ways, often using her body as a substrate. I find the painting by Carstensen of Krystufek's act a good illustration of the extremes that Western culture can lead to, like the obligation to produce a urine sample in full view of an officer for surveillance purposes. The shock that some may feel when discovering the back cover should perhaps be transposed onto what was put in place for elite athletes (including minors!), who have to comply with early morning surprise visits by total strangers to whom they have to provide a urine sample in full view of their genitals, something that I find represents quite an intrusion into their private sphere.

[3] http://www.clauscarstensen.dk, last visited in May 2018

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