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BIOETHICS OF SPORT – THE LOOK TOWARD THE FUTURE OF SPORT

Abstract

The author approaches the bioethics of sport as crucial in considering the future of today's sport. Within the bioethics of sport, the youngest sub-discipline of the philosophy of sport (McNamee and Morgan, 2015), the author notices and distinguishes two fundamental viewpoints that differ in the understanding of *bio* in the notion of *bio*ethics. Thus, on the one hand, *bio* is understood as *bio*-technology and *bio*-medicine and includes a discussion of the problems within such areas in sport. On the other hand, *bio* is understood as *life* or *bios*, which includes a wide range of additional sport-related issues. Furthermore, the author considers the bioethics of sport as the most discussed and most vibrant branch of sports philosophy and as crucial for today's (professional) sports and its future. Namely, within the area, the most complex problems and cases in sport were discussed and/or resolved, such as those of O. Pistorious, M. Rehm, and C. Semenye, including the recent pandemic caused by the COVID-19. In this sense, the author brings ten anticipated scenarios for the future development of modern sports, based on previous sports-bioethical considerations, research, and insights.

Keywords: bioethics of sport, bio-medicine, biotechnology, *bios* or life, future of sport

Introduction

In the last decade or more, the bioethics of sport has become probably a key branch of the philosophy of sport, one of the most vibrant and considered areas of contemporary (mostly high-level professional) sport. In recent years, a wide range of papers thematizing bioethical topics and problems *in* and *around* sport was published in specialized journals like *Journal of the Philosophy of Sport* and *Sport, Ethics and Philosophy*, as well as in others considering the same issues from other connected perspectives.

On the other hand, 'big' bioethical cases in sport, such as those of Oscar Pistorius, Marcus Rehm, and Caster Semenya, or the latest COVID-19 pandemic, with their complexity and possible consequences for sport, require the full and immediate involvement and reaction from the sport scholarly 'community'. A wide range of experts is needed - from philosophers and (bio) ethicists, sociologists and psychologists, biomedical scientists, to lawyers and economists – to deal with such cases in interdisciplinary, multidisciplinary, and transdisciplinary settings. Finally, their solutions have further implications and influence on the future of sport as we know it, its integrity, but also its complexion and (public) perception.

Furthermore, with the growing influence of technology *in* and *on* sport, especially biomedical technology, sport has entered its 'extreme' period in terms of competition (and sports results and records), economy (and different financial interests), medicine and health, architecture... And this doesn't seem to be the end of it.

The author will consider an overview of the sub-discipline bioethics of sport outlined in such a way. In the first part, he will produce a brief audit of the dual understanding of the sub-discipline as well as its (preferable) thematic specter. In the second part, through a brief overhaul of the cases of O. Pistorius, M. Rehm, and C. Semenya, the author will show how their resolution exerts an influence on sport. In the final part, the author will offer ten anticipated directions for the further development of today's (primarily highly professional) sports.

„Narrow Bioethics of Sport" – *bio*(ethics) as bio-medicine and bio-technology

Bioethics of sport was initiated in the late 1990s and early 2000s in the United States, United Kingdom, and Canada, the same as bioethics *per se* (just a bit

earlier - at the beginning of the 1970s). It is characterized by considerations of sport within the 'narrow' framework of 'bio-medical' or 'new medical ethics', with a sort of climax in the book *Bioethics, Genetics and Sport* by Camporesi and McNamee (2018). The thematic spectrum of the narrow scope (see Škerbić, 2019: 222; Škerbić and Radenović, 2018: 111) started with the initial three topics - doping, genetics, and gender, while in its broadest perspective it reached eight topics (Miah, 2015; Camporesi and McNamee, 2018):

1) *doping.* This area includes a discussion about the methods and substances for the illicit and unfair enhancement of athletes' competitive performance in sport, including 'genetic' and 'mechanical' doping; debate *on* and confrontations *of* the arguments for their admission or prohibition; consideration and planning of anti-doping strategies and rules; debate about regulation of exceptions for the therapeutic use of doping (TUE - Therapeutic Use Exemption)…

2) *genetics* and *genes.* This domain includes issues related primarily to gene modification and improvement of athletes; issues related to genetic testing of (mostly) children in order to determine eligibility for (top-level professional) sports, talent discovery and investment in the long-term development process; discussion of future 'Gattaca' scenarios…

3) *gender.* This is the field that was, in the 1980s and 1990s, dominated by the topics about the sex in/equalities in sport in various forms, while from the 2000s it was 'replaced' in quite a significant extent by the issues related to different gender and sexual orientation of the athletes in the context of sport as dominant: transgender, intersex, homosexual, bisexual…

4) *health.* The range of health issues in sports and amongst sport practitioners covers complex problems of injuries, especially in unhealthy and extreme conditions of highly professional competitive sports, with an emphasis on the treatment of injuries and immediate (as quick as possible) recovery and return to competition; questions of the long-term health of athletes (as well as health in general) in opposition to short term competitive benefit (and external gains of money, fame, and glory that goes along with it)…

5) *sports medicine.* The scope of sports medicine covers a wide range of issues concerning the role and boundaries of the medical profession(alists) in sports, from prescribing therapies, abuse of authority and inappropriate practices, to informative consent and/or informative decision-making (choice) of athletes; doctor-athletes-patient relationship; bio-banking issues…

6) *biotechnology*. The purview of biotechnology includes a discussion not only about the genetic technology, but also other types of biotechnological developments and discoveries that can be easily applied to sports in a different way, mostly oriented towards enhancing the athletic sports performance for record-breaking; an important problem of regulation of such technology and their acceptance and usage…

7) *transhumanism and cyborgs.* This is the sphere where the issues of overcoming the human limits and biological nature through adding technological and scientific innovations and solutions to it dominate; creation of modern cyborg athletes by adding technological solutions to the natural human body such as prostheses, artificial joints, etc.

8) *Paralympics and athletes with physical disabilities*. This is a topic present from the very beginning of the philosophy of sport, and includes various issues and problems of people with disabilities in sports; the issue of the place of the Paralympic athletes within the Olympic movement; joint competitions of able-bodied and disabled athletes...

Finally, it must be stated that this 'narrow' or (new) medical (bio)ethics viewpoint is the dominant one and widespread among scholars around the globe as well as in the relevant literature. However, there is (are) different one(s).

„Wide Bioethics of Sport" – *bio*(ethics) as *bios* or life

The concept of 'broad bioethics of sport' was presented recently by M. M. Škerbić (2019: 379-394) who pointed out the need to accept other traditions and understanding of bioethics, especially 'European bioethics' (see Muzur, 2017; Rinčić and Muzur, 2012) which is leaning on the work of Fritz Jahr and Van Rensselear Potter. In that sense, the (first) definition of bioethics of sport was offered:

> *Bioethics of Sport is an interdisciplinary field where many intersections, encounters and connections occur between the philosophy and ethics of sports with 'sports sciences' such as sociology of sport, sports medicine, sports psychology, kinesiology, and physiotherapy, as well as other sciences relevant in sport such as chemistry, biology, pharmacology etc., in order to deal with various issues related to the bios [or life] in sports, from the endangering of life to the achieving, maintaining and enhancing its quality.* (*Škerbić* and Radenović, 2018: 163; *Škerbić*, 2019: 381)

Additionally, a 'wide' understanding of bioethics (of sport) bears significant expansion of the sports-bioethics thematic spectrum in a 'Jahr-Potter' sense (cf. Škerbić, 2019). In such a broader view, a number of topics and specific problems in sport are included – a range of issues regarding the human body; animals; environment and ecology; danger, endangerment, and vulnerability; psychology; complex socio-political-economic issues; and, in a more practical sense, (bio)ethical committees and codes in sports (Škerbić, 2019: 384-5). On the other hand, the fact is that such topics were already continuously thematized within the specialized journals and publications, only they weren't recognized as sports-bioethical (cf. Škerbić, 2019: 385).

Interdisciplinary Settings for Solving the Most Complex Cases in Today's Sport

In the recent decade or so, within the interdisciplinary settings of bioethics of sport, several most difficult and complicated cases in today's sport were researched and inspected. Such cases have various implications for sport through questioning (even) the very understanding of sport, making an impact on its integrity, future development, and appearance. More specifically, these are the numerous cases of the illicit use of substances and methods (such as L. Armstrong, J. Gatlin, and M. Sharapova) with the culmination in (still present) banning of the Russian athletes from Olympic games and world competitions in 2016. This also includes the health scandals like the NFL case of concussion and brain damage of football players that were heavily discussed in the literature, while papers on the current COVID 19 crisis are yet to come. Three cases seem to be particularly intriguing among the global scholarly community - cases of Paralympic athletes Oscar Pistorius from South Africa and Markus Rehm from Germany, and the 'intersex case' of South African athlete Caster Semenya. All three cases delve deep into the very foundations of how we perceive sport, making us wonder about what is acceptable in sports and how the future of sport might look like. Moreover, three cases bring to light the fundamental questions about sport. Firstly, what is sport (in general) and athletics (especially)? And what makes sport (and athletics or sport disciplines of running and long jump) what it is? Secondly, what is the integrity of sport (exactly) and how to preserve it? Thirdly, which is the right way to play or perform sports morally?

Oscar Pistorius – 'blade runner'

Although Oscar Pistorius, a South African athlete and Paralympian, is not the first athlete with a disability to compete in the (standard) Olympic Games (OI), he is certainly the one who has attracted the most attention on an equal basis from the sports, scientific, philosophical and (bio)ethical scholars. Earlier examples include American gymnast George Eyser, who competed with a wooden leg and won a gold medal in the 1904 OI in St Louis; New Zealand shooter and paraplegic Neroli Fairhall at the 1984 Olympics in Los Angeles; American blind 1500m runner Marla Runyan at the 2000 Olympics in Sydney; and the South African marathon (10 km) amputee swimmer Natalie du Toit in Beijing in 2008 (Camporesi and McNamee, 2018: 151).

Pistorius was born without fibulae in both legs, and before the age of one, both legs were amputated below the knee so he could move independently and make preconditions for receiving carbon prostheses, the so-called 'blades'. As a successful athlete and Paralympian, in 2007 he applied to the International Association of Athletics Federation (IAAF) for approval to compete in the 2008 Beijing Olympics (cf. Camporesi and McNamee, 2018: 157-8). Although Pistorius' case was considered ethical, which meant that it was necessary to establish whether the 'blades' gave Pistorius unfair advantage, as early as 2008 the philosopher S. Edwards expressed the opinion that such an approach was completely wrong:

> *the proper focus for assessment of Oscar Pistorius' eligibility to compete should not be on whether his blades lead to his having an unfair advantage over his competitors, but instead should be on whether what he does counts as running.* (Edwards, 2008: 113)

A similar conclusion was presented by the (first) team of scientists from the University of Cologne (Germany) under the leadership of Professor Brüggemann, which stated that Pistorius performs "a different kind of movement [than running] with lower metabolic expenditure" (Brüggemann et al., 2008: 227). Results of the study show that Pistorius' limbs consume 25% less energy than standard athletes (without disability) and that, due to prosthetic limbs, the energy loss in the standing phase is about 9% as opposed to 41% in standard athletes in the human ankle joint (Brüggemann et al., 2008). His participation in the 2008 Olympics was finally declined by the IAAF rule 144.2 introduced in January 2008, which prohibits:

> *e / use of any technical device that incorporates springs, wheels, or any other element that provides the user with an advantage over another athlete not using such a device.*
>
> *f / use of any appliance that has the effect of increasing the dimension of a piece of equipment beyond the permitted maximum in the Rules or that provides the user with an advantage which he would not have obtained using the equipment specified in the Rules.* (IAAF, 2008: 100)

After Pistorius' appeal to the CAS (*Court of Arbitration in Sport*) in Lausanne, a (second) team of scientists from the Rice University in Houston (USA) was set up in 2008. They concluded that there was not enough data to confirm that prostheses give Pistorious an unfair advantage (Kram et al., 2010: 1012). Based on these findings, CAS allowed Pistorius to compete in the 2012 London Olympics (and reach the 400m semifinals) on the grounds that the IAAF had failed to prove a "sufficient amount" of unfair advantage due to usage of dentures (cf. Arbitration CAS 2008 / A / 1480). Thus, Pistorius was the first athlete with amputated limbs to compete in the Olympics athletic races.

Marcus Rehm – 'blade jumper'

Markus Rehm is a German Paralympic athlete, who underwent an amputation of his right leg (below the knee) as a result of an accident that happened to him when he was 14 years old. At the age of 20, he initiated his athletic career in the long jump. He attracted the attention of the global sports public after extraordinary results, the most impressive of which was the one in 2016 in Doha when he jumped the third best result of all time - 8.48 m. This jump would have secured him a gold medal at the last three standard Olympics - in London 2008, Beijing 2012, and Rio 2016.[1] The biggest issue here is his decision from 2014 to change the take-off leg from the natural one to the one with the prosthesis. After that, his results were drastically improved - from 7.35m in 2012 to 8.24m in 2014. Finally, Rehm requested the IAAF to allow him to compete at the standard Rio Olympics in 2016. However, he was rejected because he failed to provide enough evidence that the prosthesis did not bring him an unfair advantage. Namely, the IAAF determined, unlike the case of O. Pistorius, that the 'burden of proof' is on M. Rehm, and not some independent commission or team of scientists (Camporesi and McNamee, 2018: 160-1).

1 See: https://www.paralympic.org/markus-rehm.

It seems that the two problems are crucial in both cases. First is the question of the norms by which athletes are guided, while second is the question of the nature of the sports activities in which they compete. On the one hand, due to their fundamental physical situations or limitations, the question is, for both Paralympians and standard athletes, whether they are guided with the same norms or standards of (what is) normal in sport, which would make it possible to establish a fair and just joint competition for both. A key issue for the possible establishment of joint competitions is finding mutually acceptable, fair, just, and honest standards of what is normally achievable in sport for both groups of athletes. On the other hand, the question remains whether the nature of sports activity is the same for both in the bio-mechanical and body-motor-skill sense. In other words, was what O. Pistorius did 'blading the 400m' instead of 'running the 400m', and what M. Rehm was doing is 'blade long jumping' instead of 'long jumping'?

There seem to be at least three valid solutions: 1) Determining exactly what constitutes the nature of running and long jumping, as opposed to the 'blading' (performed by Pistorius) and 'blade jumping' (performed by M. Rehm), in such a way that will help us determine clearly and precisely whether Pistorius' performance is acceptable as running. 2) Explicit introduction of 'mixed' categories of standard (enabled) and athletes with disabilities (disabilities) in joint competition. 3) Creation of a new categorization and introduction of new categories in sports that will cover all cases of athletes that have appeared so far and bring them into separate categories.

Caster Semenya – Intersex Athlete

Similar to the previous two, resolving the case of Caster Semenye requires a combined effort of natural sciences (mostly medicine and biology) with the social sciences and humanities (such as law, ethics, and sociology) in order to find out solutions that can, on the other hand, have significant long-term consequences for sport itself.

Since the first time C. Semenya has won a gold medal in the women's 800m race at the 2009 World Championships in Berlin (Sailors, 2020), Semenya has been plagued by controversy, accusations, and attacks by both people in sport (other contestants, officials…) and the media. They have jointly challenged Caster's biological sex together with the legality of participation in women's category competitions, at the same time questioning the (un)fairness of her competing.

Today, the biological sex of C. Semenya is discussed exclusively in terms of intersexuality and "gender differentiation disorders" (see Rose, 2016; Brunet and Salle, 2016). At the time (2009), it was stated that Semenya 'has genitalia that are not typically male or female and can be ambiguous'. However, the *IAAF Policy on Gender* (and not sex) *Verification* in 2008 certainly went in Semenya's favor. Such terminological mixing of the term 'sex', which is a biological category, with a socio-cultural construction of the term 'gender' remained an issue in all IAAF and CAS later decisions. Due to the Semenya case, but also the cases of Duty Chand, Foekje Dillem, Maria José Martínez-Patiño, and Santhi Soundarajan, the IAAF and IOC enacted new regulations in the following years such as the IAAF's 'Regulations Governing Eligibility of Females with Hyperandrogenism to Compete in Women's Competitions' in 2011 and the IOC's 'Regulations on Female Hyperandrogenism' in 2012. Furthermore, after Indian athlete Dutee Chand filed a lawsuit to CAS in 2014 against the IAAF because it banned her from competing due to her (high) testosterone level, CAS has ordered the IAAF, in a 2015 decision, to present evidence that hyperandrogenism is linked with improving athletic performance and suspended the 2011 ordinance for two years. Finally, in March 2018, the IAAF decided to introduce the so-called *DSD* (*Differences in Sex Development*) *Regulations* "for regulating the classification of women" in athletics, which prescribe, for 'female athletes with the genetic variant "46 XY DSD" chromosomes, an allowance of "natural testosterone levels not exceeding 5 nmol / L". In practice, such regulations prohibit people with "differences in sexual maturation" from competing in the women's 400m, 800m, and 1500m athletic disciplines. Interestingly, the decision only affected South African athlete Caster Semenya. Thus she, together with the Athletics Federation of South Africa (ASA), filed a joint appeal to CAS. On May 1st, 2019, the court issued a decision rejecting the appeal, stating that "such discrimination is necessary" in order for the competition to be fair and to preserve the equal chances of victory for all participants. This decision has upset and divided the global sports community and produced a huge number of reactions and debates, both in the media and in sports-science and sports-philosophy journals (Savulescu, 2019; Camporesi, 2019; Sailors, 2020; Sailors and Weaving, 2020; Betancurt, 2020; Takemura, 2020; Loland, 2020…) The discussion took several directions – 1) ethical discussions on the moral justification of the decision and gaining an unfair competitive advantage, 2) legal discussions on human rights violations, 3) biomedical discussions on the importance of gender determination and its methods, 4) binary categorization in sport, 5) determination of testosterone levels, 6) scientific discussions and questioning of the plausibility

of the results, research methods and procedures on which CAS is basing its decisions.

Finally, on 8 September 2020 CAS has overruled Semenya's appeal to the previous decision (from May 2019), which seems to be the legal resolution of the case. In the decision, the CAS stated that the DSD policy is "necessary, reasonable and proportionate" to ensure fair competition in women's sport. And "fairness in sport is a legitimate concern and forms a central principle of sporting competition. It is one of the pillars on which competition is based" (CAS, 2020).

However, what seems to be fundamental for the case is determining which question should be discussed as essential. In that regard, five questions stand out. Firstly, can an intersex person be equated with a 'genetic' woman and allowed to engage in joint competition? Secondly, isn't determining testosterone levels contrary to the aspirations of natural genetic athletes in sport? More so, isn't extreme physical ability given by birth what makes athletes exceptional competitors and record breakers? And isn't that being celebrated and admired the most in sport? Thirdly, the question remains - isn't Semenya's case actually about a violation of rights to sport participation of intersex athletes? Fourthly, and this is a claim from Camporesi and MacNamee (2018), should persons who are declared women by law (who are run by the state as females) be allowed to compete in women's competitions? Finally, should we introduce an additional intersex category in sport?

COVID-19

The pandemic of the COVID-19 virus, which is ravaging the globe and affecting global human society and all its pores, is also making a manifold impact on sport. Moreover, with the COVID 19 pandemic, we are facing the *par excellance* situation in sport history. While it is still ongoing, its precise impact, magnitude, and complexity can't be measured yet. Certainly, we are facing a variety of connected problems within different areas that demand immediate and instant decision-making, forming of deciding (interdisciplinary) bodies, prescribing medical standards and health protocols, introducing ethical norms and standards… Such doings bring many questions about the usage of previously established scientific standards and developed procedures *in* and *for* sports. Also, there are the issues about argumentative deliberation and justification that was used for each immediate decision-making, and not only in terms of sports *per se* but also different sports-related terms - economy, law, media, technology,

spectators... What seems to be especially worrisome are the issues regarding intruding and interrupting the areas of personal freedom and human rights of involved parties. Furthermore, the psychological and sociological aspects of the issue are yet to be researched as well.

What Kind of Sport Awaits Us in the Future?

While dealing with some of the most 'difficult' cases of today's sport, bioethicists of sport put most of its focus on discussing and anticipating the future (development) of sport. Also, scholars from different relevant disciplines are detecting, understanding, and reflecting on the processes that led to those cases. Although the bioethics of sport (just like ethics and philosophy of sport) focuses primarily on highly competitive professional sports, it also deals with amateur, as well as sport understood as 'green' or 'ecology' sports, 'outdoor sports', 'nature sports', 'mountain sports'.

For the purpose of this paper, 10 possible scenarios or directions for/of the future development of today's sport will be pointed out within the bioethical reflection framework.

1. ENHANCEMENTS. More enhancing substances, methods, and procedures that are (or will be) allowed as well as the ones that are (will) not, will continue with the significant impact *in* and *on* sport. In addition to the 'classic' enhancers from WADA's (World Anti-Doping Agency) banned list, new ones can be expected such as the 'gene(tic) doping' already discussed in the literature (Camporesi and McNamee, 2019…), 'brain enhancers' (Sempedro and Trivino, 2017…), 'neuroenhancers' (Erhardt, 2019…) and 'mechanical doping' (Pike, 2018…). Such development seems to go towards creating a 'homo atleticus' – genetically modified athlete for breaking yet unimaginable boundaries, limits, and records in sports (cf. Petranović et al, 2019).

2. RECORD-BREAKING. Athletes' pursuit of excellence and record-breaking will continue. Reaching new incredible levels in sport and breaking new fantastic records, will be possible because of the permanent upcoming of (bio)technology *novum* associated with the knowledge and development of sports sciences. Thus, besides meeting the potential of our sport, one definite purpose of enhancers and athletes' competitive abilities enhancement is pushing the boundaries of possible in sport (always) further. Interestingly, such strivings are most obvious in 'performative' sports (Suits, 1988) such as athletics, gymnastics, swimming, and cycling, while within 'game' sports such as basketball, football, and tennis,

due to its playful character, record-breaking is much more complicated if not impossible to achieve - only through engaging in playing the game. (cf. Zagorac and Škerbić, 2018).

3. CATEGORIZATION. In the immediate future, sport seems to be facing further and more strict, more specific, and detailed categorization, especially in 'performative' sports. For such sports, where the dominant is a specific isolated and individual sporting act that the athlete must perform - jump, exercise, throw, etc., building precise and more detailed categories seems to be very important. Furthermore, while in such sports the limits for the natural athletes seem to be already reached and can not be further surpassed by training, diet, lifestyle, or athletic performance mechanics, techniques, or creativity, it seems that overcoming human capacities and limitations is only possible by turning to technology. Examples from cycling, athletics, and swimming seem more than an indication in that regard. On the other hand, for the 'playful' sports no drastic changes should be expected in terms of (new or additional) categorizations.

However, several categorization scenarios can be anticipated. Firstly, besides the binary categories of male and female, introducing additional categories should be considered such as intersex and transgender, as they fail to fit into the binary construct in sport, or, said in a more precise manner, into the 'female' category. Secondly, the introduction of categories with regard to the use of enhancements is also to be assumed – 'open' category where all that is available is acceptable and allowed, and 'limited' categories which find acceptable only special types of enhancements for each sport or sport discipline within the different communities of practitioners, for instance, steroids in cycling (cf. Morgan, 2009). Thirdly, one could also assume a category of 'natural' or 'genetic' athletes who do not want to use any (whatsoever) nutritional supplements, vitamins, and (un)permitted enhancers. Fourthly, following the previous, with the growth and development of genetics and biotechnology, it will be necessary to categorize different 'genetically modified athletes' (see Miah, 2004) in accordance with the interventions that were made on them. The most important would be to categorize such athletes in terms of both - quantity of modifications, as well as their quality or impact on enhancing the sports performance. Fifthly, in terms of transhumanism and cyborgization, a number of new categories analog to the practice within Paralympic and 'disability' sports, where each modification or intervention brings the creation of the new category can be expected. Sixthly, apart from 'closed' (which clearly and precisely prescribe the categories of competitors according to the number of kilograms, age, etc.), 'overlapping' (which allow competitors to

decide in which category to compete) and 'semi-open' (which allow 'movement' towards 'lower' but not towards 'higher' categories - for example, all under 45, or all under 80 kg), 'open' category can also be envisaged (see Martínková, 2020) in many sports. 'Open' means that everyone can participate in it in the same way. Thus, for example, women who want to compete with men could do it, just like athletes limited by weight (kilograms) or some other criteria (age, degree of disability/disability…). But also *vice versa* - athletes from higher categories could compete with those from lower ones; men with women; able-bodied athletes with athletes with disabilities… Seventhly, further creation of new categories is expected according to competitive abilities and skills (and without the current binary divisions) besides the ones we already have - classifying athletes and teams competing in the first, second, etc. league and/or level of competition…

4. TECHNOLOGY. Thus far, technology has entered almost every pore of today's sport. Thus, sport has become its technological version - 'technologized sport'. The continuation of this trend can be predicted, both in professional and amateur sports. Additionally, in professional sports technology is present in all of its segments and phases, from the preparation of athletes (training and recuperation devices, treatment and recovery from injuries…), the (technology) preconditions of the competition itself (such as equipment, props, tackle…), through its implementation (such as judge and referee technology - technology for checking the correctness of decisions, means of communication…) and monitoring (sports arenas, traffic lights, live broadcasts on different platforms…), to analysis after completion (platforms and applications for sports statistics, technologies for situation analysis…), and different types of controlling and safeguarding technologies of fair and equitable competition (VAR in football, 'Eagle eye' in tennis, doping controls…) In amateur sports, technological innovations and sophisticated solutions have also found their place. Continually, new and more advanced pieces of equipment, tools, devices, and nutrition product are offered, among which modern watches and mobile phones stand out, offering different applications that 'take care' of the safety, health, and physical well-being of sports practitioners (measuring blood pressure, heart rate, number of meters and calories burned, providing reports on weather conditions and forecasts, etc.) The COVID 19 pandemic will only lead to additional new technological solutions and measures for maintaining and preserving sports competitions, as well as taking care of the health and safety of all participants.

5. MEDICALIZATION. In today's society, medicine is present almost everywhere, making an impact on the individual and social sphere of human

existence from 'workplace' to private space - even before we were born (Turza, 2005: 123). The role of medicine, medical technology, and innovations, as well as medical teams and professionals, will continue with the development and growth in all the levels of sport. The range of responsibilities of medical stuff in sports goes from monitoring the medical condition of athletes due to heavy training regimes, prevention of both their physical and mental medical problems, dealing with the injuries (and other medical problems), remediation, rehabilitation, and recovery, to taking part in decision-making processes. More so, without medicine or medical professionals, it is not possible to officially engage in sport and organize any sporting activity and competition. Therefore, it can be predicted that the role and influence of medical professionals in sport will rise, while their number will increase.

6. SPECIALIZATION. The present trend of narrow specialization and 'detailization' within sports, especially within the coaching portion, will stay on its growth course. Thus, team coaches in sports will continue with the inclusion of specialized experts who deal with various details within a particular sport. That includes specialized experts for different particular physical and mental abilities of athletes, analysts for different focused parts of the data and statistics, specialist coaches for improving certain details within the game. Paying attention and providing training to improve different details in a sporting competition can make a crucial difference between winners and losers in high levels of professional sports. For instance, in soccer, experts appeared for the training of throwing the ball back into play using hands; in tennis for improving the serve; in basketball for improving free throws.

7. BUREAUCRATIZATION. Sport will continue the tendency of further bureaucratization in all aspects. The current COVID-19 pandemic will accelerate this and expand it further. New and more detailed procedures and protocols will be established, as well as legal regulations for the conduct and implementation of almost every aspect of sport - competitive, medical, economic, social, safety... On the other hand, in terms of the medical aspect of sport, new forms for informed consent and/or choice are expected (see Camporesi and McNamee, 2018). Furthermore, new bureaucratic specialized bodies, committees, and commissions will be created to deal with precisely defined aspects within sport and its context and environment. Also, legal regulations will be further developed to monitor the development of sport and to immediately address new situations and problems. Similarly, new bodies which take the initiative to preserve and encourage sports integrity and ethical conduct in sport…

8. ECOLOGY. A strong inclination towards environmental awareness of sport practitioners and 'green' sport (see Zagorac, 2012) with less pollution is already in motion, especially promoted in major global competitions and events such as World Cup or Olympic games. Moreover, it seems that a kind of separate competition takes place among organizers of such global events on the one hand, while different ecological measures become a *conditio sine qua non* for obtaining the organization in the first place (see IOC, 2007, 2010) In addition, there is already a number of papers and research in the literature on the need of turning *to* and harmonizing sport *with* nature (Breivik, 2020; Gildersleeve, 2019), and this inclination is expected to continue in the future.

9. SPORTIFICATION AND OLYMPIFICATION. Different competitive games and physical activities will enter the process of sportification or process of obtaining the status of sport (in legal terms) and try to enter the process of 'olympization' or the process of obtaining the status of an Olympic sport, for different reasons. As the IOC (International Olympic Committee) tends to be modern, progressive, open to innovation, urban, and youth-oriented[2] the inclusion of newly declared sports in the Olympic family is to be expected. In this regard, on the eve of the Tokyo 2020 Olympics, a major 'e-sport' event was announced as an introduction to the Olympics,[3] while the intention to include parkour in the Olympic program has already been announced for the Paris Olympics in 2024…

10. GENDER. Gender-process in sport can be seen twofold – as a process of sensitizing the sports and public in general for the gender issues in sports on the one hand, and on the other, initiating the process of eliminating or mitigating the 'male' element in sport which is actually the discrimination of the 'non-male' element in sport. The IOC has already taken significant steps in terms of achieving a 'gender balance' in Olympic sport,[4] while within the scholarly community one can find suggestions for the possible construction of new 'mixed' sports that would not be favorable to a particular (mostly male) gender on the one hand, and putting more focus on sports (such as figure skating, diving, gymnastics or synchronized swimming) that celebrate women's physical and competitive sports potentials on the other hand (see Teetzel, 2014; Sailors, 2014, 2016; Martinkova, 2020…).

2 See: for example https://www.olympic.org/news/paris-2024-puts-forward-its-proposal-for-new-sports; and https://www.olympic.org/news/olympic-movement-esports-and-gaming-communities-meet-at-the-esports-forum.

3 See: https://www.nbcsports.com/philadelphia/fusion/international-olympic-committee-and-intel-host- esports-tournament-ahead-2020-tokyo.

4 See: https://www.olympic.org/olympic-agenda-2020.

All these (and other) processes, projections, and anticipations that are taking part in today's sports have their origin, as well as end, in the internalization of sport. Internalization means constant movement *from* and *back to* the deepest and most essential internal foundations of sport. Exactly from this source the fundamental issues and questions about the sport arise. What is sport really? What is with people that they have the need to play and practice sports on one hand, and why in such a variety of ways on the other? What is it in sports that arouses such interest and attention in global terms? What are the most characteristic and essential internal goods and values of sport that can be seen as fundamental substrates, or expressed in the language of pre-Socratics, 'primordials' / 'primordial causes'? Which way is morally the most acceptable one to practice sports in order to preserve and reflect the deepest values of sports through it? Finally, can a particular human being find the meaning of his/her life *in* and *through* sports?

In the end, all practitioners of sport should not forget that the processes, questions, and answers presented and described here, as well as the introduced projections of the future of sports are based *on* and arise *from* these fundamental questions to which they are also a partial answer.

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i It should be noted that the 'Europeanization' of bioethics is an idea related to the establishment and work of the first *Research Committee for Bioethics and Sports* within the *Center of Excellence for Integrative Bioethics*, which operates at the *Faculty of Humanities and Social Sciences, University of Zagreb*. The mentioned committee initiated the first conferences dedicated exclusively to these topics (Škerbić (ed.) (2018) *International Conference Ethics, Bioethics and Sport*. Zagreb: Croatian Philosophical Society.; and Škerbić (ed.) (2019) *2nd International Conference Ethics, Bioethics and Sport*. Zagreb: Croatian Bioethics Society., with the participation of the prominent scholars and leading global authorities in the field such as William J. Morgan (USA), Mike McNamee and Jim Parry (UK), as well as publishing the first specialized volume in the scientific journal *Synthesis Philosophica* (vol. 34, no. 2, 2019).

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BIOETIKA SPORTA – POGLED PREMA BUDUĆNOSTI SPORTA

Sažetak

Autor pristupa bioetici sporta kao ključnoj za promatranje budućnosti današnjeg sporta. Unutar bioetike sporta, najmlađe poddiscipline filozofije sporta (MacNamee and Morgan, 2015), autor uočava i razlikuje dva temeljna pogleda koji se razilaze u razumijevanju *bio* u *bioetici*. Tako se, u jednu ruku, *bio* razumijeva kao *bio*-tehnologija i *bio*-medicina i uključuje rasprave o problemima unutar tog područja u sportu. U drugu ruku, *bio* se razumijeva kao *život* ili *bios*, a što uključuje širok raspon dodatnih problema povezanih sa sportom. Nadalje, autor vidi bioetiku sporta kao najviše raspravljanju i najživlju granu filozofije sporta, te kao ključnu za današnji (profesionalni) sport i njegovu budućnost. Naime, unutar njena područja raspravljaju se najsloženiji problemi i slučajevi u sportu, poput O. Pistorius, M. Rehm i C. Semenye, uključujući i aktualnu pandemiju uzrokovanu COVID-19. U tom pogledu, autor donosi deset predviđenih scenarija budućnosti razvoja modernog sporta, temeljene na dosadašnjim sportsko-bioetičkim razmatranjima, istraživanjima i uvidima.

Ključne riječi: bioetika sporta, biomedicina, biotehnologija, *bio* ili *život*, budućnost sporta