

# Genetic Modification (GM) in Sport: Legal Implications

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## Introduction

Despite an emerging body of literature, an analysis of the legal issues arising from science and technology in sport remains largely unexplored.<sup>1</sup> Perhaps one of the most common areas for the synthesis of these issues is found in regard to the use of drugs and other doping methods. However, there remains no theorising about legal issues arising from the possibility of using genetic technologies in sport. Nevertheless, an awareness of the imminent use of genetic technologies by athletes is beginning to provoke some serious reactions from international bodies in sport and medicine. Yet, still, the legal issues are not really being considered. This is surprising since, arguably, the sporting case offers a context that reveals critical questions in the development of social applications of genetics that reveal important insights into the relationship of ethics, law, and medicine. In particular, it can be said to contribute to establishing first principles upon which policy regarding the use of genetic modification (GM) can be based. However, it is understandable, given the vast amount of frivolous forecasting that is made in the media and the often cited use of genetics to make super-athletes, neither of which do justice to the serious and realistic and near implications of genetics for sport.

Within science, there has been a substantial amount of research seeking to isolate athletic genes or use gene therapy to assist in the recovery of athletes after injury. Though again, the portrayal of such research in the medical community has been harmed by overzealous speculations on the possibility of isolating genes that can, for example, allow one to exhibit super-human capabilities. That said, it can be argued that much genetic research in relation to sport is as harmed by the unrealistic speculations that are made in the press, as they are harmed by renegade scientists that threaten to abuse the science outside of sport. For example, in 1999, renegade scientist, Dr. Richard Seed, vowed to clone the first human being. Subsequent claims have been made elsewhere in the world from so-called members of the scientific community despite a world-wide condemnation of cloning human beings.<sup>2</sup> Unfortunately, while such rebels *could* be making a very serious challenge to the authority of

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<sup>1</sup> One of the few studies to consider this specifically is Ruggiero NP 'Are the Rights of Athletes Swept Under the Carpet?' [1993] Seton Hall Journal of Sport Law 3:237-257, who considers that the rights of athletes are neglected in exchange for a desire for profit-making. The case is presented in the context of artificial turf and the safety of the athlete.

<sup>2</sup> Importantly, this is not to be confused with cloning in stem cell research for therapeutic reproductive purposes, which is gaining support in ethical communities for the use of cloning to assist couples who are unable to conceive.

medical ethics by their actions, they are mostly rejected on account of them being overtly non-scientific. Arguably, medical ethics is too restrictive to address the ethical issues arising from genetic technologies. However, the scientists threatening to adopt an 'anything goes' approach to genetics, do not respond to my ideas on these matters.

From the perspective of the medical community, the application of genetics to sport could be said as somewhat of this character – an abusive or unethical application. Engineering humans for sport remains a comparatively trivial use of resources and not likely to demand the attention of any publicly funded health care research programme. Many of the aspirations of creating super-humans are, however, not really reflective of what genetic science in relation to sport is endeavouring to achieve. Yet, the real possibilities are no less startling.

Expectedly, genetic research related to sport tends to have been limited to elite performers. Hoberman<sup>3</sup> makes reference to this imminent technology by identifying its logical inevitability in performance-based sport. Some years later, scientific studies were beginning to explore the ways in which genetic information could be used to augment the human athlete. For example, gene therapy has been developed in sports medicine, specifically to reduce the time spent injured by genetically repairing the injured athlete.<sup>4</sup> Comparable research has also been conducted by Dr. H. Lee Sweeney at the University of Pennsylvania. Dr. Sweeney has researched the possibilities for using the protein called insulin-like growth factor-1 (IGF-1) to repair muscle tissue.

Dr. Geoffrey Goldspink at the Royal Free and University College Medical School in London makes similar findings. Using a form of IGF-1 called mechano growth factor (MGF) with mice, which is used to treat muscle-wasting diseases such as muscular dystrophy, Goldspink's team were able to isolate muscle tissue and insert the MGF gene. The results showed an increase in muscle mass by approximately 20 percent after two weeks.

At Harvard University, Dr. Nadia Rosenthal used IGF-1 in gene therapy in mice to halt depletion of muscle strength that comes with old age. As Rosenthal notes,

Older mice increased their muscle strength by as much as 27 percent in the experiment, which suggested possibilities for athletes as well as for preserving muscle strength in elderly people and increasing muscle power in those who suffer from muscular dystrophy.<sup>5</sup>

As well, genetic science has endeavoured to target specific genes that can be identified as determining biological characteristics, such as the capability for endurance.<sup>6</sup>

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<sup>3</sup> Hoberman JM, '*Mortal Engines: The Science of Performance and the Dehumanization of Sport*' (New York: The Free Press., 1992).

<sup>4</sup> Lamsam C, Fu FH, Robbins PD, Evans CH, 'Gene Therapy in Sports Medicine' [1997] *Sports Medicine* 25:73-77.

<sup>5</sup> Cited in Longman J 'Pushing the Limits: Getting the Athletic Edge May Mean Altering Genes' *The New York Times*. Hypertext Document: <http://www.nytimes.com/2001/05/11/sports/11GENE.html>

<sup>6</sup> Cogan A, 'Sporty Types' *New Scientist Planet Science*, November 1999.

Recently, research has taken place to identify the effects of inserting genes into a virus to render a specific bodily effect. Such research has taken place at a number of institutions, particularly using erythropoietin (epo) to increase endurance.

At the University of Chicago, Jeffrey Leiden used an adenovirus to deliver epo to mice and monkeys, to observe whether it would render a difference in biological capabilities. By inserting the gene into a virus strand, it was subsequently transported throughout the body and did, indeed, have the effect of increasing the level of red blood cells that were being pumped around the body. In performance, this renders a similar effect to that of blood-doping, which operates on a similar principle by reintroducing blood into the body to boost the amount of oxygen being transported around the body, to offset fatigue. Thus, genetically inserting epo into an athlete can increase the capabilities for endurance when active, which would be useful for any long distance event.

While no such research has been applied to humans, the possibilities for improving endurance capabilities for the purpose of competing are clear. Indeed, similar work has been conducted by Dr. Steven Rudich, of University of Michigan, where inserting epo into the leg muscles of monkeys produced a significantly elevated red blood cell level for 20 to 30 weeks.<sup>7</sup> A slightly different kind of gene therapy has been directed towards increasing muscle mass. Again, this has taken place at a number of institutions and involves the protein IGF-1.

In spite of this research, 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 recognised that one might actually influence the function of other genes to the detriment of the individual's health.<sup>8</sup> 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 the relatively small number of genes involved in single-gene disorders such as Huntington's disease or muscular dystrophy, the possibilities of medical genetics is in question.<sup>9</sup>

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 appreciates 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. It is also relevant to consider how non-sporting genetic research can yield affects on the ethical balance in sport. For example, the prospect of using genetic information to screen for young talented athletes is already something that is

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<sup>7</sup> Longman, *op cit* n 5.

<sup>8</sup> Harris J, *Clones, Genes, and Immortality*. (Oxford: Oxford University Press, 1998).

<sup>9</sup> Appleyard B, *Brave new worlds : staying human in the genetic future* (London: HarperCollins, 1999).

being approved by sports officials. For example, US women's national team coach Harmut Buschbacher has claimed that it would be desirable to obtain the genetic profiles of young rowers:

As a coach, I'm interested in performance...and if this information would give me a better opportunity to select the athletes for my team, I would like to use that. [That way] you're not going to waste so much time and energy on athletes who may not be as successful.<sup>10</sup>

It is for this reason that the present discussion has a particular significance. Extending this perspective to a point where it can be recognised that sport contributes to the development of legal and ethical policies in respect of GM is, however, an additional step. Currently, international sports and medical authorities are preparing to deal with the genetics issue – already branded, negatively I believe, as *gene-doping* – and an increasing number of meetings is addressing the brave new world of sport.

Over 2000 and 2001, there have been a number of academic and professional meetings that have devoted time to the consideration of GM in sport. These include, but are not exhaustive of the following:

- 2000, European College of Sports Science
- September, 2000: The International Council of Sport Science and Physical Education (ICSSPE) hosted the Pe-Olympic World Congress of Sports Science & Medicine, Brisbane, Australia.
- September, 2000: International Association for the Philosophy of Sport, Melbourne, Australia.
- March, 2001: Playing the Game, Denmark.
- June 6, 2001: IOC Working Party, Lausanne, Switzerland.
- November, 2001: Genes in Sport: A Seminar, School of Medicine at University College London and UK Sport, London, UK.

Additionally, the World Anti-Doping Agency (WADA) had planned to hold a closed meeting in Spring Harbour in September 2001. Due to the terrorist attacks on the World Trade Centre on September 11, this meeting did not take place and was postponed to March 2002.

The perspective from geneticists outside of sport remains sceptical. Indeed, it is not clear that genetics will give rise to effective therapeutic techniques. Professor Steve Jones of UCL, one of the world's leading geneticists, spoke at the 'Genes in Sport' meeting hosted by University College London and UK Sport. No fan of sport, Jones was thoroughly dismissive of the possibility that genetic technology might be applied to sport, saying that

There is a massive quantity of hype when it comes to gene therapy in sport. I put it in the same ballpark as the babbling nonsense talked about a baldness cure based on gene therapy.<sup>11</sup>

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<sup>10</sup> Farrey T, 'Genetic testing beckons' *ESPN*, 20 January, 2000. Hypertext Document: <http://espn.go.com/otl/athlete/monday.html>

<sup>11</sup> Cited in Powell D, Spectre of gene doping raises its head as athletes see possibilities' *The Times*. London, 2001.

One might take this response to be rather jovial. As Jones also adds by quoting the US Attorney General, he wished "genetics had never been invented"<sup>12</sup> suggesting more a contempt for any of the speculations on how such information might be used, rather than specifically directing his response to the application to sport. However, Jones is not alone. Professor Tom Murray, of the Hastings Center for Bioethics Research in New York, said isolating a gene for any characteristic, sporting or otherwise, is too simplistic a notion. He argues that

Those that believe you get simple effects from genetic manipulations see our genes as beans in a beanbag -- you add or pull out a bean and get the effect you seek..... see it as a complex ecosystem with each gene influencing and being influenced by others and the external environment.<sup>13</sup>

Consequently, the serious consideration of how such technology might be used for something so 'trivial' as to enhance sporting prowess is far-fetched. In this respect, scientific opinion is divided, though is erring on the side of caution. Genetic research is taking place in relation to sports performance and will be informed by other kinds of research that can have findings that will be useful for the elite athlete to enhance performance.

Presently, the two central sports organisations in respect to policy making are the International Olympic Committee (IOC) and the World Anti-Doping Agency (WADA). They have begun to create working groups to prepare for dealing with the problem of genetic modification, though to some disappointment, the presence of ethical deliberation seems lacking. Central members of these organisations such as IOC President Jacques Rogge and IOC Medical Director Patrick Schamasch have expressed a concern for how genetics might be abused for sporting purposes. Rogge and Schamasch, both of whom are medical doctors, have already entered into the discourse of condemnation associated with likely abuses of genetics in sport. Importantly, their reaction derives from a perspective on abuse rather than use. This distinction is important, as it ought to allow for the possible applications of genetics as having ethical merits. However, any application sought within sport seems condemned by these two key persons within international sport. As Rogge states, "Genetic engineering in sport will foster not only a greater potential health risk for athletes than does conventional doping, but also a greater potential for performance enhancement."<sup>14</sup>

Not surprisingly, there is a feeling in the International Olympic Committee for not wanting to be left behind as has been the case for other kinds of doping technique. As Schamasch states, "for once, we want to be ahead, not behind."<sup>15</sup> Indeed, this sense of urgency is reinforced by the statement of other key figures within international sport and medicine. Prof. Arne Ljungqvist, IOC member and board member for WADA said that,

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<sup>12</sup> Cited in Hamlyn P, 'Gene genie casts ominous shadow' .

<sup>13</sup> Murray, cited in Morgan N, 'Sports facing next problem after drug-takers - gene cheats' Bloomberg Press . London, 2001.

<sup>14</sup> Cited in Longman, *op cit* n 5.

<sup>15</sup> Cited in Longman, *op cit* n 5.

The gene responsible for EPO has already been identified by the Human Genome Project and could, theoretically, be injected into the muscle. An EPO gene will promote the body's production of EPO and some people will say this can never be detected. There may be other parameters we could identify that tell us whether a person has injected this gene.<sup>16</sup>

Additionally, Professor Bengt Saltin of Sweden gave a paper at the conference titled 'Play the Game' held in Denmark. Within his keynote speech, Saltin stated that the title for his paper, "Gene Doping: Science Fiction or Impending Reality?" might already "be outdated." Saltin continues to assert that "There is no doubt the medical technology is in place. Certain problems exist but they will be overcome. There are already possibilities for sportsmen. Within five years, commercial gene therapy will be available to everyone."<sup>17</sup> However, it is unclear whether this allows for the serious philosophical and ethical consideration of the technology. Indeed, the depth of ethical issues that will arise from any kind of testing is of substantial concern. Even if the aspiration is to derive methods of testing for genetic modification, it is far from clear that such procedures will be ethically sound and possible to apply therefore. As Peter Schjerling, senior genetic researcher from Copenhagen, admits, "A doping test based on taking pieces of the athlete's muscle is not likely to be ethically accepted."<sup>18</sup> Such a process would involve an invasive muscle biopsy for which no athlete is likely to provide consent. As Peter Hamlyn, consultant neurosurgeon at St Bartholomew's and the Royal London Hospital notes, "peeing in a pot is one thing, but having your legs cut open is another."<sup>19</sup> Scherling continues to explain that,

therefore gene doping can be arranged so that detection, in practice, will be impossible....Artificial genes can, and most likely will, be abused by athletes as a means of doping....Detection is extremely difficult since the artificial genes will produce proteins that are identical to those in the human body.<sup>20</sup>

Some sympathy for the ethical and philosophical issues is found in the public statements of Theodore Friedmann, who questions the rationale behind genetic manipulation for sport. Friedmann asks,

What are the endpoints of manipulation?...Is the hope to incrementally sneak up on the one-and-a-half-minute mile? Or six seconds for 100 meters? Is the question, How fully can we engineer the human body to do physically impossible things? If it is, what do you have at the end of that? Something that looks like a human, but is so engineered, so tuned, that it's no longer going to do what the body is designed to do.<sup>21</sup>

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<sup>16</sup> Cited in Wallace S, 'Drugs in Sport: Cheats could inject genes to beat system' 3 December, 2001.

<sup>17</sup> Cited in Walsh D, 'New Crisis Facing Sport' The Times London, 2000.

<sup>18</sup> Cited in Powell *op cit* n 11.

<sup>19</sup> Hamlyn *op cit* n 12.

<sup>20</sup> Cited in Powell, *op cit* n 11.

<sup>21</sup> Cited in Longman *op cit* n 5.

Interestingly though, Jacques Rogge considers genetic screening to have merits in the application to sport, though draws the line at GM.<sup>22</sup> While an explanation for this position is not clear, it seems to neglect the ethical concerns raised here in respect of genetic screening. For each of these institutions, the approach is already to condemn genetic technology in sport. Apart from Rogge's admission that genetic screening is ethically sound, there does not seem to be any acceptance that certain kinds of GM might be ethically justified. Yet, there is no real engagement with how medical ethics responds to applications of genetic technologies to techniques that are not strictly necessary. Thus, a response about the use of gene therapy to repair muscle tissue has not been given specific consideration. Statements tend to have been made in respect of the general issue of genetic modification in sport. On the basis of the present thesis, such an approach is vastly simplistic and overly committed therefore. If it is deemed medically sound to use gene therapy to reduce the injury time of an athlete, then it would seem contradictory to retract the claims about genetics that have thus been made.

The following overview will be restricted to the ethical and legal issues pertinent to sport specifically and will work towards some initial policy recommendations. It is not possible to deal sufficiently with the many other issues that remain an ethical and legal barrier to the use of genetics of sport. For example, it must be determined whether specific kinds of uses of genetic technologies are, in themselves, ethically justifiable. From one perspective, the use of cloning technology is unethical because its experimental nature implies an unacceptable level of expenditure of human embryos. In order to perfect the techniques that might be necessary for some kinds of genetic technologies can imply too great a waste of human life to justify its use. Also from this issue, one can realise how the applied ethical issues of genetics imply an engagement with deep philosophical issues concerning what constitutes human life.

Although such interests are encouraging, the importance of deliberative ethics for these organisations is not clear and there is already an emerging discourse that condemns the use of genetic technologies to enhance performance in sport without first taking time to justify such conclusions. In the specific case of the WADA, there is some indication that the matter of genetic manipulation will be a high priority for future policy-making, though this is still in its developmental stages.

### ***Ethical Issues***

The immediate ethical issues relating to genetics in sport consist of arguments within sports ethics and bioethics.<sup>23</sup> In sports ethics,

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<sup>22</sup> Clarey C, 'Chilling New World: Sports and Genetics' International Herald Tribune, 26 January, 2001.

<sup>23</sup> The term bioethics also includes the disciplines of medical ethics and the philosophy of medicine. Within the UK, bioethics is used in some aspects of medical ethics, though it is argued by some that bioethics is a distinct category of medical ethics. Nevertheless, for the present purposes, the term implies the philosophical and ethical consideration of medical and non-medical uses of biotechnology and genetics.

critical issues concern whether the use of genetics is concurrent with sporting values such as fair play and what counts as athletic performance or if it is more reflective of sporting vices such as cheating. For the latter, the discussion involves a discussion about whether the technology is justifiable from a medical perspective. It is suggested here that the two discussions cannot and ought not be separated. Certainly, the bases for conclusions will be different, though it is not the case that either the sporting discussions about fair play are pertinent only to sport, or that the discussions about medical justification are pertinent only to medicine.

In respect of the fair play issue, it is argued by Munthe<sup>24</sup> that genetics is not contrary to sporting values and, for this reason, that it is not unethical. Munthe reviews the various arguments that might be raised from a sporting perspective and concludes that the enhancement is not unethical. Specifically, Munthe presents four kinds of argument that he considers to be inclusive of the sporting responses to genetics. These consist of: safety, moral purity, pragmatic reasons, and athletic tradition. In response to safety issues, Munthe advocates the precautionary principle, which is used to govern any new technology. Simply, this entails declaring a moratorium on a technology until it can demonstrate a sufficient level of safety. Thus, the appeal is not to absolute safety, but relative levels of what is safe enough. The claim to moral purity is rejected by Munthe since he considers that the use of genetic modification implies no negative connotation on the character of the athlete, particularly when the engineering is done to the individual before they are born. On a pragmatic level, Munthe claims that there are no significant issues to which the ethicist must respond. The claim against genetics from pragmatics is that it would detract from the commercial revenue in sport by having engineered athletes. Munthe promptly rejects this by claiming that spectators will more likely be more motivated to see the enhanced athletes perform. Finally, his claim to athletic tradition as genetics being contrary to inherent core values of sport is rejected on account of his concluding that these values are vague and contested.

In response, I argue elsewhere<sup>25</sup> that Munthe does not do justice to sporting values, but that a clearer formulation of sporting values must be made. Moreover, I claim that the genetics issue is precisely the technology that is needed to redefine previously weak arguments about sporting values. Of particular relevance to the present discussion is recognising that Munthe's paper, though deliberately so, omits critical perspectives from medical ethics, that can lend strength to the sports ethical arguments. Indeed, it can be argued that the more significant reasons for identifying why genetic modification is problematic for sports derives from the medical ethical issues that it raises. Thus, the critical concepts are not in relation to fair play or some other sport-specific values, but are general concerns about freedom, autonomy, paternalism, and human dignity.

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<sup>24</sup> Munthe C, 'Selected Champions: Making Winners in an Age of Genetic Technology' [2000] *Values in Sport: Elitism, Nationalism, Gender Equality, and the Scientific Manufacture of Winners*, edited by T. Tannsjo and C. Tamburrini. London and New York: E & F.N. Spon at 217-231

<sup>25</sup> Miah A, 'Genes, Sports, and Ethics: A Response to Munthe (2000)' [2002] *Research in Philosophy and Technology* 21 [in press].



One can observe that in medical ethics, the primary concepts raised in relation to the ethical use of genetics, involves these key terms. Each of them are implied within some sports ethical literature. Indeed, Fraleigh<sup>26</sup> indicates that the crucial ethical issue in regard to doping and drug-use in sport is about individual freedoms and the limits of paternalism. As well, others have discussed the concept of personhood or respect for persons as some guiding discourse for establishing what constitutes moral behaviour in sport.<sup>27</sup> However, the links with medical ethics have not been made. Genetic technologies makes explicit the need to create such links.

Applying Fraleigh's argument to GM in sport, for the very fact that the discussion is about what kinds of technology should be banned and what kinds should be made legitimate, the discussion is a matter of determining the limits of paternalism. In sport, this area has been met with some scepticism where governing bodies have been criticised for interfering with freedoms that really have no concern for sport. For example, in 1998 at the Nagano Olympic Winter Games, a controversial case arose in respect of Canadian snowboarder, Ross Rebagliati, winner of the first-ever gold medal in the giant slalom at the Nagano. Only three days after winning the gold, the International Olympic Committee (IOC) asked Rebagliati to return the medal after it was discovered that he had tested positive for marijuana.

Further details about his innocence or guilt are less relevant here than the fact that a recreational drug (non-performance enhancing) should be of interest to the IOC. At the time, the example was controversial since it brought into question whether the reach of banned substances ought to be extended to non-performance drugs. For some, the Rebagliati case entailed an unwarranted violation of the individual's personal freedoms and overstepped the realms of paternalism for sports authorities. Marijuana is a depressant and, arguably, not particularly enhancing of a snowboarder's performance (though might be useful for an activity that requires calm and stability). As such, it is not clear why it was deemed illegal for specific sports.<sup>28</sup> For GM, there is an even stronger case for considering whether sporting authorities should be entitled to discriminate against genetically modified athletes as the following overview conveys.

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<sup>26</sup> Fraleigh WP, 'Performance Enhancing Drugs in Sport: The Ethical Issue' [1984] *Journal of the Philosophy of Sport*, 23-29.

<sup>27</sup> See for examples, Delattre EJ, 'Some reflections on success and failure in competitive athletics' [1975] *Journal of the Philosophy of Sport*, 133-139; Bailey C, 'Games, winning and education' [1975] *Cambridge Journal of Education* 5:40-50; Tuxill C, and S. Wigmore, "Merely Meat?" *Respect for Persons in Sports and Games in Ethics and Sport*, edited by M.J. McNamee and S.J. Parry. London and New York: E&FN Spon, 1998, 104-115; Schneider, A.J., and R.B. Butcher. (2000.) "A philosophical overview of the arguments on banning doping in sport. [2000] in *Values in Sport: Elitism, Nationalism, Gender Equality, and the Scientific Manufacture of Winners*, edited by T. Tannsjo and C. Tamburrini. London: E & FN Spon, 185-199

<sup>28</sup> It is relevant to note that it would seem that the infraction was an oversight. It was not clear that marijuana was on any prohibited substance list due to the unusual organisation of the snowboarding events. Rather than be under the auspices of a snowboarding federation, the International Skiing Federation adopted the role of organising the competition. However, unlike the snowboarding federation, the ISF included marijuana on their prohibited substances list thus rendering some confusion about its acceptability.

Returning again to the genetics issue, the central question – following Fraleigh’s ideas about doping – is whether sporting authorities have a right (or should have a right) to interfere with what people do with their bodies (or genes). For this reason, it seems clear how the ethical issues in relation to this matter are inextricable from the legal deliberations that surround individual freedom and the authority of organisations. This is perhaps better explained by way of a hypothetical example that might arise in the near future.

It is important to know that, often, the ethical consideration of genetic modification is separated into two categories: somatic cell and germ-line cell modifications. Put simply, the distinguishing characteristic between these two kinds of cell is that the latter of them is hereditary. This important fact raises the need for quite different considerations about what is ethical or not and what any engineered individual might be responsible for in relation to their genes. In respect of somatic cell modifications, it would be possible to effect alterations at any stage of the human’s life. As with any medical intervention, there is a level of risk tied to age, but still the principle is that the alteration can be made on a living, fully-developed human life.

In contrast, germ-line cell alterations must take place very early on in life, at the embryonic stages. Currently, there is a legal limit of 14 days set on the use of intervention techniques on human embryos, which outlaws such techniques if they take place any day after 14 days of life.<sup>29</sup> This very narrow window of opportunity makes very difficult to maximise the possibilities of genetic research, though for the present discussion involves a qualitative difference in how we understand the notion of enhancement. Effectively, in the case of germ-line cell modifications, they would be without the affected individual’s consent. Consequently, neither could they be held culpable for any engineering that is done to them. In the case of sport, it seems clear how this might raise a problem. For if it is deemed illegal to use genetic modification for sport, then the germ-line engineered athlete will be disqualified on account of something for which they can claim no responsibility or blame. They would be branded a cheat and have done nothing.

Prima facie, this would seem unfair and, indeed, it does come uncomfortably close to being a breach of basic human rights. Following the UNESCO’s Universal Declaration on the Human Genome and Human Rights<sup>30</sup>, there seems due reason to conclude that this kind of decision in sport about genetics would be untenable.

Indeed, if one analogies the genetically engineered to the genetically impaired, then it can be argued that, as there are provisions made for disabled sport, so too ought there be for genetically enhanced humans. Thus, such disqualifications might simply lead to the initiation of the Genetic Olympic Games or something similar. Such circumstances might not leave the supposedly able-bodied sports in a favourable position.

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<sup>29</sup> Warnock M, ‘Do Human Cells Have Rights?’ [1987] *Bioethics* 1:1-14.

<sup>30</sup> United Nations Education, Scientific and Cultural Organisation, ‘Universal Declaration on the Human Genome and Human Rights’ Available online at: <http://www.unesco.org/ibc/genome/projet/index.html>

For somatic cell engineering, the situation is rather more simple. Indeed, it is more similar to the use of conventional method of drug-taking insofar as it entails a conscious decision to use the technology. However, in all probability, once the technology has been developed, it is likely to be distinct from such methods in that it could be used with little risk to the athlete's long term health.<sup>31</sup>

The ethical considerations thus, prove difficult to uphold when placed into the context of the legal implications of such choices. While it might (though not necessarily) be convenient for sports ethics to conclude that no genetically modified athletes should be allowed to play sport in the name of fair play or some other normative claim, it does not seem sufficiently justified from a legal standpoint. Thus, there is a need for the approach to this issue to take account of the legal issues that are underpinned by ethical issues of justice and fairness beyond the sporting ethos.

### ***Legal Issues***

The issues of paternalism lead into the legal debates concerning the freedom of athletes in competition. Athletes' rights have gained a much greater profile in the last few years, particularly raising the profile of the treatment of children in elite sport. However, for some, there are still far too many liberties taken with the involvement of minors in elite competition. Importantly, the raised profile of athletes' rights would seem commensurate with the professionalisation of many sports, though it is not sufficient to conclude this as being the sole motivation. As well, it can be argued that the very same process has provoked even less regard for the rights of athletes in sport. In 1999, the Human Rights Council of Australia hosted the First International Conference on Human Rights and Sport, titled 'How to Play the Game.' For many years, sport has been an area of human enterprise relatively unconstrained by legislation.

From the freedoms of club trainers and the relatively unconstrained relationship between them and their youth players, to the ability for parents to push their children through elite, work-like training at a very early age, to the invasion of privacy rights taking place by the current drug-testing measures, athletes have been subject to rather little protection. However, with so many cases of drug use in sport that have been difficult to prove and, in many cases, deemed to be unjust, it would seem that greater strength is emerging for the athlete. For some, this is disadvantageous because it places the individual at the power centre of a practice that is ultimately valued because of communitarian values. Thus, a reconciling over what is good for the practices of elite sport and for the moral treatment of the athlete is of key importance.

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<sup>31</sup> It is important to note that similar arguments have been made about performance enhancing drugs. There are athletes and scientists that consider there is a way of administering some substances with very little risk to long-term health and that it is the abuse of these drugs that creates the danger, not their use.

Additionally, sport is an exceptionally interesting and unique aspect of social practices to consider the importance of law. Given that sport is premised so strongly on the importance of fairness and justice, the importance of law is highly pertinent. Indeed, it can be argued that legal issues in sport are some of the most growing aspects of law in present times. Kidd & Donnelly<sup>32</sup> provide an overview of how such rights have evolved, recognising that,

Human rights legislation has also inspired increasing respect for athletes' rights, the recognition that athletes must be afforded the same protections enjoyed by all citizens, particularly with regard to freedom from discrimination, selection for representative teams, the allocation of other benefits, and discipline and punishment (p.10)

Similar discussions can be found in legal discourse about drug-taking and other methods of doping, though it is surprising to realise how such perspectives have not been raised very much in respect of sports ethics. One exception is Thompson's<sup>33</sup> overview of the conditions in which it is morally justifiable to require athletes to submit to urinalysis examinations. In this respect, Thompson considers that the issue is fundamentally a matter of elaborating on rights to privacy. Thompson is not alone. Burke<sup>34</sup> also highlights the possibility that the "imposition of drug laws restricts the personal freedom of the athlete to explore the limits of performance, without any significant gain for the practice community." Various articles detailing issues in relation to doping test procedures recognise that there is a fundamental privacy issue at stake that must be weighed against the importance of fair play in sport.<sup>35</sup>

Within this broader, social scientific study of sport, concerns have arisen about the use of anti-doping measures for catching cheaters in competitive sport. In particular, the "Court of Arbitration established by the International Olympic Committee, National Olympic Committees and the International Sports Federations in 1983"<sup>36</sup> has been proactive in raising the protection of athletes rights. Balancing the harms of drug use with the harms inflicted upon the athlete in respect of the invasiveness of the doping test procedures has been of some significant concern. Parallel issues arise in respect of the provision for sporting opportunities for people with disabilities. Indeed, the way in which disabilities is separated from able-bodied sport might serve as some guide for the treatment of the genetically enhanced (or deficient). Genetics seems only to extend this growth, due to the added complexity and kinds of applications that are likely to ensue.

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<sup>32</sup> Kidd B, and Donnelly P, 'Human Rights in Sports' [2000] *International Review for the Sociology of Sport* 35:131-148.

<sup>33</sup> Thompson PB, 'Privacy and the Urinalysis Testing of Athlete'. 313-318 in Morgan WJ, and Meier KV, *Philosophic Inquiry in Sport* (Illinois: Human Kinetics, 1988).

<sup>34</sup> Burke MD, 'Drugs in Sport: Have they practiced to hard? A Response to Schneider and Butcher' [1997] *Journal of the Philosophy of Sport* XXIV:47-66.

<sup>35</sup> Palmer CA, 'Drugs vs. Privacy: The New Game in Sports' [1992] *Marquette Sports Law Journal* 2:175-209.

<sup>36</sup> Kidd and Donnelly, *op cit* n 32, p.10.

If genetically modified athletes are excluded from competition, then this could exclude a proportion of athletes, who have been modified for medically justifiable reasons. Alternatively, it could exclude a number of athletes who have been engineered before birth and who cannot, thus, be said to have been responsible for the modification. The exclusion of such persons would seem to conflict with individual rights to be free from genetic discrimination as advocated by the United Nations Education, Scientific, and Cultural Organisation (UNESCO) Universal Declaration on the Human Genome and Human Rights. In particular, the Declaration makes the following stipulations relevant to the present discussion,

Article 2: Everyone has a right to respect for their dignity and for their rights regardless of their genetic characteristics

Article 5 e): If according to the law a person does not have the capacity to consent, research affecting his or her genome may only be carried out for his or her direct health benefit, subject to the authorization and the protective conditions prescribed by law....provided such research is compatible with the protection of the individual's human rights

Article 6: No one shall be subjected to discrimination based on genetic characteristics that is intended to infringe or has the effect of infringing human rights, fundamental freedoms and human dignity

With these articles in mind, the requirement upon sports authorities to be reflective of their legislation in relation to GM seems clear. Legislation made within the context of sport on its own and in the absence of recognising broader bioethical debates, will be insufficient to protect individual freedoms. For this reason, it cannot be concluded as straightforward for sporting authorities simply to reject GM from sport. The banning of genetically modified humans from sport implies discriminations that have implications beyond the sporting case. The declaration must extend to the sporting context, particularly since sport aspires to the championing of moral rights and equality norms. There has to be a space where the genetically modified athlete can compete. Consequently, in the discussion about paternalism in respect of GM in sport, it is important to consider arguments from within sport and in the broader bioethical community.

It is also important to recognise that paternalistic arguments have their roots (particularly within the doping issue in sport) in the importance of *physical* harms, a perspective that does not have such strength in the case of GM (except in respect of its abuses). It has been dismissed that GM would be sufficiently detrimental to the athlete's biological health. Consequently, other kinds of harm are the basis upon which the discussion of paternalism is premised. Yet, as well, the paternalist view are premised upon seeking to protect individuals from themselves. Such positions consider that social authorities are justified in restricting freedoms on account of wanting to protect individuals from themselves.<sup>37</sup> From the sporting perspective, this approach has

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<sup>37</sup> Brown WM, 'Paternalism, drugs and the nature of sport' [1985] *Journal of the Philosophy of Sport* XI, 14-22.

been particularly relevant in the context of drug taking and doping and the perspectives of Simon<sup>38</sup> and Brown<sup>39</sup> are summarised by Fraleigh,<sup>40</sup>

they locate the issue in whether or not it is morally right to restrict the choices of an informed consenting adult athlete in taking drugs for the purpose of enhancing performance while accepting serious risks of harmful side effects (p.24).

However, the justification of paternalism in the case of GM has a quite different basis. It is not so much a concern for harms to the individual than it is a concern for harms to others (in the broad sense). Admittedly, within Simon's and Brown's formulation of the issue, they consider the importance of issues related to fairness and coercion, thus recognising the harms to others. However, it is an important distinction to recognise that GM does not respond to the kinds of harms that have built a case against the use of drug-taking and doping in sport. In this respect, it fits well with John Stuart Mill's 'harm principle' that states,

As soon as any part of a person's conduct affects prejudicially the interests of others, society has jurisdiction over it, and the question whether the general welfare will or will not be promoted by interfering with it, becomes open to discussion. But there is no room for entertaining any such question when a person's conduct affects the interests of no persons besides himself, or needs not affect them unless they like (all the persons concerned being of full age, and the ordinary amount of understanding). In all such cases there should be perfect freedom, legal and social, to do the action and stand the consequences.<sup>41</sup>

Importantly, the balancing of these harms requires more than Mill's classic utilitarianism for deriving ethical guidelines regarding GM in sport. The degree of restrictions to personal freedoms that are implied through banning GM in sport have far broader implications than does drug use. At most, a similar claim that can be said of banning GM is paralleled in the prohibition of recreational drugs from sport.

The present section of this paper will provide an overview of the central and immediate ethical issues pertinent to this matter and provide some measure of how they might be used in the development of legal policy in sport. In so doing, it will become apparent that the main ethical and thus legal issues (importantly, pertaining specifically to the sporting case – there are many others related to genetics that cannot be addressed here) involve notions relating to human rights and the autonomy of the athlete. The emphasis will be upon the ethical discourse that must ensue to provide a sound basis to the subsequent legal and policy making discourse that follows. As well, the focus will be on athletes' privacy to their genetic

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<sup>38</sup> Simon RL, 'Good competition and drug-enhanced performance' [1984] *Journal of the Philosophy of Sport* XI:6-13.

<sup>39</sup> Brown WM, 'Comments on Simon and Fraleigh' [1984] *Journal of the Philosophy of Sport* XI:33-35.

<sup>40</sup> Fraleigh *op cit* n 26.

<sup>41</sup> Mill JS, *On Liberty*, 1859. Also available online at: <http://www.utm.edu/research/iep/text/mill/liberty/liberty.rtf>

information. Numerous ethical concerns make problematic the integration of genetic technologies with human rights, some of which include the following,

A number of key issues can be targeted as likely to raise immediate concerns in relation to genetics in sport. These include the following:

1. Legal distinction between therapeutic and non-therapeutic uses of genetic modification
2. Rights to the privacy of genetic information.
3. Freedom to use genetics and be allowed to compete in sport.

While it will not be possible to do justice to each of these legal and ethical debates, some important clarifications must be made that can guide emerging policy on these matters.

### Therapy vs. Non-therapy

First, the distinction between therapy and non-therapy in genetics is unclear and this is problematic for legislators. This problem is not new in sport. Indeed, the distinction between therapy and non-therapy has been of some significance in sport for the last 40 years. In the development (and critique) of anti-doping policy, issues have emerged over what kinds of substance or method are unacceptable on the basis of whether they are therapeutic – such as treatment for illness – or enhancing – such as the use of steroids to boost muscle mass. Yet, within sports ethics, the links between medical ethics and sport have seldom been made. Indeed, sport has preferred to engage with ideas relating to naturalness and artificiality as a basis for determining legitimacy in relation to performance enhancement. However, within anti-doping policy, this position lacks credibility, though its similar formulation through the constructs of therapy remain a guiding principle within medical ethics.

Thus, making justifiable distinctions between therapeutic and non-therapeutic uses of genetic technology is one of the critical dilemmas facing medical authorities. Presently, the scientific application of genetics is restricted to therapeutic uses. Indeed, it is accurate to say that the technology is so new, that only its therapeutic use is considered relevant. The possibility of engineering enhancing characteristics has little to no priority for credible scientists. Nevertheless, despite the tacit assumptions that enhancement is unethical, its foundations are rather unstable. In practice, it can be argued that the distinction between therapy and non-therapy is sufficiently ambiguous to prevent non-therapeutic effects from taking place.<sup>42</sup> Consequently, it is important that there is also some engagement with the philosophical analysis of what constitutes therapy and enhancement to inform this discussion.

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<sup>42</sup> Miah A, 'The Engineered Athlete: Human Rights in the Genetic Revolution' [2000] *Culture, Sport, Society*, Vol.3, No.3, 25-40.

It is not inconceivable that GM could render the altered humans 'better than well' and that this might translate into some greater capability for athletic performance (because such alterations have been done to promote health). Nevertheless, a further complication arises if faced with the question about what constitutes dysfunction, which is the premise upon which gene therapy is based. While one might assert there to be a biological foundation for claiming that a specific gene needs correcting, challenges to this definition arise in the cases of, for example, dwarfism or a genetic predisposition for obesity. Although it is unclear whether specific genes really do determine such characteristics, the issue presents many difficulties. As well, where parents retain authority in relation to what kind of modifications are acceptable, then concerns arise in the case of engineering 'social' genes, such as height, weight, or skin colour.<sup>43</sup> What seems inevitable is a problematising reflection about the medical and social foundations of normalness.

### Privacy of Genetic Information

In relation to genetics, of particular concern for sports ethicists is how the genetically produced (and reduced) human will be treated when GM is used or when organisations are provided information about the genetic heritage of any individual. Soon after the announced completion of mapping the Human Genome (June, 2000), these concerns surfaced in the United Kingdom during year 2000 in respect of how genetic information would be used (and potentially exploited) by life insurance companies.<sup>44</sup> In the broad discourse of medical ethics, it has become apparent that a conventional rights foundation does not suitably protect the new kinds of human that can emerge as a result of genetic modification.

If an athlete seeks to use GM techniques that are not ethically acceptable from a legal perspective or from a sporting perspective, then recording and using genetic information to detect any alteration would be a useful basis of combating such unethical behaviour. However, the question is whether it is justifiable to include such strategies within an anti-doping strategy or whether a different approach is warranted.

Thus, the initial question is whether athletes have the right to protection of their genetic information in sport. If sport can be conceived as an agreement between various parties, then it might also be implied that the athlete waives such rights by virtue of participating. However, if such information remains private, then it would seem that governing bodies have no basis upon which to react to engineered athletes within competition. The implications of this are problematic for sports, since not being able to distinguish between the genetically modified from the non-modified would result in competition between the two, which would not seem fair for the non-modified. Yet, it remains unclear whether it is appropriate for governing bodies to be afforded such information.

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<sup>43</sup> Ryan A. 'Eugenics and Genetic Manipulation' in J. Burley, ed *The Genetic Revolution and Human Rights*. (Oxford: Oxford University Press 1999), pp. 125-132.

<sup>44</sup> Henderson M, 'Insurers to check for genetic illness' in *The Times*, London, 2000, 17.



Some points of departure can be found in employment rights cases where Hendriks<sup>45</sup> argues that “the unrestricted use of genetic information poses a number of threats to the exercise and enjoyment of human rights” (p.557). The likelihood for employers to use genetic information as a tool to reduce economic risk and to select prospective employees who are, genetically, deemed less of a risk, invites discrimination that is in conflict with the rights of the disadvantaged individual.<sup>46</sup> While there are many reasons why this might be so, it is not least because the suggestion presumes that genetic predispositions alone can accurately determine one’s susceptibility to illness, which lacks scientific credibility. Yet, immersed in such ignorance, the impetus for parents to ensure that their children are not genetically disadvantaged might, provoke them to utilise genetic manipulation for fear of disadvantaging their child later in life.

To understand how this might become manifest within sport, one can draw parallels with the privacy of the athlete and the desire to ensure athletes are not using doping methods. Thus, for the sake of equitable competition,<sup>47</sup> it is important that athletes disclose the specifics of their genotype in a comparable manner to how athletes must make themselves open to testing for doping methods.<sup>48</sup> However, in so doing, it must be recognised that given the public domain within which competitive sport is placed and the necessary reaction of governing bodies to such information, the athlete’s genotype would most likely become public knowledge and thus might impact upon the individual’s rights outside of sports competition. For example, one might consider the recent interest into how genetic information might affect possibilities for attaining life insurance. If an individual’s genetic information is made public and knowledge of predisposition for disease is part of this information, then insurance companies will be reluctant to insure that individual for a low premium. Consequently, the genetic information will have resulted in that individual being prejudiced as a result of her/his genotype.

Alternatively, if the individual is aware of their genetic constitution, then there is potential for that individual to take advantage of insurance companies.<sup>49</sup> Similarly, if the specifics of an athlete’s genotype are made public knowledge, then the athlete might find issues arising outside the context of sport that have an impact upon her/his rights and freedoms. Such circumstances might be avoided by providing governing bodies with only information that is relevant to competition – any genetic information that might identify the athlete as having been enhanced. Such information could be made public without having any detrimental impact upon the individual’s

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<sup>45</sup> Hendriks A, 'Genetics, Human Rights and Employment: American and European perspectives' [1997] *Medicine and Law* 16, 557-565.

<sup>46</sup> UNESCO *op cit* n 30.

<sup>47</sup> Ledley FD, 'Distinguishing genetics and eugenics on the basis of fairness' [1994] *Journal of Medical Ethics* 20, 157-164.

<sup>48</sup> Rose A, 'Mandatory Drug Testing of College Athletes: Are Athletes Being Denied their Constitutional Rights?' [1988] *Pepperdine Law Review* 16, 45-75.

<sup>49</sup> Sandberg P, 'Genetic Information and Life Insurance: A Proposal for Ethical European Policy' [1995] *Social Science Medicine* 40.11, 1549-1559.

ability to be treated fairly in the context of, for example, life insurance, since such information would favour the athlete. However, understanding the tenability of this solution requires further knowledge as yet unknown about the human genome and so we must remain cautious.

What seems clear is that the disclosing of genetic information to governing bodies must be done cautiously so as to ensure genetic discrimination does not take place. However, within sport the possibilities to ensure that discrimination does not take place are uniquely problematic. If governing bodies ignore genetically enhanced competitors, then there is potential for the unenhanced to suffer and, perhaps, for future generations to be coerced towards enhancement for fear that they will no longer be viable competitors in sport and beyond. This situation is already reflective of competitive sport and the difficulties arising from trying to apply international anti-doping policies. Undoubtedly, the 'clean' athlete is within a coercive environment, where the need to remain competitive almost demands that athletes must dope. Perhaps, then, there is some rationale for basing an approach to GM on relevant aspects of anti-doping strategies. Though equally, it is important to note the differences between genetics and drug enhancements to understand why, for example, genetics is more like drugs than any other kind of technology. Yet, such a perspective presumes that the two examples of performance enhancement are

If governing bodies are to react to such enhanced competitors, then there seems a need to disclose genetic information. Furthermore, upon receiving such knowledge, sports must then endeavour to preserve the integrity of equitable competition or else ban genetically engineered athletes from competition, which would also seem discriminatory. Such conclusions would yield a fundamental restructuring of sports competition, whereby the enhanced would compete separate from the unenhanced athletes. Indeed, such realities may demand a comparable re-evaluation of the appropriateness of enhancement in sport. It would seem problematic to legitimise competitive sport where athletes can be enhanced genetically, whilst banning the use substances that could have a similar effect (the argument to harm notwithstanding).

## Freedom to Compete

The final and, perhaps, most alarming legal issue that arises with the use of GM is the restrictions that might be placed on people as a consequence of the former inquiries. Depending upon what kinds of athlete are deemed to be legitimate in sport, the consequences will be the exclusion or inclusion of particular kinds of people. However, banning genetically modified humans from competitive sport raises important questions about the role of a private institution to prevent people from exercising their personal liberties. One might draw a parallel between a genetically modified community of athletes and athletes with disability. In a similar manner that one might consider it to be necessary that international sports federations strive to build the participation of special athletes, it could also be argued that the genetically modified deserve the chance to become athletes as well.

The freedom to compete in sport is, however, a rather weak right. Certainly, one might expect a right to play sport, though a right to become an elite athlete is perhaps more difficult to argue. Yet, the self-organization of genetically modified athletes can present a serious challenge to mainstream sport. If genetically modified people become athletes and, subsequently, their performances far exceed the capabilities of the non-modified athletes, then mainstream sport might find itself in a rather difficult position. It will not necessarily be possible to claim moral highground when the genetically modified athletes have not cheated. They did not engineer themselves, rather it was their parents' choice, and people can hardly be blamed or condemned on a moral level for the choices of their parents.

### **Conclusion: Towards a Policy on GM in Sport**

In order to develop a legal instrument on the matter of GM in sport, it is important to consider what theoretical perspectives can be useful. Without any coherent theoretical basis for such discussion, it would seem useful to draw upon policy within sport and bioethics. Despite the inadequacy of the initial claims of anti-doping policy – that doping is to be removed from sport – there are some merits that are worthy of attention, notably within recent developments. The ambitions for harmonization of an anti-doping policy are important, though seem also to omit the important consideration of what it is that is being harmonised. What seems to be missing from anti-doping campaigns is the philosophical and ethical ground work that is necessary to inform the anti-doping argument. This appeal for ethics to be valued by sports organisations does not aspire to some ideological aspiration for philosophers to be the gatekeepers to ethics. To consider that the ethicist must, suddenly be used as a moral expert is both unrealistic and, often, inaccurate. However, the claim asserts that anti-doping is fundamentally misconceived because it is overly generalistic. Arguably, there is not a sufficient definition of doping within sport that can yield a solution to the problem (which seems to be how to remove cheaters from sport). Indeed, Barrie Houlihan, one of the world's leading theorists on anti-doping policy, recognises that the absence of a clear definition leaves sports authorities reliant upon simple rule-violations as a basic rationale for developing anti-doping policy.<sup>50</sup> However, this cannot be, since it is the very justification of rules – particularly new rules and new doping methods – that is under question. In respect of GM, the primary question is whether the enhancement *should* be against the rules.

Currently, the Ethics and Education Committee of the World Anti-Doping Agency has been involved with discussing concerning the revision of the Anti-Doping Code, the basic instrument for discriminating between different kinds of substances. Thus, the definitional work that is suggested as needing to precede harmonisation (or, at least, to accompany it), is being addressed within anti-doping campaigns. A similar process must ensue in respect of GM in sport. However, it is also important that such discussions borrow from the format of deliberations

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<sup>50</sup> Houlihan B, *Dying to Win: Doping in Sport and the Development of Anti-Doping Policy* (Council of Europe Publishing, 1999).

about bioethics outside of sport. GM in sport is not solely a sports issue in a similar way that it can be argued that drug use in sport is not solely a sports issue. For the latter, it can be argued that the abuse of drugs is inextricable from the broader social concern about how drugs are used. Similarly, the use of GM in sport must be coherent with broader policy decisions in respect of genetics broader. Moreover, and perhaps more importantly, the format for the discussions about genetics must learn from how such discussions are taking place outside of sport. It is not sufficient for sports organisations to implement a working party that will exist for three or four years to formulate its policy. Issues and applications in genetics are not finite and, this thesis demonstrates, the issues cannot rely only on generalised medical principles about what is ethical or not in sport.

Currently, the problem facing world sports authorities is how to engage with the problem of genetics in sport. Is it treated as another form of doping? If so, then what kind of doping method – or, more broadly, performance enhancer – is genetics? Is it more like a lighter tennis racket or a drug? A problematising of these issues must ensue during these defining years, though it is foolhardy to assume that such discussions will reach conclusive ends or that they are necessary only for a specific amount of time. Rather, the responsibility should be taken to recognise that the process of policy formation is a continual re-negotiation of ideas and values. In the case of drug use in sport and other forms of doping, this point is only beginning to gain strength as the credibility of distinctions and theorising within anti-doping policies lacks clarity. Within the WADA, there is a move towards re-defining the problem and evaluating the moral and conceptual differences between different substances and methods of performance enhancement.

Such deliberation is a useful template with which policy in relation to GM can begin. Importantly, Morgan stresses the need for an open deliberative practice that does not assume that significant moral issues are to be solved solely – or predominantly – by moral experts. Rather, Morgan stresses the importance of self-determination within the sporting community, even if it is determination towards nihilism. The critical and important factor must be for the discussions to take place between different interested parties within sport and not just between policy makers.