

REFORMAT FOR MARGINS ETC

SEMENYA v INT'L ASS'N OF ATHLETICS FED'NS (IAAF)

CAS 2018/0/5794

ATHLETICS SOUTH AFRICA v IAAF

CAS 2018/0/5798

ARBITRAL AWARD Delivered by the **COURT OF ARBITRATION FOR SPORT**

Panel: The Hon. Dr. Annabelle Bennett AO SC (Retired Judge, Sydney, Australia), The Hon. Hugh L. Fraser (Judge, Ottawa, Ontario, Canada), Dr. Hans Nater (Attorney-at-Law, Zurich, Switzerland)

This dispute arises under the Constitution of the International Association of Athletics Federations (the "IAAF"), in force as from 1 November 2017, following the IAAF's decision to enact the Eligibility Regulations for the Female Classification (Athletes with Differences of Sex Development) (the "DSD Regulations").

Ms. Mokgadi Caster Semenya ("Ms. Semenya" or the "Athlete") and Athletics South Africa ("ASA") (collectively, the "Claimants") assert *inter alia* that the DSD Regulations unfairly discriminate against athletes on the basis of sex and/or gender because they only apply (i) to female athletes; and (ii) to female athletes having certain physiological traits. They contend that the DSD Regulations lack a sound scientific basis; are unnecessary to ensure fair competition within the female classification; and are likely to cause grave, unjustified and irreparable harm to affected female athletes. Accordingly, the Claimants seek a judgment from the CAS declaring the DSD Regulations unlawful and preventing them from being brought into force on the basis that they are unfairly discriminatory, arbitrary and disproportionate and therefore violate the IAAF Constitution, the Olympic Charter, the laws of Monaco, the laws of jurisdictions in which international athletics competitions are held, as well as universally recognised fundamental human rights.

...

The IAAF is the international governing body of the sport of athletics, recognised as such by the International Olympic Committee. It has its seat and headquarters in Monaco. The IAAF recognises ASA as its member federation for South Africa.

FACTUAL BACKGROUND

[In a prior decision, (CAS 2014/A/3759 *Dutee Chand v AFI & IAAF*), CAS suspended IAAF's original Hyperandrogenism Regulation. After further proceedings, IAAF withdrew the regulation and approved the new DSD regulations at issue here.]

... In summary, the DSD Regulations establish new mandatory requirements governing the eligibility of women with certain differences of sex development ("DSD") and levels of endogenous testosterone above 5 nmol/L to participate in the female classification in eight events (the "Restricted Events") at international athletics competitions ("International Competitions"). Athletes who fall within the ambit of the Regulations are defined as "Relevant Athletes". The Restricted Events include 400m, 800m and 1500m races events in which Ms. Semenya regularly participates at International Competitions. ...

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APPLICABLE LAW

Article R45 of the Code provides as follows:

The Panel shall decide the dispute according to the rules of law chosen by the parties or, in the absence of such a choice, according to Swiss law. The parties may authorize the Panel to decide ex aequo et bona.

In both their oral and written submissions, the parties have expressly referenced to and relied upon the Olympic Charter, the IAAF Constitution, as well as the IAAF Rules and Regulations, including the DSD Regulations. In subsidiary arguments, the parties also mutually rely upon the law of Monaco (and, on various points, ASA relies on various National laws of Korea and Russia).

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Accordingly, in deciding this dispute and unless otherwise specifically mentioned, the Panel finds no reason to deviate from the law agreed upon by the parties and will apply the IAAF's Constitution and Rules in conjunction with the Olympic Charter and in subsidiary, where necessary, Monegasque law.

THE DSD REGULATIONS

...

Regulation 1.1 of the DSD Regulations ("*Introduction*") explains that: *These Regulations reflect the following imperatives:*

(a) To ensure fair and meaningful competition in the sport of athletics, competition has to be organised within categories that create a level playing field and ensure that success is determined by talent, dedication, hard work, and the other values and characteristics that the sport embodies and celebrates. In particular:

(i) The IAAF wants athletes to be incentivised to make the huge commitment and sacrifice required to excel in the sport, and so to inspire new generations to join the sport and aspire to the same excellence. It does not want to risk discouraging those aspirations by having unfair competition conditions that deny athletes a fair opportunity to succeed.

(ii) Because of the significant advantages in size, strength and power enjoyed (on average) by men over women from puberty onwards, due in large part to men's much higher levels of circulating testosterone, and the impact that such advantages can have on sporting performance, it is generally accepted that competition between male and female athletes would not be fair and meaningful, and would risk discouraging women from participation in the sport. Therefore, in addition to separate competition categories based on age, the IAAF has also created separate competition categories for male and female athletes.

(b) The IAAF also recognises, however, that:

(i) Biological sex is an umbrella term that includes distinct aspects of chromosomal, gonadal, hormonal and phenotypic sex, each of which is fixed and all of which are usually aligned into the conventional male and female binary.

(ii) However, some individuals have congenital conditions that cause atypical development of their chromosomal, gonadal, and/or anatomic sex (known as differences of sex development, or DSDs, and sometimes referred to as 'intersex').

(iii) As a result, some national legal systems now recognise legal sexes other than simply male and female (for example, 'intersex', 'X', or 'other').

(c) The IAAF respects the dignity of all individuals, including individuals with DSDs. It also wishes the sport of athletics to be as inclusive as possible, and to encourage and provide a clear path to participation in the sport for all. The IAAF therefore seeks to place conditions on such participation only to the extent necessary to ensure fair and meaningful competition. As a result, the IAAF has issued these Regulations, to facilitate the participation in the sport of athletes with DSDs.

(d) There is a broad medical and scientific consensus, supported by peer-reviewed data and evidence from the field, that the high levels of endogenous testosterone circulating in athletes with certain DSDs can significantly enhance their sporting performance. These Regulations accordingly permit such athletes to compete in the female classification in the events that currently appear to be most clearly affected only if they meet the Eligibility Conditions defined below.

(e) These Regulations exist solely to ensure fair and meaningful competition within the female classification, for the benefit of the broad class of female athletes. In no way are they

intended as any kind of judgement on or questioning of the sex or the gender identity of any athlete. To the contrary, the IAAF regards it as essential to respect and preserve the dignity and privacy of athletes with DSDs, and therefore all cases arising under these Regulations must be handled and resolved in a fair, consistent and confidential manner, recognising the sensitive nature of such matters. Any breach of confidentiality, improper discrimination, and/or stigmatisation on grounds of sex or gender identity will amount to a serious breach of the IAAF Integrity Code of Conduct and will result in appropriate disciplinary action against the offending party.

Regulation 1.2 provides that the DSD Regulations "operate globally" and therefore "are to be interpreted and applied not by reference to national or local laws, but rather as an independent and autonomous text, and in a manner that protects and advances the imperatives identified above".

...

Regulation 2 is headed "*Special Eligibility Requirements for Restricted Events at International Competitions*". Regulation 2.1 explains that the special rules set out in the DSD Regulations apply only to participation by a Relevant Athlete in the female classification in a Restricted Event at an International Competition. They do not apply to any other athletes, or to any other events, or to any other competitions (although/ a Relevant Athlete does not meet the Eligibility Conditions then she will not be eligible to set a World Record in a Restricted Event at a competition that is not an International Competition).

Regulation 2.2(a) defines a "Relevant Athlete" as [one who has DSD and high testosterone levels].

Regulation 2.2(b) defines "Restricted Events" as ... 400m races, 400m hurdles races, 800m races, 1500m races, one mile races, and all other Track Events over distances between 400m and one mile (inclusive), whether run alone or as part of a relay event or a Combined Event.

Regulation 2.3 specifies [that Relevant Athletes] must: *To be eligible to compete in the female classification in a Restricted Event at an International Competition, or to set a World Record in a competition that is not an International Competition, a Relevant Athlete must meet each of the following conditions (the Eligibility Conditions):*

- (a) she must be recognised at law either as female or as intersex (or equivalent);*
- (b) she must reduce her blood testosterone level to below five (5) nmol/L for a continuous period of at least six months (e.g., by use of hormonal contraceptives); and*
- (c) thereafter she must maintain her blood testosterone level below five (5) nmol/L continuously (i.e., whether she is in competition or out of competition) for so long as she wishes to maintain eligibility to compete in the female classification in Restricted Events at International Competitions (or to set a World Record in a Restricted Event at a competition that is not an International Competition).*

[Regulation 2.6 emphasizes that a Relevant Athlete who does not meet eligibility conditions remains eligible to compete in female classifications in all competitions other than international competitions.]

...

Regulation 3.5 states that cases will be investigated/assessed as quickly as reasonably practicable and that an athlete who is under investigation/assessment must cooperate in good faith including by "*providing blood and/or urine samples upon request for analysis, and if needed, by submitting to medical physical examination*".

...

Regulation 3.18 provides that an athlete who wishes to participate ... must agree to comply fully with the DSD Regulations and to cooperate promptly and in good faith with the IAAF Medical Manager and Expert Panel including by: (i) *providing them with all of the information and evidence they request to determine whether she is a Relevant Athlete and (if so) to assess her*

compliance and to monitor her continuing compliance with the Eligibility Conditions, including (without limitation) submitting to testing in accordance with these Regulations; (ii) ensuring that all information and evidence provided is accurate and complete, and that nothing relevant is withheld; (iii) providing appropriate consents and waivers (in a form satisfactory to the IAAF Medical Manager) to enable her physician(s) to disclose to the IAAF Medical Examiner and the Expert Panel any information that the Expert Panel deems necessary to its assessment.

In addition, under Regulation 3.18(d) such an athlete is also required to follow the dispute resolution procedures set out in Regulation 4 (see below) and must "*not...bring any proceedings in any court or other forum that are inconsistent*" with that provision.

...

Regulation 4 concerns confidentiality. It provides that all cases, results of investigations and assessments conducted under the DSD Regulations will be dealt with in strict confidence at all times ...

Regulation 5 contains provisions concerning dispute resolution. Regulation 5.2 provides that any dispute in connection with the DSD Regulations arising between the IAAF and an affected athlete (and/or her member federation) shall be subject to the exclusive jurisdiction of the CAS. ...

MERITS

A. Introduction

Ms. Semenya is a woman. At birth, it was determined that she was female, so she was born a woman. She has been raised as a woman. She has lived as a woman. She has run as a woman. She is - and always has been - recognised in law as a woman and has always identified as a woman.

As an athlete, she says that she was born to run. She has undoubtedly had outstanding success in her career as an elite middle-distance runner, winning multiple Olympic, World, Commonwealth and regional championship titles. She is, today, a strong and dignified woman and one of the most famous and accomplished female athletes in the history of the sport.

The IAAF is entrusted with enacting regulations to facilitate and ensure the fair and principled administration of the sport of athletics for the benefit of all athletes. To this end, the IAAF has for some years, if not decades, struggled to deal with a problem that the IAAF believes must be solved. While children manifest similar athletic ability pre- puberty, this changes significantly post-puberty. Later in this Award, some of those changes are discussed but, at this point, suffice to say that post-puberty, generally speaking, male athletes outperform female athletes and, at elite level, this difference is insurmountable. Accordingly, in order to enable women to compete at elite level, with all of the benefits that result from such competitions and success in such competitions, it has been considered necessary to provide for what the IAAF calls "*a protected class*" of female athletes. Without the protection of restricted entry to that class, the IAAF says, women athletes would be at risk of being denied the right to compete and succeed at the highest levels. It would follow that women athletes would cease to compete in events where that protection is not available. Accordingly, the "protected class" must exist, and some workable and effective condition(s) must be established to regulate who may, and may not, participate within it.

The answer, at first, seems to be logical and straightforward: restrict entry to that "protected class" to female athletes and deny entry to male athletes, who have their own category in which to compete. In short, require like to compete against like. However, that straightforward answer assumes that sex is binary for all purposes, which it is not. It is not so simple. While elite competitive athletics has been divided into discrete binary categories of male and female, a neat and discrete boundary between male and female does not exist in nature. The male/female categorisation at the heart of competitive athletics thus does not map perfectly onto the diverse spectrum of sex characteristics that exists in natural human biology.

In recent years, a further complicating factor has begun to emerge. Laws governing the assignment of legal sex have begun to evolve in a number of jurisdictions around the world. In some jurisdictions legal sex is no longer exclusively confined to the statuses of "male" and "female". Other legal sex statuses - such as "intersex" - are now recognised in some countries. Moreover, in some jurisdictions, an individual born as one sex may change their legal sex in certain circumstances. The circumstances where this is possible vary across those jurisdictions that permit such changes to occur. The present case is not concerned with athletes who change their legal sex. Separate regulations cater specifically for such cases. The IAAF nonetheless points in this case to the growing divergence in the national rules governing legal sex as a further factor that means that the right to participate in the female class cannot simply depend on whether an athlete is recognised in national law as female.

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This case therefore involves a collision of scientific, ethical and legal conundrums. It also involves incompatible, competing, rights. It is not possible to give effect to, or endorse, one set of rights without restricting the other set of rights. Put simply, on one hand is the right of every athlete to compete in sport, to have their legal sex and gender identity respected, and to be free from any form of discrimination. On the other hand, is the right of female athletes, who are relevantly biologically disadvantaged vis-a-vis male athletes, to be able to compete against other female athletes and not against male athletes and to achieve the benefits of athletic success, such as positions on the podium and consequential commercial advantages. This right of competition is often described (although not so easily defined) as the right to compete on a "level playing field".

In the present case it is not in dispute that it is necessary to have a "protected class" of female athletes. It is common ground that competitive athletics is (and should be) divided into separate male and female categories. No party has suggested that male athletes should generally be permitted to compete at international elite levels against female athletes (although the DSD Regulations would permit women XY 5-ARD athletes who do not wish to lower their testosterone levels to compete in the male category). However, the issue of how to regulate the right to participate in the "protected class" is complex. In strictly biological terms, not all individuals' bodies fit neatly and unambiguously into a single binary male/female classification. Complex questions of biology therefore arise, necessitating consideration of issues of genetics, endocrinology and gynaecology.

It is common ground that any rules regulating who may participate in the female category must be rational, objective and fair. The IAAF insists that it does not challenge or call into question the sex or gender of Ms. Semenya or DSD athletes in general. Rather, in a consideration of eligibility to compete in certain events as a female, it refers to what it terms the "sports sex" of women athletes, invoking the existence of certain DSD and the level of endogenous testosterone to introduce a further qualification or eligibility requirement for entry into certain events in the female category. It asserts that the DSD Regulations represent a progressive and fair compromise between the right of female athletes to have a separate category of competition from the men so that they have the same chances to excel, on the one hand, and the desire of "*certain biologically male athletes with female gender identities to compete in the female category of competition*" on the other. Ms. Semenya and ASA strenuously reject the characterisation of the DSD Regulations as fair and progressive. They also strongly object to the IAAF's invocation of the concept of "*biologically male athletes*", which they regard as offensive and tantamount to questioning [...] sex [...].

In considering the issues in this case, it is important to bear in mind that the labels "male" and "female" may mean different things in different contexts. For example, these words may refer to a person's legal sex (i.e. their sex in the eyes of the law), their subjective gender identity (i.e. how they identify themselves) or some specific aspect of their individual physiology (for example their gonadic characteristics or their hormonal profile). The different meanings that attach to the same words in different contexts explain, in part, why rules governing eligibility to participate and compete in the female category generate such controversy and strength of feeling. A rule that seeks to define "maleness" or "femaleness" for one purpose can easily be perceived (rightly or wrongly) as an attempt to define - or to challenge - a person's "maleness" or "femaleness" for other purposes or in other contexts.

As a result of this, it will be necessary in this Award to refer to matters, or use language, that some people may find insensitive or inappropriate. It is simply not possible to explain the arguments and evidence advanced by the parties without drawing on the distinctions and language so advanced. It is, therefore, important to stress that nothing in this Award is intended to question, determine or pass judgment upon any aspect of any person's sex or gender. Instead, this Award is solely concerned with deciding the specific legal issues that arise for determination of the lawfulness of the DSD Regulations as challenged by Ms. Semenya and ASA.

...

The Panel also wishes to place on record its gratitude for the assistance provided by the various witnesses who testified in this proceeding. The arguments in this case span issues of great breadth and complexity. In seeking to comprehend and determine those issues, the Panel has derived significant assistance from the detailed written and oral evidence provided by an array of esteemed experts and other witnesses with relevant personal experience of these matters. Much of the expert evidence was discussed concurrently in a series of "hot tubs". The Panel expresses its gratitude to the expert witnesses for their conduct in this process and the helpful attempts made to explain where they had reached consensus and where and why they differed.

Most importantly, the Panel wishes to acknowledge the dignity displayed by Ms. Semenya throughout this proceeding. While the parties presented their evidence and submissions with due sensitivity, the Panel is conscious that the written and oral phases of the proceeding involved extensive and sensitive scrutiny of Ms. Semenya's personal health and physiology. The Panel pays tribute to Ms. Semenya's grace and fortitude throughout this difficult process and expresses its gratitude for her dignified personal participation and the exemplary manner in which she has conducted herself throughout the proceeding.

The Panel also wishes to stress that while much of the argument in this proceeding has centred around the "fairness" of permitting [...] women with [...] DSD conditions) to compete against other female athletes, there can be no suggestion that [...] female athletes with 46 XY DSD have done anything wrong. This is not a case about cheating or wrongdoing of any sort. Ms. Semenya is not accused of breaching any rule. Her participation and success in elite female athletics is entirely beyond reproach. She has done nothing to warrant any personal criticism and nothing in this Award should be taken to suggest otherwise.

...

B. The *Chand* decision

98. The CAS previously considered some of the issues relevant to this procedure in CAS 2014/A/3759 *Chand v IAAF*. The parties have used some of the discussion in *Chand* as a starting point for the present case. This Panel will not revisit the analysis in *Chand* but will, as did the parties, assume that some of the findings in that case are apposite to this one. Nevertheless, there has been a large amount of expert evidence presented to this Panel that was not available in *Chand* and the Panel looks exclusively to the evidence presented in this case to make its determination regarding the validity of the DSD Regulations.

Given the parties' extensive references to *Chand* during their written and oral submissions, the present Panel considers it important to stress that the findings and decision in *Chand* are in no way binding on this Panel. ...

...

Nevertheless, since the parties used aspects of *Chand* as a framework for their submissions before this Panel, it is appropriate to highlight some of the features of the reasoning that the parties cited and relied upon. The matters in *Chand* that the parties drew to the Panel's attention include:

- Separate male and female categories in athletics are appropriate and justifiable in the interests of fair competition.

- There should be an objective criterion or criteria to regulate the divide between the male and female categories.

...

- Lean body mass, which is the result of the increased level of testosterone which begins in males at puberty, is of "key importance" in respect of the 10-12% difference in performance as between elite male and female athletes.
- In order to justify the existence of regulations restricting the right of hyperandrogenic female athletes to compete in the female category, it is necessary to demonstrate that such individuals enjoy a significant performance advantage by virtue of their enhanced testosterone levels over their non-hyperandrogenic female peers, which makes it necessary to exclude them from competing in the female category because otherwise the very basis for having a female category would be subverted and a level playing field would be prevented.
- In this regard, it is necessary to demonstrate that the performance advantage was of comparable significance, if not identical magnitude, to that enjoyed by male athletes over female athletes, and that there is a causal relationship between that performance advantage and levels of endogenous testosterone which are the subject of the regulations.

C. The factual and scientific issues in this case

...

In respect of the role of testosterone in athletic performance, the following points of agreement emerged during the relevant hot tub (in which Prof. Holt, Prof. Hackney, Prof. Handelsman, Prof. Baggish and Prof. Tucker participated):

- Differences in testosterone levels are the primary, but not the exclusive, cause of the recorded gap in performance between males and females.
- The main physical attributes that contribute to elite athletic performance include power generation, aerobic power, body composition, fuel utilisation and economy of motion. They also include neuromuscular function, tendon function and innate immunity.
- 46 XY individuals generally have greater lean body mass, larger hearts, higher cardiac output, larger haemoglobin mass and larger VO₂ max than 46 XX individuals. The single biggest reason for the sex differences in these physical attributes is exposure in 46 XY individuals with functional androgen receptors to much higher levels of testosterone during growth and development (puberty) and throughout the athletic career.

The experts did not reach agreement, however, regarding:

- the magnitude of the performance advantage that is derived by having endogenous testosterone in the normal male range of 7.7 to 29 nmol/L;
- the strength of the correlation between levels of endogenous testosterone and lean body mass in adult males;
- whether the fact that 46 XY DSD athletes are overrepresented only in some track events constitutes a paradox that suggests the IAAF's hypothesis concerning the relationship between high endogenous testosterone and athletic performance is incorrect; and
- whether differences in exposure to growth hormone may account for some of the differences in athletic performance between men and women.

...

In respect of the impact of a DSD such as 5-ARD on sport performance, the relevant experts (Prof. Hackney, Prof. Holt, Prof. Tucker, Prof. Williams, Dr. Villain, Prof. Auchus, Prof. Handelsman, Prof. Hirschberg and Prof. Baggish) agreed that:

- All individuals with 5-ARD have serum testosterone levels in the normal male range. The proportion of that testosterone that is biologically active (i.e. free testosterone) is also on average the same as the proportion of biologically active free testosterone in normal healthy adult males.
- Individuals with 5-ARD would on average have a lower level of DHT [a derivative of the male hormone testosterone] than normal healthy adult males.

- Individuals with 5-ARD have a performance advantage over 46 XX female athletes.
- Individuals with 5-ARD have on average greater muscle mass and haemoglobin than 46 XX female athletes.
- At present there are no hard and fast data that enable the effect of DHT on muscle mass to be quantified.
- On average men have higher levels of haemoglobin than women. Higher levels of testosterone result in higher levels of haemoglobin.
- Individuals with CAIS [complete androgen insensitivity syndrome] have a mutation in the androgen receptor gene which does not respond at all to androgens. Such individuals are phenotypically female in all respects other than with respect to their internal organs.
- CAH [congenital adrenal hyperplasia] may occur in XY and XX individuals. However men with CAH tend to have the same level of testosterone as normal healthy adult males. In theory, it might be possible for an XX individual with CAH to have testosterone above 5 nmol/L while also having enough cortisol to enable them to compete without undergoing testosterone-reducing cortisol treatment.

However, those experts did not agree:

- whether individuals with 5-ARD are different to normal males in any way that impacts on sports performance (in particular, whether individuals with 5-ARD would have the same body composition and muscle mass as normal healthy adult males);
- whether pharmacological studies concerning the use of 5 alpha-reductase inhibitors by males without 5-ARD enable a reliable conclusion to be drawn that individuals with 5-ARD have the same/comparable muscle mass as those males;
- whether individuals with 5-ARD have the same/comparable levels of haemoglobin as normal healthy adult males;
- whether individuals with 5-ARD have the same/comparable V02 max [breathing capacity] as normal healthy adult males; and
- whether the differences in haemoglobin levels between males and females are solely due to differences in testosterone levels.

...

D. What is the role of testosterone in male/female sporting ability?

The role of testosterone in determining sporting ability was a major focus of each party's submissions and evidence. A fundamental feature of the Claimants' case is that there is no single determinant in defining sex as male or female and no single determinant for sporting ability. In respect of the latter, the Claimants contend that natural genetic variation can provide many examples of enhanced athletic ability that has led to outstanding success for particular individual athletes or groups of athletes.

It is accepted by all parties that circulating testosterone has an effect from puberty, in increasing bone and muscle size and strength and the levels of haemoglobin in the blood. ...

...

Testosterone may not be the only factor that results in an increase in lean body mass, higher levels of haemoglobin and increased sporting ability, but the expert evidence explains that it is the primary factor. The IAAF cited the view, endorsed by some 42 leading international experts in sports science and sports medicine, that [the main physical attributes that contribute to elite athletic performance are power generation, aerobic power, body composition, fuel utilization, and economy of motion. These experts also conclude that] biological males and biological females are materially different with respect to these attributes ... The primary reason for these sex differences in the physical attributes that contribute to elite (> 99th percentile) athletic performance is exposure in gonadal males with functional androgen receptors to much higher levels of testosterone during growth and development (puberty), and throughout the athletic career. No other endogenous physical or physiological factors have been identified as contributing substantially and predominantly to these differences. As a policy matter, the exogenous factors that influence elite athletic performance -- nutrition, training, sports psychology, environmental manipulation, sports

medicine techniques, etc. -- should be equally accessible to biological male and biological female athletes.

...

Having considered all of the scientific evidence adduced by the parties, the Panel accepts this conclusion.

E. What is the role of DHT in male/female sporting ability?

This question arose in the context of the scientific evidence concerning the effects of 5-ARD. Individuals with 5-ARD have the same levels of testosterone as normal adult males. They do not, however, have the same levels of DHT. The question, therefore, is what role (if any) DHT has on sporting ability and physical performance. As noted above, while there was a degree of agreement among the experts regarding certain DHT-related issues, they could not reach agreement concerning whether levels of endogenous DHT affect physical performance (and, if they do, what the magnitude of that effect may be).

The Panel has carefully considered the evidence adduced by the parties' experts on this point, which only came into focus at a relatively late stage in the proceedings. On the basis of that evidence, the Panel is unable to exclude the possibility that DHT may have some effect on physical performance and sporting ability. The Panel is satisfied, however, that such an effect (if it exists at all) is at most modest compared to the effect of testosterone. In reaching this conclusion, the Panel considers that while DHT is included in the WADA Prohibited List, the weight that can be attached to this factor is small in light of paucity of examples of exogenous DHT actually being used for performance enhancing purposes.

...

F. What are the main characteristics of an athlete with a 46 XY DSD (in particular 5-ARD)?

[...] all 46 XY DSD such as 5-ARD are forms of genetic mutation that can affect testosterone levels. Individuals with 5-ARD have what is commonly identified as the male chromosomal sex (XY and not XX), male gonads (testes not ovaries) and levels of circulating testosterone in the male range (7.7-29.4 nmol/L), which are significantly higher than the female range (0.06-1.68 nmol/L).

In individuals with 5-ARD, the deficiency in 5-alpha reductase affects the conversion of the male foetus's testosterone into DHT, with the result that the external genital tissues do not develop normally. At birth, depending on physical examination of external genitalia and often in consultation with the parents and other experts, such a person may be assigned the female sex or the male sex. While the enzyme deficiency affects the development of male gonads in utero, following the onset of puberty circulating testosterone has the same virilising effect on the body of an individual with 5-ARD as it does on males without 5-ARD. The testes produce normal male levels of testosterone. According to the IAAF's expert evidence, a reported 58-63% of 5-ARD persons who were assigned the female sex at birth change to the male sex when these secondary sex characteristics develop at puberty.

...

It is not disputed that a person, whether a man or a woman, with 5-ARD is a person who is XY, with testes and not ovaries and levels of endogenous circulating testosterone in the male range. What is in dispute is whether these differences, and particularly testosterone levels, do in fact affect body composition, muscle mass and haemoglobin levels to the same or similar extent as in the male adult population and whether such differences have an impact on sports performance. The Panel addresses these disputed issues further below.

G. Can it be said, as advanced by the IAAF, that a woman can have a "male sports sex"?

...

As explained above, the sport of athletics is divided in a binary fashion: male and female. The

existence and legitimacy of that division is not challenged. The IAAF emphasises, however, that the division cannot be a matter of legal sex and/or gender identity alone. This current area of dispute is, says the IAAF, one of perhaps only two situations where using legal sex as a proxy for the simple male-female binary does not work. The other situation concerns transgender athletes. In such cases, the IAAF submits that "*biology has to trump identity*" - just as it does in medicine where anatomical reality drives treatment, such as treatment of testes or ovaries for testicular or ovarian cancer. ...

The IAAF contends that, for sporting purposes, individuals with 5-ARD are biologically indistinguishable from males without a DSD and have been shown to dominate in sport over "biological females" who, the IAAF asserts, have no chance to win when competing against such "biologically male" athletes. This is because, it says, from a biological perspective 5-ARD athletes are the same in every material respect to male athletes without DSD. They have the same biological and physiological features that confer the same ergogenic effect. The only material physical difference is the size and shape of external genitalia which, the IAAF emphasises, has no impact on sport performance.

The IAAF submits that it is a matter of unfairness to "biological females" - using that term to encompass XX women born with female gonads and low levels of circulating testosterone from puberty- to require them to compete against "biological males" with a female legal sex and gender identity. The IAAF does not deny the right of "biological males" with a female legal sex/female gender identity to compete in the female category but, it says, such an athlete must do the minimum necessary to ensure that their participation does not defeat the purpose of the category. If there is to be a female category the purpose of which is to protect "biological females" against unfair competition, then the IAAF submits that eligibility to compete in that category must be based on the relevant differences between "biological males" and "biological females".

...

The Claimants strongly reject the IAAF's characterisation of women with 5-ARD and other 46 XY DSD as "biological males". They submit that the expert evidence adduced by the IAAF in support of that characterisation is fundamentally flawed and is inconsistent with the mainstream scientific consensus that no single biological parameter transcends all others when it comes to defining whether a person is male or female.

[The Panel does not resolve this dispute.] Instead, the Panel considers it appropriate to focus on whether women with 46 XY DSD such as 5-ARD have an athletic advantage over other female athletes and, if so, whether the magnitude of that advantage is capable of subverting fair competition in certain athletic events.

H. Did the athletes whose data were the subject of BG17 provide informed consent for those data to be used by the IAAF for the purposes they are now relied on?

Before addressing the existence and magnitude of any such advantage, however, it is necessary to address an issue concerning the question of informed consent raised by ASA. ... ASA contends that, for the purposes of the law of Monaco, there was no informed consent on the part of the athletes for their biological material and data that are the subject of BG17* to be used for the purpose of such a study. ASA submits that this "*may have violated applicable national laws on biomedical research if proper informed consent was not obtained*". It submits that, as a consequence, the IAAF evidence and results, which it asserts were based on "*research*" as referred to in various statutes, in the absence of informed consent, should be rejected as inadmissible in this proceeding. ...

[The panel rejected this argument on the ground that ASA had failed to demonstrate that] the analysis undertaken in BG17 constitutes "*research*" or "*biomedical research*" for the purposes of any of the national laws invoked by ASA. Furthermore, even accepting *ex hypothesi* that the athletes did not

* This is a reference to a study by Profs Berman & Garnier published in Br J Sports Med 2017;0:1-7 that provided the scientific basis for many of the IAAF's conclusions.

provide specific consent to such further analysis, informed consent is a complex question of fact and law, which may differ between jurisdictions. ASA did not provide sufficient analysis or support of its submission to enable the Panel to rule that the evidence is inadmissible by virtue of any breach of applicable national or international laws. Accordingly, the Panel concludes that the IAAF's evidence based on its analysis of the Daegu and Moscow data is admissible in these proceedings.

I. Do women with a 46 XY DSD such as 5-ARD have an athletic advantage over other female athletes? If so, what is the magnitude of that advantage?

The role of evidence and scientific assessment to support regulatory decision-making is obviously of great importance. This has resulted in detailed focus on the evidence relied upon by the IAAF to support the DSD Regulations, in particular the evidence concerning the existence and extent of the alleged athletic advantage that female athletes with 46 XY DSD enjoy over other female athletes without such DSD. The evidence adduced by the IAAF in respect of this issue comes from a variety of sources. ...

Both Ms. Semenya and ASA strongly attack the evidence relied upon by the IAAF. They point to matters such as an asserted lack of transparency, bias, flawed processes and arbitrariness. They direct much of the attack to BG17, which they say is the only empirical evidence put forward by the IAAF concerning performance differences in elite female athletes based on endogenous testosterone. The Claimants assert that it is clear that BG17, although published in a peer-reviewed journal, contains significant errors and that it falls well short of a statistically valid assessment or a controlled clinical trial or of a basis for regulation. ...

...

As an observational study, BG17 cannot alone establish a causal relationship between testosterone levels and athletic performance. ...

The IAAF also places substantial reliance on the Handelsman Paper, published in *Endocrine Reviews*, which is a peer-reviewed journal. This paper contains a review of the available literature up to 2018. The authors concluded, in effect, that the available evidence supports the link between circulating testosterone of adults and the sex differences in sports performance in most sports, that is, that testosterone was a causative factor. The main physiological factors affected were muscle size and strength, bone size and strength, and haemoglobin, each of which, alone, were said to increase athletic ability.

[The Panel discusses specific criticism Semenya's counsel directed to these papers, and responded to some of them.]

While Prof. Handelsman holds and expresses his views strongly, the majority of the Panel considers that his evidence provides a cogent basis, on a review of the available literature and published studies, to support his conclusions regarding the effect of testosterone on athletic performance. He also provides a reasoned explanation to counter the criticisms of his conclusions raised by the Claimants' experts. In some cases, the potential confounding factors raised by the Claimants' experts are conceded as possibilities that may, in theory, have some effect, but not the quantitative effect sufficient to displace the conclusions Prof. Handelsman has reached, which incorporate many of such factors into the analysis or are otherwise factors that are available to both men and women and therefore do not explain the differences in performances between the sexes. The Panel considers that Prof. Handelsman's response to the evidence adduced by the Claimants' experts is credible and persuasive.

...

The Panel also notes the Claimants' submission that the degree of advantage enjoyed by 5-ARD athletes does not equate to that of the best elite male athletes. In this respect, the Panel considers the evidence supporting that submission, which cited the very large numbers of male athletes, not all at elite level, who beat the times of the best female athletes.

The Panel has carefully considered all of the scientific evidence adduced by the parties in these

proceedings. On the basis of that analysis, the majority of the Panel accepts that the preponderance of the evidence is that female athletes with 5-ARD and other 46 XY DSD have high levels of circulating testosterone in the male range and that this does result in a significantly enhanced sports performance ability, for example, by action in the body to increase muscle mass and size and levels of circulating haemoglobin.

The majority of the Panel further concludes that that enhanced performance ability translates in practice to a significant performance advantage in certain athletics events covered by the DSD Regulations. ...

In reaching this conclusion, the majority of the Panel highlights in particular the notable statistical over-representation of female athletes with 5-ARD [...]. In the majority of the Panel's view, those statistics provide compelling evidence that the physical characteristics associated with 5-ARD give female athletes with that condition a significant and frequently determinative performance advantage over other female athletes who do not have a 46 XY DSD. The contrast between the rare incidence of 5-ARD in the general population and the overwhelming success that women with 5-ARD have achieved [...] provides powerful evidential support for the conclusion that female athletes with 5-ARD have a significant performance advantage.

In reaching this conclusion, the majority of the Panel does not purport to quantify precisely the exact percentage of the performance advantage that elite female athletes with 46 XY DSD have over other female athletes. The Panel's task is to examine the evidence before it and to consider whether the totality of that evidence provides adequate support for the IAAF's claim that female athletes with a 46 XY DSD enjoy a significant performance advantage over other female athletes, which is of such magnitude as to be capable of subverting fair competition within the female category. Having examined and considered the totality of the evidence, the majority of the Panel concludes that the evidence supports that proposition. The Panel addresses the issue of the magnitude of that performance advantage, and its effect on the necessity, reasonableness and proportionality of the DSD Regulations, further below.

J. The legal issues regarding the validity of the DSD Regulations

...

(i) Where does the burden of proof lie? [The parties agreed that the regulations discriminate on the basis of sex.]

(ii) Do the DSD Regulations constitute discrimination?

...

...The Panel concludes that the Claimants have discharged their onus of establishing prima facie differential treatment based on protected characteristics, which the IAAF must therefore establish is necessary, reasonable and proportionate. The Panel's reasons for this conclusion may be summarised as follows:

(a) It is not disputed that the DSD Regulations only apply to athletes who are recognised at law either as female or intersex (*see* Regulation 2.3(a)). Athletes with a male legal sex are therefore not affected by the DSD Regulations (save to the limited and indirect extent that the DSD Regulations provide that Relevant Athletes may compete in the male category in Restricted Events, and therefore the pool of athletes eligible to compete in the male category is theoretically marginally wider than it was before the DSD Regulations were enacted).

(b) It is similarly not disputed that within the class of individuals who are legally recognised as female or intersex, the DSD Regulations impose certain eligibility restrictions and conditions on a subset of individuals on the basis of certain biological characteristics possessed by those individuals (namely having one of the DSDs listed in Regulation 2.2(a)(i), having circulating blood testosterone level over 5 nmol/L, and having a sufficient degree of androgen sensitivity for those levels of testosterone to have

a material androgenising effect).

(c) Accordingly, the DSD Regulations are expressly intended to, and do in fact, impose conditions and restrictions on a particular group of individuals on the basis that those individuals (i) are not legal males; and (ii) all possess certain natural biological characteristics that other females and intersex individuals do not possess. Conversely, the DSD Regulations do not impose any conditions or restrictions on individuals who have a male legal sex, or who have a female or intersex legal sex and who do not possess the biological characteristics enumerated in Regulation 2.2(a).

(d) Since the DSD Regulations establish conditions and restrictions that are targeted at a subset of the female/intersex athlete population, and do not impose any equivalent conditions or restrictions on male athletes, the Panel considers that the Regulations are *prima facie* discriminatory on grounds of legal sex. Similarly, since the DSD Regulations create conditions and restrictions that are targeted at a group of individuals who have certain immutable biological characteristics (namely a 46 XY DSD coupled with a material androgenising effect arising from that condition), and which do not apply to individuals who do not have those characteristics (e.g. 46 XX individuals with or without DSDs) it follows that the DSD Regulations are *prima facie* discriminatory on grounds of innate biological characteristics.

The conclusion that the DSD Regulations are *prima facie* discriminatory is merely the starting point, and not the end, of the Panel's legal analysis. In particular, it is common ground that a rule that imposes differential treatment on the basis of a particular protected characteristic is valid and lawful if it is a necessary, reasonable and proportionate means of attaining a legitimate objective. It is to these questions that the Panel must therefore now turn.

Before turning to address these questions, the Panel notes that some of the Claimants' expert opinion evidence questioned the validity of the process by which the DSD Regulations were devised by the IAAF. ...

...

It is undoubtedly true that the process by which any rules governing participation in competitive sport are created is important. In this respect, the criteria for sound regulatory policy making identified by Prof. Pielke [Semenya's expert] are undoubtedly laudable objectives. However, the question whether the IAAF's creation and promulgation of the DSD Regulations meets those criteria is not a matter which the Panel considers it is required to determine in this case. Indeed, there is no sufficient evidence enabling it to do so. The Panel's role is not to evaluate the adequacy of the IAAF's general policy making process or to re-write its rules. As the CAS panel noted in CAS 2016/0/4684 *ROC et al. v. IAAF*, "[t]he rule-making power, and the balance to be struck in its exercise between the competing interests involved, is conferred on the competent bodies of the sport entity, which shall exercise it taking into account also the overall legislative framework. The duty of this Panel is to ensure that such an exercise does not conflict with the rules that govern it and not to alter the content (whether by way of interpretation or other form of "manipulation") of existing rules transforming them into something different."

Put simply, the responsibility of this Panel is to determine whether the DSD Regulations are necessary, reasonable and proportionate. While arguments concerning the manner in which the DSD Regulations were devised may cast light on those legal issues, the Panel is not required to - nor does it consider it has sufficient evidence to enable it to - appraise the adequacy of the IAAF's policy-making process.

Another question that has been raised by the Claimants concerns whether the DSD Regulations violate domestic and international human rights laws. The Panel received an *amicus curiae* submission from the United Nations to that effect, as well as expert opinion evidence on the likelihood that the DSD Regulations would be found to breach the national laws of several specific jurisdictions.

While the Panel is grateful for the contributions of those experts and the *amicus curiae* submission from the United Nations, it has not found the opinions expressed to be particularly useful in resolving the specific legal issues that the Panel must decide in this case. Much of the legal opinion evidence and submissions focused on the issue of discrimination. It can, of course, be accepted that there are important rights to equality and freedom from discrimination, including in sport, and that those rights find reflection in an array of domestic and international human rights instruments. However, as has been stated above, the Panel is faced with conflicting rights concerning the rights of female athletes who do, and do not, have DSD. Resolving that difficult conflict requires a careful analysis of questions of necessity, reasonableness and proportionality. The *amicus curiae* submission and much of the expert opinion evidence did not descend to an examination of the conflicting rights and the resolution of that conflict.

Further, while the Panel appreciates the different legal opinions from experts in a number of jurisdictions, it cannot come to a conclusion on whether or not the DSD Regulations would be found to be unenforceable in, or contrary to the domestic law of, different national jurisdictions. That is not the task before it. The Panel accepts that such possibilities may well exist but that is a matter for the IAAF in promulgating the DSD Regulations and, if they are upheld by this Panel, it will ultimately be a matter for the courts of the various jurisdictions in question to determine.

Are the DSD Regulations necessary?

There is no dispute that ensuring fair competition in the female category of elite competitive athletics is a legitimate objective for the IAAF to pursue. This point was common ground in *Chand* and is common ground in the present case. The Panel accepts that this is an important and legitimate objective. The more difficult (and disputed) question is whether the DSD Regulations are necessary for this purpose.

...

On true analysis, therefore, the purpose of the male-female divide in competitive athletics is not to protect athletes with a female legal sex from having to compete against athletes with a male legal sex. Nor is it to protect athletes with a female gender identity from having to compete against athletes with a male gender identity. Rather, it is to protect individuals whose bodies have developed in a certain way following puberty from having to compete against individuals who, by virtue of their bodies having developed in a different way following puberty, possess certain physical traits that create such a significant performance advantage that fair competition between the two groups is not possible. In most cases, the former group comprises individuals with a female legal sex and a female gender identity, while the latter group comprises individuals with a male legal sex and male gender identity. However, this is not true of all cases. Natural human biology does not map perfectly onto legal status and gender identity. The imperfect alignment between nature, law and identity is what gives rise to the conundrum at the heart of this case.

Once it is recognised that the reason for organising competitive athletics into separate male and female categories rests on the need to protect one group of individuals against having to compete against individuals who possess certain insuperable performance advantages derived from biology rather than legal status, it follows that it may be legitimate to regulate the right to participate in the female category by reference to those biological factors rather than legal status alone. Since those biological factors do not correspond perfectly with legal sex in every case, the Panel accepts the IAAF's submission that it is sometimes necessary to devise eligibility conditions that are not exclusively based on legal sex. ...

Ms. Semenya argues that genetic difference and outstanding success is by no means uncommon in elite sport. Indeed, it is generally and rightly celebrated. Her evidence supports the submission that a 46 XY DSD is a form of genetic mutation that is not qualitatively different from other genetic differences that are accepted in sport and which in many instances may be determinative of athletic success. She submits that human diversity should be celebrated through inclusiveness and points to her own success in overcoming adversity through strength and perseverance.

...

Ms. Semenya points out that her fastest time in her best event, the 800 metres, has been beaten by almost 3,000 men and that she is consistently between 9% and 14% slower than the comparable men's performances. The evidence also demonstrates that the margin by which she finishes ahead of the second place is, on average, just 1.03% - a margin that is not a statistical outlier in comparison with the history of track events analysed in the same timeframe. This does not, she submits, accord with the criterion in *Chand* of an advantage comparable to that of male athletes, such as to make it necessary to exclude women athletes with DSD from the female category.

...

99. In respect of the first issue, matters have moved on in the four years since the hearing in *Chand* took place. The Panel in *Chand* did not have BG17 or the Handelsman Paper, which were published subsequently, nor the totality of the evidence adduced in this proceeding.

... After reading the evidence and hearing the experts give concurrent evidence, which greatly assisted the Panel, and taking account of the submissions of the parties, the majority of the Panel concludes that it is satisfied that:

- Testosterone levels are significantly higher in male athletes than in female athletes, after puberty;
- Testosterone impacts and enhances athletic performance by acting on muscle strength and size and on circulating haemoglobin levels;
- Circulating testosterone has its effect in the human body whether the source is exogenous or endogenous;
- The target of testosterone action is sex neutral; its mechanism of action is the same in male and female bodies;
- The different levels of circulating testosterone in the male and female population give rise to an advantage in athletic performance which means that male athletes significantly outperform female athletes;
- 46 XY 5-ARD athletes have levels of circulating testosterone at the level of the male 46 XY population and not at the level of the female 46 XX population;
- This gives 46 XY 5-ARD athletes a significant sporting advantage over 46 XX female athletes.

...

The majority of the Panel, therefore, concludes that it is satisfied that androgen sensitive female athletes with 46 XY DSD enjoy a significant performance advantage over other female athletes without such DSD, and that this advantage is attributable to their exposure to levels of circulating testosterone in the adult male range.

In *Chand*, the evidence, and the basis for the Panel's observations, was that the difference between elite male athletic ability and elite female athletic ability is of the order of 10-12%. In the present case, the IAAF emphasised that, while this may be so, there is still a difference and a performance advantage between "second tier" male athletes and elite female athletes. The magnitude of that difference would not be of the order of 10-12% but would still be relevant and sufficient to deny female athletes the fair opportunities to win. That is, male athletes do not have to be elite to surpass even the very best female athletes. Dr Berman pointed out that, in a race such as the 800m, a 1.6% advantage, as calculated in BG 17, was sufficient to determine first place by in the region of nine metres.

Thus, with the benefit of further evidence and submissions, it can be accepted that the relevant male performance advantage should not be limited to one of 10-12%. Rather, a lower percentage advantage may still be sufficiently significant as to render competition meaningless.

...

On this basis, the majority of the Panel accepts that the IAAF has discharged its burden of establishing that regulations governing the ability of female athletes with 46XY DSD to participate in certain events are necessary to maintain fair competition in female athletics by ensuring that female athletes who do not enjoy the significant performance advantage caused by exposure to levels of circulating

testosterone in the adult male range do not have to compete against female athletes who do enjoy that performance advantage.

The next question, therefore, is whether the IAAF has discharged its burden of establishing that the DSD Regulations are both reasonable and proportionate.

Are the DSD Regulations reasonable and proportionate?

...

The majority of the Panel therefore concludes that the DSD Regulations are necessary and reasonable. The area that has given rise to the greatest difficulty is that of proportionality....

...

a. The effect of the DSD Regulations on society generally

Ms. Semenya submits that there is a disproportionate effect in the consequences of the DSD Regulations in broader society. On the one hand, she points out, they affect only a relatively small number of vulnerable athletes; on the other, they interfere with fundamental human rights in a manner that is likely to have significant implications for the treatment of women in society generally.

The Panel does not consider that it is able to undertake an assessment of the likely impact of the DSD Regulations on wider society, which would require an analysis of multifaceted sociological issues which are not amenable to judicial resolution by an arbitral tribunal that is tasked with determining the validity of rules that govern eligibility to participate in sporting competitions.

The IAAF is charged, *inter alia*, with supervision of athletics in accordance with its own Constitution and overarching principles. The majority of the Panel have accepted that, within the relevant segment of society governed by IAAF regulations, these DSD Regulations are necessary and reflect a rational resolution of conflicting human rights. In light of this conclusion and the constraints on the Panel's competence and role, the majority of the Panel does not consider it necessary or appropriate to seek to make any assessment of the possible wider impact of the DSD Regulations outside of that sphere.

b. The effects of testosterone-suppressing medical treatment

The Claimants submit that, in order to be eligible to compete in a Restricted Event, Relevant Athletes must undergo testosterone-suppressing treatment that is both medically unnecessary and has serious and potentially dangerous side effects. The Claimants argue that this is a factor of very great significance when it comes to an assessment of the reasonableness and proportionality of the impugned Regulations.

...

The evidence of Ms. Semenya was, of its nature, anecdotal but real. However, it is not possible for the Panel to conclude that all of the symptoms that she encountered while attempting to reduce her levels of testosterone were due to the medication, or that they could not otherwise be controlled, or that they would continue, or that other athletes [...] would experience exactly the same side effects (different women react differently to different forms of oral contraceptive), or that another form of oral contraceptive, if prescribed, would result in the same side effects.

In any event, there is also the evidence of clinicians who say that the side effects are not different in nature to those experienced by the many thousands, if not millions, of other XX women, who take oral contraceptives. ...

In the majority of the Panel's view, requiring 46 XY DSD athletes to take oral contraceptives to lower testosterone in order to compete in the female category in Restricted Events at International Competitions is not, of itself, disproportionate. In the circumstances, the majority of the Panel is of the view that, on the present evidence, the side effects that may be experienced by such athletes [...] as a result of taking an oral contraceptive do not outweigh the need to give

effect to the DSD Regulations in order to attain the legitimate objective of protecting and facilitating fair competition in the female category.

c. The effect of requiring Relevant Athletes to undergo intimate medical examinations and assessments of virilisation

The Claimants submit that the requirement to undergo intimate personal examination to determine the extent of virilisation if an athlete does have high levels of testosterone is another form of sex or gender testing and is both subjective and inappropriate. It can also be highly intrusive and is an infringement of bodily integrity that can result in psychological harm. This harm would be repeated were an athlete to appeal to the CAS, where further examination may be required, and further detailed discussion of her body would take place. The Claimants also submit that psychological harm may arise from an athlete being labelled as having a DSD and from learning that they have such a condition.

...

Having regard to all these factors, the majority of the Panel therefore concludes that the provisions in the DSD Regulations dealing with the assessment of virilisation do not render the DSD Regulations disproportionate.

d. The risk that the confidentiality of Relevant Athletes will be compromised.

The Panel does accept that the IAAF has been successful in preserving the confidentiality of DSD athletes covered by the predecessor to the DSD Regulations. Nevertheless, the exclusion of athletes from Restricted Events in International Competitions where, for example, the athlete has qualified in National Competitions would be likely to render confidentiality meaningless in some cases. In those situations, it would not be difficult for an informed observer to infer from the absence of that athlete at subsequent International Competitions that the athlete has a relevant 46 XY DSD and has declined (or been unable) to reduce their endogenous testosterone to within the prescribed level. The Panel considers this is likely to be an inevitable detrimental effect of the DSD Regulations as they are currently framed. The Panel does not consider that this factor of itself renders the DSD Regulations disproportionate having regard to the countervailing legitimate interests pursued by the Regulations. It nevertheless has regard to the likelihood of some harm arising from the inferential disclosure of confidential medical information in reaching its overall conclusion as to the proportionality of the Regulations.

e. The application of the DSD Regulations to only the Restricted Events

The IAAF says that it accepted the observations in *Chand* that it should apply restrictions only where the evidence of a significant performance advantage arising from enhanced testosterone levels in athletes with 46 XY DSD was clear and compelling. Much of the IAAF case, and the evidence in support, centered around one event, the 800m. The Claimants submit that the Restricted Events were selected arbitrarily. They point out that events for which there was evidence of advantage in BG17 (such as the hammer throw and pole vault) were not included within the category of Restricted Events, while the 1500m and 1 mile events - where the evidence of advantage was less significant - were included. Nevertheless, the Claimants also focused their evidence and submissions on the 800m and there was no specific and targeted focus on the empirical basis for the inclusion of other events within the definition of Restricted Events. This is understandable, as the focus was the event most pertinent to Ms. Semenya.

...

The Panel has some concern about the inclusion of two events within the category of Restricted Events on the basis (at least in part) of a speculative assumption that since female athletes who compete successfully in the 800m often also compete successfully in those longer events, it must follow that 46 XY DSD athletes are likely to enjoy a significant performance advantage over other female athletes in those two events. Nevertheless, the majority of the Panel considers that the IAAF has provided a rational overall explanation for how the category of Restricted Events has been

defined. The scope of the Restricted Events therefore cannot be described as arbitrary. While the Panel has concerns about the adequacy of the evidentiary basis for including the 1500m and one mile events within the list of Restricted Events, it is mindful that it does not have the power to rewrite the DSD Regulations or to amend the list of events covered by the Regulations. Instead, it is required to make an assessment of the overall proportionality of the DSD Regulations. Having regard to the evidence adduced by the parties, the majority of the Panel does not consider that the scope of the Restricted Events *in toto* is disproportionate.

f. The rationale and effect of the 5 nmol/L threshold

A further issue of concern relates to the level of endogenous testosterone permitted under the DSD Regulations. The upper level of testosterone permitted in the Hyperandrogenism Regulations, as considered in *Chand*, was 10 nmol/L. The rationale for that former limit was that 10 nmol/L is at the lower end of the normal male range. The upper level in the DSD Regulations has been lowered to 5 nmol/L. The IAAF's explanation for the change is that it has determined a level by reference to XX female levels of testosterone. Thus, this lower threshold represents a level that is significantly higher than the upper limit of the normal range for the female XX population (0.06 to 1.68 nmol/L), adjusted upwards to allow for increased levels of testosterone in female XX athletes with PCOS. The IAAF points out that individuals with levels above 5 nmol/L will either have a testosterone-secreting tumour in the adrenal glands or ovaries, be taking exogenous testosterone, or be a male-to-female transgender athlete or a 46 XY DSD individual who is not suppressing their testosterone levels. The IAAF has not provided any further concrete explanation for why the level was lowered or why it is not, for example, 7.7 nmol/L (which is the accepted lower limit of the normal male range).

There are statements in the IAAF's evidence as to a performance advantage when the level of an individual's endogenous testosterone increases from 5 nmol/L to 10 nmol/L. There is some evidence that exogenous doses to increase women's circulating testosterone to 7.3 nmol/L resulted in 4.4% increased muscle mass and 12-26% increased muscle strength and that increasing endogenous testosterone from 0.9 to 5, 7 and 10 nmol/L increased circulating haemoglobin by 6.5%, 7.5% and 8.9% respectively. The Panel is therefore satisfied that the decision to reduce the testosterone threshold from 10 nmol/L to 5 nmol/L was not arbitrary.

g. The ability of the athlete to maintain a level of testosterone below 5 nmol/L

[Semenya argued that training regimes could result in an athlete inadvertently breaching the 5 nmol/L maximum level under the DSD Regulations even if the treatment regime of oral contraceptives designed to reduce the level of testosterone sufficiently was followed diligently.]

... If a Relevant Athlete takes the medication as prescribed to lower testosterone and fully complies with that treatment and still has fluctuations over the maximum permitted level, that would, under the DSD Regulations in force at the time of the hearing, still disqualify her from competing in a Restricted Event. It would be an impossible burden for the athlete to demonstrate that such unintentional fluctuations did not impact her performance. ... As a result, it is likely that she would take part in competitions without being able to know for certain whether her testosterone level is below the prescribed threshold on the day of the competition. A delay between testing and notification of the results of that testing would inevitably mean that the athlete could not respond to any fluctuations (such as a spike in testosterone caused by pre-competition tapering) that occur immediately before competitions. There is therefore a real risk that an athlete may suffer disqualification - and all of the detrimental consequences this entails - despite using her best endeavours to comply conscientiously with the DSD Regulations.

For the purposes of the proportionality assessment, a balance must be struck between countervailing factors. On one hand is the imposition of a new maximum threshold of 5 nmol/L which was rationally selected because it represents the highest level well above the normal

female range (allowing for athletes with PCOS). On the other hand, there are the side effects of using medication to lower testosterone levels coupled with the risk of inadvertent fluctuations above the 5 nmol/L threshold and, potentially, the difficulty for an elite athlete in competition to keep their testosterone consistently below 5 nmol/L, to monitor that level adequately in real time and to pay for that monitoring.

The matters of compliance are clearly very important. If the DSD Regulations cannot be implemented fairly in practice, that could render them disproportionate at a later stage, since a regulation which is impossible or excessively difficult to apply fairly cannot be characterised as a proportionate interference with the rights of those who are subjected to it.

...

The Panel does not, of course, have direct evidence of compliance with the DSD Regulations, which have not yet been implemented. Nevertheless, the Panel does have concerns as to the maximum level of 5 nmol/L and the practical ability of female athletes with 46 XY DSD to ensure that their levels of testosterone do not exceed that level. These matters will necessarily require oversight by the IAAF to ensure that this requirement is workable in practice.

...

However, the matters raised concerning potential difficulties in complying with the DSD Regulations were speculative (apart from agreement as to the possible difficulty with absorption of the hormone if the athlete had a gastro-intestinal infection) and without evidence or evidentiary support with respect to compliance with the 5 nmol/L requirement. That level chosen by the IAAF did have evidentiary support and explanation. The task for the Panel is to consider the DSD Regulations as promulgated and not yet implemented. Hypothetical consequences of the way in which the DSD Regulations might be implemented do not provide an evidentiary basis for a conclusion that they are presently and on their face disproportionate.

h. Conclusion on reasonableness and proportionality

The majority of the Panel concludes that, on the evidence before it, the IAAF has shown that the DSD Regulations are reasonable and proportionate on their face. Nevertheless, the Panel has some grave concerns as to the future practical application of the DSD Regulations. While the evidence has not established that those concerns are justified, or that they negate the conclusion of *ex facie* proportionality, this may change in the future unless constant attention is paid to the fairness of how they are implemented. In this regard, reference is made to the matters discussed above.

...