

Reimaging talent: how genetic enhancement could shape the future of sports

Introduction

In recent decades, the boundaries of human potential and technological advancement have been explored and pushed through various forms of media and competition. In the late 1990s, the television show *Robot Wars* introduced audiences to a new type of combat sport, one that seemed to belong to the realm of science fiction: remote-controlled machines equipped with hammers, rotating blades, spurs, and flamethrowers replacing gloves and muscles, creating a spectacle of engineering and design prowess. Fast forward a few years, and the speculative future of sporting competition has taken again an embodied form with the emergence of *The Enhanced Games*, a "faster, higher, stronger" alternative to the traditional Olympic Games, notable for its lack of drug testing and, in the words of its president Aron Ping D'Souza, for its goal «to evolve humanity, by demonstrating what the human body is truly capable of» (see *Enhanced Games: The mind behind the 'Doped Games'*, 2024)

By examining the implications of such advancements, in particular the controversial topic of genetic modification through somatic intervention (Semenova, 2023), this paper addresses questions about the nature of sports and the concept of protection of natural talent. Does the objection to performance-enhancing modifications, viewed as a "dehumanization" of athletic performance, hold when considering genetically modified super-athletes? Does the protection of natural talent, aimed at ensuring a level playing field, serve as a moral framework to shape public attitudes toward sportsmanship (Erler, 2018)? To address these questions, the author considers public perception, especially suspicion, as a crucial criterion for revising sports categories such as "the extraordinary performances".

"Who said Jordan?" - Being the best dunker at just 6'1"

«Thirty teams and their ferocious fighting machines battle it out in a bulletproof arena for the chance to be crowned Champion»: nearly 30 years ago, the TV show *Robot Wars* served as a precursor to the concept that competition could be drastically transformed by the introduction of technologically and engineeringly advanced participants. The show's success lay in its appeal to both the technological enthusiasts and the public, who were fascinated by the innovative strategies and

mechanisms involved in robot combat. I was very young at the time of this program, but I remember another rather innovative one well: *SlamBall*, a kind of combination between football and basketball made more spectacular using trampolines that allowed for a series of beautiful dunks and stoppages. My favourite player was Stan Fletcher: he was unanimously considered the strongest of them all, especially for the spectacularity of his dunks. Yet even though it was a sport very similar to basketball, he was not "that" tall (his height is 6'1", about 185 cm). What made Fletcher the best of all was his responsiveness and his ability to change pace. Indeed, if he had been the tallest of them all, that probably would have negatively affected the qualities that made him exceptional. At the same time, however, if there had been no trampolines, Stan Fletcher probably would never have been known as one of the greatest dunkers ever. I think I liked the sport for that very reason: trampolines allowed a much wider audience of athletes to jump high. Since I have been interested in human genetic enhancement I am often reminded of Fletcher's example. I compare his figure to that of another athlete who plays the same sport as Fletcher, but in its more "traditional", non-technologically mediated form: Boban Marjanovic, the current tallest player in the NBA. Despite being an often-decisive player thanks to his "biological endowment", Marjanovic will certainly not be remembered as one of the most talented and brilliant basketball's dunkers.

This paper contends that enhancing athletic performance—whether through technological, pharmacological, or genetic means—does not compromise core elements deemed essential to sports and athleticism: talent, competitiveness, transparency, and even the possibility of failure. On the contrary, it posits that such enhancements, especially genetic ones, can augment these elements. Specifically, they enable a clearer distinction between natural talent, exemplified by athletes like Fletcher, and what is largely based on biological luck, as seen in Marjanovic.

The Dehumanization Argument

In 2003, the World Anti-Doping Agency (WADA), the international authority on drug use in sports, preemptively banned athletes who have undergone genetic modification, labeling such procedures as "gene doping" (see *WADA 2004 Prohibited List*). In 2017, WADA extended this prohibition to include technologies like CRISPR. WADA's rationale for the ban is the "protection of natural talent": «WADA strives to establish a level playing field, to allow athletes to concentrate on the pursuit of athletic excellence through their natural talent [...] The use of

genetic transfer technology to dramatically enhance sport performance is contrary to the spirit of sport» (see *WORLD ANTI- DOPING CODE 4.3.2, 2003*). We can refer to WADA's critique of genetic enhancement technologies, which is widespread, especially in broader non-sporting literature (see, for example, Habermas, 2003), as the "dehumanization argument". This perspective argues that enhancing athletes would undermine the intrinsic human qualities of effort and perseverance, through which natural talent must be honoured and nurtured (Murray, 2018). Thus, it posits that genetic enhancement leads to an unfair advantage, eroding the level playing field essential to fair competition.

This objection to genetically enhanced athletes can be challenged from various perspectives. First, throughout sports history, athletes who excel often benefit from natural genetic advantages (Georgiades et al., 2017). For example, a predisposition for higher lung capacity is already a genetic differentiator among athletes. Genetic modification could therefore be seen as a regulator of the natural lottery (as trampolines were in the case of Stan Fletcher), levelling the playing field by providing opportunities to those who may not possess such natural advantages. This could democratize access to high-level sports performance, allowing more individuals to compete based on a broader definition of talent.

Secondly, humans have always utilized technology to enhance their capabilities, from primitive tools to modern sports equipment. Genetic enhancement can be considered a continuation of this trend, not a deviation from it (Barfield, 2019). The point, if anything, might be that since technology would be embodied, it becomes more difficult to decipher when an "upgrade gear" is unfair. This leads to the importance of the category of suspicion in the viewer's perception, which will be discussed later.

It can also be argued that genetic enhancement might compromise the ethics of sports. However, technology and ethics are not mutually exclusive. Instead of outright rejecting genetic modification, it would be more constructive to develop an ethics of genetic enhancement that values integrity and transparency as central (Murray, 2017).

Finally, genetic enhancement can be viewed as an opportunity to expand the boundaries of human performance. Each generation of athletes strives to surpass the achievements of their predecessors. Genetic modification could represent the next significant leap in this ongoing quest for excellence. This advancement does not diminish the importance of effort or perseverance; rather, it recontextualizes them within a new paradigm where athletes must still work hard to optimize and manage their enhanced abilities, emphasizing the importance of

strategy and mental fortitude.

For these reasons, this paper contends that a more significant argument than the critique of dehumanization is that of "levelling of performance", which posits that one of the fundamental elements of sport—the unexpected, resulting from the "extraordinary performance"—would be lost.

"Can you believe this?" – On Wonder and Sport

As a twenty-six-year-old football fan, watching Lionel Messi play has always evoked a mix of admiration, a longing to emulate his skills (quickly dampened by the realization of its impossibility), and a deep fear of facing his Barcelona in the Champions League. One story that has always fascinated me is how Como, a team that just reached Serie A for the first time this year, reportedly turned down a young Messi due to his frail physical structure, which they deemed unsuitable for professional football. It was then Dr. Diego Schwarzstein who administered hormonal treatment to Messi, allowing him to reach a height of 5'5", merely adequate for competition. In contrast, Messi's great rival, Cristiano Ronaldo, is known not just for his unique talent and statuesque physique, but especially for his exceptional mentality. It is his relentless dedication to training that have propelled him to be the greatest alongside Messi. Thus, while many can achieve a comparable physique, replicating Ronaldo's psychological resilience and determination is far more challenging. Both players exemplify that there is a core that cannot be reproduced through biological manipulation. As the public recognizes and appreciates that significant differences in sports could arise from something which cannot be artificially replicated, and since the acceptance of difference in terms of pure talent is the basis of what we call sports competition, we should first identify what we mean by pure talent, distinguishing it from purely performative biological endowments, before opening a discussion on what is the correct degree of distribution of the latter by means of genetic enhancement interventions.

To understand what I mean, I'll provide an example (staying within the realm of sports, of course!). In Formula 1 both the driver's skills, his pure talent, and the car's technical specifications, its performative potential, contribute to victory. But which of the two carries more weight in crossing the finish line first? We could surely agree that within set limits for engine power, safety systems, and chassis weight, each racing team can design and upgrade the

parts of the car that assumes to be the most important to win. We can also safely assume that if there were no driver, and all cars were equipped with the same autonomous driving system, the best-designed car in terms of overall output would probably win the race. The same could be said when imagining the opposite scenario: if all racing teams used the exact same car, no one would have a definitive advantage in winning, but if behind the wheel of one of these machines there is a pilot with pure talent superior to the others, the likelihood of them crossing the finish line first is high. He could even lead to win a less performative car!

Here we arrive at the importance of suspicion as a method to disentangle what constitutes pure talent, in the case of our pilot an exceptional hand-eye coordination, reflexes, decision-making under pressure, capacity to adapt swiftly to changing conditions, strategic overtaking manoeuvres, and the ability to maintain focus throughout a race duration, from the underlying biological structures that enable its emergence. Once the latter are defined for each sport (through a process of public discussion and policymaking, the investigation of which is beyond the scope of this paper; see S. Polcz, A. Lewis, 2018), I argue that modern genetic screening technologies would make it relatively straightforward to identify those who have used genetic enhancements enabling precise and transparent regulation. Take the example of Eero Antero Mäntyranta, a Finnish cross-country skier who competed in the 1960s. «He was one of the greatest Olympians ever in his sport: he won seven Olympic and five World Championship medals. He was found to have an abnormally high red blood cell count, which allowed his blood to carry more oxygen, in turn giving him a competitive edge. This abnormality led to accusations of cheating, and his victories were viewed with suspicion. His name was only cleared two decades later when his family was selected for a genetic study that revealed that his elevated red blood cell count - 500% above average - was due to a rare genetic variant» (S. Polcz, A. Lewis, cit.). It seems quite straightforward to think that if everyone had possessed his biological endowment, or another considered fundamental for competing in this sport, and if Mäntyranta had still won all those medals, no one would have doubted his immense pure talent. Allowing genetic enhancement through public and transparent regulation would therefore enable greater accountability for the actual sporting achievements of athletes. In this regard, what we need to focus on is how to achieve a new balance in the "sporting hermeneutic circle" (F. Frias, 2016) composed of maintaining competitive levels among athletes, ensuring the fascination and trust of the public towards the game itself, and respecting the given rules. Since the first two show

themselves to be inherently susceptible to and mouldable by technological mediation and enhancements in terms of overall level of sports performance (George Best was one of the most talented footballers in history, but if he were playing today, with the average level of physicality that players and audiences have become accustomed to, he might not have the same opportunity to showcase his skills), our focus must remain on adjusting and setting rules and limits to ensure fairness and transparency.

Think of the classic example of sport's inequality, that of athletes who use doping in a situation where not all competitors have access (or are willing to break the rules of the competition to gain access) to it. Let's ignore both the fact that athletes are usually already better equipped genetically and physically than most of us: the "inequality" to which we refer here is the additional advantage gained by illicit drug use. Thus, «doping is unethical not so much because it creates inequality per sé, but because it is necessarily clandestine as nobody knows who is or is not using drugs, and this breaches the rules of the sport and is unfair to those who obey the rules» (J. Harris, S. Chan, 2008).

In contrast, what we consider legitimate and open to all, training, is often less accessible than doping or genetic enhancement would be in practice. To approach the level of Mäntyranta «an athlete would need to increase the level of EPO in their blood, thereby achieving a higher oxygen-carrying potential. However, several methods can increase EPO levels: training at high altitude, sleeping in a hyperbaric tent, extracting your own blood at an earlier date and injecting it later, or injecting synthetic EPO» (S. Polcz, A. Lewis, cit.). The first two methods, which involve training, are not prohibited, whereas the latter two, considered enhancement interventions, are banned. Unless effort is rewarded as virtuous simply because it is effortful (an effort, moreover, that is superfluous given that Mäntyranta will have an initially insurmountable biological advantage), I believe the reasoning here suffers from elitism. Training is considered equitable because it adheres to established rules and, theoretically, all athletes are permitted to pursue it. The same, however, could be done with enhancement interventions, ensuring even greater effectiveness in terms of transparency and increasing the likelihood of democratizing and rewarding pure talent.

Conclusion

The issue of enhancement interventions, particularly in sports, centers on distributive justice. WADA's implicit endorsement of natural advantage is clearly at odds with its stance on the

necessity of a level playing field for fair competition. According to Ronald Dworkin, a just system ensures equal opportunity, separates endowments from ambitions, and justifies distributive inequalities based on choices rather than uncontrollable factors (Dworkin, 2000). Therefore, advancing athletic performance through genetic and technological means should be viewed not as a divergence from sportsmanship but as a natural evolution. Historically, sports have embraced technological aids, from training equipment to performance gear, indicating a progression toward accepting genetic enhancements. Establishing an ethical framework emphasizing transparency and fairness is crucial for integrating genetic technology into sports without compromising the essential elements of what we call sportsmanship: «a rule-governed activity that is about fairness, excellence, an understanding of how to play the game, and, in competitive sports, winning» (D. Abad, 2010). An open and non-prejudicial discussion on the possibilities offered by enhancement technologies is consistent with the promotion of all these elements. Not only would sportsmanship not be compromised, but also, since the will to win has always been in systematic conflict with the other elements, leading to rule-breaking behaviours, and since this peril is increased by a not properly regulated use of enhancement technologies, an unprecedented opportunity to develop an updated ethical and legal balance centred on integrity and transparency opens for all stakeholders involved in the sports community.

References

- Abad D., *Sportsmanship*, Sport, Ethics and Philosophy, 4(1), 27–41, 2010.
- Barfield W., *The Process of Evolution, Human Enhancement Technology, and Cyborgs*, Philosophies, 4(1):10, 2019.
- Dworkin R., *Sovereign Virtue: The Theory and Practice of Equality*, Harvard University Press, 2000.
- Erler A., “Natural” Athletic Performance or a Level Playing Field? You Can't Have Both, *American Journal of Bioethics* 18 (6):30-31, 2018.
- Frias, F. J., *The hermeneutics of sport: limits and conditions of possibility of our understandings of sport*, Sport, Ethics and Philosophy, 10(4), 375–391, 2016.
- Georgiades, E., et al., *Why nature prevails over nurture in the making of the elite athlete*, BMC Genomics 18 (Suppl 8), 835, 2017.
- Habermas J., *The Future of Human Nature*, Cambridge, Polity, 2003.
- Harris J., Chan S., *Enhancement is good for you!: Understanding the ethics of genetic*

enhancement, *Gene Ther* 15, 338–339, 2008.

Murray T. H., *The Ethics of Sports Technologies and Human Enhancement*, London, Routledge, 2017.

Murray T. H., “*Natural*” *Talents and Dedication—Meanings and Values in Sport*, *The American Journal of Bioethics*, 18(6), 1–3, 2018.

Polcz S., Lewis A., *Regulating Genetic Advantage*, 32 *HARV. J. L. & TECH.* 265, 2018.

Semenova E., et al., *Genes and Athletic Performance: The 2023 Update*, *Genes* 2023, 14(6), 1235.

