

# Genetic Technologies and Sport: The New Ethical Issue

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The persuasiveness of arguments against the use of drug taking or doping in sport remains unconvincing. As will be argued, it does not seem that there is any position that warrants the removal of all performance enhancing substances from competitive sport. Furthermore, it is less clear whether governing bodies of sport would be justified or would benefit from preventing the use of drugs in competitive sport. While it might be argued that popular opinion remains against doping, it is uncertain whose interests are reflected by this position. This is made most explicit in anti-doping policy where the justification for imposing sanctions on the basis of positive tests is unconcerned with the intent or possible innocence of the athlete. Rather, the very presence of a banned substance within an athlete's urine or blood is deemed to be a guarantor of guilt, simply because the substance is placed on a list of unacceptable methods—a policy of *strict liability* (29). While this perspective might trivialize the efforts of a great number of organizations, such as the World Anti-Doping Association (WADA), which are working to rid sports of drug taking, the rationality of such efforts remains highly questionable and presumes an ethic of sport that is universal and uncomplicated. Broadening these ideas about performance enhancing drugs in sport, this paper identifies the prospect of enhancing athletes through genetic manipulation, arguing the extent to which the enhancement of an athlete by such methods would be desirable for the purpose of sports competition. It is intended that genetic engineering, as an example of performance enhancement in sport, will provide greater insights into why drug use and similar methods of doping might or might not be acceptable within sports.

Initially, it will be useful to present some caveats as to what kinds of technology are under consideration. Genetic techniques are various and their implications tend to be specific. Thus the moral issues raised by cloning humans are very different from those raised by the genetic modification of individuals. Not surprisingly, for a paper that is concerned with performance enhancement, the kinds of technology under consideration are those that would seek to enhance athletic performance. This is not to suggest that such engineering would render an individual able to perform at an elite level. Rather, such enhancements would merely ensure the *potential* for one to achieve an elite level of performance given the suitable training conditions. As such, it is the interest of this paper to consider ethical issues

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concerning the use of such technology. This will be achieved by considering circumstances in which individuals are genetically enhanced within society, asking how and whether such people would fit within societies and whether they would fit into sport.

Initially, I will present an argument for considering the prospect of genetically manipulating humans with a view to enhancing their physical fitness, so as to make explicit the relevance to sport. Second, I will identify the assumptions that are made by presenting circumstances whereby genetically engineered athletes exist. This step is particularly contentious, since it bypasses a great deal of legal and political argument that is likely to influence the realization of genetically manipulating enhancement, such as the maintaining of human rights in an age of genetic technology (10). Nevertheless, such an assumption is essential to allow the considerations of the current paper. Third, I will identify the characteristics of genetic enhancement, thus making explicit what kind of enhancement constitutes a genetic one. From such criteria, genetic engineering will then be contrasted with the kinds of performance enhancement that are accepted or rejected within sports. This will be achieved by addressing established criticisms of various forms of performance enhancement in sports competition, notably drug use. Upon recognizing these distinctions and similarities, it will then be concluded what this reveals about the acceptability of genetically engineering human beings for sport—from a sports ethic perspective (rather than from a human rights, bioethical, or social perspective). Thus, the intention will be to demonstrate whether genetic enhancement fits within the permissible methods of achievement in sport. Finally, in returning to the main interest of this paper, I will address the ends of sports that embrace genetic enhancement, arguing how sport must make explicit its justification about the acceptability of various kinds of performance enhancement. These deliberations are directed, quite specifically, at the doping issue, though they derive from a concern that it would not be ideal for governing bodies to be reactive to the emergence of genetic enhancement in the development of sport policy.

### **A Rationale for Considering Genetic Engineering (for Sport)**

The relationship between elite sport and genetic engineering is at best a tenuous one. Presently there are very few implications for their association since the technology remains specifically interested toward benefiting the health of an individual, rather than enhancing physical capabilities. As such, one might question the relevance of considering the prospect of genetic enhancement when there seem to be many other forms of enhancement within sport, the use of which demands justification—such as the sophistication of equipment (22, 30, 42). Yet this early stage of the genetic revolution ought not to be underestimated. Already, genetic engineering has been used for experimental purposes in the treatment of disease through alteration in non-germ-line human cells, those cells that are not hereditary (21). The effectiveness of this research is still unclear, though it is not difficult to imagine that, if successful, it will generate interest in the benefits of germ-line (hereditary) therapy and enhancement.

While engaging in philosophical discussions about genetic manipulation might once have been deemed as mere futurological discourse, the last decade (if not more ) has shown that societies are not always prepared for new technologies

as they become utilized. The moratorium set by U.S. President Clinton in 1997 on the cloning of human beings seems indicative of this, particularly regarding genetic technologies. Admittedly, my perspective on genetic engineering for purposes of enhancement is premature, since there are many questions unanswered about the technologies that my thesis presumes are straightforward. Moreover, the science of gene therapy, as I have acknowledged, is in the relatively early stages of development and much is unknown about complex gene disorders and our ability to do anything to manipulate these with any degree of safety. However, a great deal of literature has emerged from medical ethics that is addressing this new technology and its imminent reality must be taken seriously. Within this literature it is possible to identify phases that reveal how the discipline has moved from a principle-based approach (5) to one that recognizes bioethics as being a discipline requiring a more casuistic approach to ethics. Bioethics has now a noticeable presence within philosophical literature, which is addressing the many implications of gene technology. Within the last 10 years, the rise of bioethics has been noticeable through the emergence of national bioethical committees such as the UK Nuffield Council on Bioethics, the US National Bioethics Advisory Committee, and UNESCO's International Bioethics Committee.

Within the last decade, bioethical research has considered such broad issues as the patenting of human DNA and problems with ownership of life. Most recently this has been highlighted by the publication of the Human Genome Project, the biggest scientific collaboration in the history of medicine, which has been able to map the entire human genome and thus provide a vast source of information about the nature of human genes (20, 23, 32, 52, 64). From this research, concerns have arisen about the dangers of genetic essentialism and the power of the gene to instill the false belief that genes alone can determine a person's health (15, 33, 41, 45).

A related concern about genetic essentialism has to do with the distribution of genetic information. This topic is gaining much recognition, particularly within the context of insurance. The main ethical dilemma involves whether individuals should be required to disclose their genetic information to a potential insurer or whether they have the right to keep such information private. Currently it is being argued by insurance companies that they should be entitled to the genetic information of the people they are insuring so that they can make an informed decision about the level of insurance they might wish to provide and the premium that ought to be set. For the individual who is seeking insurance, this presents the possibility for discrimination on the basis of genetic information, as the individual with a predisposition for genetic disease will most likely have to pay more for insurance.

This again reaffirms the concerns about basing decisions solely upon genetic information and the power such information can have. Perhaps more alarming is that, by disclosing such information, the individual with a poor genetic prognosis is placed at a further disadvantage when trying to protect himself or herself from the genetic condition itself (26, 53, 56). It would seem, then, that genetic disadvantage leads to further disadvantage and it must be questioned whether this is ethically acceptable. In October 2000, the United Kingdom became the first country to allow insurers to use genetic tests to identify people with hereditary illnesses (25). Immediately, concerns arose for the vulnerable groups that might suffer disadvantage as a result of this. However, while still under much criticism, it is being argued by the British government that this is simply an extension of

what is already legitimate practice and that the measures are designed to benefit and protect the vulnerable groups.

Inextricable from other kinds of reproductive technology, genetic interventions cut across ideas about the moral status of the embryo, as is discussed in the context of other issues such as abortion. Within such discussions, it is most relevant to evaluate whether the human embryo is to be treated as a person, or at least a potential person.<sup>1</sup> If the embryo is recognized as such, then it is deemed morally impermissible to regard that person merely as a means to an end rather than as an end in itself, and it must be afforded some level of human rights. Thus the influence of Kantian notions of means and ends is heavily imbued within bioethical discourse. Within the United Kingdom this matter has been raised recently in the context of cloning the somatic cells of embryos for nontherapeutic research. In April 2000 it was recommended by the Nuffield Council on Bioethics that research be allowed to clone the cells of an embryo for purposes that are *not* intended to benefit that embryo (but which are used instead to further research into genetic disease). While this was deemed morally legitimate under the current Human Fertilisation and Embryology Authority (HFEA), the decision was highly contentious as it appeared to be a first step toward the legalizing of human cloning (46).

There are many more issues being addressed by bioethicists. Some additional matters include the patient–doctor relationship, experimentation with life, the use and function of ethics committees, health-care research in developing countries, and the prospect of genetically modified food. As such, there are now many volumes of work within bioethics, genetics, and philosophy which recognize genetic technologies as being in great need of academic study.<sup>2</sup> Despite these many issues, it might still be wondered how it is possible to leap from gene therapy, which is still in its infancy, to gene enhancement, which is even more of a distant prospect. From a medical perspective this distinction is highly critical and very significant. Traditionally, medicine has been about making people well, returning people to normal health, and caring for disabilities. Thus, to suggest that medicine would become interested in (and could fund) health care for the purpose of genetic enhancement—making people better than well (34)—seems ambitious. Moreover, the financial burden of providing genetic enhancement underpins the commitment of medicine to therapy, the serious business of illness, rather than enhancement. Of course, one might cite cosmetic surgery as being comparable to genetic enhancement in that (for some people) both appear somewhat frivolous, vain, and unnecessary. Indeed, genetic enhancement has been regarded by some as reflecting Baconian hubris to a pathological extreme (47). However, it is also possible to see parallels between cosmetic surgery and genetics that will *support* the use of genetics for enhancement. For if one considers that cosmetic surgery is sometimes carried out after serious burns, acts of violence, or deformities at birth, it is also possible to envisage how genetic enhancements could be used for a similar purpose. Thus, if an individual is born with a deficiency (however one may conceive of this) that might lead to a health or social disadvantage, then it might seem desirable to engineer this genetic problem to avoid such consequences.

However, cosmetic genetics would probably look quite different from cosmetic surgery. Genetics is supposedly concerned with the biological health of an individual and purports to being underpinned by some scientific standard that measures the health of an individual. Conversely, cosmetic surgery recognizes the *social health* of an individual as being important. Yet it is somewhat fallacious to

claim that there is some alleged baseline to health that can be set as a standard from which it can be decided whether an individual is well or not. Such normative concepts fail to take into account the dynamic concepts that are health and disease and their social connotations. For example, that an individual might be obese as a result of genetic determinism (16) also has social implications of being prejudiced because of being overweight, and there is a danger that prospective parents might seek to correct this “social” disadvantage rather than the “biological” defect (57). It is important to note that, what is considered deficient or normal today may be deemed as preventable or subnormal tomorrow.

Perhaps the most effective example to reflect this is death. Whereas death might be construed as an inevitability of life at present, in a future where life-extension is possible, it might be deemed as a disease that should be cured or postponed.<sup>3</sup> Similarly, while it is considered unnatural to genetically engineer one’s child today, it could seem entirely worthwhile and a logical choice tomorrow. There are also eugenic concerns about the genetic elimination of obesity (and other characteristics) that cannot be ignored. If one seeks to ensure that one’s child is not born with a predisposition for obesity on the basis that this would disadvantage the child socially, then one might provoke a way of thinking about genetic characteristics that might allow, for example, the engineering of skin color, gender, or height on similar grounds. Such decisions are alarming since they seek to address prejudice simply by removing difference, as opposed to learning tolerance and acceptance.

The retort to my claims about the tenability of using genetic enhancement might be that I have provided an argument for considering enhancement technologies generally and not for considering enhancement technologies *in sport*. However, as an initial response and in a similar manner to Elliott (15), I would argue that, if the (bio)ethicist is to understand the implications of genetic engineering, then intimacy and detailed knowledge of the context under discussion is of the utmost importance. Thus the (bio)ethicist must consider how the realization of any technology will impact upon social contexts, if she is to find sound judgment of its moral credibility. However, I would also add that sport is a particularly interesting example through which to consider the acceptability of genetic enhancement. Unlike other social practices, sport takes the view that its participants are either legitimate or not. Central to its concern is whether the athletes involved in the competition are participating within the rules of the game. As such, if a particular method of achieving success were deemed as cheating, then any participant using such means would be disqualified from competition. However, genetic enhancement is neither within nor outside of current rules; no perspective has been taken about this kind of enhancement by governing bodies. Consequently, if governing bodies are to deem such means unacceptable, then one should expect some justification for this, particularly since the implications of any such decision might disadvantage individuals in a way that is morally unacceptable (43). Furthermore, any such justification can be useful for understanding further what it is that delimits the boundaries of acceptability with performance enhancement in sport.

### **Assumptions About the Genetically Engineered Athlete**

#### *Can We Engineer a Human to Be Good at Sport?*

Perhaps the most immediate question that must be raised in the context of genetics is whether it is actually possible to engineer a person with a particular

enhancement in mind—in this case a predisposition for athletic excellence. Is it possible to engineer a great mathematician, artist, athlete, or philosopher? Whereas the bioethical dilemmas challenge the acceptability of gene enhancement (getting from therapy to enhancement), this particular assumption is about the *possibilities* of the technology. While there has been no engineering of specific genes in order to enhance a person's physical capability beyond what is humanly possible, some research has suggested that specific genes are responsible for specific kinds of predisposition such as criminality or alcoholism (50). Of course, such claims are of interest more to the tabloid press than to the serious scientific community, where associations between social behavior and genetics are tenuous at best, though more often entirely uncertain (27). Nevertheless, within a sporting context, research has documented the possibility of isolating a gene for endurance (3, 11, 65, 66). Additionally, it has been suggested that gene therapy could be used to speed up the process of healing sports injuries (36). As such, the possible goal of genetic enhancement to improve athletic capabilities seems imminent.

Simply because specific genes might influence specific capabilities does not make it possible to engineer athletic capability with any degree of certainty or safety. By altering one gene, it must be recognized that one might actually influence the function of other genes to the detriment of the individual's health (23). Certainly within the immediate future, there seems little reason to suppose one might engineer a specific gene without any imbalance occurring between other genes—a phenomenon known as *pleiotropy*. As such, it might be deemed too risky to do any kind of engineering for any kind of gene. Beyond engineering only the 4,000 genes involved in single-gene disorders such as Huntington's disease or muscular dystrophy, the possibilities of medical genetics is in question (1).

Although one can argue that the evidence is inconclusive in showing whether genetic manipulation could safely engineer genes with a view to a specific kind of enhancement, there is growing evidence to suggest that this might be possible. Furthermore, when one recognizes the infancy of genetic research and what has already been achieved in this relatively short amount of time, it would seem naive to ignore such possibilities.

### *Would Anyone Really Want to Engineer a Child to Be a Good Athlete?*

The second assumption made within this paper is that people would actually want to use genetic engineering to make their children more capable for sport (or for any activity). While arguments to support this assumption would encompass much more work than can be discussed in this one paper, it is possible to provide some reasoning for its probability. In this assumption, it appears there are two issues that must be considered. First of all, it must be argued whether persons would seek to engineer their children at all. Second, it must be considered why, out of all the possible kinds of enhancement that might be available, one would choose to engineer an embryo to become a super-athlete? After all, it is likely that enhanced capability for sport would be but one of a supermarket of genetic possibilities that could be chosen. Thus we might engineer an embryo to be a better logician, doctor, musician, or scientist. To deal with the former difficulty initially, there would seem something unnecessary about enhancing the genetic composition of a human embryo. As I am sure any loving parent will testify, life is so very precious that if one's child is born a healthy, fully functioning baby, then to seek improvement upon this would seem ungrateful to such good fortune. Moreover, it

might also be considered immoral to genetically engineer such a child if there is a potential for jeopardizing the baby's future health by so doing.

As for whether people would choose to enhance the athletic capability of their child over other characteristics, athletic capability has in its favor that such engineering could be described so as to yield direct health benefits, whereas to enhance the brain functioning of an individual might not. Of course, one might respond to this by arguing that genetic engineering to create an elite athlete would actually be to create an unhealthy body, since an elite athlete's body is abnormally fit and not healthy from a long-term perspective. However, this objection need not be relevant since the circumstances need not assert such specific enhancements as specialized training would bring about. Rather, this paper is concerned with engineering general health properties that would provide subtle, though significant, changes to athletic capability.

Such opportunities for engineering the characteristics of one's child are already available to some degree with the use of known sperm donations and the most recent emergence of such an enterprise as "Ron's Angels"—the web-based company set up for infertile couples who seek to have "beautiful" children (24). The website is managed by Ron Harris and offers the opportunity for customers (also known as prospective parents) to bid for the eggs of female models in an auction (starting bids range from \$15,000 to \$150,000). In justifying the legitimacy of this site, Harris argues that in modern society beauty is an asset, and if one seeks the best advantage for one's offspring, then to ensure that they can be beautiful is morally acceptable and entirely rational.<sup>4</sup>

It seems reasonable that such opportunities would be of interest to some parties even if such motives were morally questionable. When faced with the choice of whether to try to ensure a healthier future for one's child (providing the risk is negligible), the logical, individualistic choice would surely be to do so. However, I would not wish to suggest that those infertile couples who might seek sperm or egg donation are comparable to a couple who is seeking an enhanced baby. Yet there would seem something quite logical about trying to ensure a more fruitful future for one's child by safe genetic engineering. Thus, conferring genetic enhancement might simply be construed as being akin to "giving one's child a good education" (4: p. 463).

### *Would Genetic Engineering Actually Render an Edge in Competition?*

There would seem to be no other reason to genetically enhance one's child than the very knowledge that such costs (the risk of engineering a life that could be "normal") would be far less than the potential benefits. Unless there can be some degree of certainty that the engineering will have the effect of placing one's child at an advantage, then there seems little reason to pursue it.<sup>5</sup> As such, there is a need to address the degree to which genetic heritage actually makes a difference to the success of an athlete or the health of an individual. Is it really possible to argue the significance of this one characteristic when so many other factors influence the success of an athlete? Surely the many years of training, dietary specialization, the failure and striving to better oneself that an athlete must endure cannot be undermined by simply genetically enhancing oneself, as appears from my consideration of the importance of genetic engineering. Yet, accepting that genetic heritage does play some part in determining success does not commit one to genetic essentialism—the view that all that matters is the genetic predisposition of an individual. The

evidence that genetics does make a significant difference to performance in sport is limited (11). However, given that the difference between elite competitors is now so marginal (31), the ability to enhance even a small component that affects performance is an advantage to be exploited (even if human life is not).

### *The Coexistence of an Engineered Class With “Normal” Humans*

The final assumption made in this paper concerns the way in which engineered humans would emerge within society. Recognizing that societies will not suddenly find that there no longer are persons who are not genetically engineered, the fairly unproblematic assumption is that there will be circumstances whereby the genetically engineered will live alongside the non-engineered. This likelihood raises questions about equity, ontological issues of normalcy, and the potential for prejudice between persons of different genetic capability that are quite extraordinary. One might wish to draw parallels with the kinds of differences between people of different cultural origins and argue that the engineered class would be of a similar difference. However, unlike the distinguishing characteristics of any race or culture, the defining boundaries will overtly be biological—which seems to go against a great deal of work to combat racial boundaries deriving from alleged biological difference (1). As such, one might argue that such technologies are unacceptable, since they would serve to promote segregation and boundaries between people, the removal of which has been the ambition of much social work, education, and integration. This is not to suggest that the engineered class will be any better than the non-engineered. However, it would most certainly be the case that a non-engineered class would more likely be at a disadvantage than people who are genetically engineered, and that this would be quite apparent.<sup>6</sup>

## **Conceptualizing Genetic Enhancements for Sport**

To understand the significance of genetic enhancements in sport, it is necessary to conceptualize them and understand how they differ from other kinds of enhancement in sport, as this will help clarify what kinds of ethical issue are presented by their prospect. In recent literature, an emerging perspective appears to be subsuming genetic enhancements under a similar guise as doping and drug-taking (3, 44). However, such conclusions have been made without first discerning whether these different forms of enhancement are comparable and have relevant similarities. As such, it is necessary to do the conceptual analysis in order to understand what kind of enhancement constitutes a genetic enhancement. In so doing, it is first necessary to recognize that genetic enhancements could take a variety of forms which will have varying implications.

First, a number of distinctions could be made between the various kinds of genetic alteration that might be used to alter the genotype of an individual and make them suitable for athletic competition. For example, a key distinction can be made between enhancements that alter the hereditary (germ-line) cells within the body and the nonhereditary (somatic) cells. However, perhaps the most relevant and simple distinction to make in the context of sport is between enhancements that are made before birth and after birth. With regard to the latter, the comparison between drug use is more relevant. For example, broad medical interests to create artificial blood through genetic engineering could make possible the use of a method

of performance enhancement comparable to blood doping without the risks presented by removing blood from a body and reinserting it later. Similarly, research is seeking to establish methods of replicating the natural production of erythropoietin, which would also appear comparable to other methods of conventional doping.

With such examples, it is quite understandable to conceptualize such genetic enhancements in a similar way as other methods of doping, thus presenting similar ethical issues. However, if one now re-examines genetic manipulations that might take place before birth, then the issues are quite different and it is less clear that they are analogous to other methods of doping. Thus it is possible to make an initial distinction between pre-birth engineering and doping, where the enhancement is made to the germ-line of the individual (the hereditary cells). The enhancement is something that is done to an individual or potential life on the authority of a legal guardian rather than something chosen by the individual who is receiving the enhancement.

Second, it is possible to argue that a pre-birth genetic enhancement is not something that ought to be construed as being artificial or unnatural in a similar way to other kinds of innovation. It is unclear to what degree one can construe a genetic enhancement as having interfered with the natural organism, given that the alteration might have been made just days after conception. Whereas one might argue that spectacles, pacemakers, or prosthetic limbs are most definitely artificial or unnatural in the sense that they are external to the human being, it seems more problematic to conclude something as being unnatural to a life that has hardly begun and that might have been augmented in a way that uses its own tissues (as might be said of cloning).

A similar question might be asked, for example, about the degree to which conception by sexual intercourse is different from in-vitro fertilization in terms of distinguishing the natural? While in-vitro fertilization is not the natural method of procreation, the resulting entity is most definitely of the natural world. Similarly, it could be asked in what sense a human life that is conceived and born by natural means, though that might have been genetically modified to some degree, is also unnatural. Thus it is uncertain whether genetic engineering serves to determine the natural or is itself unnatural, given the close proximity to conception that such technology would be used. It seems more persuasive to tend toward the former and argue that genetic engineering is natural since it is merely a difference in degree to how one's genotype is determined by conventional means. Of course, the conclusion to such a question depends on where one draws the boundaries of intervention and causation as determinants of the natural. If the sole criterion of naturalness is the conception of an embryo through heterosexual intercourse, then one must accept that many kinds of life are unnatural. Thus the production of test-tube babies, surrogacy, and perhaps even prenatal interventions all lead to the conclusion that the resultant life is unnatural. Furthermore, the basis of concluding that heterosexual intercourse is natural is to purport a somewhat homophobic and narrow perspective upon what can be natural to human beings. Do we conclude that the individual wearing spectacles or having a pacemaker is unnatural? Indeed, what is the significance of any such conclusion anyway? How does this make any difference to one's perspective on enhancement? This will be explored later in the responses to established criticisms of performance enhancement in sport.

A third characteristic of genetic enhancement is that it does not determine physical capability. One might be extremely well predisposed for competition or

physical excellence. However, this does not mean one can simply become an elite athlete by virtue of these characteristics. Rather, one must hone these gifts, train hard to compete, and endure all that the unenhanced athlete must. Alternatively, it must also be noted that genetic enhancement could provide an *advantage* within competition. While this might seem to contradict the previous claim, it is really to recognize that, within elite competition, the distinction between first and second place or between degrees of skill is so small that genetic advantage would be enough to render an athlete sufficiently more capable than another. For example, within the 100-m sprint, the distinction between first and second place, or the degree to which world records are being broken, is very small. Thus it is conceivable that athletes will increasingly approach similar levels of performance, perhaps where the distinction between them is so small that spectators cannot see it at all. For this reason, it could be suggested that genetic enhancement could be useful for providing difference between competitors.

A fourth characteristic of genetic enhancement is its association with health. While this talk of enhancement and superhumans might appear somewhat frivolous and unnecessary for humans who are supposedly in normal health, there is an inextricable relationship between the enhancement of athletic capability and the enhancement of health. Thus, if one were to enhance physical capacity, one would necessarily be enhancing health. However, there would seem to be a negative side to engineering humans in such a way. From considerations about how an engineered class would relate to non-engineered people, there is a sense that parents of prospective children might feel it necessary to have their child enhanced before birth to ensure that the child is not at any disadvantage to the engineered class. Consequently, by condoning engineering or simply allowing it to take place, or even not being able to stop people from seeking its use, would be to create a climate of coercion.

Finally, it seems characteristic of genetic enhancement that an unfair advantage in competition is the resultant effect, providing some athletes have access to it while others do not. Recognizing the assumptions made previously, one can anticipate a climate where, for some time at least, the enhanced exist alongside the unenhanced. Thus, sport must seek to reconcile this unfair advantage in order to preserve competitive ideals.

### **Is a Genetic Enhancement Unethical?**

Given this kind of categorization of genetic enhancements, it must now be determined how and whether such enhancements would fit into competitive sport. First, would the genetically engineered human be allowed to compete, and would this kind of enhancement be something that is conducive to a good sports competition, whatever that might be? Establishing this acceptability requires a consideration of objections about various kinds of performance enhancement that have previously been made. From this framework it would then be possible to determine whether genetic enhancements are objectionable in a similar manner. In this respect, it is appropriate to use the very characteristics described in the previous section. Thus the following objections can be argued as reflecting an encompassing concern about various kinds of performance enhancement within the philosophy of sport literature over the last 20 years. For each of the objections made about doping, a number of readings are given that outline arguments to that effect in the

context of drug-taking (though it should be noted that the authors do not necessarily conclude in favor of the objection).

1. Doping is cheating (2, 12, 17, 18, 38, 40, 55, 63).
2. Doping is unnatural (28, 29, 37, 48, 49).
3. Doping is not reflective of the virtuous athlete and good competition (58, 59, 60).
4. Doping provides an unfair advantage (20, 37, 48, 49, 54).
5. Doping is harmful to health (8, 37).
6. Permitting doping instills coercion and elitism (7, 14, 19).

The response of genetic enhancement to these concerns is not entirely different from responses about the acceptability of drug-taking and doping, which are explored in depth by the literature noted above. However, there are some important differences that provide further insight into what kinds of performance enhancement are acceptable in sports. First, claiming such enhancement to be cheating is to make a claim about the actions of an individual. Consequently, the retort to arguments against genetic enhancement is quite different from a response about the acceptability of drug-taking or other performance enhancements. With pre-birth genetic enhancements, it does not make sense to say that the athlete has cheated by having an enhanced genotype, for the individual would not have acted in any way. Thus, to sustain this view of the athlete as cheat, one must conclude that the engineered athlete is a cheat by virtue of having a genotype that is more predisposed to competition even though such a disposition will have been afforded by a parent or guardian who chose to enhance this person's genetic predisposition.

Subsequently, one might then argue that it is the guardian who is responsible for the cheating that takes place. Yet this kind of perspective makes problematic the penalizing of an athlete—or indeed banning him or her from competition—since it seems unacceptable to punish an individual for something that is not of his or her doing. Why should an athlete be banned from doing something if the reason for being banned is not her responsibility or doing? Thus it would seem that to argue such enhancement as cheating is not a reasonable position, unlike drug-taking, which in some cases can be argued as being an *intentional* act on the part of the athlete (13). However, this begs the question as to whether penalties are directed at the intentions or the resultant consequences of an athlete's actions: whether someone has intended to cheat or that something has taken place that has resulted in cheating regardless of intentions.

It might be argued that genetic enhancement within sport is unacceptable because it is an unnatural means of gaining an advantage in performance. Yet this perspective has a fairly weak claim and, as a justification, would appear to reject any kind of performance enhancement. This is most evident with respect to concerns about drug-taking where it is argued that such techniques are inappropriate for their conferring an *unnatural* advantage for the athlete. Perhaps the most vehement response to this kind of perspective is to question what constitutes the natural. Thus it must be questioned why a particularly abnormal diet or regimen of training is considered as acceptably natural when it could be argued as being equally unnatural as any banned substances (37). This is particularly true for such substances as erythropoietin (EPO) or nandrolone, which are produced naturally in the body.

The inadequacy of the perspective from naturalness is most apparent from the way in which anti-doping policy chooses to articulate the unacceptability of drug-taking in sport. Whereas once we could read of policy stating that specific substances are unacceptable as being unnatural, this kind of argument is no longer central to concerns about drug-taking, arguably reflecting the weakness of this perspective (29). From such responses it would appear that concerns about what is natural are not sufficient where sport is concerned. Indeed, that something is unnatural appears as no reason to object to its use in sport. Somewhat aside from this line of argument, it might also be contended that genetic engineering does not so much alter the natural as determine it. This perspective is to make a particular claim on the status of the foetus, embryo, or zygote, and argues that in deciding upon what is natural or not requires one to conclude when the natural begins. While intuitively one might wish to argue that the natural—the life—begins at conception, it must be recognized that even this might not be a sufficient distinction. For example, if one were able to alter the capabilities of sperm, or the fertility rate of ova, and if one were to have a child after having altered these ingredients, perhaps even through diet, then must one conclude that the resultant child is unacceptably unnatural? It seems nonsensical to do so, and we are left still uncertain about what is the natural. Similarly, to argue that the natural life is that which is created through conception is also to construct a concept of the natural that can be contested. Given the very early stage at which genetic enhancements would be made to the embryo, it seems counterintuitive to argue that a life that has been altered so early is no longer a natural life. As such, arguments advocating the acceptability of an enhancement based on whether it is natural or not do not seem convincing.

Claims made about what is virtuous for an athlete or what constitutes good competition are also problematic for arguing against the use of genetic enhancements in sport. Neither does it seem possible to claim that an individual who has been genetically enhanced at birth is unable to be a virtuous athlete (whatever that might mean), or to claim that the individual could not experience the internal goods of competition simply because she is engineered. One might simply draw a parallel between athletes with a particularly capable genotype (that has not been enhanced) and ask a similar question. Clearly one would not claim that, simply by having an enhanced capability for athletic performance, one could not appreciate the internal goods of a sport. Again, this relates somewhat to the condition that the genetic advantage is not chosen by the individual and thus cannot be seen as an act that reflects a particular attitude (treating people as ends, or valuing competition for external goods).

To suggest that being genetically enhanced provides an unfair advantage over other athletes is also slightly different from similar claims about drug-taking or other performance enhancements. Again, one might wish to compare the effect of such an advantage with current practice. Today it is not a problem for sports that some athletes are genetically more predisposed to performance than others, and it could be argued that competitive sport requires making such distinctions (59).<sup>7</sup> So why would it seem a problem if we enact a similar effect by genetic engineering? In what sense is it unfair that one person is genetically more capable than another? One might argue that it is because this kind of difference has been afforded by a deliberate intent to gain an advantage, that it is unacceptable. However, it is rather

tenuous to claim that such advantage had been intended to place a person at an advantage within sport, since such a decision would likely not be made with any particular sporting career in mind. It is also rather excessive to ban a genetically enhanced individual from competition on the basis that he or she has an unfair advantage. Apart from being discriminatory toward such individuals, one must be consistent and disqualify even those individuals who have a naturally enhanced genotype. Upon such a rationale, *reductio ad absurdum*, all genetic difference should be removed from competition (or as much as is practically possible). Alternatively, it might be argued that the sports competition is constituted by achieving as much as is possible with the genotype one has, which has been determined without any intervention. If such a position is to be deemed credible, then it must be shown what actually counts as intervention. Following such criteria, one might find it problematic to allow an individual into competition who might have had gene therapy.

Arguments made about performance enhancements that are harmful to an athlete's long-term health are also difficult to sustain in the context of genetic enhancements. Bearing in mind that the circumstances have been presented whereby enhancement will be *conducive to health*, it is not reasonable to claim paternalism upon such grounds as health or harm as might be found within literature about drug use (8, 19). Nevertheless, there are many such concerns about the use of such technology that have implications beyond sport. As was stressed earlier, the experimental nature of enhancing technologies presents very real concerns about their long-term benefits for the individual and for the human species more generally. For example, a particularly strong critique about genetic engineering concerns its potential to reduce genetic diversity and thus threaten the survival of a species that might actually depend upon some degree of dysfunctionality within its ecosystem (51, 52). At this stage such concerns cannot be discounted, though they are not concerns specific to sport. Rather, such concerns will be relevant from a medical and societal perspective. Once these issues are addressed, sports authorities will be in a position where it will be particularly difficult to argue these as being unacceptable on the basis of harm.

Concerns about coercion in sport have been argued as making morally unacceptable the taking of drugs. For governing bodies to allow performance enhancing drugs to be a part of competitive sport would render a situation whereby all athletes would *have* to take drugs to remain competitive. As such, athletes would be coerced into taking drugs and to accept the risks that go along with this. Of course, a similar situation results when drugs are banned; only the athlete is not seeking the most effective ergogenic aid without condition, but does so bearing in mind that the aid must escape detection from testing procedures. Similarly, to allow genetically engineered persons into competitive sport could yield a situation where, to become an elite athlete and be competitive, it would be necessary to ensure that one had a genetically enhanced genotype.

Clearly, this coercive characteristic is not limited to a sporting context. One might extend the thesis and argue that genetic enhancement at all would bring about a kind of people who would be at an advantage in many respects: health, capability for employment, educational success, and so on. As such, it would become *disadvantageous not to be genetically enhanced*. In turn, this would bring about an environment where all parents must embrace genetic engineering to ensure

that one's child is open to opportunities for future success and has the best start in life. In itself, such circumstances would seem alarming for the wider concerns about affecting a change in the genetic variability of the human species. Yet simply because something is coercive is not a reason to remove it from sport. Clearly it could be deemed coercive that one must train very hard to do well in sport, yet this would not be deemed a negative characteristic, and to try to remove such a characteristic from sport is nonsense. Furthermore, even if one might accept a distinction in the acceptability of coercive characteristics on the basis that unacceptable examples are those that coerce one to inflict self-harm (19), one can argue that this would not be the case with genetic enhancements given the argument in the previous paragraph.

### **What Does This Tell Us About Performance Enhancement in Sport?**

There would seem nothing convincing about genetic engineering as a means of performance enhancement that is contrary to what is permissible within sport. Even the tentative criticisms about drug-taking do not seem to hold fast for genetic engineering. Furthermore, genetic enhancements offer a useful tool for learning about what is regarded as a permissible form of performance enhancement in sport. The characteristics of genetic engineering seem able to resist the major arguments against specific kinds of performance enhancement in sport. Moreover, it would appear that genetic engineering would be acceptable within competition in a way that drug taking might not. Genetic enhancements cannot be construed as cheating, they are not unnatural, they do not provide an unfair advantage, their coercive character is not a justifiable position for the rejecting of such enhanced persons from competition, nor are such enhancements unacceptably harmful.

If one could imagine drugs or other methods of doping that were conceptually similar to genetic enhancements, then arguments against their use would be very interesting indeed. The question raised here is whether a drug that could respond to the previous criticisms of performance enhancers, as does genetic enhancement, would still be deemed unacceptable. It is my suggestion that even if such criteria were met, drug-taking or doping would remain morally repugnant and condemned by sporting bodies. This is because if one strips away each of these rather questionable reasons for disallowing drug-taking from sport, one is left with a form of enhancement that is shrouded within a culture of uncertainty about the safety of pharmaceuticals. Stressing the interrelatedness of drug-taking in sport and the larger society is also an interest of Houlihan's *Dying to Win* (29). Rather than conceive of the doping issue in sport as something that is a claim about what kind of activity sport is or is not, it must be recognized that sport is not an insular activity devoid of social influence. Drug culture is notorious for reflecting such negative characteristics as dependence, addiction, ill health, death, and antisocial behavior, and it is argued here that such characteristics pervade attitudes toward drug-taking in sport. Thus, when one hears of an athlete who has taken drugs, the concern is not simply that the athlete has cheated but that he or she has acted in a manner that is unbecoming, cowardly, weak, or dirty. It is not that such performance enhancements are unacceptable because they reflect the nonvirtuous *athlete* or even bad competition. Rather, it is that they embody a form of personhood

that is not admirable (the nonvirtuous *person*). As such, it could be argued that the criticism of drug use in sport is a criticism of an individual as a person rather than as an athlete. This very point is recognized by Brown (9), who points out that attitudes to drug-taking in sport are pervaded by social attitudes to drug use more generally.

### Where Does This Leave Sport?

In an age of genetic engineering, it will not do simply to ban such persons from sport and to disqualify them from competition. The very suggestion would raise human rights concerns across the globe concerning the prejudicing of individuals with inferior genetic capabilities (61). Moreover, such circumstances would likely spawn the emergence of an engineered Olympics and similar events anyhow, where the genetically enhanced superathletes will be separated from mere mortals with their “naturally” conceived genotypes. Clearly, the alternative situation, where the enhanced compete against the unenhanced, would not be acceptable since those individuals without an enhanced genotype would be significantly disadvantaged (given the assumptions made about genetic enhancement in this paper).

Logically, one might imagine the following of such events as boxing and judo, where divisions are created based not simply on weight differences but on genetic characteristics. Thus, in the name of fair play we could imagine divisions created on the basis of genetic enhancements in strength, endurance, and speed. Yet it seems odd that such divisions would serve to negate the very enhancements that had been used to achieve an advantage and distinguish a winner. Indeed, such a conclusion might strengthen the claim that such forms of enhancement are ultimately self-defeating and irrelevant to the sporting contest. For if the physical differences between competitors were equalized—as seems desirable where genetics is used to create advantage—then the resulting competition would be a test of will, determination, and training effects. However, the further point can be made that, within such circumstances where genetic engineering is accommodated, it would seem increasingly difficult to place restrictions on the kinds of substances an athlete can use.

If the rationale for anti-doping were indeed the fair or good competition, then genetic enhancement would seem to create insurmountable difficulties in sustaining this ideal. In comparison to genetic enhancement, doping might easily accommodate the criteria for acceptability save for the argument that such use is considered cheating, since the athlete will need to have chosen to dope. With genetic enhancement that is achieved very early in life, such a claim cannot be made. Of course, this is where it must be decided upon what grounds a substance is deemed to be illegal. If the substance is not harmful, then banning it might seem unacceptable given that genetic enhancements would be deemed acceptable. Consequently, the emergence of genetic engineering can force the justification of rejecting drug use from sports competition since the acceptance of genetic engineering for competitive sport will make more acute the need for clarification about performance enhancements.

### **Conclusion: The New Ethical Issue**

Despite my initial rationale for considering genetic enhancement within sport, it might be contested that I have set up a straw man only to knock it down and claim that genetic engineering is not acceptable for the purpose of sport. However, it was not the intention to suggest this. Indeed, it has not been argued that genetic enhancements would be unacceptable within sport. First of all, such enhancements present less repugnant circumstances than drug use with respect to their acceptability in sport. Moreover, it is more likely that genetic enhancements would be an *acceptable* form of performance enhancement for sport and that their banning would make an unreasonable claim on an individual's liberty (61). Such enhancements do not appear to detract from what constitutes good competition, since they do not reflect the character of an athlete nor contradict the basis of sporting competition as some form of agreement between athletes. As such, genetic enhancements present new considerations for sport philosophers to consider and to decide upon their acceptability.

In 1984 Fraleigh (19) wrote that the central ethical issue within sport was drug use and the acceptability of restricting "the informed choice of consenting adult athletes in taking harmful drugs" given their implications for harm, coercion, and/or fairness. Now, at the turn of a new century of elite sport, genetics poses a vast array of new dilemmas for the sports ethicist that will force a sharpening of ideas about what constitutes acceptable performance enhancement in competition. In the context of genetic engineering, it is not a matter of restricting an individual's choice about his/her own body, but of an adult's choice about his/her child. So this new technology changes the context within which discussions about paternalism wield a much smaller stick. Thus, to interfere with the reproductive freedom of an adult in the Western world is largely objectionable. However, such difficult issues perhaps must be approached from an objective position whereby the sanctity of liberty is brought into question for the good of future generations.

It was also the intention of this paper to present a different, and likely, form of human enhancement that makes problematic conventional perspectives on performance enhancement in sport. It was to suggest that, with an enhancing technology like genetics, governing bodies would be unable to make particular kinds of claim about the acceptability of such enhancement and to ban persons with such advantage from competition. While genetic engineering might not yet be realized, the justifications for banning drugs or other kinds of enhancing technology from sport remain complicated and open to much criticism. It could be argued that concerns are based on an intangible intuition about drug use, in part deriving from social equivocation about the many kinds of drugs. Furthermore, seeking a ruling upon its acceptability from a sports logic perspective might be insufficient. Using the example of genetics, it is possible to isolate this criticism of drug use in sport and identify that the main concerns about its use in competition are not to do with the athlete, fair competition, or health, but rather with the social stigma surrounding drug use more widely. Such a criticism is entirely contrary to ideas about sport as existing within its own system of values and logic and thus demands a re-evaluation of the doping dilemma. If sports philosophers hope to find reasons for the unacceptability of drug-taking within sport, I argue, they will be very disappointed

since the criticisms against their use, from a sporting perspective, are insufficiently consistent with other means of attaining performance enhancement in sport.

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## Notes

<sup>1</sup>It is important to note that the HFE Act currently enforces a 14-day limitation on embryo research. Thus, research may only be carried out on human embryos before the embryo is 14 days old. After this stage the embryo is considered to establish characteristics of individuality and cell determination, which are regarded as being significant stages toward personhood. For an analysis of the moral status of the embryo, see Warnock (62).

<sup>2</sup>For an excellent and current overview, see Kuhse and Singer (35).

<sup>3</sup>The reality of this prospect is not as futuristic as one might think. Currently cryonics is a highly developed science with an increasing membership. This science of preserving the recent cadaver in a way so as to allow the possibility of reanimation is somewhat religious in its faith in science to provide the technological means by which it would be possible to reanimate the "dead" individuals. (For more information, see The Alcor Life Extension Foundation <<http://www.alcor.org>>.) Additionally, Bova (6) identifies research that has sought to identify a gene that is responsible for aging, locating the insulin receptor gene as a principal determinant of this. Moreover, the science behind the possibility of eternal life is frighteningly simplistic: The body has some means for regeneration of itself (in the production of skin cells and red and white blood cells). Thus all that is required to ensure longevity of life is to find some way of preventing this regeneration from stopping for other kinds of cells in the body. This may be possible by identifying the function of various genes.

<sup>4</sup>Incidentally, I would encourage a rather cynical perspective about this enterprise, which derives from the recognition that Ron's Angels stands to make more money through advertising on the website than from the actual selling of eggs, sperm, or anything else for that matter. While this immediately makes me wonder whether the site was actually set up for the purpose of selling eggs or simply to generate advertising, again the answer seems unimportant. That one could actually make vast amounts of money by inventing a site simply to attract sponsorship, without actually having a product, is an incredible aspect of the cyberspatial, global market.

<sup>5</sup>Such consequentialist reasoning might require pursuing, for it presumes an ethical view of genetic engineering on the basis of costs and benefits that might not be appropriate. For an overview of varying perspectives on approaches to bioethical dilemmas, see Kuhse and Singer (35).

<sup>6</sup>Of course this presumes that any engineered person will have characteristics that are more advantageous than those of a nonengineered person. One might contest this with reference to Ledley's (39) ideas about the environmental determinants of genetic advantage. Ledley identifies that seemingly dysfunctional genes can simply be a matter of environmental circumstances. For example, the sickle-cell gene also carries a protection against malaria, and the common cystic fibrosis mutation encodes a protein which may function at low temperatures—an advantage in some countries.

<sup>7</sup>However, one might cite such sports as boxing, wrestling, or judo, where it *is* relevant to distinguish between genetic or biological characteristics to attain a more fair competition and promote different kinds of skills that can be displayed by virtue of having a different sized body.

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