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Abstract

In the debate on cyborg-athletes in sport, rightly so, (un)fairness was the central point of consideration this far. However, with this paper, we make a claim that in cyborgization cases, together with (un)fairness, another problem should be considered as well - the pressure that cyborgization can put on other athletes, sporting communities and the integrity of sport. In order to make our case we will first critically examine notions of cyborg, cyborgization and cyborg-athletes; secondly, we will discuss the coercion argument and propose changing it into the pressurization argument; thirdly, we will critically examine the concept of integrity of sport; and finally, we will provide ethical guidelines for cyborgization of/in sports.

Key-words: Cyborg-athletes, Coercion, Pressurization, Integrity of Sport

Resumen

En el debate sobre los atletas cyborg en el deporte, con razón, la (in)justicia fue el punto central de consideración hasta ahora. Sin embargo, con este documento, afirmamos que en los casos de cyborgización, junto con la (in)justicia, también se debe considerar otro problema: la presión que la cyborgización puede ejercer sobre otros atletas, las comunidades deportivas y la integridad del deporte. Con el fin de presentar nuestro caso, primero examinaremos críticamente las nociones de cyborg, cyborgización y atletas cyborg; en segundo lugar, discutiremos el argumento de la coerción y propondremos cambiarlo por el argumento de la presurización; en tercer lugar, examinaremos críticamente el concepto de integridad del deporte; y finalmente, proporcionaremos directrices éticas para la cyborg

Palabras clave: Atletas Cyborg, Coerción, Presurización, Integridad del Deporte

I. Introduction

Our paper was prompted by Marcus Rehm's request to compete in the athletic discipline of the long jump in the Olympic Games in Rio 2016. IAAF denied the Paralympian's' request with the explanation that he failed to provide the burden of proof that the prosthesis he used on the partly amputated right leg did not produce a competitive unfair advantage. The authors find the case paradigmatic and exemplary, especially in the light of Markus Rehm being probably the world's top long jumper at the moment. As his 'unfair advantage case' was minutely described and thematised in the literature (especially by Camporesi & McNamee, 2018), the authors would like to further the debate on the inclusion of disabled athletes in able-bodied competitions, with the claim that such a case should not be considered only from the perspective of unfair advantage, but from the

perspective of the coercion or pressurization perspective as well. Thus, in this paper, we will do just that.

Moreover, in our opinion, right now we are facing a new type of pressurization that we can describe as cyborg-pressurization. We argue that modern sport is going towards cyborgization on many levels and in many ways, and while this process is already going on it can be expected to play a much more important role *in* and *for* sport in the near future. At this moment we can point out a few sportsmen in high-level professional sport with artificial parts in their bodies who are *de facto* cyborg-athletes, such as no. 1 tennis players Andy Murray (<https://www.theguardian.com/sport/2019/jan/16/andy-murray-career-could-be-saved-metal-hip-implant-bob-bryan-australian-open-tennis>), Nenad Zimonjić (<https://www.atptour.com/en/news/zimonjic-hip-feature-sofia-2019>) and Bob Bryan (<https://www.nytimes.com/2019/04/02/sports/bob-bryan-hip-surgery.html>), triathlon runner Michael Rix (<http://www.opnews.com/2016/08/man-wins-triathlon-three-months-after-hip-replacement-surgery/12804>) with a metal hip instead of the natural one, and NBA player Malik JonMikal Beasley with the metal rod in his leg (<https://www.cbssports.com/nba/news/nba-draft-big-board-likely-first-rounder-reveals-he-had-metal-rod-placed-in-leg/>).

In our opinion, every cyborgization in a sport that will bring competitive success and will develop/enhance athlete's performance will provide a specific kind of pressure on others involved in the same competition. This doesn't necessarily mean that one would cut off part of her/his body to use the blade for a longer or a higher jump or faster run. We are thinking about smaller sport-specific steps like incorporating different small artificial parts in one's body (spirals or bones, for instance) that will undoubtedly help athletes to become more competitive in their sports.

More so, it seems to us that this will also pose a very specific threat to the integrity of sport in general and to each sport individually.

In order to make our case, we will provide a critical analysis of (mostly) sports-philosophy literature that has provided the definition of cyborg-athlete (Miah, 2003; Pérez Triviño, 2013; Lopez Frias, 2016), rationales for the coercion argument (Simon, 1984, 2004; Fraleigh, 1984; Veber, 2014; Schneider, 2016) and the concept of integrity of sport (Cleret, McNamee & Page, 2015; Archer, 2016; Gardiner, Parry & Robinson, 2017). That will help us to set the proper ground for ethical analysis of the case and presentation of ethical guidelines for cyborg-athletes inclusion in sports.

II. Cyborg – athletes: Enhancing the natural body in sports

The role of the cyborg was explored by several authors in the debate on cyborg-athletes in the philosophy of sport. Lopez Frias identifies the two defining components of the traditional definition of the cyborg: (a) the symbiotic relationship between human nature and technology; and (b) the embodiment of a superhuman or inhuman feature or ability.

Clarke's view of the cyborg is in line with the way in which philosophers of sport, such as Breivik (2008, 2013) and Ilundáin-Agurruza (2014a, 2014b), reflect on the embodied nature of sport. Roger Clarke builds his notion of the cyborg upon the idea that the cyborg is the combination of human components and technological implants. He regards the cyborg as 'a person whose physiological functioning is aided by or dependent upon a mechanical or electronic device' (Clarke 2011, 52). Clarke's definition distinguishes between two kinds of mechanical devices: prostheses and orthoses.

The term cyborg was coined in 1960 by Manfred E. Clynes and Nathan S. Kline. They defined a cyborg as a 'self-regulating, man-machine system' and 'exogenously extended organizational complex functioning as an integrated homeostatic system unconsciously' (Clynes & Kline, 1960). The term cyborg is an abbreviation of '(cyb)ernetical (org)anism' which represents a synthesis of a biological organism and artificial parts (e.g. electronic, mechanical or robotic). By bringing the body under comprehensive control with cybernetic feedback systems, cyborg would be persons who can free themselves from the constraints of the environment to the extent that they wished. (Clynes & Kline, 1960)

On the other hand, athletes are regarded as cyborgs when their performance relies heavily on technological intervention. Famous examples of cyborg-athlete are the baseball player Tommy John 'The Bionic Man' (Carroll, 2013), and Oscar Pistorius 'Blade Runner' (Camporesi, 2008).

Pérez Triviño points out the contradiction of the situation in which athletes such as T. John or O. Pistorius have undergone therapeutic treatments that were unimaginable a number of years ago and without which they would not achieve their actual level successfully. It is clear that these are cases of therapeutic treatments, but the question is whether we should consider them also as enhancement treatments. As long as it is possible now or in the future that these initially-therapeutic treatments allow the patient to improve on his previous abilities we will be on slippery ground. In

other words, the scope of therapy could increase and, in this way, diffuse what an enhancement treatment would be (Miah, 2004).

The use of technology in sport can be carried out with distinct therapeutic or enhancement goals (ibid.). The ethical questions about its legitimacy in sport arise when it is used for or it has enhancement effects. And the enhancing procedures are ‘any change in the biology or psychology of a person which increases species-typical normal functioning above some statistically defined level’ (ibid., p. 97), that lead towards the expansion of the possibilities of existing organs or human functions, with the goal of creating a cyborg body which would be more exactly incorporated into the techno-scientific environment.

More specifically, such a possibility generates inevitable ethical and legal questions. In this sense, the paradox that arises in sport is that medical implants, which were invented with obvious therapeutic and restorative goals, would improve the physical abilities of athletes, and can improve physical sports performance (Wolbring, 2011; Zettler, 2009). On several occasions, the current state of technical development has helped athletes with implants (cyborgs) to achieve better results than able-bodied athletes. For this reason, not only do these athletes claim that they should be allowed to take part in competitions for disabled athletes, but they also claim that they should not be excluded from competitions for regular athletes (Dvorsky, 2007).

Moreover, Pérez Triviño reasoned that it is probable that in the near future, we will see sportspersons wanting to change their organic body parts for a mechanical prostheses (Pérez Triviño, 2013).

“Next-gen research will shift from replacing the human leg to improving it, just as pharmaceuticals have shifted from restoring to enhancing. Why stop at a better hairline when we can make a better thigh?” (Adelson, 2011).

Cyborgs could overcome the able-bodied and become super-abled. But then, the question arises why can’t able-bodied athletes change their bodies technologically to enhance it?

“Given the ‘arms race’ nature of competition, will these positional advantages cause athletes to do something as seemingly radical as having their healthy natural limbs replaced by artificial ones?” (Dvorsky, 2007).

II. Athletic enhancement: Prosthetic and software in the cyborg athlete

Artificial techniques that serve to return lost opportunities could be abused in many ways. For example,

"... the cochlear implant is currently being used to give people some semblance of normal hearing, it could also be used to augment normal hearing. Retinal implants and wearable computers could also be used to allow people to secretly record and transmit what they see, says Clarke" (Salleh, 2010)

Such a technology could be used for giving instructions to the athletes during the competition, for instance, a coach could give advice to the tennis players during the match.

It is possible that Pistorius' and Rehms' cheetah prostheses will become a paradigm shift in sport in which competitors will no longer rely solely on their own talents and capabilities of their bodies, but also on mechanical aids shaped by technological properties, which will gradually change the "face of sport".

"Athletes have already become posthumous cyborgs that we celebrate. It is very likely that greater use of this technique will increasingly penetrate into other aspects of culture because it is beginning to accept more and more improvements. Sport could soon become a kind of resistance to such events, but in the meantime, sportsmen will be put at high risk by forcing them to improve behind closed doors." (Mellinger, 2008)

More so, Clarke believes that with the development of cyborgization more people will demand their "rights to the technology" that is keeping them alive and that will lead to an over-demanding of such rights in both - cyborgized and non-cyborgized persons. Thus, for example,

"... people who just became disabled, will demand the right to obtain their relevant prosthesis. People who are using prostheses to recover lost capabilities will seek to protect their existing rights. People who have lost capabilities but have not yet got the relevant prostheses will seek the right to have them. Enhanced humans will seek additional rights to go with the additional capabilities that they have." (Clarke, 2010)

This raises questions in sport such as will natural athletes take care of themselves to attach more effective mechanical limbs? Will all athletes want to be like O. Pistorius? Let's imagine a hockey team that communicates telepathic or basketball with improved peripheral vision. (Weiner, 2008) Where does this lead? In G. Wolbring's opinion, this leads to a situation in which there will be a classification of the Olympic Games in the future.

" Division I might allow steroids and human growth hormone. Division II might ban drugs, but allow special shoes or fins on uniforms. Division III might allow prosthetics and extra-skeletal devices – a "luxury editions". Division IV might be your basic guys and gals in shorts and T-shirts. Eventually, the bionic athlete, or "human enhancement technology" (HET) athlete, will be the high-performance athlete, earning money, TV ratings and attention. The ones with normal legs will be

viewed as kind of cute, but I'd rather watch the guy who can run the 100 meters in five seconds." (Weiner, 2008)

Wolbring has in a way predicted still ongoing debate of categorization in sport in the sports-philosophy literature (see for instance Škerbić, 2020b).

IV. Coercion Argument

'Coercion argument' (CA) was introduced in sports–philosophy during the 1980's debate about dropping the restrictions on doping between so-called 'libertarians' and 'essentialists'. According to Fraleigh (1985), lifting the ban on performance-enhancing drugs (PEDs) and giving athletes the freedom to choose doping is morally problematic because it would exert coercion on other competitors to inflict self-harm and put them in a 'morally unconscionable' position to choose between usage of doping and dropping out of competition. (Fraleigh, 1985, p. 28) In such a way, coercion can be described as undermining athletes' autonomy by creating a situation in which athlete has to decide whether to use some enhancement in order to stay 'effective' in competition (ibid, p. 27). Here, the value of (athletes) human autonomy becomes challenged by the coercive nature of the athlete's act of taking doping for gaining an unfair and unjust competitive advantage.

Hollowchack (2000) also puts emphasis on coercion-autonomy-harm relation and echoes the point by saying that 'harm, through coercion, dictates the ban on steroids [and should be] maintained not reversed'. (Hollowchack, 2000, p. 42) Coercion on one hand, means putting an unfair pressure on others, forcing them to do something that they won't do otherwise, while on the other, it means undermining one's autonomy of making a free choice and taking away options for choosing. (ibid, p. 39) Finally, allowing doping is building a specific coercive environment in which is not just a matter of promoting injuring other competitors but also injuring the sport per se. (ibid, p. 48)

Veber (2014) brings the most comprehensive account of CA in the literature so far. In his view, CA is not convincing in unless four ways. Firstly, it is impossible to draw the clear line of potential harm of coercion, nor the extent of coercive force without "inviting charges of arbitrariness" (ibid., 271). Secondly, we cannot know how many athletes would be actually coerced to use enhancements, nor the amount of enhance-free athletes who would be ready to compete either way. Thirdly, it seems that sport-philosophers were using the wrong term all along. Namely, it doesn't meet any criteria of the concept of coercion in the literature presented by different authors like

Nozick (1969), Frankfurt (1988), and/or Anderson (2011). Veber propose using a different terms influence and pressure instead. Fourthly and finally, in CA reference to ‘the highest level of sport’ it is not quite clear which level of different sports is the highest.

V. Pressurization – not Coercion

What we find peculiarly important in Veber’s criticism is the deliberation on the usage of the term coercion. Namely, his discussion on Frankfurt’s account of coercion clearly shows that what is going on in sport doesn’t have to do with coercion. It is strange that neither Fraleigh nor Hollowchak didn’t take a deeper look at the already present philosophical analysis of coercion done by important and influential philosophers such as Nozick (1969) and Frankfurt (1973). Instead, they just took the term from another context and put it in the sports-philosophical discussion to which it obviously doesn’t belong.

However, we agree with Veber that a new and more plausible term should be picked and that the argument should be renamed. We think that pressure is the most convincing solution, while the term influence somehow lacks precision and seems too general and abstract to replace coercion. It seems to us that pressure is a specific and concrete kind of influence, among a wide spectre of many different others like coercion, manipulation, enforcement, or lobbying. The sporting issue here is not that one is coercing someone into doing something that someone else will not do, but instead, by our doings, we are putting pressure on someone else, influencing that person in a specific way and provoking their reaction or response. Pressure is present in sport constantly in many forms: from other athletes hard training methods, accomplished results, acquired level of competitive performance, usage of new technologies and/or equipment, up to pressure provided by media and fans. In the competition, coaches are putting pressure on their athletes, then athletes are putting pressure on other athletes as their opposing co-competitors or as their teammates. On the other hand, fans are putting the pressure on all - coaches, teams and athletes, but also referees and other officials, while club owners are putting pressure on their employees. It seems to us that pressurization is one of the essential *spiritus movens* of sports, and thus responsible for its development to the present state.

In sum, the argumentation and rationales for the claims that we made are similar to coercion-deliberators, just the umbrella term to describe it has been replaced in order to keep the plausibility

in order. We propose a specific renaming of the ‘Coercion Argument’ into the ‘Pressurization Argument’.

VI. Integrity of Sport

In the careful overview of the literature on sports integrity (SI), one can easily notice that the preliminary step was somehow skipped - what is integrity per se? It seems to us that if we provide the answer to that, it would be much easier to explain and understand what the integrity of sport is precise. In this regard, it is optimal to turn to the Latin origin of the term *integritas* and its meaning: intactness, uninjured, correctness, and fullness, which guide us to the core of integrity as such. Integrity is completeness, wholeness or being whole, having all integral parts together, intactness or purity and incorruptness of a thing or self. (Cox et al, 2021)

There are many types of integrity such as professional, artistic, and intellectual, but also personal integrity, moral integrity, and integrity as a virtue (Cox, 2021). Every sphere or component of human life, as well as every social practice, has its own integrity – and sport is one of them. We distinguish between types of integrity in terms of commitments to specific kinds of ends, principles and ideals (Halfon, 1989, p.55) which suggest that integrity is maintaining identity-conferring commitments (Bernard Williams, 1981, p.12).

Furthermore, morality seems to be an inevitable component of integrity, and not just as a part of specific ‘moral integrity’. Here, congruity between one’s ethical commitments and one’s actions seems to be crucial. For our discussion, of course, the crucial question is what is sport(ing) integrity? What are the essential components of SI and what makes the sport whole, pure and uncorrupted unity? Let the literature speak for us here.

For Cleret et al (2015) SI is the term present for a longer period in the sports-philosophy literature and was occasionally used in a vague manner for the purposes of different ethical argumentation, similar to the usage of other heavy terms such as ‘spirit’ or ‘nature’ of sport. It seems actually that integrity appears to be a value that is rarely commented upon unless it is seen to be absent.” (Archer, 2016, p. 120)

Cleret et al pointed out the “growing presence [of the term] in sports governance literature” that is starting to become “embedded in a range of organizations connected to sports”, mostly as an “umbrella term that has emerged, largely from the sports industry and financially interested parties”,

as well as law enforcement agencies and a new kind of private detectives or SI investigators. (ibid., p.2; see also McNamee, 2013, p.173-4)

From 2011 onwards, a wide range of institutions is claiming the preservation of the integrity of sport as an ultimate goal stated in their official statements, declarations or other important documents. Some of them are connected to preserving human rights (UK Equality and Human Rights Commission) or providing security (International Centre for Sport Security, International Centre for Sport Security and the United Nations Office on Drugs and Crime, UN International Centre for Sport Security), while others are making sport policies in different countries (Australian Institute for Sport, Ministers of Physical Education and Sport) and sports competitions (FIFA, IOC).

Interestingly, the above-mentioned institutions are defining the term in a similar negative manner, confronting it with different threats to the sport. In this regard, besides “an unholy trinity of unethical practices - corruption, match-fixing, illegal and irregular sports betting” (ibid., p.3), the authors have detected 17 different items that ‘sports with integrity’ strongly reject:

“[1] discrimination, [2] illegal sports gambling, [3] abuse of children and [4] young persons, [5] sexual harassment, [6] assault and [7] violence, [8] coaching malpractices, [9] player school/academy and [10] transfer abuses, [11] sport management malpractices, [12] procurement transparency and [13] accountability issues, [14] inappropriate sponsorship and [15] funding, and [16] corruption via [17] organized crime.” (ibid., p.4; see also Harvey&McNamee, 2020)

Authors are using the formulation ‘sport with integrity’ and agree that it should “promote and preserve sport with a range of ethical concepts rooted in equality and human rights - ‘protected characteristics’” (Ibid., p.3), just to conclude that “the complexity of the issues [of integrity] involved means that the problem can only be addressed properly by multi-stakeholder responses.” One of them is definitely a sport-philosophical community.

On the other hand, in A. Archers’ account, ‘sporting integrity’ is at the same time a value and a virtue, that can be conceptualized in a threefold way (Archer, 2016). Firstly, SI is a coherence between permissible means, posed limitations and goals in sport. Secondly, SI is a practical identity which means keeping intact the basic values or principles of sport (such as fair play, comradeship, and team effort) and staying true to them while doing sports. (ibid., p.132) Finally, SI is a social virtue of standing by one’s sport commitments, either as individual sport practitioners or as a

sporting institution. (ibid., p.122) The second part of Archer's account was questioned by Zakhem & Mascio. They have proved that competitive coherence is neither necessary nor sufficient for sporting integrity (Zakhem & Mascio, 2018, p.4). Instead, they are proposing 'being true' to the 'spirit' or the 'ethos' of the game view of sporting integrity. And they describe the 'spirit of the games', derived from Pierre de Coubertin's (2000) ideals for the modern Olympic Games, as a commitment to values and principles such as fair play, friendship, respect for competitors, education, peacebuilding, competing for the love of the sport, and giving one's best effort. (ibid., p.9) What is questionable to us, is Zakhem & Mascio's understanding of Archers' account of sporting integrity. It seems that they took only one part (out of three) of the SI account which is actually threefold, and focused on the coherence part. Such an act doesn't seem fair or scholarly just. We, on the other hand, took Archer's threefold account of SI as one complex view and not three separate views. Such a (threefold) view is much wider and deeper than Zakhem & Mascio's, but also much more coherent. Finally, their concept of SI is vague and would be much better if they would take a closer look into each value/principle/ideal they enlisted and build upon. Namely, most of them were discussed heavily in the literature and even mentioned by Archer (!). There is no need to use them in a vague manner and only within the Coubertinian concept of 'spirit' or 'ethos' in which even seems that they are suggesting that 'spirit' and 'ethos' of sport are one and the same. Finally, it is not clear to us how the external ideal of (international) peacebuilding is a part of SI or the ethos of sport.

The SI conception that we are in favour of is Gardiner et al (2017) four-level model that we will call the *comprehensive SI*. The first level is a *sport per se* integrity level which includes internal values of sport and core features in sport such as fairness, respect (inclusivity and care), excellence, and competition (ibid., p.18). Second is a *personal* integrity level in which every individual sportsperson takes responsibility for representing his/her identity [of being an athlete, referee, or official...]. The third is an *institutional* integrity level which is focused on the organisation or institution that should ensure that their primary commitment stays to sport's internal goods and standards of excellence, and not the external ones. (ibid., p.19). Finally, *procedural* integrity level of sports events, which mean staying committed to the central purpose of competitive sport – the establishment of skilful superiority and the comparison of the relative ability of the contestants – and in doing so respecting considerations of moral equality.” (ibid, p.19) In our view, the strongest part of such a comprehensive SI is leaning on the intrinsic values of sport which seems to be

integrated into the footholds of SI. A few things are problematic in our opinion. One is pointing out inclusivity as (a part of respect in sport) intrinsic value or a core feature of the sport. Inclusivity doesn't seem to be essential for sport and was not perceived as an internal or intrinsic value in the literature thus far. (Martinkova, 2018; Škerbić, 2020) To be precise, inclusivity is actually an external value and thus not necessary nor crucial for SI. Second is, and this goes for every SI conception presented here, an emphasis on the role of the physical body as a part of personal integrity is missing here. And the physical body is a crucial part of every definition/conception of sport as well as our viewpoint on cyborg-athletes. However, this doesn't undermine the importance and role of comprehensive SI.

At the end of this part and within the context of SI, we need to praise McNamee's Erasmus Mundus program stated in KU Leuven, which we understand as connecting philosophy and (bio)ethics of sport to the practical realm of/in sports which is missing within the discipline. On the one hand, we like the inclination of having real practical implications of theoretical considerations on sports, and not just on sporting integrity but also others. On the other hand, the program is a practical proof of the possibilities of wide usage of gathered specialized knowledge and education in philosophy of sport for the variety of jobs and participation within interdisciplinary teams that are doing significant and necessary acts and initiatives to save sports.

VII. Cyborg Pressurization and Integrity of Sport and Athletes

It is our position that cyborgization of/in sport is not problematic only because of the issues with fairness in the competition and gaining unjust competitive advantages (McNamee, Camporesi 2018), but also because of pressurization on other athletes and sports-involved parties, and, even more so, posing a threat to the very integrity of sport.

Let's consider rather a drastic example and imagine that request of the long jump cyborg athlete Markus Rehm to compete in the standard IAAF competitions has been approved. A pretty realistic scenario would be that Rehm would dominate the discipline. Namely, he holds the long jump world record in his category (8.48 m) set at the 2018 IPC World Championships in Berlin, Germany. Moreover, the distance of 8.48 m was enough to win the gold medal at the prior 3 Summer Olympics (2012 London, 2008 Beijing, 2004 Athens). Domination would put a huge pressure on other long jumpers, together with their coaches, team members, and the entire long jumping community. In order to stay competitive, they would be pressured to either do what is necessary to

stay on the new required competitive level or - leave the (level of) competition. The whole community would be pressured to *think of* or *come up with* certain technological advancements and/or some degree of cyborgization in order to stay on the elite level.

If we put our imaginary case under the SI scanner, we can detect the diminishment and endangerment of SI in several ways. Firstly, in the *sport per se* level of SI cyborgization is diminishing the fairness of the competition. Secondly, connected to the first, on the SI *institutional* level, cyborgization is undermining commitment to the internal goods and standards of sporting excellence. Finally, it is undermining the comparison of the relative ability of the contestants. Interestingly though, it would pass the *personal* level of SI because every cyborg-athlete is actually representing their own personal identity.

It seems to us that cyborg-pressurization can influence and put pressure to irreversibly change both, athletes with their physical bodies (abled and/or disabled) and the particular standard sport (long jump). Moreover, it seems pretty obvious that the moment cyborgization will make an impact on sports performance quality or quantity, it will become a significant ethical issue, but more importantly - an integrity problem. And not just the bodily integrity of athletes, but also the integrity of competition and sport itself.

Here, the distinction between two types of the human body in sport seems crucial to us – 1) natural or biological and 2) artificialized or technologized body. The decision on which kind of body we want in sport will give us two possible directions: 1) of preservation of what was naturally given, or - the way of biology, and 2) of changing or improving nature – the way of technology. The first direction is keeping the athlete's bodies natural despite the unfairness of the biological lottery, complemented by the social, geographical, political, economic and other relevant contexts and additions to unjust and unfair differences. It seems that in contemporary sports this can be achieved only through precise restrictions of different kinds: usage of substances, food supplements, methods or technology to help in improving athletes' performance. The second direction is using the technological *novum* and giving the athletes different technologized help in pursuit of excellence and other internal goods, but also, the external ones – such as records, medals, financial gains, fame and glory, is widespread and ongoing globally. Today's athlete bodies, especially that of top-level professionals, are already specifically improved by technology in many ways. On the other hand, technology industries and inventors will be using sport as a laboratory to test improvements and

develop innovations. However, we can anticipate that such a furthering and spreading of the usage of technology in and for sports and their athletes will end up in precise and detailed categorization of sport. Here, it seems that the role of technology will be much more extensive and important for athletes in performance-based sports (athletics, swimming, gymnastics) than in games-based sports (basketball, soccer, tennis), where biologically received unfair advantages can be exceeded through creativeness and playfulness.

VIII. Recognising ethical limits in sport and human nature

The accelerated development of cyborgization in sport and the increasing its usage to improve athlete's ability can bring us into a situation in which we are no longer able to categorize improvements as "good" or "bad", "acceptable" or "unacceptable". Consequently, it gives rise to doubt about whether cyborg athletes should be able to partake in different athletic competitions, and, if allowed, under what circumstances. Through the presented examination of the sports-philosophical literature on the meaning and understanding of cyborg-athletes, the coercion/pressurization argument and the concept of integrity of sport, we set the grounds for the ethical examination that follows.

Cyborgization techniques move the limits of freedom for handicapped athletes who are given the opportunity to compete "equally" with natural athletes and achieve results. On the other hand, the question of whether or not such a substitute is a physical disadvantage or even creates an irrefutable advantage and leads to the improvement of healthy athletes, which by force of the argument will contribute to the destruction of sports integrity.

The ethical framework that can be easily applied to sport in the case of Rehm and similar is four principles set by bioethicists Beauchamp and Childress (2001): harmlessness ("do not harm"), charity ("do good"), autonomy (respect for personality, holiness of "personal choice) and justice (equal access and application).

On the other hand, Pérez Triviño points out four criteria for any technological intervention in sport - technology should be banned if it: 1. affects the spirit of the sport, especially the equality among athletes; 2. cause health problems; 3. dehumanize the sport; and 4. represent an aesthetic problem. (Pérez Triviño, 2013, p.14.)

Another problem to consider is how to find out when the use of technology is leading athletes to cross some important boundary. Mike McNamee identifies vulnerability as one such boundary (MacNamee, 2014, p. 36). In McNamee's opinion,

“we would be forced to consider the normative status of human nature itself and the (potential) desirability of biotechnological modifications and the resultant transformations of our understandings of elite sports.” (McNamee 2013, 185)

It is our opinion that in the times of confronting natural and improved athletes, defining ethical principles is the key issue that must be answered regardless of the pace and direction of future sport development. Without any pretence of being systematic or comprehensive, we put forward some of the potential principles of cyborgoethics in sport:

1. The principle of deliberation.

Every specific kind of cyborgization needs specific and thorough deliberation, questioning of ethical, medical, social and philosophical *pro et contra* arguments for certain technical progress in order to draw a line between restorative and normalizing procedures on the one hand and enhancing and reshaping procedures on the other. Such deliberation implies the philosophical discussion about the essence of enhancement in sport. Implants and prostheses that improve the results in sport should be distinguished by the effects that they bring - therapeutic, enhancing and transhuman.

“A therapeutic effect would be one that repairs a body to more or less match its state previous to an illness. An enhancement effect would be one that would allow for an increase in natural human potential within the typical human realm. A transhuman effect would be superhuman improvement, that is, the increase of a person's abilities beyond the characteristic scope of the human species.” (Triviño, 2013, p.15.)

2. The principle of purpose.

Every usage of ubiquitous neuro-, bio- and nano-technologies, as well as other enhancement technologies in sport has its own purpose that wants to be achieved by inserting the implant or prosthesis into the athletes. Before allowing certain technology, we should be able to recognize its purpose and be able to put it in question – is it a treatment, help, the mean of achieving a certain kind of equality, or – competitive unfair enhancement?

Here, Pérez Triviño points out the additional problem of dehumanization, where athletes' extensive use of physical performance enhancement technologies may lead to a situation in

which “we are incapable of identifying the original ‘I’ whose performance we want to improve” (Schneider, 2000; Triviño, 2013, p.16.)

Furthermore, it is necessary to examine “1. When there is harm to others; and 2. When there is insufficient knowledge about the effects it would have on health.” (Triviño, 2013, p.19.)

There is a vast difference between the need to substitute a deficient organ or organ system function, and upgrading the function of a hitherto normally functioning organism. A line should be drawn between the ethics for the preservation of life, and autonomy and the ethics of enhancement which tries to justify the need for man’s enhancement and reshaping.

3. The principle of protection or preservice.

Before allowing any kind of cyborgization in sports we should be aware what do we need to protect or preserve in sport. It seems to us that more than anything, we need to preserve the integrity of sport, and we should protect intrinsic values, such as fair play and striving for excellence.

4. The principle of promotion.

Another important criterion is what are we promoting in sport by allowing certain cyborgization. In our opinion, sport should promote the natural talent of athletes, one’s personal effort in striving for excellence, and one’s flourishing as a human being. Namely, we should take into account whether athletes will benefit from cyborgization only as a competitor or as human beings as well. (Škerbić, 2020, p. 9)

We believe that the four proposed principles of cyborgoethics in sport could help to keep the integrity of sport intact on the one hand, and fairness in the sports competition undermined on the other. Finally, four principles could keep pressurization of cyborgization in/to sport in accordance with essential values and principles of sport in such a way that only cyborgization that promotes them will be allowed. In such a way, cyborgization could be an important addition to sports in its best light.

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