



SEX, SPORT AND DOPING: CONFLICTS FOR BIOETHICAL ANALYSIS

SEXO, DEPORTE Y DOPAJE: CONFLICTOS PARA EL ANÁLISIS BIOÉTICO

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ABSTRACT:

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It seems beyond doubt that the practice of certain sports requires gender differentiation, given the sex-linked characteristics that determine different levels of performance and skills. Moreover, there is a consensus on condemning doping practices, such as attempts to artificially alter the physical performance of athletes through the use of certain substances, because they involve tampering with the physical or mental conditions of the persons involved, as well as practices that have health risks, with consequences that can become serious and irreversible. In the case of "trans" athletes, their genetics, physiology, and endocrine system, responsible for typically male testosterone levels, would provide an insurmountable barrier to their eligibility in female athletic competition. However, the case of athletes diagnosed with Disorders of Sex Development does not fit into any of the above scenarios. They are biologically women and competes in the female category. They have not taken any anabolic substances that may be considered doping. We propose a bioethical evaluation of these cases.

RESUMEN:

Palabras clave:

Trastorno del desarrollo sexual, transexualidad, deportes, dopaje, bioética.

Parece indudable que la práctica de determinados deportes requiere una diferenciación de género, dadas las características ligadas al sexo que determinan diferentes niveles de rendimiento y habilidades. Además, existe un consenso en la condena de las prácticas de dopaje, como los intentos de alterar artificialmente el rendimiento físico de los deportistas mediante el uso de determinadas sustancias, porque implican alterar las condiciones físicas o mentales de las personas implicadas, así como prácticas que suponen riesgos para la salud, con consecuencias que pueden volverse graves e irreversibles. En el caso de los atletas "trans", su genética, fisiología y sistema endocrino, responsables de los niveles de testosterona típicamente masculinos, proporcionarían una barrera infranqueable para su elegibilidad en la competencia atlética femenina. Sin embargo, el caso de los deportistas diagnosticados con trastornos del desarrollo sexual no encaja en ninguno de los escenarios anteriores. Son biológicamente mujeres y compiten en la categoría femenina. No han tomado ninguna sustancia anabólica que pueda considerarse dopaje. Proponemos una evaluación bioética de estos casos.

1. Background

Female athletes with some types of Disorders of Sex Development (DSD) who aspire to participate in the Olympic games are affected by the current regulations adopted on 26 April 2018 by the International Association of Athletics Federations (IAAF). The regulations entered into force on 1 November of the same year and changed the criteria on the eligibility of female athletes for competition according to their blood testosterone levels.

As well as the necessary recognition as belonging to the female or male sex, a limit of 5 nmol/L was established as the maximum plasma testosterone level in women during the six months prior to the competition in order to be admitted to middle-distance running events, which affected the aforementioned athletes. It should be clarified that normal levels of this hormone range from 0.12 to 1.79 nmol/L in most women, and from 7.7 to 29.4 nmol/L in men¹.

Some authors have disagreed with the criteria adopted by the IAAF, which applies the restrictions to certain athletic events and not to others, such as the 1500 m, claiming that there are biases in the studies on which they have based their position².

2. Female athletes with some types of disorder of sex development

Female athletes affected by some types of Disorders of Sexual Development (DSD)³— some of them probably of genetic origin —causes them to produce higher than normal testosterone levels (hyperandrogenism).

1 IAAF Athletics. [publicación en línea] «ELIGIBILITY REGULATIONS FOR THE FEMALE CLASSIFICATION (ATHLETES WITH DIFFERENCES OF SEX DEVELOPMENT)». 2021
<<https://www.iaaf.org/download/download?filename=c402eb5b-5e40-4075-8970-d66fccb10d41.pdf&urlslug=Explanatory%20Notes%3A%20IAAF%20Eligibility%20Regulations%20for%20the%20Female%20Classification>> [Consulta: 28/07/2021]

2 Franklin, S, Ospina Betancurt, J, Camporesi, S. «What statistical data of observational performance can tell us and what they cannot: the case of Dutee Chand v. AFI & IAAF». *British Journal of Sports Medicine*. 2018; 52: 420-421.

3 Witchel, SF. «Disorders of sex development». *Best Pract Res Clin Obstet Gynaecol*. 2018; 48: 90-102.

This means that, in this cases, their high hormone levels are not due to drug use, as happened with many other athletes suspended for taking testosterone in order to enhance their performance.

3. Testosterone

According to an article published in the British Medical Journal in 2017, female athletes with high free testosterone concentrations have a significant competitive advantage over females with low levels of this hormone in the 400 m, 400 m hurdles, 800 m, hammer throw and pole vault⁴.

Although, as we mentioned, other authors have questioned the validity of these data, the aforementioned paper has served as a basis for establishing the existing rules on the access of athletes with DSD to athletic competition based on their testosterone levels.

Experts consulted by the IAAF have compiled and reviewed all published evidence and data, which indicate that increasing circulating testosterone levels from the normal female to male range leads to increased muscle mass and strength and higher hemoglobin levels.

In particular, increasing testosterone levels in women from 0.9 nmol/L to only 7.3 nmol/L increases muscle mass by 4.4% and muscle strength by 12-26%, while if the increase is 5, 7, 10 and 19 nmol/L, the circulating hemoglobin increases by 6.5%, 7.8%, 8.9% and 11%, respectively. Experts estimate that the ergogenic advantage of having circulating testosterone levels in the normal male rather than female range is greater than 9%⁵.

4. Doping with anabolic steroids

The term “anabolic steroids” (ASs) refers to a set of compounds related to testosterone from the point of view of both structure and biological activity, although

4 Bermon, S, Garnier, P. «Serum androgen levels and their relation to performance in track and field: mass spectrometry results from 2127 observations in male and female elite athletes». *British Journal of Sports Medicine*. 2017; 51: 1309-1314.

5 Handelsman, DJ, Hirschberg, AL, Bermon, S. «Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance». *Endocr Rev*. 2018; 39(5): 803-829.

due to their associated function, they should be called anabolic androgenic steroids⁶.

As one study reports⁷, the first use of anabolic steroids (testosterone and derivatives) in sport occurred in the 1950s, pioneered by a Soviet weightlifting team⁸. Other sports disciplines requiring strength and/or resistance were incorporated into the fraudulent practice of doping in order to increase muscle mass, strength and power. An increase in the aggressiveness of athletes can also be achieved, which can be an advantage in certain sports. This and other psychological effects are heightened if there is a history of psychiatric illness and alcohol or another drug abuse^{9, 10}.

These types of doping substances were included in the list of substances banned by the IOC at the Montreal summer games in 1976. Ben Johnson's disqualification at the Seoul Olympics in 1988 is an example of doping with ASs, in this case with stanozolol. Other athletes have succumbed in their careers, yielding to the temptation of their use¹¹.

5. Transgender athletes

As we recently published¹², the controversy raised by the access of transgender athletes in women's competition (biological males who have transitioned to the female gender) complicates the issue even further.

The case of male to female transgender athletes, has raised the comparative grievance between women (fe-

male biological sex) and "trans women" (male biological sex) in athletics, sparking intense controversy both on the part of those who are reluctant to allow trans women to compete on equal terms with biological female athletes, and on the part of those who claim that it is discriminatory not to allow trans women to compete in elite sports alongside biological women¹³.

In the case of "trans" athletes, their genetics, physiology and endocrine system, responsible for typically male testosterone levels, would provide an insurmountable barrier to their eligibility if the aforementioned IAAF criteria were applied, unless they undergo other treatments aimed at reducing their testosterone levels to below the established 5 nmol/L. This would result in "reverse doping", that is, the administration of substances aimed at modifying the physiological levels of certain hormones, in this case to lower them.

6. Bioethical assessment

It seems beyond doubt that the practice of certain sports requires gender differentiation, given the sex-linked characteristics that determine different levels of performance and skills. Nevertheless, one paper proposes to abolish competition differentiated on the basis of biological sex, replacing the binary gender in elite sport (male and female competitions) with a different approach, based on an algorithm that would apply to all elite athletes (cis-gender and transgender); this would include a number of physiological factors (including, but not limited to, testosterone levels), as well as their gender identity. This instrument would also be proposed for female athletes who have instigated transition to the male gender¹⁴.

The just demands of every athlete to compete on equal terms makes it very difficult to implement measures such as the one mentioned.

13 Observatorio de Bioética. [Publicación en línea] ¿Deben competir las mujeres trans junto al resto de atletas femeninas? 2021. <<https://www.observatoriobioetica.org/2020/01/deben-competir-las-mujeres-trans-junto-al-resto-de-atletas-femeninas/32281>> [Consulta: 27/07/2021].

14 Knox, T, Anderson, L, Heather, A. «Transwomen in elite women's sport – clarifying the nuances of our approach». *Journal of Medical Ethics Blog*. 12/08/2019.

6 Wilson, JD. «Androgen Abuse by Athletes». *Endocrine Reviews*. 1988; 9(2): 181–199.

7 Laudo, C, Puigdevall, V, del Río, MJ, Velasco, A. «Hormonas utilizadas como agentes ergogénicos: situación actual del problema». *An. Sist. Sanit. Navar*. 2006; 29(2): 207-217.

8 Catlin, DH, Hatton, CK. «Use and abuse of anabolic and other drugs for athletic enhancement». *Adv Intern Med*. 1991; 36: 399-424.

9 Brower, KJ. «Anabolic steroid abuse and dependence». *Curr Psychiatry Rep*. 2002; 4: 377–387.

10 Pope, HG, Kouri, EM, Hudson, JI. «Effects of Supraphysiologic Doses of Testosterone on Mood and Aggression in Normal Men: A Randomized Controlled Trial». *Arch Gen Psychiatry*. 2000; 57(2): 133–140.

11 Laudo y cols., *op.cit*. 111.

12 Observatorio de Bioética. [Publicación en línea] Polémica en los juegos olímpicos de Tokio al competir una mujer transexual en la competición femenina. 2021. <<https://www.observatoriobioetica.org/2021/07/polemica-en-los-juegos-olimpicos-de-tokio-al-competir-una-mujer-transexual/36489>> [Consulta: 27/07/2021].

The significant observable differences between the male and female sex cannot be reduced to the evaluation of certain parameters, in order to replace the sexual identity of the athletes, which powerfully determines their physical and mental aptitudes, by a set of measurable conditions.

These are difficult to establish and agree upon and can introduce biases between individuals, overestimating some circumstances, such as certain hormonal levels, and underestimating others, such as psychic abilities related to motor coordination, emotional management or others that are very difficult to assess.

The male and female phenotypes are different enough to warrant gender separation in athletic competition. Attempting to maintain the opposite or replace these differences by evaluating a battery of measurable parameters in order to abolish differences by sex would only discriminate against athletes in many disciplines, in addition to encouraging doping procedures that seek to establish the levels of the parameters to be evaluated within the required ranges.

Moreover, there is a consensus on condemning doping practices, such as attempts to artificially alter the physical performance of athletes through the use of certain substances, because they involve tampering with the physical or mental conditions of the persons involved, as well as practices that have health risks, with consequences that can become serious and irreversible.

However, the cases of female athletes affected by some types of DSD we are discussing in this article does not fit into any of the above scenarios. They are biologically women and competes in the female category. They have not taken any anabolic substances that may be considered doping.

Their peculiarity is that their bodies physiologically produce more testosterone than normal in women, although this is likely a congenital endocrine disorder.

Should the general criterion of excess testosterone be applied in these cases as a limiting factor for sports in women? The IOC and IAAF think so. However, they are not doping; they simply train like the other athletes, and

yes, they do profess a physiological advantage provided by their DSD, which can cause excess testosterone production, which gives their certain characteristics due to the higher testosterone levels mentioned above. But these characteristics give their advantages that can be compared to those of a basketball player measuring 2.25 m or to an Ethiopian runner who, because of his genetics, has exceptional anatomy and physiology for long-distance running, or to the jockey who, because of their short stature and low weight, can compete in horse racing with certain advantages. Other peculiarities such as hyperactivity can be an asset in certain competitions or outside them, as happens in people with an exceptional singing voice or musical ear, or people with Asperger's syndrome who show extraordinary mathematical abilities.

It is very problematic to limit the access of certain people to certain activities only because of their particular conditions if they give them advantages. Advantages acquired fraudulently, as in the case of doping, or artificially as in the case of trans athletes, can constitute a comparative grievance for the rest. However, this is not the case for athletes affected by some types of DSD such as hyperandrogenism, who are limited to compete as they have always done, being nothing more than themselves, with no supplements or deception.

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