



AARHUS UNIVERSITY



Cover sheet

This is the accepted manuscript (post-print version) of the article.

The content in the accepted manuscript version is identical to the final published version, although typography and layout may differ.

How to cite this publication

Please cite the final published version:

Petersen, T. S., & Lippert-Rasmussen, K. (2021). Neuro-doping and fairness. *Neuroethics*, 14(SUPPL 2), 179-190. <https://doi.org/10.1007/s12152-020-09447-3>

Publication metadata

Title:	Neuro-doping and fairness
Author(s):	Thomas Søbirk Petersen, Kasper Lippert-Rasmussen
Journal:	<i>Neuroethics</i> , 14(SUPPL 2), 179-190
DOI/Link:	https://doi.org/10.1007/s12152-020-09447-3
Document version:	Accepted manuscript (post-print)
Document license:	https://creativecommons.org/licenses/by-nc-nd/4.0/

General Rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

If the document is published under a Creative Commons license, this applies instead of the general rights.

NEURO-DOPING AND FAIRNESS

1. Introduction

Many have argued that we should ban healthy athletes' use of neuro-doping (ND) such as transcranial direct-current stimulation (tDCS) and cognitive enhancing drugs like Ritalin or Modafinil. Arguments for this view often appeal to a concern for: ND's negative health effects on athletes [1];¹ the incompatibility of ND and the 'spirit of sport' [4];² or for social pressure on athletes to use doping, if it is not banned.³ However, in this paper we focus on different versions of the fairness objection to the legalization of the use of ND, i.e., the objection that it will lead to an unfair competitive advantage for some athletes over others. According to this objection, even if ND is safe, does not violate the spirit of sport, and its legalisation will not lead to a problematic social pressure to use ND, there is still an important reason for banning ND.⁴

There are four reasons for scrutinising the fairness objection to ND at least. First, it is far from obvious either whether an unfair advantage should always be banned, or why the use of ND is unfair. Second, the unfairness objection represents a type of argument which is common in the neuro-ethical literature on the legalisation and use of cognitive performance enhancement, but is rarely discussed in detail (see e.g. Buchanan [10] and Meulen [11]) and rarely so in the context of sport.⁵ Third, the single strongest predictor of how morally wrong one evaluates the use of neuro-enhancement to be is the perceived unfairness of its use [14]. Finally, and more pragmatically, as research continues to bring forth new drugs and new devices for neuro-doping, it is important that we keep up with this development, by presenting and discussing arguments for and against the legalisation of such drugs and devices prior to their being widely used.

A preliminary clarification about the term 'legalisation' seems in order. It is one thing whether the use of ND should be legal according to the laws of a country and another whether it should be banned in the regulation issued by governing, non-state sports organisations. In

¹ Nitsche et al. [1], for instance, refer to data showing that tDCS is associated with, e.g., tissue damage and neurological diseases such as epilepsy. However, the scientific literature is rather mixed on the issue of whether it is safe to use tDCS. For references to studies concluding that the use of tDCS is safe, see e.g. Arul-Anandam et al. [2] or Dayan et al. [3].

² For a critique of WADA's idea of the spirit of sport, see e.g. Petersen and Lippert-Rasmussen [5] and Møller [6].

³ See e.g. Murray [7]. For a critique of this type of worry, see Veber [8] and Petersen [9].

⁴ The unfairness objection seems to be narrower in scope than health-based objections, as the latter, unlike the former, given certain versions of paternalism, also apply outside the competitive contexts (whether it be in sport or not). However, as we show in Section 5, one version of the unfairness objection is based on the assumption that doping is bad for your health.

⁵ Exceptions to the not-in-the-context-of-sports-claim include Park [12] and Lavazza [13]. Park will be discussed in Sections 4 and 6.

some countries, like Denmark or the UK, it is not against the law to use ND, but according to WADA regulations (which sports organisations in both Denmark and UK adhere to) it is impermissible to use certain forms of ND. In what follows, we frame our discussion about whether it is justified to ban the use of ND as a matter of whether sports organisations should ban the use of ND. However, we believe that our arguments also apply the similar question whether the state should render the use of ND illegal.

In Section 2, we will first characterise neuro-doping, some of its potential performance-enhancing effects, and which kinds of ND are prohibited by the World Anti-Doping Agency (WADA). In Section 3, we present an argument – the unfair inequality of opportunity argument – intended to capture some central concerns of those in a broader audience who favour a ban on ND for fairness-related reasons and critically assess it. Sections 4 to 6 critically zoom in on three scholarly formulated versions of the aforementioned argument. Section 4 scrutinises a recent paper by Kwangho Park [12], who argues that we should ban ND (tDCS) because it is unfair that only wealthy athletes can afford to use it. In Section 5 we discuss Christian Lenk’s [15] view that doping should be banned as it is unfair when athletes seek advantages that do not depend on their own performance or training. Section 6 is devoted to the presentation and critical discussion of an argument by Corlett et al. [16] to the effect that the use of ND by athletes imposes unfair health care costs on everyone. Section 7 concludes that there is no convincing principled fairness-based objection to legalising ND.⁶ None of the argument succeeds on its own, and it is not as if they can somehow be combined to form a more complex argument that amounts to a good principled fairness-based objection to legalising ND.

2. What is neuro-doping?

Before dissecting the unfairness objection, we need to mark out the field. Park [11] adopts what we will call the narrow specification of ND, according to which ND only relates to electronic stimulus of the brain such as transcranial direct-current stimulation (tDCS). We conceive of ND more broadly such that ND also includes brain boosting drugs like Ritalin and Modafinil. However, there is no sharp line between ND and non-ND. Traditional use of doping, like the use of anabolic steroids, may also affect your mental capacities, e.g., by changing your mood. And the use of ND, as will be referred to in the next paragraph, can also affect endurance and muscle strength. Nevertheless, in what follows we use the loose

⁶ An anonymous reviewer suggested that a ban on ND might be justified on the ground that its introduction is unfair to athletes of the past. We have two worries about this line of argument. First, we are not certain that it has any moral weight at all. Surely, there are lots of other interventions, improvements etc. that would raise the same concern, if ND does, and which, intuitively, does not, e.g., we do not think it is unfair to past generations of athletes competing in Tour de France that a 1903 bike is much heavier than a 2020 bike. Second, even if this concern has moral weight, we do not think it has enough weight to justify banning the relevant enhancements.

term “ND” to refer to drugs or methods that are correctly believed by the user or those in the user’s team who make the athlete, use the drugs or methods, e.g., trainers or doctors, to enhance mental capacities in order to improve sports performance.. Let us give a few examples.

Drugs like Ritalin, which is believed to improve the ability to concentrate and one’s attention span [17], and Modafinil [18], which is believed to improve working memory, are forbidden in any sport by WADA regulations. However, methods like transcranial direct- current stimulation (tDCS) or electroencephalography (EEG) are not forbidden by WADA. Some studies show that tDCS, which is a non-invasive and painless brain stimulation that delivers electric impulses to particular parts of the brain, can improve athletic performance by increasing attention span and memory, for instance [19, 20].⁷ Studies also show that electroencephalography (EEG), which provides a non-invasive method of recording the voltage differences produced by the electrical activity of neurons in the brain, together with neurofeedback that “... trains the athletes to gain learned control over a particular component of brain activity” [22], can improve athletic performance in archery and golf.

All in all, there seems to be evidence that at least some forms of ND have the potential to enhance the performance of athletes. Moreover, at least some forms of ND are currently banned. With that as a background assumption, let us now, in the next four sections, turn to four different fairness-based objections to allowing athletes to use ND.

3. The unfair inequality of opportunity argument

The idea that fairness dictates that athletes should have equal opportunities to perform their best, and that permitting doping, including ND, prevents the realisation of this fairness ideal, is quite common. Take the view of Morten Mølholm, Director of the Sports Confederation of Denmark and Olympic Secretary General in the Danish Olympic Committee. He thinks doping *tout court* should be banned because:

The competitive element of sport is linked to the notion of competition between equal athletes, who have had the same opportunities to prepare themselves and to perform. This notion of fairness is lost when some athletes acquire a competitive edge by using illegal substances. [23, our translation]

Another example is WADA which declares that “[t]he purposes of the World Anti-Doping Program and the Code are: To protect the Athletes’ fundamental right to participate in doping-free sport and thus promote health, fairness and equality for Athletes worldwide ...” [1]. In addition, one of the ways in which WADA believes it promotes fairness for

⁷ For references to scientific studies that can be taken as evidence for tDCS performance- enhancing effects, see e.g. Lavazza [13] and Garasic and Lavazza [21].

athletes is by banning certain substances and methods and by punishing those who do dope. Also, WADA's Ethics Panel alludes to the value of fairness when they state: "Fairness and Justice: Although individuals are fundamentally different and not equal, and the circumstances under which athletes might have to train are not the same (e.g. due to differences in resources), efforts should be made in sport to provide equal opportunity and to facilitate fair competition" [24]. We take it that the following argument – the unfair inequality of opportunity argument – captures the essence of the objection to permitting ND, *inter alia*, in statements such as those just quoted:

P1: Fairness requires that athletes have equal opportunities to win.

P2: The use of ND by some athletes creates greater inequality in the opportunities to win.

P3: If P1 and P2, then the use of ND by athletes should be banned.⁸

C1: Thus, the use of ND by athletes should be banned.

Unfortunately, as we will now show, all three premises of this argument are problematic. Starting with P1, we note that, rightly or not, many reject it, because they think that fairness permits some inequalities of opportunity in sports. In the world of sports, we praise and celebrate the individuals who have won in the genetic and social lottery [25, 26].^{9 10} Athletes who win, and whom we think should be allowed to win in sport consistently with fairness, often possess superior athletic qualities as the result of random genetic factors, e.g., those determining muscle mass, height, speed, endurance, mental strength, for which the athletes themselves is not responsible. Moreover, becoming a top athlete takes more than winning in the genetic lottery. It also helps to win in the social lottery. It is a fact that the best athletes in many sports typically come from rich countries, or from an elite in a poor country.¹¹ You can be extremely talented and still never get the opportunity to win an Olympic medal if you grow up in a country without access to good training facilities, skilled trainers and resources for participating in international competitions. Some sports-economic studies indicate that in order for a country to achieve one Olympic gold medal at the 2004 Olympics in Athens, the country had to invest around 37 million Australian dollars (measured by the value of an

⁸ Strictly speaking, P3 should say that, from the perspective of fairness, the use of ND by athletes should be banned. However, there are other values than fairness, so, consistently with P3, it might be that, all things considered, the use of ND should not be banned.

⁹ Some might object at this point that there is such a thing as the Paralympics. We acknowledge this, but also note that when it comes to prize money and commercial value, Paralympics athletes fall far below other able-bodied athletes.

¹⁰ Hence, empirically speaking, at least, it is hardly correct, given a literal interpretation of Mølholm's position, that competitive sport builds on "... competition between equal athletes, who have had the same opportunities to prepare themselves and perform."

¹¹ See Savulescu, Foddy and Clayton [27, p.669]. See also Loland [28, p.94] who writes that "... it seems unfair when Scandinavian cross-country skiers with extensive technological support compete against Ukraine or Belarus skiers with almost no support system at all. Financial and technological 'muscles', and not athletic abilities and skills, is decisive of the outcome."

Australian dollar in the year 2000) [27].

One way to cast light on the sort of equality of opportunity that fairness requires in the context of sport is to look at discussion of the sort of equality of opportunity that fairness requires in other contexts. It is commonplace to distinguish between formal and substantial equality of opportunity when it comes to social and economic goods [29]; [30, p. 40–73]. In the context of the labour market, it is common to understand formal equality of opportunity to require that no one is excluded from applying for positions and that the selection among candidates should be made on the basis of their qualifications for the position in question. Substantial equality of opportunities requires that people have fair opportunities to achieve the relevant qualifications (cp. [31]).¹² Although, originally, this distinction is applied to a discussion about what characterises equal opportunities in the labour market, we believe this distinction applies in the context of sport as well. The question then becomes whether “equal opportunities to win” in P1 means equal formal opportunities or equal substantive opportunities (or both).

If it means the former, then fairness requires that all athletes should compete on the basis of the same rules and that no athletes, no matter their race, sex, gender, nationality, ethnicity, religion or other ascriptive properties, should be excluded from participating in sport.¹³ Perhaps that is the sort of “equal opportunity” WADA has in mind when it stress the importance of efforts being made “in sport to provide equal opportunity and to facilitate fair competition” (see above). If we understand P1 along these lines, two obvious problems arise.

First, at least for some ascriptive properties – sex, gender, disability and nationality – most people do not think fairness requires formal equality of opportunity. It is not unfair that only Dutch citizens are allowed to compete to become the Dutch national champion in the 100 metres sprint. Similarly, it is not unfair that men are not allowed to compete in the women’s 100 metre sprint final or that able-bodied persons are not permitted to participate in the Paralympics. Admittedly, not everyone might share these views; some think formal equality of opportunity is indeed violated by gender segregation in sports and subscribe to the view that, say, boxers should compete in different classes depending on gender-neutral classifications like muscle mass rather than in gender-segregated leagues.¹⁴ Fortunately, we

¹² It is common to think, as Scanlon does, that substantive equality of opportunity requires formal equality of opportunity and something else. For presentational purposes, we treat the former as something that is not contained in the latter.

¹³ With the exception, though, that sport is usually divided into male and female categories. Further, while athletes who are trans women are allowed to participate in, e.g., the Olympics, they are only allowed to do so if “... trans women athletes declare their gender and not change that assertion for four years, and demonstrate a testosterone level of less than 10 nanomoles/liter for at least one year prior to competition and throughout the period of eligibility” (https://en.wikipedia.org/wiki/Transgender_people_in_sports. Accessed May 19 2020).

¹⁴ One might question why we should accept that elite sport celebrates and pays the genetically (and socially fortunate) and largely (although not formally) excludes persons who, genetically or socially speaking, stand no chance of succeeding in elite sport? As a general matter, elite sport involves giving extra advantages to persons who are already at an advantage and cultivates a “survival of the fittest and richest” mentality. Athletes who use doping

can avoid the intricacies that these views give rise to, because of the second problem, which is that if P1 pertains to formal equality of opportunities, then P3 is false. As long as all athletes are permitted to use ND, then fairness, as presently understood, has no quarrel with ND.

Should we take “equal opportunities in P1 to mean substantive equal opportunities instead? There are different accounts of what fair opportunities to acquire qualifications require. According to what we shall call *the moderate view of substantive equality of opportunity*, substantive equality of opportunity requires counteracting the differential effects of social class. According to what we shall call *the radical view*, it requires counteracting differential luck in the genetic “lottery” in addition to counteracting the effects of social class. We shall not take any stand on whether fairness requires substantive equality of opportunity in either of these two senses. However, we note that, for reasons already indicated, few people subscribe – whether they should or not – to a radical view of substantive equality of opportunity in sports, i.e., that athletes whose bodies for genetic reasons are optimal should have no better opportunities than others to win, and, thus, that they are not really in a position to appeal to radical substantive equality of opportunity to defeat a liberal view on the use of ND. Accordingly, for most the moderate ideal of substantive equality of opportunity is more attractive.

Let us now turn to the question of whether P2, under the interpretation of equality of opportunity as moderate substantive equality of opportunity, is true. The answer seems clear: it need not be so. If ND were mostly used by poor ND athletes – e.g., its use were permitted in poor countries, but banned in rich countries – it could mitigate these athletes’ lack of luck in the social lottery and thus decrease moderate, substantive inequality of opportunity (without, remember, violating formal equality of opportunity).¹⁵ Similarly, if athletes could apply for permission to use ND, given that they could not afford more expensive training support systems available to wealthier or better supported peers, that similarly would not increase inequality of opportunity among athletes. We therefore infer that P2 is false.¹⁶

Finally, we need to consider P3. Suppose both P1 and P2 were true. Should the use of ND by athletes then be banned as P3 says? There are two reasons why not. First, P3 narrowly focuses on the fairness of athletic competitions. Even this focus is too narrow when we are engaged in a moral evaluation of whether ND should be banned, all things

to compensate for their shortcomings because they lost out in the genetic or social lottery are punished, ridiculed and stigmatised. This could be seen as motivating biological egalitarianism. For this view, see Torbjörn Tännsjö’s article in this issue, and Tännsjö [32].

¹⁵ The same point applies to radical substantive equality of opportunity, which, however, we bracket here for reasons already indicated.

¹⁶ Some might reply that while we are right that the use of ND *might* not increase unfair inequality of opportunity, as a matter of fact it *will*. In one sense, this reply misses its target, since our concern is whether there is a *principled* fairness-based objection to ND. In any case, we briefly address something like this reply at the end of this section.

considered. If, for instance, ND has benefits outside the sports arena, such benefits should be taken into account, and if they are paramount in areas such as in education, or more generally, an increased attention span or increased impulse control, for example, may benefit people in many parts of their lives, these benefits might morally outweigh the supposed unfairness of using ND. Another reason why P3 might not be true is that whether a ban will in fact promote fairness in sport depends not simply on the ban itself but on how it affects the use of ND. If, for instance, it is difficult to enforce a ban on the use of ND – because of detection problems, for example then a ban might not reduce unfair inequalities in sports competition. Indeed, it might increase them in the sense that many law-abiding athletes are penalised for complying with ND regulation that many other athletes successfully violate. Hence, to defend P3, supporters of the unfair inequality of opportunity argument would have to supply empirical evidence for the claim that a ban would actually reduce unfair inequalities in opportunity and, to the best of our knowledge, this has not been done.

Since all three premises of the unfair inequality of opportunity argument seem open to forceful objections, we conclude that it fails to provide a strong case for banning ND in sports. Some might suggest that we have been barking up the wrong tree. Our objections simply show that we should be considering a version of the unfair inequality of opportunity objection that relies on weaker premises and, thus, delivers a weaker conclusion:

P1*: Fairness requires that athletes have *roughly* equal opportunities to win.

P2*: The use of ND by athletes *who are either not unfairly disadvantaged, or who are but will benefit from it beyond what is required to mitigate that unfair disadvantage*, creates greater inequality in the opportunities to win *and, as a matter of fact, this effect will not be counterbalanced by the use of ND by athletes who are unfairly disadvantaged and will not benefit from it beyond what is required to mitigate that unfair disadvantage.*

P3*: If P1 and P2, then *as a matter of fact* there is a *pro tanto* reason why the use of ND by athletes should be banned.

C1*: Thus, there is a *pro tanto* reason why the use of ND by athletes should be banned.

This argument is weaker in that it does not justify a ban on the use of ND. Rather, it simply shows that there is a fairness-based consideration favouring a ban in the and only so given that, as a matter of fact, schemes such as selectively permitting poor athletes to use ND will not be implemented. This is the main reason why, in the present context, which is an exploration of whether there is a principled all-things-considered fairness-based reason for banning ND, we are not particularly worried about the existence of this argument. Moreover, P2* makes a controversial empirical claim about the effects of permitting the use of ND, which needs to be supported. In particular, it controversially assumes that no ND techniques will in fact counteract other sources of unfair, unequal opportunities.

4. Park and the equality of opportunity fairness argument

Some scholars argue that allowing athletes to use ND would increase the social unfairness that already exists among athletes. For example, social scientists like Park [12] and Rodenberg and Hampton [33] have argued that the use of ND (or more precisely tCDC) is unfair and, according to Park [12, p.4], should be banned "... as only athletes of means would likely benefit from the technique ... as there are surely athletes that may be unable to purchase these devices." One reconstruction of this argument goes like this:

P4: Fairness requires that rich and poor athletes have equal opportunities to win.

P5: The use of ND by athletes results in rich athletes having better opportunities to win than poor athletes.

P6: If P4 and P5, then the use of ND by athletes should be banned.

C1: Thus, the use of ND by athletes should be banned.

Unlike the fairness argument in the previous section, Park's argument is only concerned with inequalities of opportunity between rich and poor athletes. Accordingly, it can set aside issues arising in connection with unequal opportunities resulting from differential luck in the genetic lottery. Otherwise, the structure of the argument is similar to that of the unfair inequality of opportunity argument in the previous section. Is the present argument any better? Let us look at each of the three premises in turn.

P4 seems plausible. Perhaps a competition can be locally fair if equally good athletes have equally good chances of winning whether they are rich or poor. However, if rich athletes have much better opportunities for achieving the level of athletic skills than poor athletes, then in a broader sense the relevant sports discipline is not fair.¹⁷

P5, however, is more problematic. For most athletes – most athletes in richer parts of the world, anyway – many forms of ND are much cheaper than other performance boosting devices. For example, ND such as tDCS or Ritalin can be a cheaper way to improve mental capacities that can enhance sports performance, compared to, say, the relevantly similar improvement of mental capacities gained by consulting a sports psychologist. Given that rich athletes already have privileged access to much more expensive performance-boosting devices, introducing relatively cheap ND devices might reduce inequality of opportunity between rich and poor athletes by reducing the costs of improving one's mental capacities. This might be the case even if the poorest athletes might not be able to afford relatively cheap ND devices as long as middle-income athletes, who prior to the introduction of these devices were unable to afford the alternative and more expensive techniques that produce comparable advantages, can. A further reason for being sceptical of P5 is that sports associations or the

¹⁷ Cf Williams [31].

government could sponsor ND for poor athletes. In this case, poor athletes do not have to pay for the enhancement out of their own pocket, and no athletes would, all else being equal, be subject to unfairness due to not having access to such devices; thus, P5 is false. Admittedly, it may not very likely that such sponsoring will take case. However, our main concern here is with principled fairness-based objections to permitting ND. Also, our previous example of cheap ND techniques crowding out more expensive and, thus, more inequality of opportunity inducing non-ND techniques already in use stands even under realistic assumptions.¹⁸

Consider, finally, P6. The first thing we wish to note is that P6 has quite radical implications. If we should ban tDCS, for example, because the apparatus for this technique costs around \$400,¹⁹ presumably we should ban all other performance-enhancing equipment, training techniques, etc. that exceed \$400, such as the use of the Babolat© tennis racket which has a microchip inside the grip that can record the spin and speed of the ball, which costs close to \$400²⁰ – unless, of course, one can give a good moral argument for why it is only tDCS, out of all types of equipment, that should be banned.²¹ Second, just like P3 in the previous section, P6 might be false because banning ND might not decrease inequalities between rich and poor athletes. If, for example, tDCS devices are made illegal, it may be true that because some will probably still use them even if illegal, the price may go up compared to a situation where these devices are not banned, thus resulting in a situation where all illegal users are found among wealthy or well-funded athletes. If they are legal, and they become popular, their price might decrease and more people would be able to use tDCS.²² In that case, the non-prohibition of tDCS would accommodate the moral concern expressed in P4.²³ We conclude that narrowing the focus of our fairness

¹⁸ Our aim in this article is not to argue for the implausible thesis that, under no actual circumstances and for no ND technique ever, is there a fairness-based objection to permitting it.

¹⁹ See e.g. <https://www.haloneuro.com/products/halo-sport-2> - accessed 25 May 2020.

²⁰ Park and others do not offer any explanation of why we should ban ND but not ban expensive equipment like the Babolat© tennis racket and countless similar or even more expensive pieces of equipment.

²¹ A further concern here is the following: if fairness dictates that one should forbid the use of performance-enhancing devices that cost \$400 or more within sports disciplines where one can participate without having to bear that sort of cost, what should we then say about sport disciplines where just to participate in them without any sort of performance-enhancing devices one will have to bear costs far in excess of \$400, e.g., motor racing? Does one's fairness-based view of the latter not motivate forbidding the latter sports disciplines altogether on the ground that in those disciplines, poor athletes do not even have the opportunity to participate and lose? We suspect that some might respond that this would result in the loss of massive enjoyment and pleasure among spectators attending or watching motor sport events etc. and that this justifies not banning them. But then, of course, one might ask whether, in principle at least, for similar reasons expensive performance-enhancing devices should not be permitted in cheap sport disciplines.

²² The motivation for permitting the use of certain presently expensive pieces of equipment, training devices etc. is to promote fair equality of opportunity, not to protect the interests of cheaters. Indeed, by permitting the use of the relevant pieces of equipment etc., the users would no longer *be* cheaters.

²³ An anonymous reviewer suggested we weaker and more plausible version of P6, to wit, “P6* If P4* and P5, then the use of ND by athletes should be banned” where P4* says “Fairness requires that rich

objection to permitting ND as we have done in this section results in a fair-equality-of-opportunity-based objection which is no more plausible than the objection scrutinised in Section 3.

5. Lenk's equality of opportunity fairness argument

According to Lenk, "... equality of opportunities seems to be constitutive for the idea of sports competitions. ... We find it unfair when single athletes seek advantages in measurements which do not depend on their own performance or training. ... [Doping] is unfair, and should be ruled out, when one party in sports competitions has a decisive advantage not because of training and performance but because of enhancement technologies" ([15, p.220, 226].²⁴ We can represent this argument as follows:

P7: Fairness requires that athletes do not enjoy decisive advantages over others to perform best in sports that are not the result of their own training and performance but the result of enhancement technology.

P8: The use of ND by athletes results in some athletes enjoying decisive advantages over others to perform best in sports that are not the result of their own training and performance but the result of enhancement technology.²⁵

P9: If P7 and P8, then the use of ND by athletes should be banned.

C1: Thus, the use of ND by athletes should be banned.

While Lenk's objection to ND is fairness-based, like the objections in the two previous sections, it is also different. Unlike the unfairness of the inequality of opportunity objection in Section 3, the present objection applies even if everyone has equally good opportunities for boosting their performance through the use of enhancement technologies. If in such a situation some choose to use that option and others do not, then those athletes who choose to do so might enjoy a decisive advantage over their peers not due to their own training and performance (in the relevant sense), and that is unjust according to P7. Also, Lenk's objection, as he seems to construe, manifests no concern for the unfairness of some

and poor athletes do not have too unequal opportunities to win". Unlike P4, P4* is satisfied even if rich athletes have better opportunities to win than poor athletes. Since P6* is weaker than P6, we agree that it is more plausible. However, we do not think that P4* is plausible. What might make it seem plausible is that ensuring fairness in the competing between rich and poor athletes will often require to great sacrifices in terms of other values.

²⁴ Lenk's view on the unfairness of doping seems very similar to that of philosophers like Loland [28, p.95]), who argues in favour of a ban on doping because "[t]he use of performance enhancing drugs is seen as a shortcut of 'natural' biological adaptation to training, and as a reduction of individual responsibility for performance."

²⁵ As an anonymous reviewer pointed out, the use of ND could be under some interpretations of "training and performance" be seen as something that falls under that label rather than as something different from it. However, we want to flesh out this notion, it is clear that such interpretations are not congenial to the ambition of providing a Lenk-style argument for banning ND.

athletes benefiting much more from training than other athletes due to the former's luck in the genetic lottery. If we turn to the objection in Section 4, we can note that, unlike Park's objection, Lenk's objection is insensitive to inequalities between rich and poor athletes. One way to see this is to compare a situation where only poor athletes use enhancement technologies with one in which only rich people do so. According to Park's objection, the latter situation is unfair, while the former might not be unfair at all. According to Lenk's objection, both situations are likely to be unfair and, if so, unfair for the same reason. Is Lenk's objection convincing? Just as in the two previous sections, let us look at each of the three premises of his argument.

Basically, we think P7 runs into a dilemma based on identifying advantages resulting from the athletes' own training and performance and not enhancement technologies. We can adopt a broad or a narrow conception of such advantages. According to the broad conception, athletes possessing decisive advantages already enjoy many such advantages, e.g., advantages resulting from high altitude training or the use of oxygen tents or masks, medical enhancement like caffeine and painkillers or mental enhancement from coaches and sports psychologists (which are all legal according to WADA). If we understand P7 on the basis of the broad conception of enhancement technology, we suspect many will be inclined to reject P7, for example because they do not think fairness dictates that athletes do not enjoy decisive advantages as a result of, say, high-altitude training. If, on the other hand, we embrace a narrow understanding such that the techniques listed above do not count as enhancement technologies or advantages not achieved through the athletes' training, then one might ask why could at least some forms of ND not similarly be seen as something other than enhancement technologies. For example, if the benefits of a particular form of tCDS only accrue if one is subjected to it while training intensely, then why is the use of tCDS not comparable to training in an oxygen tent? If so, then P7 might not rule out ND.

Moving on to P8, we note that not all uses of ND result in some athletes enjoying decisive advantages over others. One could license losing athletes in competitions to use ND to narrow the skills gap between them and winning athletes. Alternatively, suppose everyone's performance is boosted in equal proportion by the use of ND and that everyone uses it. If so, no one will gain any competitive advantage – let alone any decisive advantage – from the use of ND. Basically, the same athletes would win under conditions where everyone uses ND as those who would win where no one does. And even in cases where there would not be a perfect overlap between those who win and those who would not have won but for their use of ND, it is not clear that they must have enjoyed a decisive advantage as a result of their use of ND, since, in many such cases, presumably tiny changes such as in wind direction would have resulted in a different athlete winning.

Consider, finally, P9. As we have seen with P3 and P6, there are reasons for

resisting the inference from unfair inequality of opportunity of the moral desirability of a ban on what causes the relevant unfair inequality of opportunity. These reasons apply in the present case as well. Moreover, we think there is an additional reason in the case of Lenk's argument, given its understanding of unfair advantages in sports competitions. For that notion of unfairness is such that unfairness can exist even if everyone has equally good opportunities for using ND. Assuming that ND involves no health risks and assuming that such equally good opportunities exist, then the case for banning ND seems even weaker than in the case of the two previous objections that we have scrutinised. This is so because those who must compete in situations where others have decisive advantages over them could have neutralised these advantages by simply using harmless ND techniques themselves. If so, it is unclear that they have a complaint if they are not protected by a ban of the use of ND backed up by enforcement procedures.

6. The unfair costs to others argument

So far, the fairness-based objections to ND that we have discussed focus on how its use by some athletes is unfair to other athletes. In this section, we focus on a different fairness-based objection, which centres on how ND use by some or even all athletes is unfair to non-athletes. This objection has been put forward in Corlett et al. [16] and Corlett [34]. These scholars argue that, on the assumption that doping is dangerous to health [16, p.47], doping should be banned because:

... it is unfair to have others subsidize the incurred medical costs of such risks assumed by the doping athletes ... No one has a right to burden others with the cost of their risky behavior unless it can be shown that such behavior is morally necessary (such as service in a morally justified war or ... firefighter duties, etc.). [16, p.49]

... doping in sport should continue to be disallowed to the extent that doping in sports unfairly saddles others ... with the burden of subsidizing the medical costs incurred by doping athletes. [16, p.57]

Fleshing the objections out in a bit more detail gives us:

P13: Fairness requires that athletes who participate or train for participation in competitive sports do not, as a result of this participation, impose health care costs on others.

P14: The use of ND by athletes is a way of preparing for participation in competitive sports that imposes health care costs on others.

P15: If P13 and P14, then the use of ND by athletes should be banned.

C1: Thus, the use of ND by athletes should be banned.

Corlett et al. accept P13 on the basis of a Principle of Actuarial Fairness, according to which “... health risks assumed under one’s control that knowingly result from one’s own voluntary and intentional negligence or behavior are economic liabilities that should accrue to that individual only” [16, p.48]. Note also that P14 reflects that the unfair costs to others objection, unlike the previous three fairness-based objections, presupposes that ND is detrimental to athletes’ health. Again, we think that each of this objection’s three premises is problematic.

Starting with P13, we believe that the Principle of Actuarial Fairness which grounds Corlett et al.’s acceptance of it has very implausible implications, both outside and inside the realm of sport, and, therefore, that we should reject P13. Given Corlett et al.’s views about what falls under people’s control, the Principle of Actuarial Fairness implies that those millions of people who are obese, drink, smoke, etc. “...ought to be required to fully cover their costs of health care insofar as they are responsible for their poor health” [16, p.55]. Similarly, the principle implies that everyone who participates in sports that carry the risk of injuries that will involve health care costs should pay for those costs themselves. Admittedly, these implications presuppose a certain view about control according to which people are autonomous choosers regarding their health-related choices, making them are morally accountable for the choices, which seems problematic.²⁶ But even if we grant Corlett et al. this view, it is undeniable that autonomous individuals make health-affecting choices under very different circumstances. More specifically, poor people typically make those choices under much less favourable choice situations than rich people. They do this in a way which, to our minds, casts doubt on the plausibility of the Principle of Actuarial Fairness because, basically, it implies that poor people should pay for much of their own health care – something which typically they cannot afford.²⁷ A similar point applies to the inequality between people who, due entirely to luck, have good health and people who do not and thus face much worse choice situations than the former.²⁸

There is a further reason to be sceptical of P13 which derives from the fact that it assesses the fairness of a certain activity, i.e., doing sport using ND, by only focusing on one

²⁶ For a critic of Corlett et al. [16] and Corlett [34] on whether athletes’ choice of doing sport is a voluntary choice, see Frias and McNamee [35].

²⁷ Admittedly, this problem is mitigated to the effect that Corlett et al. think that the principle should only be applied against a background of fair distribution. That, however, would presumably also affect the principle’s implications regarding the use of ND.

²⁸ There are some affinities between Corlett et al.’s Actuarial Principle and Dworkin’s view that distributions should be ambition-sensitive. However, one crucial difference between Corlett et al.’s view and Dworkin’s [36] is that Dworkin only wants to enforce the norm of ambition-sensitive under conditions where background justice is ensured, i.e., in his famous hypothetical scenario: a situation where all external resources have been distributed through his auction and inequalities in internal resources reflecting differences in sheer luck have been mitigated through his hypothetical insurance scheme (or some institutional device that mimics its outcomes).

particular effect it has, i.e., the imposition of health care costs on others. However, from a fairness perspective it is more plausible that other effects of the relevant practice count too. For instance, some studies show that sport has a crime preventive effect, as it causes social mobility, diversion from crime (keeping young people off the street) and improves pro social behaviour such as health awareness, cooperation, life skills, self- confidence (see e.g. Hartmann & Kwauk, [37] and Ekholm [38]). It is unclear why such benefits for others from sport, including sport involving the use of ND, should not count from the point of view of fairness alongside the imposition of health care costs.

In response, Corlett et al. could modify P13:

P13*: Fairness requires that athletes who participate or train for participation in competitive sports do not, as a result of this participation, impose net costs on others.

However, to show that P13* is true is a much more complicated matter than to show that P13 is true and, in any case, Corlett et al. clearly do not offer any sort of evidence to the effect that P13* is true. So if our objection to ND is based on P13*, perhaps we should be agnostic about whether the use of ND by athletes should be banned.²⁹

P14 is problematic too. One thing to note is that, as many scholars have argued, whether doping is dangerous to health all depends on what kind of doping and what amount of doping we refer to.³⁰ Moreover, even if it turns out that ND involves certain health risks, that does not suffice to justify P14. Let us assume that, if ND is unavailable to athletes, athletes will use other forms of doping like anabolic steroids and EPO, which are more dangerous to health, thus imposing more unfair health costs on others.³¹ Similarly, if the alternative to doing sport using ND is not doing sport at all, the overall effect of a ban on the

²⁹ In the light of our criticism one might suggest an even weaker version of P13, to wit, P13**: Fairness requires that athletes who participate or train for participation in competitive sports do not, as a result of this participation, *negligently or recklessly* impose net costs on others. Obviously, this raises the question of when the use of ND is negligent or reckless. However, the main problem is that at most an argument appealing to P13** would at best constitute something much weaker than a principled objection to the use of ND, to wit, a case for banning the negligent or reckless use of ND by athletes when it imposes health costs on others. Hence, in essence the concern behind P13** would seem to speak in favour of regulation rather than banning ND.

³⁰ See e.g. Savulescu, Foddy, Clayton's [27] reasons for the claim that some forms of doping are not harmful, and Kayser and Smith's [26] reasons for the claim that anti-doping policy, by its punitive nature, increases the harm associated with the use of doping.

³¹ A similar implication would follow if the health risks involved in ND are grave but of such a nature that the use of ND actually reduces the expected health care costs for others [that one existence will involve, e.g., because ND users do not live until they become old and will consume many societal health care resources.] reviser's note (footnotes can't take comments in Word): the bit in square brackets is not at all clear, please explain and I'll rephrase.

use of ND might be to increase the amount of health care costs imposed on others.³² Furthermore, P14 is false under circumstances of a system of private health care or, for that matter, under a system where basic health care is provided by the state and use of ND by athletes is legal provided that they take out insurance covering the expected health care costs involved in the use of ND. Note, finally, that if ND is legal, its use can be monitored by doctors who ensure that people use the right amount and quality. Legalising ND substances like Ritalin or letting devices such as tCDS remain legal would ensure that athletes are able to keep in regular contact with physicians who can tell them about side effects and the proper dosage and quality, so as to minimise health risks. This might minimise the imposition of unfair health care costs on others, compared to a situation where the use of ND is illegal and, thus, tends not to be monitored by doctors [26]; [40, p.15) – a possibility which casts doubt on the final premise, P15, to which we now turn.³³

P15 is blind to all the direct benefits of legalising ND. First, sports involving the use of ND may result in enjoyment and well-being for both the athletes and others such as spectators, trainees, relatives, etc. Moreover, doping in sport (even sport involving the use of ND) might also have some benefits when it comes to physical and mental health that might decrease the overall cost of physical and mental health for the average tax payer³⁴ – benefits that, from a moral point of view, might outweigh the unfair nature of imposing health care costs on others. Second, athletes using ND might benefit from being cognitively enhanced – e.g. by an increased attention span – in areas other than sport, e.g. education.

Similarly, P15 is blind to the indirect benefits of not banning ND – benefits which also seem relevant to whether, all things considered, we should use the instrument of law to avoid the imposition of some presumably relatively minor costs on others.³⁵ One such indirect advantage of legalising ND is that it would reduce the possibility of criminals profiting from ND, with the state profiting instead from the legalisation because a white market will increase tax revenues compared to a black market, resulting in a lesser imposition of costs on taxpayers. Another indirect benefit is that legalisation would minimise the possibilities of some athletes coming into contact with criminal environments, a contact that might lead to bad networks and more crime, which again would impose costs on others such as victims and taxpayers. A third indirect benefit is that legalisation would typically mean

³² See e.g. Hatziaandreu [39].

³³ We are assuming here that for the purpose of determining the health care costs imposed on others as a result of athletes' use of ND, we should compare the real world with the closest possible world in which ND is legal rather than compare a world in which ND is illegal and not used – in the real world, the use of banned substances etc. is very widespread – with one where it is legal and used.

³⁴ See e.g. Penedo et al. [41].

³⁵ Admittedly, the benefits might accrue to different people than those on whom the costs are imposed, and that would be morally significant according to some moral views, e.g., contractualism.

that fewer are punished, which has the immediate advantage that, all else being equal, it could *save money* on testing athletes, investigations and court cases. Furthermore, legalisation would mean that athletes (and their family and friends) avoid the welfare loss, e.g., due to stigma and public humiliation, and loss of income often associated with being punished for doping.

In the light of these issues with the premises about the costs-to others-objection to ND, we cautiously conclude that the objection offers little reason for banning the use of ND.

7. CONCLUSION

In this paper, we have scrutinised four different fairness-based objections to legalising the use of ND among athletes. The first three objections focused on how its use by some athletes is unfair to non-using athletes, while the last objection focused on how the use of ND by some, or even more so, all athletes is unfair to non-athletes. We argued that none of the objections to a ban on the use of ND among athletes are sound, so we conclude that, insofar as there is a sound moral argument for banning the use of ND by athletes, that argument appeals to other arguments than the fairness-base arguments discussed in this paper. As we noted at the beginning of this article, there are indeed arguments – sound or not – of this kind and nothing we have said in this article refutes any of these arguments. Moreover, in this article we have not provided a positive defence of legalising the use of ND in sports. Nevertheless, we think that our results are significant. For one thing, objections to doping in general and ND in particular are often fairness-based. Moreover, while our article has not offered a positive defence of legalising the use of ND in sports, some of our objections have indicated what such a positive argument might look like – an argument that we hope to develop further in future work.

References

1. Nistche, M. A, et al (2008) Transcranial direct current stimulation: State of the art Brain Stimulation, 1, 206-223.
2. WADA. 2020. 2021 world anti-doping code. <https://www.wada-ama.org/en/resources/the-code/2021-world-anti-doping-code>. Accessed 7 January 2020.
3. Arul-Anandam, A. P., C. Loo, and P. Sachdev. 2009. Transcranial direct current stimulation: What is the evidence for its efficacy and safety? *F1000 Medicine Reports*, 1.
4. Dayan, E. et al. 2013. Noninvasive brain stimulation: From physiology to network dynamics and back. *Nature Neuroscience* 16(7): 838.
5. Petersen, T. S., and K. Lippert-Rasmussen. 2007. Prohibiting drugs in sports: An enhanced proposal. In *New ways in applied ethics*, ed. J. Ryberg, T. S. Petersen, and C. Wolf, 237–260. London: Palgrave Macmillan.
6. Møller, V. 2010. *The ethics of doping and anti-doping: Redeeming the soul of sport?* Abingdon: Routledge.
7. Murray, T. H. 1983. The coercive power of drugs in sports. *Hastings Center Report* 13(4): 24–30.
8. Veber, M. 2014. The coercion argument against performance-enhancing drugs. *Journal of the Philosophy of Sport* 41(2): 267–277.
9. Petersen, T.S. 2021. *Doping in Sport: A Defence*. Routledge.
10. Buchanan, A. (2011). *Beyond humanity?: The ethics of biomedical enhancement*. Oxford University Press.
11. Meulen, R., Mohamed, A., & Hall, W. (Eds.). W. (Eds.). (2017). *Rethinking cognitive enhancement*. Oxford University Press.
12. Park, K. 2017. Neuro-doping: The rise of another loophole to get around anti-doping policies. *Cogent Social Sciences* 3(1) <https://doi.org/10.1080/23311886.2017.1360462>.
13. Lavazza, A. 2019. Transcranial electrical stimulation for human enhancement and the risk of inequality: Prohibition or compensation? *Bioethics* vol. 33(1): 122–131.
14. Farber, N. S., J. Savulescu, and T. Douglas. 2016. Why is cognitive enhancement deemed unacceptable? The role of fairness, deservingness, and hollow achievements. *Frontiers of Psychology* 7: article 232.
15. Lenk, C. 2007. Is enhancement in sport really unfair? Arguments on the concept of competition and equality of opportunities. *Sports, Ethics and Philosophy* 1(2): 218–228.
16. Corlett, J. A., V. Brown Jr, and K. Kirkland. 2013. Coping with doping. *Journal of the Philosophy of Sport* 40(1): 41–64.
17. Agay, N., Yechiam, E., Carmel, Z., & Levkovitz, Y. 2010. Non-specific effects of methylphenidate (Ritalin) on cognitive ability and decision-making of ADHD and healthy adults. *Psychopharmacology*, 210(4), 511-519.
18. Battleday, R. M., & Brem, A. K. 2015. Modafinil for cognitive neuroenhancement in healthy non-sleep-deprived subjects: a systematic review. *European Neuropsychopharmacology*, 25(11), 1865-1881.
19. Chi, R. P., and A. W. Snyder. 2012. Brain stimulation enables the solution of an inherently difficult problem. *Neuroscience Letters* 515: 121–124.
20. Davis, N. J. 2013. Neurodoping: Brain stimulation as a performance-enhancing measure. *Sports Medicine* 43: 649–653.
21. Garasic, M. D., and A. Lavazza. 2016. Moral and social reasons to acknowledge the use of cognitive enhancers in competitive-selections contexts. *BMC Medical Ethics* 17:18.
22. Thomson, T. et al. 2008. EEG applications for sport and performance. *Methods Department*

- of *Psychology* 3(45): 279–288.
23. Mølholm, M. 2016. Derfor skal doping bekæmpes. *Jyllands-Posten* (Danish Newspaper), 29 December 2016. https://www.dif.dk/da/politik/nyheder/nyheder/2016/december/20161228_doping. Accessed (05.02.20).
 24. WADA Ethics Panel. 2017. <https://www.wada-ama.org/en/resources/the-code/2021-world-anti-doping-code>. Accessed 7 January 2020.
 25. Fost, N. 1986. Banning drugs in sports: A skeptical view. *Hastings Center Report* 16(4): 5–10.
 26. Kayser, B., and A. C. Smith. 2008. Globalisation of anti-doping: The reverse side of the medal. *British Medical Journal* 337: a584.
 27. 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.
 28. Loland, S. 2018. Sport, performance-enhancing drugs, and the art of self-imposed constraints. *International Journal of Applied Philosophy* 32(1): 87–100.
 29. Arneson, R. 2015. Equality of opportunity. In *Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/equal-opportunity/>.
 30. Scanlon, T. 2018. *Why does inequality matter?* Oxford: Oxford University Press.
 31. Williams, B. 1973. The idea of equality. In *Problems of the Self*, 230–249. Cambridge: Cambridge University Press.
 32. Tännsjö, T. 2012. Biological egalitarianism: A defence. In *The posthuman condition: Ethics, aesthetics and politics of biotechnological challenges*, ed. Kasper Lippert-Rasmussen, Mads Rosendahl Thomsen, Jacob Wamberg, 170–183. Aarhus: Aarhus Universitetsforlag.
 33. Rodenberg, R. M. and H. L. Hampton. 2013. Surgical doping: A policy loophole? *International Journal of Sport Policy and Politics* 5: 145–149.
 34. Corlett, J. A. 2018. Should and will inter-collegiate football be eliminated? Assessing the arguments philosophically. *Sport, Ethics and Philosophy* 13(2): 170–182.
 35. Frias, F. J. L., and M. J. McNamee. 2019. Brain-injured footballer, voluntary choice and social goods: A reply to Corlett. *Sport, Ethics and Philosophy*. doi.org/10.1080/17511321.2019.1583273.
 36. Dworkin, R. 2000. *Sovereign virtue*. Cambridge, MA: Harvard University Press.
 37. Hartmann, D., and Kwauk, C. (2011). Sport and development: An overview, critique, and reconstruction. *Journal of sport and social issues*, 35(3), 284–305.
 38. Ekholm, D. (2013). Sport and crime prevention: Individuality and transferability in research. *Journal of sport for development*, 1(2).
 39. Hatziandreu, E. I., J. P. Koplan, M. C. Weinstein, C. J. Caspersen, and K. E. Warner. 1988. A cost-effectiveness analysis of exercise as a health promotion activity. *American Journal of Public Health* 78(11): 1417–1421.
 40. Farah, M. J. (2010). *Neuroethics, an introduction with readings*. Cambridge MIT Press.
 41. Penedo, F. J., and J. R. Dahn. 2005. Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry* 18(2): 189–193.