Policing the sex binary: gender verification and the boundaries of female embodiment in elite sport

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

This thesis develops a genealogy of the female category in elite sport by examining the historical and contemporary manifestations of 'gender verification' as a form of sex and gender binary policing applied by the International Olympic Committee (IOC) and the International Association of Athletics Federations (IAAF). By mapping the IOC's and the IAAF's gender verification policies and practices from the 1930s until the present, the thesis charts both continuities and discontinuities in how boundaries were drawn around the female category and how the female/male sex binary was erected and secured by the IOC and the IAAF through gender verification.

The thesis is based on archival research and embedded in feminist theory. It applies the Foucauldian genealogical approach and discourse analysis to construct a genealogy of the female category, aiming to contribute to feminist theorising on the ontology and epistemology of sex difference and the female/male sex binary. It takes the female category in elite sport as a lens for exploring the construction of sex and gender category boundaries more generally, and examines how the sex binary is solidified in different ways in response to changing temporal and contextual conditions.

The core argument developed in the thesis is that gender verification practices have been motivated by anxieties over sex and gender binary breakdown, embodied by female-categorised athletes who rendered in doubt the relationship between sexed embodiment and its gender categorisation. They consequently also rendered in doubt the ontological necessity or fixity of binary sex and gender categories. This doubt, in turn, incited the construction of definitional and embodied boundaries around the female category based on which female athletes' gender could be verified, which functioned to both erect and secure the female/male dividing binary line. The thesis demonstrates, not only the foregrounding significance of sexed and gendered doubt in the construction of the sex binary, but also the foregrounding significance of the temporal and contextual contingency of the ontology of sex and gender difference.

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Chapter one

Introduction

In June 2014, the Sports Authority of India (SAI) received a letter concerning an 18-year-old Indian athlete Dutee Chand, who had recently competed in the women's Asian Junior Athletics championships. The author of the letter was a representative of the Athletics Federation of India (AFI), and expressed concern regarding a 'gender issue' in relation to Chand. The letter stated:

> It has been brought to the notice of the undersigned that there are definite doubts regarding the gender of an Athlete Ms. Dutee Chand. During [the Asian Junior Athletics] championships, also, doubts were expressed by the Asian Athletics Association regarding her gender issue. … In view of the above you may like to conduct Gender verification test of Ms. Dutee Chand … so as to avoid any embarrassment to India in the International arena at a later stage (AFI, cited in CAS, 2015b: 4-5).

Subsequently, Chand travelled to a SAI training camp, where she was made to undergo medical examinations including blood tests, gynaecological examination, karyotyping, MRI examination, and an ultrasound (CAS, 2015b). Chand was assigned female at birth, identified as a woman, and had been competing in women's junior-level athletics since 2007. In July 2014, however, the SAI notified Chand that she would no longer be permitted to compete in women's athletics because her 'male hormone' levels were too high. The medical examinations that Chand underwent had concluded that she had so-called female hyperandrogenism, meaning elevated levels of androgenic hormones in females which, the SAI determined, excluded her from the right to compete in the female category (CAS, 2015b).

The SAI's decision to exclude Chand was based on the regulations on female hyperandrogenism that had been introduced by the International Association of Athletics Federations (IAAF) and the International Olympic Committee (IOC) among other sport governing bodies a few years earlier (IAAF, 2011a; IOC, 2012). These regulations had established an androgen threshold for athletes' eligibility to compete in the female category in sport, which Chand had exceeded. After she was excluded from athletics due to her 'hyperandrogenism', however, Chand decided to

challenge the regulations, arguing, with support from medical and bioethics professionals, that excluding her from the female category on the grounds of her endogenous androgen levels was unfair and scientifically unsound (CAS, 2015b). The hyperandrogenism regulations had been based on the idea that high levels of androgens – considered 'male hormones' – in female athletes provide these athletes with an unfair, 'male-like' advantage over other women. Yet, Chand and her supporters argued that there was no scientific evidence to support that idea. After hearing their argument, in 2015, the Court of Arbitration for Sport (CAS) decided to suspend the regulations on female hyperandrogenism for an interim period of two years, during which time sport governing bodies were asked to submit to CAS evidence that hyperandrogenic women's high androgen levels provide these women with an unfair advantage (CAS, 2015a).

Meanwhile, Chand was not the only athlete who was excluded from women's sport on the grounds of a 'gender issue'. While American athlete Chloie Jonsson was training for the 2013 women's CrossFit Games, her lawyer received a letter from CrossFit Inc. general counsel Dale Saran. The letter informed that Jonsson would not be permitted to compete in the CrossFit Games in the female category because she had been assigned male at birth. This was despite the fact that she both identified and was legally recognised as a female and a woman, had undergone gender reassignment surgery in 2006, and been on hormone therapy ever since. Saran stated:

> We need to get our facts together. … Chloie was born, genetically – as a matter of fact – with and X and a Y chromosome and all of the anatomy of a male of the human race. Today, notwithstanding any hormone therapy or surgeries, Chloie still has an X and a Y chromosome (Saran, 2013).

Therefore, Saran concluded, any claims that Jonsson is female were

> categorically, empirically false. The principle intent of the CrossFit Games is to determine the fittest man and a woman on Earth. What we're really talking about here is a matter of definition; of what it means to be 'female' for the purposes of the CrossFit Games (Saran, 2013).

While these two stories are among the most recent controversies centred on 'gender issues' in elite sport, such gender issues have a long history dating back at least to the 1930s. Despite being different in detail, the Chand and Jonsson stories highlight a core problem that has troubled elite sport governing bodies ever since elite level sport competitions have been organised for women athletes; namely, what it means to be 'female' for the purposes of sport. The vast majority of sports, including in the Olympic Games, are divided into two separate and mutually exclusive female and male categories, with the exception of a few mixed events such as Equestrian and the recently added mixed Olympic relays in athletics and swimming.[1] The core justification for sex segregated competition is so widely accepted that it seems commonsensical: female bodies have weaker athletic performance potential than male bodies and therefore separate women's events are necessary to provide female athletes a fair competition. Despite significant temporal changes in how this justification has been articulated, the core message has remained the same throughout the history of modern international sport: 1950s observers, for example, noted that a woman "is constitutionally weaker and does not possess the same endurance, nor can she produce the same physical output than men" (Messerli, 1952: 9). In the 1980s, sport officials considered that female bodies were afflicted, among other things, with "tiredness, and poor performance, weak muscle and ligament tone [and] Hormonal cycles" (Hay, 1988), while medical commentators argued in 2016 that the statement "that men and women are different is a biological reality, and in sport, the difference has obvious performance implications" (Tucker & Harper, 2016). Despite being articulated at different temporal periods these comments share two principal ideas: firstly, female and male bodies are fundamentally different and, secondly, in the context of sport this difference manifests as female performance inferiority.

[1] The IOC approved the inclusion of a 4 x 400m mixed relay in athletics and 4 x 100m mixed relay in swimming as well as a mixed relay in the triathlon for the 2020 Tokyo Olympic programme. Mixed team events were also added in judo and archery, and mixed doubles events in table tennis. The new additions double the number of mixed Olympic events from nine to 18, and reflect the IOC aim of achieving a 50 per cent gender balance as part of the 2020 Olympic agenda (IOC, 2017).

These two ideas have been and continue to be accompanied and intertwined, however, with the key problem of defining 'female' for the purposes of sport. As Chand's and Jonsson's stories illustrate, what it means to be 'female' is neither self-evident nor is there any clear consensus on how it should be defined. While for Chand, it was her androgen levels that rendered her ineligible to compete in women's athletics, Jonsson's exclusion was justified primarily with reference to her chromosomes. Indeed, Jonsson would have been eligible to compete in the female category in accordance with the criteria used to exclude Chand, while Chand would have been eligible to compete in accordance with the criteria used to exclude Jonsson. What it means to be 'female' is thus not only a matter of definition, but the dividing line between 'female' and 'male' is drawn in different ways in different contexts. In the words of Eric Vilan, who was involved in the formulation of the hyperandrogenism regulations that were used to exclude Chand, "you have to draw the line in the sand" (Macur, 2012: SP6). Moreover, the core justification used for sex segregated sport competition – that female bodies have weaker athletic performance potential than male bodies – is not *categorically* true: elite level female athletes perform at higher levels than most males (and at higher levels than nearly all or even all other females). Consequently, not only the question of how 'female' is or should be defined, but also the primary justification for sex segregated competition, are contested matters, and are ontologically as well as epistemologically unstable delineations.

These 'gender issues' are neither restricted nor confined to the sphere of sport competition. The problem of delineating and regulating the female/male boundary accompanies most or perhaps even all sex and/or gender segregated contexts and spaces where sexed and gendered categories are limited to the binary female and male or woman and man categories. For example, in 2016, the Human Rights Campaign foundation reported that 29 'bathroom bills' were under consideration in the United States (HRC, 2016). The aim of these bills is primarily to ban transgender people from using bathrooms consistent with their gender identity, with a bill proposed for the State of Washington, for example, requiring those who wish to use women's public bathrooms (or locker rooms, showers, and other gender segregated spaces) to be able to demonstrate that they have "female deoxyribonucleic acid"

(i.e. DNA) ("House Bill 2782", 2016). As one observer noted, the language of such bills appears consistent with genetic 'sex testing' as a requirement for bathroom access: "So … every girl who goes into a bathroom has to not only pull down her pants and prove she has a vagina, but you also need to have a blood test and show you've got XX chromosomes?" (Steinmetz, 2016). Mandates requiring one to embody 'female deoxyribonucleic acid' or XX chromosomes as proof of her right to access women's bathrooms would, notably, exclude not only transgender women but also many other women, including (self-identified, legally defined, and phenotypically female) women who have XY chromosomes, or women who have so-called disorders of sex development, from using women's bathrooms.

Since the 1930s, elite sport governing bodies like the IOC and the IAAF (which was called International Amateur Athletic Federation until 2001) have had in place regulatory policies aimed at addressing and solving 'gender issues' that resemble the 'bathroom bill' attempts to make sex binary policing in sex and gender segregated spaces a legal matter. The regulations on female hyperandrogenism are the most recent manifestation of these policies, which have only been applied to athletes competing or registered to compete in the female category. The policies have historically carried multiple formal as well as informal titles including 'sex testing', 'sex control', 'femininity certificate', 'femininity control', 'investigations of femininity', 'naked parades', 'tests of sexual chromatin', 'health and gender examinations', and 'gender verification' in addition to 'regulations on female hyperandrogenims', as well as various other combinations of the words 'femininity', 'sex', 'gender', 'testing', 'control' and 'verification'. The different titles relate to different temporal periods as well as to different policies, but the policies have all been mobilised to performed two interlaced regulatory functions: firstly, they have policed the categorical border between 'female' and 'male'. Secondly, they have drawn definitional boundaries around the female category by delineating which bodies do and which do not count as (sufficiently or appropriately) female for sport. For this purpose, sport governing bodies have mobilised scientific and medical epistemologies and methodologies to construct methods for identifying sex that have been applied to investigate both the bodily external contours and internal realities of female athletes to ensure that they are, indeed, females. The policies

have functioned, principally, to enable sex or gender segregated sport competitions based on two mutually exclusive sex or gender categories, and they have been justified on the principle that female bodies have weaker athletic performance levels than male bodies. The policies have aimed to ensure that the female/male category division holds true in practice.

In what follows, I will use the collective umbrella term 'gender verification' to denote these policies and related practices, for reasons which I unpack shortly. The historical and contemporary manifestations of gender verification in elite sport constitute the empirical study upon which this thesis is based. In particular, the thesis is based on a study of the IOC's and the IAAF's gender verification policies, because of the prominent and visible role of these two sport governing bodies and because of their key role in the history and contemporary reality of sex and gender binary policing in elite sport more generally. By examining the history of gender verification from the institution of the first gender verification policy by the IAAF in 1937 until the most recent debates on the regulations on female hyperandrogenism, the thesis provides a genealogy of the IOC and IAAF female categories as a lens for exploring how the borders of the sex binary and the boundaries of the female category have been navigated through gender verification. The following sections of this introductory chapter outline the focus of the research project; map the conceptual and theoretical terrain within which the thesis is embedded and to which it contributes; introduce the core arguments of the thesis; and provide a summary of the chapters that will follow.

Research questions and focus

This thesis examines the ontology and epistemology of sex difference and the female/male sex binary, by constructing a genealogy of the female category in elite sport. Focusing on elite sport gender verification policies and practices, the project explores how and why boundaries are constructed around the female category, and how and why the dividing line between the binary 'female' and 'male' categories is erected and secured. The thesis is embedded within feminist theory and feminist epistemology in particular. It aims to contribute towards related negotiations and

debates around how binary sex and gender difference is produced, maintained and conditioned, both temporally and contextually. Relatedly, it is centrally concerned with the relationship and epistemological distance between sexed bodies and the gender categories with which they are designated. The thesis examines how sex(ed) and gender(ed) categories are established as such, and how and why their categorical boundaries shift over time in response to changing contextual conditions. It addresses the following questions:

1. How has 'female' been conceptualised and defined in elite sport gender verification policies at different temporal contexts, and how and why are conceptualisations and definitions of 'female' produced?
2. How and why do conceptualisation and definitions of 'female' change over time?
3. How and why is the female/male sex binary erected and secured in sex segregated elite sport?
4. What are the implications of the above to our understanding of sex and gender difference and binarisation more generally?

Situating the research

The epistemology of sex difference and the sex/gender distinction have been central issues in feminist theory and scholarship, because women's and men's differentiated social positions and roles have historically been derived from presumed natural differences between (binarised) female and male bodies. Since Simone de Beauvoir published the S*econd Sex* in which she argued that one is not born but, rather, becomes a woman (de Beauvoir, 2014), the socially constructed reality of gender and thus social positions has been the foundation of much feminist literature and research. Yet, the notion of the 'female' and the 'female body' have historically occupied a central position in much feminist theory and activism, serving as the ground and unifying theme for women's emancipation in the face of the constructed and diverse reality of the social positions of different women that diverge and intersect around race, class, sexuality, nationality, (dis)ability, and other axes of

difference (Crenshaw, 1989). Grounding feminism on femaleness or on the female body, in turn, tends to necessitate the construction of embodied boundaries through which 'female' can emerge in the first place to ground feminist subjectivities and collectives. As Janice Raymond (1994: 110) remarked, "if feminists cannot agree on the boundaries of what constitutes femaleness, then what can we hope to agree on?" The consequence of the construction of these boundaries, like the consequence of the construction of boundaries in general, is that some subjectivities, collectives and bodies have been excluded from feminism (Hines, 2010; Stone, 2006; Stryker, 2006). For Raymond, it was transsexual and transgender women whom she rendered as artificial 'others' against which authentic or 'true' female embodiment could be constituted.

By the 1990s, however, Judith Butler (1990, 1993) had argued that rather than serving to foreground feminism and gender activism as the foundation, or rather than being the fixed state from which women and men emerge as socially constructed categories, sex itself is a gendered category. It was not that the state of being female could ground feminism or unify the variously positioned 'women' through a shared embodied fact, but that sex and the binary categories 'female' and 'male' were themselves constituted, naturalised and materialised as such through gendered systems of culturally intelligibility that ordain bodies into a binary relation. Concurrently, feminist science and technology studies emerged as a well-established critical endeavour that challenged scientific and medical conceptualisations of sex difference as a fixed or static binary biological reality (Birke, 1999; Haraway, 1991c; Martin, 1991; Oudshoorn, 1994; Spanier, 1995; Stephan, 1993). Queer, transgender and intersex activism and social movements were also gaining wider publicity, challenging not only gendered but also sexed (and sexual) binaries and boundaries. By the mid to late 1990s, transgender scholars Leslie Feinberg and Pat Califa had published their *Transgender Liberation: A Movement Whose Time Has Come* (1992) and *Sex Changes: Politics of Transgenderism* (1997), respectively, while intersex scholar Cheryl Chase had published her *Hermaphrodites with Attitude: Mapping the Emergence of Intersex Political Activism* (1998). Alongside other similar interventions, these texts called for a re-articulation of culturally intelligible bodies

and subjectivities, claiming recognition and empowerment for sexed and gendered subjectivities and bodies that transgress the binary sex and gender system.

Since then, a body of feminist scholarship has emerged that aims to move beyond, not only the binarisation of sex and gender categories, but also the sex/gender distinction by rethinking the ontology of (sexed) bodily materiality as fluid rather than as a static ground from which gender follows. They emphasise the permeability of the boundary of the sex/gender distinction and the entanglement of biology with sociality (Barad, 2007; Hird, 2009, 2012; Jagger, 2015; V. Kirby, 1997; Wilson, 1998, 2015). Karen Barad (2007), for example, has argued that instead of beginning one's analysis with a framework of binaries, borders and boundaries (including sex/gender as well as female/male, woman/man, feminine/masculine) one should examine the material(ising) effects of the boundary drawing practices themselves that produce those binaries, borders and boundaries, and ask what is excluded through this production process.

The history of feminist theory around sex, gender and the sex/gender distinction is, centrally, a history of negotiations around the ontology and epistemology of sexed and gendered differences; the categorical boundaries of the 'female' and the location of the female/male dividing binary line; and the ontological and epistemological relationship and distance between sex and gender. Located within these negotiations, this thesis takes up Barad's advice and aims to make a contribution to feminist theory and feminist epistemology by offering a genealogy of the female category in elite sport as a lens through which to investigate how boundaries are constructed around the female category, and how the sex binary is produced and secured.

The context of sport in general and international elite sport in particular relies on more rigorous sex and gender binary division than most other contexts due to the need to maintain sex and gender segregated competitions. As sport is intimately connected with and fundamentally about the body and its potential and limits, sport has been a central social signifier of sex difference. This is because it expresses the different potential and limits that are seen to accompany male and female embodiment, respectively. As sport historians and cultural scholars have extensively documented, there is an enduring and deeply embedded conflation between

athletic prowess and male embodiment (Cahn, 1994; Hargreaves, 1994, 2000; Lenskyj, 1986; Mangan & Park, 1987; Osborne & Skillen, 2011; Smith, 1998) which is especially pronounced in international sport. The sphere of sport, and women's entry into this masculine space, has consequently been, and continues to be, a site where the nature of sex difference and sexed embodiment is manifested, debated, and contested (Hargreaves, 1994). Consequently, gender verification policies in sport provide a particularly useful avenue through which to explore how the sex binary is erected and how boundaries are drawn around sex and gender categories.

While aiming to make a contribution to feminist theory around the ontology and epistemology of sex difference, I also aim to contribute to debates around gender verification and sex binary policing in elite sport. This thesis provides an account of why gender verification policies were instituted and continued over time; why and how they changed; and what functions they historically performed and continue to perform in the present. One of the most enduring characteristics of gender verification has been the contested and debated nature of the related policies and practices, which is embedded within and exemplifies the contested and debated nature of the ontology of sex and gender difference more generally. Indeed, as I was writing the conclusion for this thesis, new debates were emerging on the hyperandrogenism regulations that were used to exclude Chand from women's athletics, connected with the role of androgenic hormones in how the boundaries of the female category should be drawn (Bermon & Garnier, 2017; Karkazis, 2017). The on-going contestation over these boundaries illustrates the pertinence of explanatory accounts of the nature and manifestations of this form of sex binary policing. The core arguments made in this thesis aim to intervene in current debates around the boundaries of the female category in sport, providing insight for elite sport regulators on the foregrounding epistemologies and ontologies upon which they build regulatory policies. The next section introduces these core arguments, providing an initial map of the arguments to be developed through later chapters.

Core arguments of the thesis

By offering a genealogy of the female category in relation to gender verification policies and practices in elite sport, in this thesis I argue that sexed and gendered boundaries, divisions and borders are foregrounded by and erected upon sexed and gendered *doubt*; that is, doubt about the relationship between sexed bodies and the gender categories within which they are claimed to belong. It is this doubt that motivates the need to erect definitional as well as embodied boundaries around the female category by mandating the construction of definitions of 'female', and thus the delineation of which bodies do and which do not count as 'female' for the purposes of sport competition based on this definition. In other words, boundaries around the female category and, consequently, the line that delineates the sex binary are erected in response to doubt about the relationship between sexed bodies and gender categories which are presumed to exist in a binary relation, while the location of the binary line is the question to be resolved.

Despite the multiple titles and terms that have been applied to sex binary policing policies in elite sport, I will use the term 'gender verification'. This terminological choice is motivated, not only by a desire for terminological consistency, but also by my use of 'gender verification' as an explanatory concept to theorise these policies and related practices. The idea of gender verification seems, on the surface, oxymoronic. This is because the term 'gender verification' is only intelligible to the extent that 'gender' is verifiable. According to dictionary definitions, to verify something means to prove that something is true, or to make certain that something is correct or accurate.[2] Yet, in Dayna Daniels' words, since "gender is a constructed, social practice that changes over time, the ability to verify gender is indeed a challenge" (cited in Schultz, 2014: 103) because 'gender verification' implies verifying that something socially constructed or self-defined is true, correct or accurate. In other words, it presumes that 'gender' is not self-verifying, but that it can (or must) be verified in some other way. This, in turn,

[2] As defined by the Cambridge dictionary (2017) and the Merraim-Webster dictionary (2017), for example.

suggests that the thing (or arrangement of things) based on which gender is verified is not, itself, gender, but carries that which is 'true' or 'real' – that which can verify, or that which is a proof of, gender.

Throughout the history of gender verification in sport, female athletes' right to compete in their self-identified or claimed gender category in elite sport has been granted (or denied) by examining embodied characteristics taken to signify 'femaleness'. In other words, the 'truth' or accuracy of their gender has been verified with recourse to the sexed body, because the sexed body has been taken as the material referent of (true or real) gender. However, as discussed above, what 'femaleness' amounts to is a matter of definition, and can be and has been defined in different ways in different contexts. Since how 'female' is defined is contextually contingent, what exactly gender verification has verified (or what exactly has been taken or defined as sufficient proof of one's claim to be a woman or female) has changed over time. To verify the truth or accuracy of one's claim to belong in the female category with recourse to the sexed body, one must thus first know what 'female' embodiment implies before the verification process can be undertaken. In other words, one can only verify gender with recourse to the sexed body – one can only find a proof or truth of gender from a body – to the extent that one knows what one is looking for.

Defining 'female' in a particular ways (such as in relation to hormones or chromosomes) and then using that definition to verify gender works, in turn, to erect a relationship between the (social) gender category ('women' or 'females') and the sexed attributes or characteristics in relation to which the definition of 'female' is constructed. Consequently, the relationship between bodies and how they are situated within gender categories is modified. For example, if 'female' is defined as the state of having XX chromosomes, then Chand's gender (as woman and female) can be verified, but Jonsson's cannot. If 'female' is defined in terms of androgenic hormone levels, on the other hand, then Jonsson's gender can be verified, but Chand's cannot. To inquire into gender verification, then, is to inquire into how sex and gender categories are erected; how bodies and embodied attributes and characteristics come to ground gender; and how relations between categories and bodies shift and are secured.

The core question that arises at this point, however, is why policies and practices of gender verification are mandated in the first place. When and under what conditions does the need arise to verify gender – to verify that a subject's self-identified or claimed gender category is true, correct or accurate? In this thesis, I will argue that gender verification is compelled when the truth or accuracy of the relationship between a subject's gender category and her sexed body is rendered in doubt. The function of gender verification is to verify that relationship; to ensure that it holds 'true' and is 'correct' or 'accurate', in cases where this truth or accuracy is rendered in doubt.

I will argue that this doubt, in turn, arises when a subject's (claimed) gender category and their sexed embodiment appear discontinuous; when an athlete who self-identifies as or claims to be a woman appears 'suspiciously' masculine, or when she self-identifies as or claims to be female, but her embodiment seems not to support that claim because it appears 'male-like'. This is because these subjects disrupt presumed binaries and relations between female and male, woman and man, and feminine and masculine. By disrupting or breaking down sexed and gendered category boundaries, they incite doubt not only about the relationship between the body and its social classification, but also about the ontological fixity and necessity of binary sex and gender categories themselves.

Since the relationship between an athlete's gender category and her sexed body can only be verified to the extent that one knows which embodied characteristics or attributes amount to a proof of the accuracy or truth of the gender category, the gender verification process requires that one must first have at hand a workable definition of 'female' or 'femaleness' that can then be used as proof of an athlete's right to compete in the female category. Chand's and Jonsson's self-identified gender category (as women and females) was, for example, rendered inaccurate in relation to their sexed bodies, which failed to evidence 'femaleness' in accordance with the applied (hormonal or chromosomal) definitions of femaleness.

To summarise, then, sex and gender binary policing practices and policies in elite sport have been motivated by anxieties around sex and gender category breakdown carried by female-categorised athletes who rendered in doubt the ontological fixity of binary sex and gender categories. These athletes self-identified

as women and females, but the 'truth' or accuracy of their self-identified gender category was rendered in doubt by their perceived male-like or masculinised sexed bodies and gender presentations. The existence of this sexed and gendered doubt, in turn, was taken to mandate 'verification' of the 'truth' of gender, where this truth was to be found within the contours or interiors of the sexed body. Gender verification has thus primarily been a practice of verifying that women athletes are females with recourse to the body where the 'truth' of femaleness was taken to be located.

The findings presented in subsequent chapters demonstrate not only the above outlined argument but also the ways in which processes of sex binary construction and regulation have been foundationally embedded within, and contextualised by, broader temporally and contextually located gendered, geopolitical, colonial, racialised, classed, and sexual(ised) discourses, and their intertwinement with sporting ideologies and ideals including Olympism and the ideals of the Olympic movement. While I argue that gender verification has always been foregrounded by gendered and sexed doubt, the bodies to which this doubt has been attached have primarily been bodies relegated as 'other' in relation to the middle/upper-class, western and white subject. Those who came to carry sport regulators' gendered and sexed suspicions were female-categorised athletes who contested prevalent ideas around what 'normal' female embodiment and women's gendered behaviours should look like. These sex and gender norms, in turn, have always been classed, racialised and embedded within gendered colonial histories through which normatively gendered female embodiment has been constituted as the body of petite, frail and feminine white middle/upper class woman. The bodies and gendered subjects who failed to conform to these body norms have disproportionately been the subjects who were rendered in gendered doubt. They were associated with the breakdown of normalised sexed and gendered category borders, in ways that relegated them into the realm of sex binary contamination or 'pollution'. Such sex and gender binary polluting bodies were consequently defined not as (normal) females, but as 'masculinised', 'hermaphroditic', 'hybrid', 'hypermuscular' or, indeed, 'hyperandrogenic' among other things. When faced with such bodies, elite sport officials expressed anxiety over sex category disruption, and

responded with policing efforts to safeguard the sex binary. At different temporal periods, the sex binary and the boundaries around the female category were re-drawn in response to new challenges to prevalent ideas and norms in relation to sexed bodies and gendered appearances and behaviours, carried by contextual changes and newly emerging gendered threats.

In the present context, as the CAS is about to re-examine the regulations on female hyperandrogenism, the definition of 'female' or 'femaleness' to be applied to verify athletes gendered claims and to determine the boundaries of the female category are up in the air. A historical account of how and why these boundaries have been erected is thus particularly timely. According to one current medical observer, when it comes to the regulations on female hyperandrogenism, using androgen levels "to categorise male and female athletes isn't perfect, but it's the best solution we have" (Harper, 2017). The arguments made in this thesis and the genealogy of the female category that is mapped in subsequent chapters provide insight into the consequences of such less than perfect 'solutions' for drawing the female/male dividing line 'in the sand', as Eric Vilan phrased it. The research findings provide a basis for assessing the normative question of the extent to which these consequences can be justified in the present.

Chapter summary

Chapter two, *Theorising and Historicising Sex and Gender*, contextualises the core arguments of the thesis by placing them into the context of broader histories and theory in relation to sex difference, gender, and the sex/gender distinction. It discusses the scientific, medical and colonial histories of sex difference, and outlines the theoretical framework that informs the thesis. Building on Judith Butler's 'matrix of intelligibility', the chapter maps the theoretical ground upon which the arguments of the thesis are built. It discusses the existing body of literature on gender verification, and charts the ways in which knowledge about the history of gender verification has been produced by scholars, outlining my intervention into this literature.

Chapter three, *Methodological Framework: A Genealogy of the Female Category in Elite Sport*, outlines the methodological framework of the research. The project is built on Foucauldian genealogy, and the chapter discusses how the genealogical approach was mobilised to construct a genealogy of the female category in elite sport. It outlines the conceptualisation of the archive that informed the research, the archive collections that were consulted, and the data collection process through which the research findings were produced. The chapter discusses the discourse analysis method that was applied to the data, and conceptualises the findings presented in the thesis as situated knowledges.

Chapter four, *Sex Change Metamorphoses, Hermaphrodites, and 'Normal' Women: Physical Examinations and Femininity Certificates*, discusses the institution of the first gender verification policies and their context of emergence. The chapter argues that the first gender verification policies were instituted in a context of anxieties over sex binary breakdown, embodied by female-categorised athletes who transgressed the boundaries of normalised female embodiment, and thus incited doubt about the extent to which they were 100% female. The chapter maps 1930s medicalised conceptualisations of female embodiment, and the intertwinement of these conceptualisations with emerging endocrinological theories of sex instability that were rendering the sex binary unstable. These tangled discourses resulted in imaginaries of female athletes competing in 'strenuous' sports (like athletics) as abnormally masculinised, or even hermaphroditic. When some female-categorised athletes underwent sex changes, appearing to metamorphose into men, sport regulators instituted gender verification to ensure that women athletes were 100% female rather than masculinised, in accordance with hegemonic conceptualisations of 'normal' female embodiment.

Chapter five, *Pure Versus Polluted Bodies: Cold War Gender Relations and Naked Parades*, examines the first on-site 'naked parades' gender verification policy instituted by the IAAF in 1966, contextualised by gendered Cold War geopolitical East/West dualisms. The chapter argues that on-site gender verification policies were instituted to secure the sex and gender purity of the female category against a threat of sex and gender binary pollution. On-site 'naked parades' unveiled the 'naked truth' of female athletes' bodies, to verify the legitimacy of their status as

women and females by ensuring that their embodiments were appropriately feminine and gender 'pure'. Central was binary drawing between pure versus polluted bodies and ideologies, where pollution was identified with the political East and purity with the political West. The chapter discusses how these imaginaries contextualised the emergence of anxieties over abnormal, hybrid, and sex binary polluting bodies in elite sport, identified with the Soviet bloc. These anxieties resulted in intertwined policing paradigms aimed at ensuring the feminine gender purity of women's sport and the purity of athletes' bodies from 'artificial' (i.e. doping) substances.

Chapter six, *Medicalisation, Screening and Diagnosis: On-site Gender Verification in the Olympic Games*, focuses on the medicalised on-site gender verification paradigm instituted by the IOC in 1968. Built on sex screening and diagnosis, the paradigm applied chromosome-based screening for sex, combined with further sex examinations intended for bodies with abnormal screening results to diagnose the 'truth' of their sex (or sex pathology). The chapter charts how medical diagnosis and treatment technologies were mobilised to secure the sex binary against category breakdown. Female-categorised athletes who embodied this breakdown were conceptualised as pathological or abnormal, and then subjected to normalising treatments aimed at re-aligning their bodies with the sex binary. The chapter argues that this medicalised on-site gender verification system aimed to identify the final truth of sex for athletes whose legitimate status as women or females was rendered in doubt by 'abnormal' gender verification screening results, and to normalise their sex abnormalities to re-align their bodies with the sex binary.

Chapter seven, *Gender Fraud and Masquerade: Penises, Well-formed Scrotums, and Health and Gender Examinations*, discusses the emergence of gender fraud or masquerade prevention as the official rationale for gender verification. This is contextualised by 1970s and 1980s anxieties around transsexual women athletes, and the involvement of scientists who argued that men with chromosomal abnormalities were capable of 'passing' chromosome-based gender verification screening as females despite having male phenotypes. The chapter maps how these two issues intertwined to centre concerns over fraudulent sex and gender category crossings committed by presumed overt males with male genitalia as the key threat

to the authenticity of the female category. A new definition of 'female' was consequently constructed and the absence of male genitals defined as sufficient proof of one's legitimate status as female, resulting into a 'health and gender examinations' policy instituted by the IAAF 1991. The chapter argues that this policy and the genital-centric sex definition were motivated by anxieties over fraudulent sex category crossings committed by overt males with penises. The genital-centric definition was consequently constructed to safeguard the female category in sport against this threat by verifying the legitimacy of athletes' status as females by ensuring they lacked male genitals.

Chapter eight, *Gendered Suspicions: Suspicion-based Gender Verification and the Concern Over Bodily 'Excess'*, examines how enduring concerns over abnormally sexed and suspiciously masculine female-categorised athletes motivated the institution of gender suspicion-based gender verification. The chapter discusses concerns over 'hypermuscular' female bodies that motivated the institution of a case-by-case gender verification system targeted at identifying gender 'suspicious' female athletes, combined with continued interest in female athletes' genitals. This was contextualised by racialised and gendered concerns over successful Chinese female athletes and gendered readings of revelations about a large-scale doping programme in Cold War East Germany. The chapter argues that suspicion-based gender verification was foregrounded by racialised gender norms that pre-establish some bodies as more easily gender suspect. Suspicion-based policies were instituted to secure the gender purity of women's sport against gendered boundary transgressions by 'excessively' muscular, masculinised and successful female athletes' bodies that seemed to overflow the boundaries of the female category, rendering their claim to be females in doubt and in need of verification.

Chapter nine, *Regulations on Female Hyperandrogenism: Centring Androgenic Athletic Advantage*, discusses the IAAF and IOC female hyperandrogenism regulations, and their intertwinement with transgender athletes' eligibility policies. These regulations centred androgenic hormones as the essence of sex categorisation in sport, intertwining conceptualisations of androgens as 'male' sex hormones with conceptualisations of androgens as performance enhancing hormones. The chapter shows how the regulations were foregrounded by controversial beliefs in males'

relatively higher androgen levels being the source of their athletic superiority over females, in ways which link to the pathologisation of high androgen levels in females as an androgen 'excess' disease that should be treated with normalising medical interventions. While the hyperandrogenism regulations aimed to shift focus away from gender and sex concerns explicitly and towards hyperandrogenism as a medical problem, the chapter argues that the regulations continued to police the sex binary. They aimed to verify that the bodies of athletes claiming the right to compete in the female category fell within the delineated boundaries of the female category, now defined in hormonal terms. The chapter also charts how the regulations reinforced white, western gendered body norms, and maps how critiques of the regulations resulted into their suspension in 2014, inciting panic over sex and gender binary breakdown during the Rio 2016 Olympic Games.

Chapter ten, *Conclusion: Continuities, Discontinuities, and Reflections on the Future of Sex Binary Policing in Elite Sport*, brings together the arguments made in previous chapters to reiterate the theoretical argument of the thesis. It charts the continuities and discontinuities in gender verification policies and practices, and foregrounds the importance of sexed and gendered doubt as well the ontological instability of sex and gender categories. The chapter ends by considering the contemporary context of challenges against the hyperandrogenism regulations' suspension by CAS, and offers reflections on the present and future of sex binary policing in elite sport.

Chapter Two

Theorising and historicising sex and gender

This chapter contextualises the core arguments of this thesis, by locating them within the broader histories and discourses of science, medicine, and colonial imaginaries within which the history of gender verification in elite sport is embedded and through which gender verification as a practice has been made intelligible. It provides a history of the sex/gender distinction and the sex binary to show how the notions of 'sex' and 'gender' as well as their internal female/male, woman/man, and feminine/masculine binarisations are themselves embedded within, and foregrounded by, broader histories of science, medicine, and colonialism through which they have been made salient. These histories show that sexed and gendered categories and systems of meaning are historically contingent and temporally and contextually variable. They also show that the sex binary and, consequently, the 'female' and 'woman' categories have been produced through specific scientific and colonial discourses that rely on notions of 'normality' and 'pathology' as well as racialised and classed imaginaries of sex and gender category purity and feminine appropriateness.

Building on and extending Judith Butler's analysis of the matrix of intelligibility that compels continuity and coherence between sex, gender and (hetero)sexual desire, the chapter outlines the theoretical framework within which the core arguments of the thesis are embedded. I argue that the need for practices of verifying gender arises in response to subjects who fail to exhibit the presumed relationship of continuity and coherence theorised by Butler, and who embody sex and gender binary breakdown. These subjects, who have disproportionately been 'others' of the western, white, middle/upper class subject, threaten the naturalisation of the matrix of intelligibility and sex and gender binaries. They also incite doubt about the ontological necessity or 'truth' of the sex binary. Thus, this chapter grounds the theoretical argument of this thesis; namely, that gender verification has arisen in response to doubt in relation to the naturalisation of sexed and gendered categories and binaries.

The final section of the chapter discusses the existing body of literature on the history of gender verification, and outlines my intervention into this literature by charting how this history has been narrated and (re)produced in academic accounts. Building on and extending Vanessa Heggie's (2010) analysis of the problematic ways in which knowledge has been produced about this history, I argue that historical accounts about gender verification are not only often poorly evidenced but also centre 'gender fraud' and 'male masquerade' as the key thematic of the history. This, in turn, produces an interpretation of gender verification (at least historically) as a practice of verifying that women athletes are not men/males. In contrast to this, the argument advanced in this thesis is that gender verification has primarily been a practice of verifying that women athletes are *females*, which requires a separation between the sexed body and its social or cultural gender status.

Histories of the sex binary and the sex/gender distinction

Western metaphysics have been centrally constituted as a system of binarisations whereby meaning is structure through opposition: in a Saussurean manner, a thing or an arrangement of things gains meaning by being defined against that which it is not (V. Kirby, 1997). One of the foregrounding binaries of Western modernity is the nature/culture binary through which the entity 'culture' is constituted and gains meaning to the extent that all that is 'nature' is bracketed off, and vice versa. As Bruno Latour (1993) has argued, the salience of 'nature' as separate from 'culture' necessitates the 'purification' of the constitutive stuff of the two ontological zones from each other, and the zones gain meaning as 'nature' and 'culture' only through their mutual separation. The ontological purification of binary zones necessitates that 'hybrid' entities that could blend the categorical lines between the differentiated zones come to be forbidden, and the hybrid space is rendered uninhabitable.

The nature/culture binary, in turn, foregrounds other familiar binaries that rely on it for meaning, such as human/non-human, mind/body, and social/scientific, where the former term is identified with culture and the latter term with nature. Like these other binaries to which it is kin, the sex/gender distinction as well as its

derivatives – female/male, woman/man, and feminine/masculine – are nature/culture dependent in Anglophone epistemology, and intertwined with the other binaries that are also nature/culture dependent. Gender (man, woman, masculine, feminine) is identified with culture: it is a social category and a characteristic of the human subject (animals do not have gender, they only have sex), located in the mind, and subject to social and historical change. As such, it is an object of social, cultural, and historical analysis. Sex (male, female), on the other hand, is identified with nature: it is treated as a natural category and as fixed in the face of social and historical change. As such, it is an object of scientific knowledge in the zone of the material body. As Donna Haraway (1991b: 130) has argued, then, the intelligibility of sex as differentiated from gender and consequently, I would add, the intelligibility of their internal female/male, woman/man, and feminine/masculine binarisations, depends "on a related system of meanings clustered around a family of binary pairs". The explanatory power of sex and gender categories therefore depends on historicising these binarisations.

The epistemic consequence of the binary system has historically been that sex, conflated with the 'biological body', has been taken as the ground and as the foundation of the social classification of subjects into women and men, whereby these classifications have been taken to be ordained by biological differences between female and male bodies relegated as 'natural'. Anglophone feminist mobilisations of the sex/gender distinction historically sought to resist this biological determinism by disentangling social gender classifications from biological bodies to politicise the category 'woman' as a cultural one, to show that women's structural social position does not derive from biological 'truths' but is socially ordained. In the *Second Sex*, Simone de Beauvoir argued that to realise her full potential as an individual, a woman must fight the biological attributes of the 'human female', such as menopause, painful childbirth, and the 'monthly curse' (2014: 64). As I noted in the introductory chapter, irrespective of biology, de Beauvoir argued that women's historical and social position is not determined by the body but is fashioned socially: "One is not born, but rather becomes, a woman" (2014: 295) – even if one might, indeed, be born a female. The effect of this politicisation of 'woman' as a cultural category, however, was that the sex/gender distinction, even while it liberated the

category ‘woman’ from biological constraint, relegated sex and thus the category ‘female’ as outside the cultural sphere and left it sitting static as a ‘natural’ category, to be studied by the natural rather than the cultural and social sciences.

Yet, in *Gender Trouble*, Judith Butler pondered:

> what is sex anyway? Is it natural, anatomical, chromosomal, or hormonal, and how is a feminist critic to assess the scientific discourses which purport to establish such ‘facts’ for us? Does sex have a history? … Is there a history of how the duality of sex was first established …? (1990: 9).

Indeed, when de Beauvoir and others wrote about ‘biology’, they conflated the physical characteristics of bodies with the science of biology as the study of and discourse about these physical characteristics, without subjecting the latter to interrogation (Birke, 1999). By the 1990s, feminist critics of scientific discourses had demonstrated, however, that gendered and racialised language appears throughout biomedicine, stretching from molecules to organs to conception to the immune system (Birke, 1999; Haraway, 1991c; Martin, 1991; Oudshoorn, 1994; Spanier, 1995; Stephan, 1993) in ways that showed the world of scientific facts to be “contextual not only in that it depends on who we are and where and when, but also in that it is shaped by where we want our ‘facts’ to take us” (Hubbard, 1990: 15-16). As Michel Foucault (1991, 1998) argued, these scientific facts or truths, rather than having an independent ‘natural’ ontological existence waiting only to be discovered by the natural scientists, were produced within and through temporally and contextually delineated scientific discourses embedded within relations of power that govern how knowledge is produced in the first place. Social relations of power worked to justify and manifest themselves through the production of knowledge including scientific knowledge about the ‘biological body’ and sexed embodiment.

Foucault (1998) argued that the proliferation of new sciences in the 18th century directed at the study of the human body functioned to produce a multiplicity of discourses and institutions that constituted the body as an object of biomedical knowledge (as the ‘biological body’). They claimed power over the definition and management of bodies and their sex, and resulted into multiplied scientific specialities of examination and diagnosis. These took the forms of not only biology

but also medicine, psychiatry, psychology, and other disciplines of study, each carrying authority over their specific realms of inquiry. Thomas Laqueur (1990) has argued that the emergence of biological models of the body in the 18th century, embedded within this broader epistemic shift that established the biological body as the foundation for a scientific epistemology, moved from a previous gender hierarchy read *onto* the body as a matter of degree of femininity and masculinity to a dichotomised sex system founded on or read *from* the body as duality. This scientific ontology worked to establish sex as biological dimorphism and incommensurability through which male and female were purified from each other, in the Latourian sense, as mutually exclusive categories grounded as natural differences knowable from the body. These natural sex differences then proliferated throughout bodies in 18th century anatomy books, extending from the brain to the skeleton to such details as sweat and blood vessels (Schiebinger, 2000).

The effect of this was a medical(ised) definition of the 'female body' (delineated as singular) as fundamentally (naturally) different from the male body, in ways that were grounded in women's reproductive role as the constitutive condition of female embodiment. 18th and 19th century theories about the biological female body were centred on the instability and fragility of women's bodies which were seen to be dominated by the cyclicality of menstruation and weak composition, rendering women as the 'weaker sex' and vulnerable to ailments such as uterine displacement and pelvic damage that could be incited by any kind of 'strenuous' physical effort (Hargreaves, 1994). The construction of female embodiment as ill-suited to physical activities in turn justified curtailing (white, middle/upper class) women's physical activities to protect their (and their offspring's) health, including restricting most of women's socially sanctioned activities to the domestic sphere where their 'natural' reproductive roles as mothers and wives were manifested (Cahn, 1994; Hargreaves, 1994). This was achieved through scientific models of female embodiment that constructed (idealised) depictions of *the* female body. For example, models of the female skeleton, as fundamentally different from the male skeleton, emphasised characteristics such a narrow rib cage and wide pelvis (Schiebinger, 2000), and models like this were then incorporated into clinical

practice to construct paradigms of 'health' for women based on curtailment and moderation when it came to physical exercise (Hargreaves, 1994).

Foucault (1998) argued that the proliferation of the sciences and their acquired power over the management and definition of bodies constituted sex as a problem of 'truth' and constructed around it apparatuses for producing truth which rely on technologies of health and pathology. The proliferation of the sciences enabled the proliferation of scientifically analysable pathologies subject to correction or treatment as patients, in ways reliant on medical models of normality and pathology concerned with sex(ual) irregularities. These models or norms of sex (and sexuality) were defined as 'healthy' in relation to which irregularities or deviations (from normal) could be defined as pathological, and their specific characteristics described and then 'corrected' (i.e. normalised) to align with the prescribed norms of health. In other words, notions of normal(ised) health enabled the construction of models of pathology for 'abnormal' bodies, assigning them (the truth of) sex(ual) pathology. This multiplication of sex abnormalities susceptible to diagnosis and treatment in turn enabled the specification of 'abnormal' bodies into categories of pathology: they became medical 'cases' ascribed with a pathological 'type'.

Alice Dreger (1998) has argued that by the late 19th and early 20th century, medical models located the 'truth' of sex, constituted in relation to the centring of incommensurable sex dimorphism, in the anatomical structure of gonadal tissue which then marked the body in its entirety as either male (through testicular tissue) or female (through ovarian tissue). This gonadal definition of sex, or what became known as the Klebsian system of sex classification, in turn enabled the categorisation of bodies as either male or female regardless of other characteristics, resulting in what Anne Fausto-Sterling (2000: 36-40) has called the 'hermaphrodite vanishing act' because the gonadal definition of sex eliminated nearly all possibilities of 'true' sex hybridity. It defined all bodies based on gonadal status into one of five categories: the normal(ised), 'healthy' male and female; male and female forms of pseudo-hermaphroditism; or the very rare true hermaphroditism (requiring presence of both ovarian and testicular tissue), with 'pseudo' connoting a spurious (false) kind of hermaphroditism. Consequently, in Foucault's words, henceforth "everybody was to have one and only one sex ... as for the elements of other sex that

might appear, they could only be accidental, superficial, or even quite simply illusory" (1980: viii).

While the Klebsian sex classification system persisted throughout most of the 20th century, during the early to mid 20th century, two medical theories of sex difference emerged that unsettled previous ideas about sex and the body; namely, the hormonal and chromosomal theories of sex development. Androgens and oestrogens, which came to carry the labels of male and female sex hormones respectively, had emerged as endocrinological objects of knowledge by the 1930s, and their emergence in many ways dislodged sex from specific locations in the body – gonads in particular – towards chemical agency working throughout the body (Oudshoorn, 1994; Roberts, 2007). As Nelly Oudshoorn (1994) has argued, while endocrinologists initially thought these hormones to be sex specific chemical messengers of femininity (oestrogens) and masculinity (androgens) originating in the ovaries and testes respectively, the discovery that oestrogens were also produced by healthy males and androgens by healthy females led to a momentary disruption of previous dualistic conceptualisation of sex. The failure of these 'sex' hormones to be sex confined did not destabilise their designation as sex hormones, however, but resulted in the construction of a new medical model of relative (as opposed to absolute) sex specificity based on a quantitative system of normal(ised) sex hormone levels for female and male bodies, respectively (Oudshoorn, 1994; Roberts, 2007). This enabled the emergence of new pathologies that derived from 'excessive' or 'insufficient' amounts of androgens or oestrogens in female or male bodies, which could be managed or treated (or normalised) based on models of 'normal' amounts of these hormones defined as heathy, and 'abnormal' amounts defined as pathological.

However, while the hormonal model of sex rendered bodily masculinity and femininity more fluid and relative than previous models, the discovery and increasing understanding of the sex related functions of the X and Y chromosomes by the mid 20th century supported the image of sex difference as an unalterable binary. As Sarah Richardson (2013) has argued, because of the fixed nature of chromosomes – conceptualised as genetic 'facts' – the X and Y chromosomes in many ways came to embody 'sex itself' or the 'hard reality' of sex against the fluidity

carried by hormones. They represented what 'nature intended', and enabled a genetic conceptualisation of sex whereby the 'intended' sex of 'ambiguously' sexed bodies could be revealed by observing chromosomes.

The emergence of the X and Y chromosomes as objects of knowledge, and their conceptualisation as 'sex' chromosomes, also enabled the consolidation of two great scientific theories of the early 20th century – the chromosomal model of inheritance and the hormonal model of sex – which in turn enabled the emergence of a new, more comprehensive theory of sex difference (Richardson, 2013). While sex hormones explained how the messages of masculinity and femininity are transported to induce masculinisation or feminisation, chromosomes were established as the directors or initiators of this process. The biological ontology of sex difference was thus erected onto a model that distinguished between genetic sex *determination* and hormonal sex *differentiation*, whereby genetic sex was conceptualised as the primary determinant and hormonal sex as secondary development of sex(ual) characteristics (Richardson, 2013). According to this model, while 'normal' female or male embodiment would result to the extent that hormones correctly followed the intentions of the chromosomes, the sex development process could go 'wrong' due to faulty hormone messaging or due to genetic 'abnormalities'.

While the 18th century proliferation of the sciences had resulted in a multiplication of sex(ual) pathologies, this new model of (normal) sex development and the accompanied development of more sophisticated medical and diagnostic apparatuses and treatment technologies foreground the advent of 20th century categories of sex abnormality, irregularity, and deviance that continue to be mobilised in diagnostic practices in the present, each with its own technologies of diagnosis and history through which they became 'treatable bodies' (Rubin, 2003). The category 'transsexual' was established in medical literature by the 1950s to distinguish those who sought sex reassignment surgery from other sex(ual) pathologies, and the late 1960s saw the proliferation of clinics that offered diagnosis and surgical operations for transsexual patients (King, 1996). The chromosome theory of sex and the development of methods for identifying bodies' chromosome constitutions was mobilised to 'prove' that transsexuals were 'the sex they appeared

physically to be', thus establishing transsexuality as a psychosexual (rather than physiological) pathology (Miller, 2006). Throughout the 20th century, new categories of 'hermaphroditism' to which the term 'intersex' was increasingly applied were also differentiated and defined in accordance with newly identified aetiologies of different conditions, each with its own diagnosis and treatment. The new models of hormonal and chromosomal sex enabled the classification of these conditions into types of hormonal or chromosomal 'abnormalities', which were then mobilised to construct treatment frameworks (Feder, 2009; Karkazis, 2008; Karkazis & Feder, 2008).

The primary form that these treatment frameworks assumed reflects and illustrates the normalising system through which pathologies are identified and corrected in relation to norms of 'health', as well as the power of scientific epistemologies in the regulation or 'purification' of the sex binary. The hegemonic treatment paradigm mobilised for bodies born with 'ambiguous' sexed anatomies – genitals in particular – by the end of the 1950s became a congruence model developed by psychologist and sexologist John Money and colleagues. Based on a desired congruity between external genitalia, the gender of rearing, and the patients' future gender identity (i.e. psychological sense of oneself as a woman or a man), Money and colleagues' model prescribed genital surgery performed at infancy for bodies born with 'ambiguous' genitals. The model functioned, in other words, as a normalising paradigm whereby ambiguous genitals were 'corrected' to align with the sex binary, constituting surgical intervention as the alteration of 'abnormalities' which return bodies to their normal or natural state and re-construct (rather than construct) genitalia that should have been there all along if sex development had taken its natural course (Karkazis, 2008; Kessler, 1998). The congruence model built by Money and colleagues also enabled the emergence of a medicalised 'wrong body' narrative as a diagnostic tool for transsexuality, whereby the diagnostic criterion for transsexuality became cross-gender identification described as a sense of being born in the wrong body. Appropriate narration of a 'wrong body' became the primary criterion for access to surgical intervention, the possibility of which was enabled by the desired congruence between gender identity and genital physiology (Prosser, 1998; Rubin, 2003). This enabled the medicalisation of transsexuality as a treatable

medical condition: transsexual bodies could be (re)aligned with binarised sex through surgical intervention. Indeed, medicalisation constituted the major framework through which cross-gender identification was understood throughout the 20th century (Ekins and King, 1996).

As an answer to Butler's question about the history and epistemology of sex, then, sex as well as the concept of the 'biological body' from which sex is derived, has a history. Moreover, there is a history to how the duality of sex was established. These histories are embedded within the history of science and medicine, and scientific epistemologies reliant on models of health and pathology constructed around notions of the 'normal'. The extent to which sex is natural, anatomical, chromosomal, or hormonal is temporally defined and delineated through scientific and medical discourses that function to constitute, rather than discover, the 'truth' of sex and where it is to be found. To assess the scientific discourses which purport to establish such truths for us, a feminist critic must, then, as Haraway (1991b) advised, historicise the science of sex difference and the ways in which sex has been established as a binary, because the explanatory power of sex as a category as well as the categories of 'female' and 'male' depend on this historicisation. The explanatory power of sex categories depends also, however, on racialised histories of science, medicine, and the body, which provided constitutive conditions for the intelligibility of sex as differentiated from gender, and for the 'pure' separation of females and males as feminine women and masculine men, which was achieved through contrasting the gender 'purity' of the white West against the gender pollution or contamination of the 'other'.

The colonial histories of sex and gender

The binarised ontology of sex difference as pure dimorphism and the connotations that are attached to sex as a 'natural' category and gender as a 'cultural' category were constructed in relation to colonial relations of power and Darwinian theories that made sex and gender ontologies salient along racial lines. In Darwinian evolutionary narratives, coinciding with the scientific models that erected 'pure' sex dimorphism onto the (human) body, sex dimorphism was conceptualised as a sign

of evolutionary progress. This was due to the idea that sophisticated organisms demonstrate higher levels of sex differentiation and procreative heterosexuality than less sophisticated organisms, manifesting through sex differentiated reproductive roles (Eckert, 2009). Consequently, sex 'ambiguity' and unclear differentiation of reproductive roles appeared as a sign of 'primitiveness', while 'clear' differentiation was identified with European, white, and middle/upper-class ideas around appropriate gender behaviour for men and women, respectively. Those bodies and subjects for whom clear sex differentiation and clearly divided reproductive roles (of the European form) were not seen to be manifesting – i.e. the colonised, racialised, and classed 'others' of the colonisers – therefore appeared primitive or 'degenerate' in evolutionary terms, and thus closer to animality than human civilisation and 'culture' (Eckert, 2009; McClintock, 1995).

As Anne McClintock (1995) has argued, embedded within these kinds of narratives, the colonial conquest was imagined as a journey proceeding not only in space, but also backward in time to a region of evolutionary prehistory, inhabited by primitives who failed to exhibit (human) culture and belonged, therefore, to the realm of nature. The evolutionary backwardness of these primitives was manifested in their failure to exhibit clear gender role differentiation (of the European form). Colonial imaginaries projected perceived sex(ual) anomalies and deviance onto racialised bodies in general, and racialised women in particular, who were imagined to be militarised (like men), have monstrously large clitorises that bordered on the penis-like, and to copulate with apes (McClintock, 1995). The colonised 'others' thus emerged as pre-cultural embodiments of the kinds of primitive sex(ual) blurring that was seen to belong to human evolutionary past.

The identification of the colonised 'other' with nature also resulted in imaginaries of 'natural' physicality and animal-like 'brute' strength and endurance of racialised subjects who were seen as unsuited to intellectual efforts. They were identified, rather, with the physicality of the body in ways that justified subjecting them to (forced) physical labour to which the colonised body was taken to be naturally better suited (P. Miller, 1998). Indeed, the myth of the 'natural black athlete' that continues to circulate in the present has its roots in colonial legacies that constituted black bodies' physical (athletic) prowess as a 'natural' by-product of

the racial difference of the black 'other', contrasted against white athletes' sporting skill and knowledge constituted as a cultural attainment. While blackness is marked by natural ability derived from the body, whiteness is marked by skill and technique derived from the mind (Cahn, 1994; Hoberman, 1997). In relation to racialised and especially black female bodies, the notion of natural physicality intertwined with conceptualisation of unclear sex differentiation among colonised peoples, particularly in relation to slavery: that black female bodies could not only bear but also seemed well suited to the bodily demands of hard physical labour seemed to show that "black women clearly did not belong to the weaker sex" (Vertinsky & Captain, 1998: 544).

These colonial imaginaries infuse the legacy of the sex/gender distinction: as Maria Lugones (2007, 2010) argued, emphasis on the 'pure' sex dimorphism of the human subject was produced through a 'colonial/modern gender system', whereby the 'light side' of the system (i.e. the coloniser, the human) was attributed with pure dimorphism evidenced by clearly delineated reproductive roles. The 'dark side' of the system (i.e. the colonised, the less-than-human), on the other hand, was attributed with imperfect sex differentiation conceptualised through binary contamination and blurred reproductive roles. Pure dimorphism was evidenced by a clear cultural separation (of the European form) between males and females as masculine men and feminine women in all spheres of social life in accordance with their reproductive roles, while imperfect sex differentiation was evidenced by a lack thereof. Through this imaginary, colonised "males became not-human-as-not-men, and colonized females became not-human-as-not-women" (Lugones, 2007: 744). Those attributed with the object status of animality and associated with nature became, in effect, genderless: female and male at best, but not women (mothers, wives, homemakers) and men (providers, family heads, ruling fathers) (Davis, 1981).

This racialised colonial imaginary also resulted in the collapsing of gendered, racial, and classed imaginaries whereby the definition of the (white, male, and middle-class) European self was produced in negated relation to the (collapsed) racialised, classed and gendered 'others' (McClintock, 1995). The co-constitution of racial and sexual/gendered 'degeneration' enabled what McClintock (1995: 43) described as "the domestication of the colonies and the racializing of the metropolis"

through which the 'degenerate classes' of the metropolis (the working-class, criminals, etc.) were policed by the invocation of racial deviance: they were constituted as racially atavistic and thus animalistic 'primitives' dwelling, misplaced, at the imperial metropolis in ways that mirrored the conceptualisation of the colonised as sexual/gender 'throwbacks'. Similarly, scientific models constructed analogies between European women and the 'lower races' as childlike and as closer to nature in evolutionary terms (Stephan, 1993). The imaginaries of racialised and gendered degeneration were extended to European internal 'others' especially in the geographic East of Europe, identified as backward, simple, and primitive in contrast with the complex, developed, and cultivated West of Europe (Todorova, 1996).

The distinction between gender as culture and sex as nature was thus made salient through these co-constituted conceptualisations based on which dimorphically gendered human culture become 'pure' from primitive sex(ual) blurring that occurs in nature and within the bodies of 'others'. They also foreground the centring of sex dimorphism in scientific models of sex and the body, and how sex binary contamination came to be conceptualised and managed. The Darwinian conceptualisations resulted in what Lena Eckert (2009) has called racialised 'intersexualisation' (i.e. the constitution of bodies as *inter* sex or between binarised sex), in ways that pre-established some bodies – especially the racialised 'others' – as (always already) insufficiently sex and gender differentiated. As Zine Magubane has noted, scholars have not tended to fully account for the role that racialised systems of meaning played in the (re)production of medicalised concepts like 'intersex' as objects of scientific and cultural knowledge – i.e. "Intersex … as a classificatory schema" (2014: 761). While "white deviant bodies were hastily and summarily normalized in ways that reflected a concern with … heterosexual reproduction and highly specific gendered habits and behavior codes", the lack of "social and biological differentiation between men and women" was what "marked blacks as black while also indexing their fundamental difference from and inferiority to whites" in ways that made racialised people's 'reversed' gender ideology a normal or natural signifier of racial difference (Magubane, 2014: 770, 776). An "ambiguously gendered white body needed to be corrected to retain its whiteness, whereas an

ambiguously gendered black body was seen as confirming the essential biological difference between whites and blacks" (Magubane, 2014: 781).

The history of gender verification as a sex binary policing paradigm in sport is, centrally, a history of the intertwinement of gendered, sexed, racialised, and classed imaginaries around embodied difference of the scientifically and medically delineated 'biological body', and it is firmly embedded in the legacies that have constituted sexed and gendered binary blur as a characteristic of the 'other'. While the protectionist ideas and models of fragile female embodiment have been read onto the bodies of 'appropriately feminine' white, middle/upper-class women, the intertwined racialised, gendered, and classed conceptualisations of sex binary blur have historically associated female bodies of the 'other' with animality, physicality, and sexed and gendered evolutionary backwardness contrasted against the feminine purity and gendered virtue of white, western, middle-class women. The pre-conception of bodies of the 'other' as unclearly sex and gender differentiated, combined with conceptualisations of sport as a sphere of masculine embodiment and behaviour, is central for understanding how the boundaries around the female category have been delineated and regulated in elite sport and why some bodies, and not others, have become the core objects of concerns around sex binary breakdown. By offering a history of sex, gender, and the body, my aim has been to show that how the sex binary is delineated, and how 'sex' and 'gender' as systems of meaning themselves have been constituted, is not only temporally and contextually variable, but also embedded within broader systems of meaning that structure how embodied difference is understood and navigated. What 'female' and 'woman' are taken to mean, and where the dividing line between the male/female, man/woman, and masculine/feminine binaries is drawn, are historical questions embedded within colonial legacies that continue to carry meaning in the present.

The next section builds on Butler's analysis of the relationship of continuity and coherence between sex, gender, and desire – what she called 'the matrix of intelligibility', to place the core arguments of this thesis in their theoretical context. To understand how gender verification becomes an intelligible practice, 'gender' must be taken to imply a social attribution and status as woman or man, or female or male, which are attached to differentiated social, gendered standings, including

the right to compete in either women's or men's sport, respectively. After analysing Suzanne Kessler and Wendy McKenna's ethnomethodological approach to gender, the section applies Butler's matrix of intelligibility to foreground the argument that gender verification is a practice of verifying that athletes claiming to be female are 'truly' female. True or at least sufficient 'femaleness', on the other hand, is established by exposing sexed embodiment. The need for this arises because the relationship between the body and its social classification is rendered in doubt.

The matrix of intelligibility, realignment, and the importance of doubt

In their ethnomethodological approach to gender Kessler and McKenna (1978) argued that genitals are the essential sign of gender – that genitals, in our cultural imagination, *mean* gender. They argued that this is demonstrated by genital surgery performed for subjects whose genitals do not conform with their gender (i.e. pre-operative transsexual/gender and intersex bodies): their genitals are (re)constructed to conform to their gender when they fail to correspond, which shows that genitals are taken *as* gender (Kessler, 1998; Kessler & McKenna, 1978). Iain Morland (2001) has added that this also suggests a foregrounding relationship between genitals and sex: genital surgery for transsexual/gender subjects, at least, seems to imply that rearranging genitals makes a central difference to one's sex, which suggests that the equation 'genitals mean gender' relies on a foregrounding equivalence between genitals and sex. Yet, Kessler and McKenna (1978) also argued that what matters in everyday interaction for gender attribution is not the material genitals that bodies actually have, but what they called 'cultural genitals': the genitals that bodies are assumed to have underneath clothing based on gendered readings of appearance, despite not being seen or observed directly by others. As Morland (2001) has noted, this means that in everyday gendering, it is not the material genitals themselves that mean gender but the cultural genitals that are presumed, and that are presumed precisely because of the concealment or invisibility of their material referents.

What Kessler and McKenna's approach implies, then, is that readings of subjects' gender presentation are taken as proxy for their sexed truth located, they argue, in genitals. Yet, the history of sex difference suggests that while genitals

matter, they are by no means the only location with which sex, or gender, have been identified. Indeed, the history of gender verification in sport that this thesis maps will shows that various embodied attributes from chromosomes to hormones, as well as the sexed body as a whole, have taken up this position. Kessler and McKenna's account is interesting for my purposes, however, because it suggests that gendered readings of bodies' presentation and appearance function as proxy for a sexed reality that is hidden, implying that gender presentation functions, if not as 'cultural genitals', then as proxy for a naturalised sexed truth carried by the body. What interests me, then, is the relationship between gendered reading of embodiment as this proxy, and the material referent(s) of these readings: I am interested in the conditions under which the concealment of the material referent comes to imply possibility of doubt about its existence. In other words, I wish to understand when the invisibility of the martial referent comes to require its unveiling as proof of the appropriateness of gender attribution.

In *Gender Trouble* (1990), Judith Butler argued that gender attribution functions according to instituted norms whereby gender intelligible subjects are those that maintain a coherence or continuity between sex, gender and (sexual) desire. This continuity takes form through the constitution of desire as (dualistically) heterosexual, which requires and institutes the production of oppositional feminine and masculine genders, which in turn are grounded as attributes of oppositional female and male bodies. Through this logic of continuity and coherence, gender is meant to 'follow' from sex and desire is meant to 'follow' from gender (and sex). In other words, females are feminine women who desire men, and males are masculine men who desire women. Those subjects for whom this relation of continuity does not hold (trans, intersex, or queer subjects, for example) consequently appear discontinuous or incoherent and thus unintelligible within the normative system of coherence and continuity: "they appear only as developmental failures or logical impossibilities" (Butler, 1990: 24). Butler argued, however, that this matrix of intelligibility functions to mask that naturalised (dualistic) heterosexuality regulates gender and sex into a binary relation in the first place: rather than binary feminine and masculine genders being entailed by female and male sexed bodies, gender is produced and compelled by norms of gendered and sexed coherence.

In *Bodies That Matter* (1993), Butler added that the norms of gender and sex that compel binary and mutually exclusive male and female embodiments delimit and produce intelligible morphological possibilities through which normative positions of sex (the two sexes) are assumed and compelled as 'citations' or approximations of the norms. She argued that the (binary) norms of sex are *materialised* onto bodies: they take hold of bodies by being 'cited' whereby the norms are maintained through their continued materialisation. This process of materialisation is, in turn, reinforced through the threat of unintelligibility or abjection that results from a failure to conform. For example, Morland (2001) has argued that the surgical 'correction' of 'ambiguous' genitals on intersex bodies is enabled by the citationality of genital norms: that genitals rendered as ambiguous are moulded to approximate 'female genitals', for example, presumes the existence of standard(ised) or 'normal' female genitals based on which the re-construction of genitals can be modelled. In this way, such models, which embody genital norms, become materialised onto bodies surgically. And yet, Morland argued that the citationality of intersex genital surgery actually suggests that empirical 'male' and 'female' genitals in general can only ever be quotations of 'nostalgic genitals' – the ideal archetypes of male and female genitals – that are always already phantasmal and out of reach: "the endlessly enormous penises, the measurelessly capacious vaginas, [and] the infinitely dainty clitorises" based on which surgeons model genital accuracy (2001: 365). All genitals quote a nostalgic genital imaginary (more or less accurately but never fully) which in turn is rendered normal or natural, and are modelled in relation to it, sometimes surgically.

If one reads with Butler and Morland, sex binary policing practices, including medical and surgical treatment or 'correction' paradigms for sex 'abnormalities', make sense as practices of normalising realignment: the possibility of doubt about the relationship between gendered readings of bodies' presentation or appearance and the 'truth' carried by sexed attributes makes sense as the threat of discontinuity. A failure to present or embody gender normatively – the failure of presumed female bodies to appear appropriately feminine for example – makes 'gender trouble' to the extent that failed femininity appears inconsistent with presumed (female) bodily materiality. Gender 'verification' practices function to unveil the body or its sexed

characteristics as proof of the appropriateness of gender attribution when it comes to bodies that appear discontinuous. These discontinuous bodies are troublesome because they threaten the naturalisation of the presumed gendered coherence and continuity and, consequently, they compel practices of realignment. These, in turn, are necessary to maintain the social and cultural differentiation between men and women as separated and differentiated social categories, to prevent gendered social structures from collapsing.

Practices of realignment attach, however, not only to genital norms, but to medicalised norms of sexed embodiment in general. While the matrix of intelligibility theorised by Butler presumes continuity between sex, gender and desire, there is also a presumed continuity between sexed attributes that are taken to collectively constitute (binarised) female or male embodiment. For example, the chromosomal and hormonal models erected by the mid 20th century, in combination with Money and colleagues' congruence model, functioned to establish a model of normal(ised) sex development and gender attribution whereby hormonally induced sex differentiation is presumed to follow from the instructions provided by 'sex' chromosomes to construct a female or a male body accompanied with the appropriate gender identity and genitals. When the 'wrong' chromosomes, too high quantities of the 'wrong' hormones or the 'wrong' genitals appear on sexed bodies, these bodies appear as discontinuous or unintelligible 'developmental failures' that incite practices of realignment that include not only surgery but also treatments like hormonal therapy intended to bring the bodies back within the confines of the medical(ised) norm. It is, then, not only gendered readings of bodies' presentation and appearance that incite doubt about the mandated relationship of continuity, but also bodily sexed attributes that appear, inconsistently, on 'wrong' bodies.

Butler's framework for conceptualising the production and materialisation of binary sex and gender enables a way to of understanding how and why doubt about the relationship between gender and sex, and the material referents with which sex is identified, arises, and why resolving this doubt appears as imperative. In other words, it enables a way of understanding how sex and gender binary policing practices and regulatory frames like gender verification function and why they are erected. A key problematic that must always accompany these regulatory policing

practices attaches, however, to the problem of ontology: the history of the sex binary, and the histories through which the sex/gender distinction has been made salient, show that there is no stable ontological 'truth' of sex and the presumption of sex dimorphism itself is historically contingent. Where sex difference is located, how sex is conceptualised, and how 'female' embodiment is differentiated from 'male' embodiment are contextual questions embedded within particular histories of science, medicine, and colonial systems of meaning. As I noted in the introduction, some feminist thinkers (Barad, 2007; Haraway, 1991a, 1991c; Hird, 2002, 2012; V. Kirby, 1997) have worked to rethink the ontology of sexed materiality as fluid and shifting (rather than fixed in 'nature'), and they argue for the inseparability of ontology and epistemology in the construction of an intelligible word. For Haraway, for example, scientific figurations such as the 'human genome', but equally applicable to figurations such as 'chromosomal sex', 'hormonal sex' or, indeed, 'sex difference' in general, turn "body into story, and vice versa, producing both what can count as real and the witness to that reality" (1997: 197). Indeed, there is "nothing about being 'female' that naturally binds women. There is not even such a state as 'being' female, itself a highly complex category constructed in contested sexual scientific discourses and other social practices" (Haraway, 1991c: 155).

As a starting point, then, the ontology of sex difference is unstable, and what the gender status of 'woman' means is also contextually and temporally variable as feminist scholars have long argued. Thus, to verify one's gender status through the body taken to carry femaleness, it is necessary to first delineate what 'female' means. While simply to designate something – a body, an attribute, a characteristic – as 'female' and as the ground of a social status as woman can rarely in itself make it so (i.e. there must be a material reality and a cluster of exiting social relations that enable or invoke the designation), the designation as an act of naming does do something. It modifies how that body, attribute, or characteristic is situated in a gender(ed) system. It erects a relationship between the body, attribute, or characteristic, and a (social) status, and it modifies the relationship between bodies and how they are situated within gender categories.

As I have shown, what these categories or designations imply is conditioned by colonial, gendered, and racialised systems of meaning, and the pure sex and gender

dimorphism of humanity has been delineated by rendering those constituted as 'other' as insufficiently sex and gender differentiated. The effect of these legacies has been not only that the (human) 'biological body' has been constituted as foundationally sex dimorphic with deviations from the binary categories rendered pathological, but also that the appropriate relationship of sexed and gendered continuity and coherence has been erected upon white, western, and middle/upper-class gender normativity. Consequently, those bodies that fail to conform to these norms and fail to appropriately exhibit or embody the relationship of continuity and coherence – who fail to appear appropriately feminine, or appropriately female for example (where 'female' is the 'weaker sex') – have disproportionately been bodies rendered as 'other'. They have then been conceived as pathological in contrast with (racialised, classed and gendered) norms of sex(ed/sexual) 'health' through which 'normal' sex difference has been constituted as binary in accorded with western medical and cultural models of gender appropriateness and embodied femininity.

Yet, these bodies also challenge the binary body norms that are taken as foundational: by failing to conform, they render in doubt the naturalisation and 'truth' of sex as dichotomy and they threaten the relationship of sex and gender continuity taken as imperative and rendered natural. Because the sex binary or a 'truth' of femaleness cannot be found from a body before a definition of 'female' is produced– i.e. before sex has been found*ed* onto the body; a process which is contextually and temporally conditioned – these bodies make explicit that there is no ontological fixity to sex. By failing to conform, they show the point at which sex and gender categorisation systems lapse or become disputed. It is for this reason that these bodies mandate sex binary policing practices like 'gender verification': they render in doubt the relationship of continuity and the ontological fixity of the sex binary in the first place by showing that there is no fixity or 'truth' to it. In other words, sex binary policing practices like gender verification become necessary when the sex binary and the relationship of continuity is rendered in doubt, and it is this doubt that mandates practices of regulation and realignment.

Historians of social categorisation have emphasised the intensification of category boundary regulation and policing during periods or within context of category instability (Dreger, 1998; McClintock, 1995; Reis, 2009). The argument that

I will make is that when it comes to gender verification in elite sport, this boundary regulation is only compelled when discontinuous appearing bodies that disrupt either the female-woman-feminine continuity, or the female-woman-feminine/male-man-masculine oppositional binarisation (or both) challenge the system of intelligibility through which 'sex' and 'gender' are established and secured as such. These bodies incite doubt about the relationship between the (material) body and its (social) classification, and gender verification seeks to secure or verify this relationship to prevent the whole sex and gender system of intelligibility from collapsing. This necessitates a definition of what 'female' means so that the relationship becomes verifiable in the first place, which in turn requires that boundaries are drawn around the 'woman' and 'female' categories in opposition to the 'man' and 'male' categories. This boundary drawing then functions to establish a dividing line between male/female and man/woman and, consequently, the sex binary is erected and secured.

In sum, boundaries around sex and gender categories, and the dividing line between the sex and gender binaries, are foregrounded by, and erected in response to, subjects and bodies who render in doubt the location and ontological fixity of these boundaries and dividing lines in the first place. Sexed and gendered boundaries, lines, divisions, and borders are, then, foregrounded by and erected upon *doubt*, which is disproportionately carried by those 'other' to the white, western, and middle/upper-class feminine subject. To show how this argument differs from, and intervenes in, existing literature on gender verification, the final section of this chapter maps the problematic ways in which histories of gender verification have been narrated by scholars.

Histories of gender verification in elite sport

In her paper *Testing Sex and Gender in Sports; Reinventing, Reimagining and Reconstructing Histories*, Vanessa Heggie (2010: 157) argued that

> Because of the sensitive nature of this subject, histories of sex testing are difficult to write and research; this has led to the repetition of inaccurate

> information and false assertions … As historians, we need to be extremely careful to differentiate between mythologies and histories.

The history of gender verification in elite sport has been widely commented on and analysed by scholars across disciplines, mostly since the 1990s (for a starting point, see Pieper, 2016; Simpson et al., 2000; Wackwitz, 2003; Wiederkehr, 2009; Wrynn, 2004). The bulk of this work has been produced in social scientific and medical journals, which usually provide a historical account of gender verification to contextualise other arguments that follow, to place these arguments in a historical context. However, Heggie argued that the history of gender verification, as it is told by scholars, has been reinvented, reimagined and reconstructed in ways that fit particular narrative patterns. Motivated by and building on Heggie's arguments, I reviewed 105 academic journal articles about gender verification across disciplines to understand how the history of gender verification is produced in academic accounts. This section is focused on extending Heggie's arguments around the narrative patters that are mobilised to produce knowledge about this history.[3]

As Heggie (2010) argued, there is a straightforward narrative path through the history of gender verification which scholars tell by using widely repeated illustrative cases of sex and gender suspect or male-identified athletes who infiltrated into women's sport in the past – what Heggie called 'the canon of gender frauds'. The narrative path takes as its starting point the 1936 Olympic Games which were held, controversially, in Berlin, and are sometimes referred to as 'Hitler's Olympics'. One competitor at Berlin was German high-jumper Dora Ratjen, who is said to have been a male in disguise. According to scholars, "Dora Ratjen (real name Hermann Ratjen) posed as a woman in the women's event, and then admitted to the ruse" (Ritchie 2003: 87): he later "confessed that he was forced under Nazi order to bind his genitals and compete as a woman" (Sullivan 2011: 403-404). This "young man had been forced by the Nazi Party to … hid[e] his real sex, to increase the number of German medals" (Ferez, 2012: 278). This story about Ratjen was even made into a

[3] While there are, of course, articles that do not reproduce the narrative patterns I discuss (and many articles reproduce some common narratives but not others), my focus here is on discussing those narratives that are widely reproduced.

feature film in 2009 titled *Berlin 36*. The film tells the story of Jewish athlete Gretel Bergmann who was suddenly excluded from the German Olympic team due to anti-Semitism and replaced by Ratjen – an 'Aryan' male whose 'true' sex was known to German officials – in order for him to win the Gold medal for Germany (which he failed to do, finishing fourth).

According to historical accounts, Ratjen was not the only gender fraud in Berlin. His story is often accompanied with the story of Stella Walsh (for whom her Polish name Stanisława Walasiewicz is sometimes used), who was a highly successful Polish-American track athlete in the 1930s. Walsh's story begins with her rival, Helen Stephens, who won the 100-meter race with Walsh finishing second. Stephens is often claimed as the first athlete to have been subjected to (an ad hoc) gender verification due to accusations made by a Polish journalist, which she passed. The story goes as follows:

> In the first recorded gender verification test, German officials 'examined' Stephens when a journalist claimed she was a man. Ironically it would turn out that it was Walsh who would have failed the sex test. Following her death in 1980 … an autopsy revealed that Walsh had the sex organs of both a man and a woman (Wrynn, 2004: 217).

Some go as far as claiming that Walsh, like Ratjen, was a more straightforward case of gender masquerade, with one scholar stating that the autopsy following her death "revealed that she had been hiding a secret. As it turned out, 'she' was a 'he'. … Stella Walsh was a 'man'" (Jönsson, 2007: 240).

The stories of Ratjen and Walsh are the most widely repeated illustrative cases of early 'gender fraud' in women's sport, and they appear in most academic accounts about the history of gender verification. Most significantly, as Heggie argued, these cases are usually used to explain the introduction of gender verification. As phrased by two scholars, since it seemed that men were "binding their genitals to compete as women" (Amy-Chinn, 2012: 1298), "at its inception, gender verification … was envisioned as a way to catch cheaters: men disguising themselves as women to win fraudulently" (Hercher 2010: 551). Academic accounts usually locate the introduction of gender verification in the late 1960s when the IAAF instituted their

first on-site gender verification policy which I will discuss in chapter five. The canon of gender frauds seems to provide evidence for the claim that "sex fraud may have been systematically perpetuated for political gain dating back to the 1936 Berlin Olympics" (Reeser, 2005: 696), and the 1960s introduction of gender verification thus seems to have been aimed at putting an end to three decades of gender fraud.

Yet, there are some notable problems and even temporal inconsistencies with this historical narrative widely reproduced in exiting literature. Firstly, as I show in chapter four, the introduction of gender verification is not located in the late 1960s with the IAAF on-site policy, but the IAAF instituted their first gender verification policy in 1937 – three decades earlier. However, the stories of Ratjen and Walsh that are used to explain why gender verification was first introduced only became known after the 1937 policy had already been instituted: Ratjen's alleged gender fraud was first reported in 1957,[4] many years after the height of his competitive career in women's sport, while Walsh's autopsy and the consequent revelations about her sex characteristics occurred only after her death in 1980. Despite this, accounts about Walsh's and Ratjen's gender frauds function to associate their gender 'suspiciousness' with the 1930s context, by claiming them as part of a history of early gendered transgression in women's sport. Indeed, some accounts imply that Walsh's gender was already in doubt in Berlin, with one scholar stating that "if the Poles had suspicions [about Stephen] it was surely because they themselves had doubts about the gender of their own athlete, Stella Walasiewicz" (Bohuon, 2015: 967-968). Two scholars stretch this line even further, claiming that Walsh and Stephens had actually "accused one another of being male", rather than accusations being directed only

[4] The earliest accounts about Ratjen's 'gender fraud' were made by newspapers reporting that the IAAF had belatedly awarded a high-jump world record to a British athlete Dorothy Tyler: the IAAF "gave a British woman a world high jump record today – 18 years after the jump – upon finding that the former record holder was a man" ("18-Year Error", 1957: C6). In 1966, Ratjen's story was given an additional dramatic overtone by the *Time* magazine, which claimed that 19 years after setting a women's high jump world record, "Dora turned up as Hermann, a waiter in Bremen, who tearfully confessed that he had been forced by the Nazis to pose as a woman 'for the sake of the honor and glory of Germany.'" ("Track & Field: Preserving la Difference ", 1966). This *Time* news article is cited by several academic articles in relation to the claims that are made about Ratjen.

against Stephens (Tucker & Collins, 2010: 128). I have found no evidence to support these ideas. Nor have I found any evidence to suspect that Walsh's gender was considered any more 'suspicious' before 1980 than the gender of female athletes' in general who participated in masculinity-connoting sports like athletics at the time, which I explore in chapter four. Indeed, even the accusations against Stephens were contextualised by particular 1930s worries directed against female-assigned (rather than male-assigned) athletes who seemed to be 'metamorphosing' into men.

Secondly, after Ratjen's death in 2008, an investigative journalist Stefan Berg (2009) published an article in *Der Spiegel*[5] after he had been given access to new archival records about Ratjen held at the Kiel university hospital department for sexual medicine. According to Berg, these records tell a very different story about Ratjen who, instead of being a fraudulent male infiltrator, had been assigned female at birth and raised a girl. His gender had only been reassigned (and his name changed, not to Hermann, but actually to Heinrich) after the Berlin Olympics by German officials who had consequently returned Ratjen's medals, which had not been re-awarded earlier due to confusion caused by the war.[6] This version of Ratjen's story, very different and perhaps less captivating than the Nazi administered gender fraud plot, reads more like a story of misidentified sex at birth which was corrected later in life, actually by Nazi German officials.

The most notable characteristic of historical accounts about gender verification, and of the collective academic production of knowledge about this history in exiting literature, is a disregard for primary sources by scholars. Some scholars offer no sources whatsoever, most cite older academic sources, most of which in turn do not offer sources, and two scholars (Tucker & Collins, 2009, 2010) go as far as citing Wikipedia. There are also inconsistences between different accounts and some sloppy case outlines which confuse 'facts' about different

[5] This article was translated into English by Jan Liebelt, and the English version published online by *Spiegel Online International*.

[6] According to a 1957 news article about a belated world record award to Dorothy Tyler, the IAAF only corrected the Ratjen-related records in the late 1950s and not "earlier because of confusion caused by the war" ("High-Jump She is a He - So Dorothy Gets a World Record", 1957: 3).

illustrative gender fraud cases with each other or even invent entirely new cases.[7] Indeed, stories like those of Walsh and Ratjen are re-told over and over again in such a way that they appear to have gained an aura of legend, to the extent that reference to sources is made to seem almost unnecessary as 'everyone knowns' what happened (i.e. these stories are 'common knowledge'). While tracing the citations in search of primary sources, I was left to navigate a web-like chain of citations that crossed each other and led me around in circles.

As Clare Hemmings (2005: 118) has argued, academic journal articles are not only the result of the author's work, but reflect collective practices of knowledge production: "Which aspects of an article are flagged by peer reviewers as in need of more work, which teleologies pass unnoticed and so on are collaborative decisions". As such, they reflect how hegemonic narratives come to be established as *the* (rather than *a*) history. This is so in particular because journal articles usually (re)produce the history of gender verification as a 'background story' to contextualise other arguments. They thus indicate, in Hemmings' words, a presumed or "a 'common sense' understanding of the … past", because they produce this past "as a *prelude* to the author's own particular insights" rather than taking it as the object of in depth investigation in its own right (2005: 117, original emphasis).

The reproduction of stories like those about the male imposter Ratjen and Walsh's sex secret in existing literature do, however, perform a specific narrative function, by supporting the claim that gender verification was instituted to prevent gender frauds – to prevent fraudulent subjects from infiltrating into women's sport by 'masquerading' as women. This narrative is less interesting because of its disloyalty to primary sources, but more because it illustrates how histories are produced in the present. As scholars, "we make and remake stories about the past … which stories predominate or are precluded or marginalized is always a question

[7] For example, one scholar (Ferez, 2012) confuses 'facts' about Stephens and Walsh by implying that it was Stephens who was murdered and autopsied, while two scholars cite both the Ratjen 'male masquerade' story and another story about "a 1938 world record holder in high jump who was barred from competition when it was discovered that she had both female and male genitalia" (S. Kirby & Huebner, 2002: 36). The latter case appears to be a combination of 'facts' about both Ratjen and Walsh, merged together to crated a new gender fraud case.

of power and authority" (Hemmings 2005: 118). When explicit 'gender frauds' are centred as the 'original cause' of gender verification, the key historical 'threat' to the boundaries of the female category in sport appears to be athletes who committed explicit forms of gendered deception ('masquerade', even by 'binding their genitals') with dubious motives (of reaping the benefits of success in women's sport). The prospect of these fraudulent subjects is then used as the justification for gender verification. As phrased by one scholar, "historically speaking, the primary justification for gender testing has been to prevent male intruders from fraudulently competing in women's sport" (Henne 2014: 788). Indeed, male masquerade prevention is provided as the original motive and rationale for gender verification even by Lindsay Pieper (2016) in the most comprehensive (and only monograph-length) history of gender verification published to date.

The historical centering of gender frauds or 'male masquerade' functions to produce a particular interpretation of the history of gender verification: it constructs gender verification as a practice primarily aimed at verifying that women athletes were not men/males. Through this interpretation, the key historical concern when it comes to the need to verify gender in sport appears to be fraudulent gender binary crossings committed by men or male bodies (presumably accompanied with genitalia that needed binding) who infiltrated into women's sport under false pretenses. My argument is not that concern over fraudulent gender masquerade did not exist – indeed, in chapter seven I show how the gender fraud/masquerade concern became, momentarily, the primary justification for gender verification in the late 1980s – but that this was neither the first nor the most significant concern that motivated the institution and continuation of gender verification practices since the late 1930s till the present. Rather, my argument is that gender verification was (and continues to be) primarily a practice aimed at verifying that women athletes are *females*, rather than that women athletes are not men/males. This difference is significant: gender verification, I will argue as I noted above, has been primarily a policing apparatus motivated by panic over sex binary breakdown and over the location of the boundaries around the female category. The core site of concern has been, not explicit men or male bodies in women's sport, but female-categorised and female-identified athletes who embodied the binary breakdown and who broke

through the boundaries that had been drawn around ('normal') female embodiment, rendering their claim to be women or females in doubt. While these boundaries were drawn in different ways at different temporal periods, they were always navigated in relation to (contextually delineated) relations between sexed bodies and the ways in which they were/are socially and culturally classified into gender categories at each temporal juncture.

Conclusion

This chapter has contextualised the core arguments advanced in this thesis, by mapping the sexed and gendered histories of science, medicine, and colonialism that foreground the intelligibility of gender verification as a sex binary policing paradigm. It has outlined the theoretical framework within which the arguments are embedded, and discussed my critique of, and intervention into, existing literature on gender verification in sport.

The chapter charted how cultural and feminist theorists have shown the sex/gender distinction to rely on broader binary systems of intelligibility, being foregrounded by the nature/culture distinction through which sex is identified with the former and gender with the latter side. Sex as a natural category becomes an object of the natural rather than social and cultural sciences, sitting fixed in nature and outside the social sphere of cultural and historical change. Yet, as Butler and Haraway among others suggested, sex is not static, but it has a history of its own. When sex is unmoored from its fixity as a natural category and subjected to historical and cultural analysis, historians and cultural theorists of science and medicine have demonstrated how medical models of sex difference are temporally and contextually delineated conceptualisations, subject to historical and cultural change. They are embedded within broader scientific epistemologies that established sex as pure dimorphism grounded on the 'biological body' and erected as natural through particular knowledge production practices and medical discourses. The consequent scientific delineations of the medical(ised) and fragile 'female body' as foundationally differentiated from the 'male body' as the 'weaker sex', as well as models of pathology and abnormality constructed for those bodies that failed to fit

within the binary categories, constitute the history of how the duality of sex has been established, normalised, and naturalised.

This history is also a colonial and racialised history, as the binarised ontology of sex difference as pure dimorphism, as well as the relegation of sex as a natural and gender as a cultural category, were produced through colonial relations of power that made sex and gender differences salient along racial (and classed, etc.) lines. Pure sex differentiation, manifested in clearly delineated reproductive roles and corresponding social gender statuses and behaviours (of the European, white, middle/upper-class form), were identified with the (Western) European subject. Unclear sex differentiation and blurred or polluted gender roles, on the other hand, were identified with racialised (and classed, etc.) 'others'. That colonised female bodies seemed to be not only capable but also well suited to the kinds of physical labour that were taken to be too strenuous for the fragile white, middle/upper-class woman suggested that the labouring racialised (and classed) female bodies did not belong to the 'weaker sex'. While scientific delineations of the medical(ised) 'female body' as in need of protection from physical strain were read onto the bodies of white, middle-class women constituted as 'appropriately feminine', intertwined racialised, gendered, and classed conceptualisations of sex binary blur constituted the female bodies of the 'other' as the negation of feminine virtue and gender purity.

These histories show that what 'woman' and 'female' as categories imply is temporally and contextually conditioned, and embedded within broader scientific, medical(ised) and colonial histories that have made these categories salient. When it comes to the intelligibility of 'gender verification' as a practice, I argue that verifying gender implies verifying one's (social) gender status through the body, taken to carry 'femaleness'. For this to be possible, however, it is necessary to first know what 'female' means, and how the gender status and the sexed body are related to each other, in contextually conditioned ways. Kessler and McKenna's (1978) account of gender attribution suggests that gendered readings of bodies' appearances function as proxy for a sexed 'truth' that is hidden. In relation to gender verification, the question that arises is when and under what conditions does the concealment of the material referent identified with this 'truth' come to imply possibility of doubt about its existence, and under what conditions does it become

necessary to unveil the sexed body as proof of the appropriateness of gender attribution.

Building on Butler's (1990, 1993) matrix of intelligibility, I argued that this unveiling becomes compelled when bodies disrupt either the presumed female-woman-feminine relationship of continuity, or the female-woman-feminine/male-man-masculine oppositional binarisation (or both). This is because these bodies incite doubt about the naturalised and normalised relationship of continuity between the sexed body and its (social) gender status or classification, and gender verification is a practice of verifying (and securing) this relationship. Since to verify the relationship, there must exist a delineation or definition of what 'female' means, to be intelligible, gender verification polices rely on definitional and embodied boundaries being drawn around the 'female' category in opposition to the 'male' category. These delineations and definitions are temporally and contextually variable, and constructed in relation to broader gendered, racialised, classed, colonial, etc. discourses and relations of power erected upon white, western, and middle/upper-class gender and sex normativity that constrain which bodies appear as (appropriately) female and what (appropriately) feminine embodiment looks like. Those bodies that fail to conform to this normative framework appear discontinuous and threaten the naturalisation of the sex binary and the matrix of intelligibility theorised by Butler. They not only incite practices of realignment, but also render in doubt the relationship of continuity and the sex binary itself, by showing that they are neither essential nor ontologically fixed. This doubt compels gender verification and the accompanied boundary and category delineations and definitions. Boundaries around the 'female' category and the dividing line between the sex and gender binaries are thus foregrounded by, and erected in response to, bodies that render in doubt the location and 'truth' of these boundaries and dividing lines in the first place. The chapters that follow are focused on showing how this process has unfolded in elite sport from the 1930s till the present.

This chapter also charted the 'common-sense' historical narrative of gender verification (re)produced in exiting literature on gender verification. By building on and expanding Heggie's (2010) analysis of the ways in which the history of gender verification has been reinvented, reimagined and reconstructed, I outlined the

historical and epistemological problems that characterise much of this literature. I showed how the historical centring of gender fraud and masquerade functions to construct a particular historical interpretation of gender verification practices; namely, that these practices have been aimed at verifying that women athletes are not men/males. My interpretation of the historical record and my theoretical intervention differ from this: rather than being a practice of gender fraud/masquerade prevention, gender verification has been primarily aimed at verifying that women are *females*, and it has been motivated by panic over sex binary breakdown carried by female-categorised athletes who embodied this breakdown. Key to my argument is my methodological approach which relies on archival research, and on Foucauldian genealogy which aims to interrupt the 'presumed' of the past. The historical account produced in this thesis disrupts the presumed, common-sense narrative of gender verification reproduced in existing literature. The next chapter outlines how the Foucauldian methodological approach enables this through decentring the historical object itself, and analysing, rather, the genealogy of the object.

Chapter three

Methodological framework: a genealogy of the female category in elite sport

This chapter outlines the methodological framework of this research, which offers a genealogy of the female category in elite sport. The research maps the continuities and discontinuities in the International Olympic Committee's (IOC) and International Association of Athletics Federations' (IAAF) female categories by studying the 'descent' and 'emergence' of the 'female' as an object of knowledge and discourse. Framed by Foucauldian genealogy, the analysis is based on archival research, where the archive is conceptualised as power-endowed system of meaning making. Discourse analysis was applied to the documents collected from the archives, as a method enabling a formalised approach for reading the archival data within the confines of the broader genealogical framework. The findings thereby obtained were used to chart the temporally and contextually shifting constitutions of the 'female' from the 1930s till the present. Like much qualitative research, the project is both a product of pre-designed research parameters and chance encounters, both of which were influenced by my location, not only as a researcher, but also as a former competitive athlete with personal stakes in the project. This chapter outlines the genealogical framework of the research; the epistemology of the archive; the primary sources consulted both by design and as a consequence of unplanned encounters; and the situated location of the final product in relation to my social positioning.

A genealogy of the female category

The methodological framework within which this project is embedded is Foucauldian genealogy as conceptualised by Foucault in *Nietzsche, Genealogy, History* (2000), and as he applied it in *Discipline and Punish* (1991) and the three volumes of *The History of Sexuality* (1990a, 1990b, 1998). Genealogy, which can be understood as the construction of a history of discourse or discursive objects, was particularly apt for my purposes due to Foucault's emphasis on the disruption of inherent stabilities or the 'presumed' of the past (and the present), and due to his aim to examine how

differences and distinctions emerge, and what its excluded in their emergence. Applying Foucauldian genealogy, my research examined the continuities and discontinuities in the how the 'female' as a discursive and material object of knowledge was constituted in elite sport, and how boundaries were drawn around the female category in different ways in response to shifting temporal and contextual conditions.

Central to Foucault's methodological approach is the decentring of the subject and the object in historical inquiry to produce analysis that accounts for the constitution of the object and subject as such within a historical framework. He conceptualised genealogy as analysis of the constitution of objects, without presuming them to have any fixed or cross-temporal/contextual reality as constituents, and without searching for their 'origins' in a teleological sense. This amounts to the abandonment of fully formed or total constituents of history or in history in a way that rejects any appeals to an ontological essence. It implies an epistemological commitment to the idea that, in Foucault's (2000: 78) words, we cannot discover "a timeless and essential secret" about objects through historical analysis, but rather "the secret that they have no essence or that their essence was fabricated in piecemeal fashion from alien forms". Thus, rather than presuming that 'female' as an object of knowledge and regulation has any static or cross-temporal/contextual reality, my analysis aimed to account for how the 'female' was constituted and how and why its definitions and meanings were altered.

To replace the notions of origins and essences, Foucault mobilised Nietzsche's conceptualisations of 'emergence' and 'descent' as tools for analysis. Genealogy as the analysis of emergence is the analysis of the multiplicity of events that "gave birth to those things that continue to exist and have value for us" (Foucault, 2000: 81). 'Present' objects of discourse and the state of the present itself emerge, not as the culmination of a clear and linear historical development, but through a multiplicity of events, where an 'event' is conceptualised (not as a sharply delineated "decision, a treaty, a reign, or a battle", but) as "the reversal of a relationship of forces" or relations of power that do not have a final point of culmination but are on-going (Foucault, 2000: 88). Genealogy, then, "does not pretend to go back in time to restore an unbroken continuity" but aims, rather, to identify the reversals,

deviations, and even accidents through which discursive objects emerge (Foucault, 2000: 81).

Genealogy as the analysis of descent, on the other hand, is the tracing of this on-going emergence. It functions as a map of the 'ancestry' of objects, and replaces the search for objects' origins with an analysis of the multiplicity of events that constitute their descent. Foucault referred to genealogy as 'the history of the present' (1991: 31), or as the mapping of the descent of 'present' objects by mapping the events through which they have emerged. For my purposes, key to Foucault's conceptualisation of descent is the way in which it attaches itself to the body, marking both external and internal bodily sites like genitals, hormones and chromosomes, and thus embedding the body in its totality within its historical descent. Indeed, genealogy, for Foucault, is "situated within the articulation of the body and history. Its task is to expose a body totally imprinted by history" (2000: 83).

Foucault's framework enabled me to place at the centre the temporal and contextual contingency of sex and gender categories in general, and of the 'female' in particular. I examined the discursive, embodied, and historical constitution of the 'female' in elite sport to produce a genealogical account of the descent and on-going emergence of the 'female' as an object of knowledge and discourse, without presuming to know what it means in advance. I applied emergence and descent as tools to account for the events – the reversals and shifts – that comprise the descent of the 'female', and to analyse its emergence through these events as a site of on-going relations of power and struggle. By analysing the continuities and discontinuities in the constitution of the 'female', I aimed to expose the sexed and gendered body in sport as 'totally imprinted by history'. Genealogy allowed not only analysis of how the 'female' emerges and is constituted as a unitary category, but it also allowed me to move beyond the common-sense or 'presumed' history of gender verification reproduced in existing literature that I discussed in the previous chapter.

Conceptualising the archive

This project is based on archival research. Building on Foucault (1989) and Jacques Derrida (1995), I conceptualise the archive as historical, cultural, and material

phenomena of collective meaning making. The archive is a material phenomenon as a location – either corporeal or digital information storage system – and a cultural phenomenon for the production of meaning through the organisation of materials (where 'organisation' also accommodates randomness). Foucault conceptualised the archive, among other things, as a system of meaning making that embodies relations of power and "governs the appearance of statements as unique events", thus enabling and constraining what can be stated and locating statements within a context of intelligibility (1989: 145). Documents stored and collected together in archives function within the confines of the archives' system of intelligibility and carry power relations, whereby archives must be understood through the power-endowed production of intelligibility: rather than mediating access to any original identity, experience, or 'truth', archives themselves are products of history and have their own histories of constitution.

As Derrida has argued, the archiving process and available technologies of archiving "determine the structure of the *achievable* content even in its very coming into existence and its relationship to the future. The archivisation produces as much as it records the event" (1995: 17, original emphasis). In other words, the archive is not a 'container' for storing events of the past that would exist as such anyway, but processes of archiving, including the choice of what is and is not archived, and available technologies function to constitute the archived events, enabling and constraining what information is preserved, and therefore what can be researched. The archive, and the archiving process of inclusion and exclusion of documents in the archive, can thus be conceptualised as a process of emergence which, rather than providing access to pre-existing historical 'truths', (re)makes the past.

This is particularly so in relation to the current availability of vast quantities of digitised documents, which not only shapes how the past is constructed in the present, but also enables the production of new histories and knowledges (Hedstrom, 2002). The proliferation of archive digitisation allows researchers to access digitised collections through fast key word searches, which in turn enables the bringing into dialogue of large numbers of documents in ways that can produce new knowledges that would not have been possible before digitisation. The bringing together of these documents is itself a process of archivisation: the coming into

existence of new archived events. Indeed, as documents can only signify something to the extent that they are read and placed in context, archivisation not only changes how they are contextualised and why they are read, but also enables them to gain intelligibility in the first place. Thus, instead of being stable referents outside of their historical and discursive (re)constitution, archived documents are 'rewritten' and transformed through the practices of archivisation and research.

The implications of the above that should be highlighted in relation to my own research project are twofold: firstly, the archived documents that form my primary data reflect the histories and priorities of the archives within which they were held. Archives function, in many ways, as a (selective) externalised memory of the past (Hedstrom, 2002) written in the voice of those in power, and in particular the IOC archive collections that I consulted reflect the priorities of the IOC and its male-dominated history. The archival record is written primarily in the voice of white and middle-class or elite men, while women and those who were the object of the IOC's regulatory practices were not able to write themselves into the IOC record. They were written about, primarily by men, who discussed, debated and regulated their bodies in ways fundamentally embedded within gendered power relations that structure the archival record as well as the archive itself. Their silence in the archive reflects the absence of their voices in the decision that were made about them and, indeed, I spent most of my time in the archive reading records about 'them' written to be read by 'us' – reports that were clearly not intended for me to read since the reader was presumed to be male.

Secondly, not only the archive collections that I consulted, but also the 'sub-archive' that I constructed (by collecting and bringing together data in the form of photographs of primary documents and electronic copies of digitised documents) are a product of practices of inclusion and exclusion that produce or re-make as much as they record the past (or *a* past). In many ways, I was not only a researcher but also an archivist in my own right: to collect data, I made decisions about what to take and what to leave behind; what to include in and what to exclude from my own 'sub-archive' in ways that required me to decide and define what matters and which information is worthy of being in the record (Robertson, 2005). These decisions not only delimit the borders of my sub-archive, but also reflect my power, as a

researcher, to choose what is and is not worthy of note. In other words, they reflect my power to include as well as to exclude. After all, archives cannot draw meaning from themselves, but they can only 'speak' a history to the extent that you ask questions of them, and decisions about which questions to ask are always power-endowed decision about what matters.

The starting point for my research, then, and the frame through which I conceptualised my encounters with the archive, was the assumption that archival research does not constitute, simply, a project of fact-retrieval, but it is, in Antoinette Burton's words,

> a set of complex processes of selection, interpretation, and even creative invention – processes set in motion by, among other things, one's personal encounter with the archive, the history of the archive itself, and the pressure of the contemporary movement on one's reading of what is to be found there (2005: 8).

Encountering the archival record: primary sources and the data collection process

I conducted my research at two archival sites and at digitised archive collections accessed remotely. Many of the central findings were obtained by following the key discourses and objects of inquiry as they travelled across localised domains as well as time and space, in 'multi-sited' ways (Henne, 2015). Many of the collections and individual documents I consulted were discovered during the research process rather than before, both by chance and as a consequence of clear connections derived from data, as I encountered expected as well as surprising 'cross-archival' links.

I began the data collection process in autumn 2015 by undertaking a two-week research visit to the IOC Olympic Studies Centre (OSC) archives in Lausanne. I collected data from the IOC Medical Commission and 'medicine and medical matters' files and files containing the meeting minutes of the IOC Executive Board and IOC Sessions, by taking photographs of documents identified as having relevant content through screening the documents for key words and content designators. Through this process, I collected a 'sub-archive' of documents that I expected to form

the bulk of my primary data. However, as I undertook initial analysis of the data, I identified the key actors that shaped the boundaries of the female category in Olympic sport. While I had anticipated the role of many key influencers, I realised that some influencers had a more significant role than had been previously accounted for. These included two scientists in particular: Malcolm Ferguson-Smith and Albert de la Chapelle. Their significance was clear from the data, but the IOC data included only the IOC's side of the story, while the deliberations and debates that shaped the perspectives of the scientists was missing, leaving me with a one-sided perception of key events. I thus set out to gain an understanding of the scientists' side of the story, and I identified two archive collections that contained documents relating to the careers of these scientists: the Malcolm Ferguson-Smith collection held at the University of Glasgow archives, which has been digitised as part of the Wellcome Library's 'Codebreakers: Makers of Modern Genetics' collection, and the Albert de la Chappelle collection held at the University of Helsinki archives.

I collected and analysed documents in the Malcolm Ferguson-Smith collection through remote access, and undertook a two-week visit to the University of Helsinki archives in December 2015, collecting data by identifying relevant documents by screening for key words and content designators. The information held in these collections was much more comprehensive than I anticipated, and significantly shaped my understanding of the history. The collections contained information not only on these scientists, but also on the history of scientific and medical debates on the boundaries of the female category in sport spanning over three decades. Most notable were the Albert de la Chappelle collection's gender verification files which have not, to my knowledge, been consulted before, and the documents held in the collection led me to new links between the IOC and multiple other scientists and cross-national scientific communities.

Based on an initial analysis of the Ferguson-Smith and de la Chapelle collections' data, I identified and analysed medical academic articles held in academic journal databases and key scientific discourses that were connected with, and foregrounded, the themes in the data. I also identified broader, geopolitical, ethical, and racialised discourses which shaped the ways in which the 'female' and

its boundaries were conceptualised at different temporal periods. I then realised that my initial IOC archives data was insufficient for fully understanding the broader discourses and frameworks within which IOC medical decision-making was embedded, since most of my IOC data consisted of data relating to medical matters, specifically. I thus undertook a second two-week visit to the OSC centre in the spring of 2016, to collect data that would enable me to understand the broader discourses embedding sport regulators' medical decision-making.

During my second visit, I consulted IOC files on women in sport, the Russian National Olympic Committee, the 1968 Mexico City and Grenoble Olympic Games, the 1936 Berlin Olympic Games, as well as the files of IOC president Avery Brundage and the IOC Medical Commission president Prince Alexandre de Merode. I also reviewed the extensive collection of books relating to the Olympic Games held at the OSC reference library. This second IOC research visit enabled me to place data collected during the first visit as well as data collected from the Ferguson-Smith and de la Chapelle collections into a broader framework.

In addition to the IOC, Ferguson-Smith, and de la Chapelle collections, I consulted multiple digitised newspaper archive collections during the data collection and initial analysis processes, to place my other data into the context of public and media discourses. After my first IOC archive visit, I collected initial data from digitised newspaper archives in the form of newspaper articles, using the basic key words of 'sex testing', 'gender verification', and 'femininity control', combined with the word 'sport'. At different stages of the research process, I collected additional newspaper data based on key themes I identified from my other data, using key words related to the themes. This included using the names of athletes that became subject to gender verification in sport, and using key word combinations like 'Soviet + women + sport', 'doping + women + sport', and 'sex change + sport'. The newspaper collections that I consulted were the following: ProQuest Historical Newspapers, UK Press Online, Time Magazine Online Archives, the Times Digital Archive, Nexis newspaper archive, and Google Newspaper Archive. To analyse contemporary newspaper representations, in addition to using the Nexis database, I also collected data in the form of online news stories through Google news by word searches, in particular in relation to the Rio 2016 Olympic Games.

Two key limitations in relation to the data collection process influenced the findings and analyses presented in this thesis. Firstly, the IOC archives place an embargo on documents that can be accessed for research, whereby documents less than 20 or 30 years old (depending on document type)[8] are not accessible to be consulted.[9] The embargo on documents meant that I was not able to analyse post mid-1990s IOC documents, which means that my analysis of more recent history was constrained in important ways: my analysis of the late 1990s discourses is limited to data from the de la Chapelle and Ferguson-Smith collections and newspaper collections. The temporal scope of the de la Chapelle and Ferguson-Smith collections does not extend past the turn of the century, and data from 2000 onwards is limited to analysis of newspaper collections and online IOC and IAAF materials. Because the IOC and the IAAF publish key documents relating to contemporary and more recent regulatory policies online, however, I could access these key documents through their online document databases.

Secondly, due to limits in my language proficiency, I was not able to analyse documents in languages other than English, Finnish, and Swedish.[10] This inevitably introduces a language (and consequently, regional) bias into the analysis, since documents in other languages held in the consulted collections (including, most significantly, French, German, and Russian) were disregarded on the grounds of language. The inclusion of documents written in Finnish and Swedish at the expense of other languages, in particular in relation to my use of data from the de la Chapelle collections, also means that there is an emphasis on the Northern European perspective and Northern European actors, including de la Chappelle and the IAAF (and later also IOC) Medical Commission president Arne Ljuqgvist, especially in

[8] Files containing only 'public' material and general IOC files classed for 'internal use' have a 20-year embargo, while materials classed as 'confidential' and meeting minutes of the IOC Executive Board, IOC Sessions, and IOC commissions and working groups have a 30-year embargo.

[9] In addition, to protect the identities of vulnerable individuals and sensitive information, documents containing information about the identities of athletes subjected to gender verification are not accessible (for good reasons).

[10] Many documents in the de la Chapelle collection were written in Finnish or Swedish, and the quotes included in the thesis from these documents were translated into English by myself.

chapters seven and eight. In addition, language restrictions also meant that my analysis of newspaper articles was limited to newspapers published in English (and to newspapers published in Finnish and Swedish held as part of the de la Chapelle collections). All newspapers I analysed from newspaper databases were consequently English language publications mostly from the UK and the USA (with some from Australia, Canada, India, and South Africa), thus representing a particular (mostly Western) perspective at the exclusion of other perspectives (such as, most significantly, Eastern European and the Soviet Union).

It is also important to note that my visits to the OSC and the conversations that I had with IOC staff there gave me a perspective into the culture of Olympism and the Olympic values – which are materialised at the OSC site as statues and memorabilia – in ways that shaped my reading of the data I collected. My reading was shaped, in particular, by my visits to the Olympic museum located at the OSC site, which functions in many ways as an embodiment of Olympism and its history, standing as a symbol of the Olympic Games' influence in the world. While I do not directly invoke my experiences of these visits in the thesis, the visible and celebrated presence of the Olympic values at the OSC site shaped my interpretation of the values themselves, especially in relation to the foundational and static status they are given in the Olympic imaginary.

I have outlined my encounters with the archives and the data collection process in this way, because I wish to highlight how the results and analyses collected together to form this thesis were the consequence of chance encounters and unanticipated cross-spatial and cross-temporal linkages as much as they were the consequence of pre-designed research parameters. While I had planned the documents I consulted during my first visit to the IOC archive to form the bulk of my primary data, it was only when I exited the archive after this first visit that the process of data collection fully began. The records I encountered both there and thereafter had temporal gaps, were ruptured, often messy, and in the case of the de la Chapelle collection, unorganised. As I brought all my collected data together in the end, the 'sub-archive' I had constructed was the result of a network of relations, constructed by following traces in the data that were sometimes clear, sometimes unexpected, and always influenced by my personal experiences of and encounters

with the archives as well as the histories and scopes of the archives themselves. I return to the importance of my personal social location further in this chapter. The next section discusses the method I applied to analyse the data collected.

Discourse analysis

To enable formality in the analysis of documents, I applied discourse analysis embedded within the broader Foucauldian theoretical and methodological frame, which I conceptualised as a structure of reading rather than as a closed method. While I mobilised discourse analysis as a tool to formalise the process of analysis, I did not conceptualise it as a fixed or static method, but as an approach with which to structure reading, while remaining flexible. I follow the Foucauldian definition of discourse as "ways of constituting knowledge, together with … social practices, forms of subjectivity and power relations" (Pitsoe & Letseka, 2013: 24). I follow Ian Parker's understanding of discourse as being realised in 'texts', where texts are "delimited tissues of meaning reproduced in *any* form that can be given an interpretive gloss" (Parker, 1992: 6, original emphasis). In other words, discourse is 'occasioned' in texts (Gill, 1996), and discourse analysis is analysis of discourse through these occasions and their context. Discourse analysis, then, involves asking questions about how discourse embeds the texts analysed and how discourses are organised in texts, as well as about the texts' historical and temporal locatedness.

While various approaches to the formalisation of the analysis of discourse have been devised (Fairclough, 2003; Potter & Wetherell, 1987; van Dijk, 1997) my use of the method was built on Parker's (1992) and Carla Willig's (2013) approaches due to their grounding in Foucault's epistemological framework, and due to them enabling a focus on the kinds of discursive objects constituted and how they come to emerge. While Willig's 'procedural guidelines for the analysis of discourse' consist of six stages of analysis and Parker has devised a detailed 20-step guideline for the analysis of 'discourse dynamics', many of Willig's stages are focused on the analysis of subjectivity/subject positioning and only some of Parker's comprehensive guideline's steps focus on the constitution of discursive objects. Due to my focus on the genealogy of the female category, the emphasis of my analysis was on the

constitution of the 'female' as an object of knowledge and discourse, and the broader contexts that foregrounded the emergence of the 'female' as an object. Building on, and merging together, steps from Willig's and Parker's approaches, I thus employed the following stages in my analysis:

> *Stage 1: identifying the constitution of objects in discourse*: identifying how the 'female' was constituted in texts. Rather than searching for lexical comparability, analysis was directed towards the identification of (continuous and discontinuous) meaning.
>
> *Stage 2: locating discursive objects within wider discourses*: Identifying the different ways in which constitutions of the 'female' were located within wider discourses. Different discourses embedding texts were identified and their relationship to one another examined.
>
> *Stage 3: examining the uses of discursive objects (i.e. what work they do)*: Examining the contexts within which different constitutions of the 'female' were employed. Their functions, what they were capable of achieving, and what was gained through their employment was examined.
>
> *Stage 4: examining the historical location of discourses*: Examining the historical or temporal location of discourses and the 'female' as a constituent within. Focus was on how and where the discourses and constituent objects emerged and on their continuities and discontinuities.

I applied these stages as tools to analyse the archival documents that constituted my primary data while allowing for flexibility in how the stages were mobilised (e.g. in what order, or whether using all stages was necessary, depending on the text analysed). After each data collection stage, I conducted initial analysis identifying key themes and connections. After the data collection process was completed, I conducted a full analysis of all collected data, refining the themes and connections identified, and organising them into thematic, temporal sections which

constitute the chapters of this thesis. While Foucault himself did not apply discourse analysis as it has been systematised as a method, I conceptualised discourse analysis as a tool with which to construct a genealogy of the female category. Due to its embeddedness within Foucault's epistemic frame, using Foucauldian discourse analysis allowed me to remain faithful to my broader genealogical framework, while enabling me to approach the analysis of documents in a formalised and systematised way.

Situated knowledges

The planned and unplanned research encounters that enabled me to write this thesis were influenced not only by my meetings with and within the archives, but also by my personal location as a researcher from the global North based in the United Kingdom, and as a former competitive female athlete who positions herself as sitting somewhat uncomfortably within her assigned gender category. My social location both motivated the research project and influenced the research process, which necessitates an awareness of situatedness of the outcome also in relation to my personal history.

I have been an athlete as long as I can remember. My childhood was surrounded by sport, and I was raised by former elite athletes in a family where competitive sport participation was taken for granted. As a child, it did not occur to me to think that I was any less capable at sport than the boys, and it was only during my early teenage years that I realised that my culture saw my body as substandard in comparison to the athletic potential of the boys around me who were growing up to be men. In my late teens, I took up weightlifting, and as my strength and muscularity increased, I became accustomed to comments that rendered my (presumed hetero)sexuality or gender in doubt. The fact that I not only embraced my strength but also identified as a lesbian and preferred what was perceived to be masculine gender presentation and behaviours caused confusion among my peers that both amused and troubled me.

The beginnings as well as the final product of this research project are embedded within my personal history and the circumstances of my 'entry into

knowledge' (Hook, 2005) about sex binarisation and gender policing in the context of sport through this personal history. Thus, while I do not directly invoke my own experiences in the research, the analyses that follow cannot be conceptualised as being 'outside' or independent of my personal history because my motivations for undertaking this research shaped the research process and the feminist voice with which I speak in presenting the findings. I follow Donna Haraway (1988) in conceptualising research products as situated knowledges, where recognition of the situatedness of research implies recognition of the groundedness and failure of innocence of all knowledge production. I read situated knowledges to imply, not only a call for reflexivity, but also a call for "a version of historical awareness, a tracking of the researcher's own 'entry into knowledge'" (Hook, 2005: 23). This tracking relates to the systems of meaning "that accrue to the … location from which the researcher speaks", both in terms of the methodological and theoretical location of the research project and in terms of the social location of the researcher herself (Hook, 2005: 23).

This also applies to my location as a white researcher from an affluent Norther European country, which in many ways positions me in a location of relative privilege in relation to many of the subjects whose stories I analyse in my research. The situatedness of research production implies not only a loss of innocence, but also responsibility for our 'enabling practices' where 'irresponsible' means unable to be called into account (Haraway, 1988). Following Haraway, I conceptualise knowledge production and accountability as co-constitutive which, as Linda Alcoff (1991: 26) reminds us, applies not only to knowledge production itself but also extends to looking "at where [the knowledge] goes and what it does there". I thus conceptualise my research as constituting situated knowledges that must remain accountable and contestable for their content as well as effects, implying openness to be called into account for what they do as well as do not enable.

Conclusion

In this chapter, I have outlined how this thesis offers a genealogy of the female category in elite sport, applying Foucault's genealogical approach. The thesis is based

on archival research conducted at the IOC archives, the de la Chapelle collections, the digitised Ferguson-Smith collections, and multiple digitised newspaper archive collections. The data collected was analysed using discourse analysis, and findings thereby produced are conceptualised as situated knowledges, obtained as a consequence of chance encounters as much as a consequence of pre-designed research parameters.

As explored in this chapter, I mobilised the Foucauldian genealogical framework to study the continuities and discontinuities in the constitution of the 'female' as an object of knowledge and discourse in shifting temporal and contextual conditions, as well as to study the boundaries that were drawn around the female category in elite sport in response to these conditions. I conceptualise the archive and the archived documents that constitute my primary data through an epistemology of the archive as a power-endowed system of meaning making whereby archival research is seen, not as a project of simple 'fact-retrieval', but as a process of inclusion, exclusion, selection, and interpretation that are shaped by the history of the archive itself as well as the researcher's encounters with the archive. I analysed the data collected in the archives by using Foucauldian discourse analysis as a tool with which to construct a genealogy of the female category, enabling me to approach the analysis of documents in a formalised and systematised way while remaining faithful to my broader genealogical approach.

The findings presented in this thesis were brought together by following the objects of inquiry as they moved from one discursive and archival context to another, in expected as well as unexpected ways. The 'sub-archive' I constructed by tracing these movements, and the process of tracing itself, was shaped by my personal history as well as the histories of the archives. The history that I produced as consequence should thus be seen as situated knowledge, implying recognition of its groundedness and failure of innocence as well as its – and my own – openness to be called into account in relation to its effects. The methodological approach applied enabled me to move beyond, and make an intervention into, existing literature by disrupting the widely reproduced 'presumed' or 'common-sense' account of the history of gender verification, by basing my arguments on primary sources, and by

enabling me to account for the continuities and discontinuities in the constitution of the ‘female’ in a contextually conditioned way.

Chapter four

Sex change metamorphoses, hermaphrodites, and 'normal' women: physical examinations and femininity certificates

This chapter discusses the early history of gender verification, focusing on the 1930s context in which the first gender verification policy was instituted. This time-frame has received little academic attention – as I noted in chapter two, most scholars locate the introduction of gender verification in the late 1960s context.[11] This chapter, however, aims to show not only that a gendered protest-based policy was instituted by the International Amateur Athletic Federation (IAAF) as early as 1937, but also that that this policy was motivated by concerns over gender and sex binary breakdown carried by female-categorised athletes who were entering the masculine sphere of athletics competition in increasing numbers. Many women in athletics were considered excessively masculine or masculinised; some to the extent that they appeared hermaphroditic or were even seen to be changing into men. These concerns were, in turn, embedded within a context where medicalised conceptualisations of female embodiment constituted women's bodies as frail and susceptible to harm from physical strain, and intertwined with the emergence of new endocrinological theories of sex instability that rendered sex difference unstable.

By outlining the early 20th century medicalisation of female bodies' physical capability and related prescribed notions of vulnerably to physical 'strain', this chapter analyses how the naturalisation of female embodiment as a physical handicap resulted in imaginaries of female bodies able to bear the strains presumed to be involved in athletics participation as abnormal and unnaturally masculinised. It maps the implications of endocrinological theories around hormonal sex instability to women's sport, and the related emergence of new conceptualisations of 'sex changes' through which an association was constructed between female's athletic participation and excessive masculinisation that could even result in a sex change

[11] Notable exceptions to this are Vanessa Heggie (2010, 2014) and Lindsay Pieper (2016). My analysis of the historical record, however, differs from theirs.

'metamorphosis'. I consider the stories of two former female athletes in particular, both of whom 'changed sex' after their careers in competitive sport; namely, Mary/Mark Weston and Zdeňka Koubková/Zdeněk Koubek. Despite their stories featuring prominently in the archival record, Weston and Koubek are absent from most histories of gender verification, and when they are included, they have been labelled "transgender athletes" (Pieper, 2016: 31) and "sporting transsexuals" (Heggie, 2014: 340). It is important to note from the outset, however, that the 1930s portrayals of sex change did not have the connotations of transsexuality to which the term attaches in the present and the transgender/sexual labels were not applied to describe Weston and Koubek. Rather, these sex changes were portrayed as arising from within the body itself, which held bisexual potentiality due to hormonal sex instability. They were also connected with concerns over the proliferation of hermaphroditic bodies in women's athletics.

The chapter discusses the policies that were instituted and applied in athletics, and possibly also in the Olympic Games, between 1937 and 1966, and concludes by mapping how the early gender verification policies were foregrounded by medicalised, white, and middle/upper-class European norms of appropriately feminine embodiment. I argue that the concern over sex binary breakdown that motivated the introduction of these policies was carried by female-categorised athletes who seemed to exceed and transgress the normalised and naturalised boundaries around female embodiment, representing the instability facing binarised categories of sexed bodily difference. These athletes incited doubt about the truth of their claims to belong in women's sport and in the female category, and sport regulators consequently erected bodily constraints on claims to femaleness or womanhood that were written into policy.

'Normal' feminine women and 'the peculiar awkwardness of women's efforts'

The formative vision of the Olympic Games for Pierre de Coubertin, the founder of modern Olympism,[12] was based on ideals of masculine prowess, demonstrated in competition where success is "determined purely by the physical superiority and *muscular potentialities* of the individual" (de Coubertin, 1956: 53, original emphasis). De Coubertin did not consider such competition suitable for women – the true Olympic athlete was gendered male, while women's role in the Games, according to de Coubertin (1956: 54), should have been "that of crowning the champions" and he was adamant that women "should not seek the limelight!" De Coubertin's ideas about women and sport were shared by many of his contemporaries, and built on broader conflations of athleticism and masculinity. Sport historians have extensively documented this conflation, and analysed the naturalised connection of athleticism and sporting prowess with male embodiment as well as the reversed association of female bodies with athletic inferiority (Cahn, 1994; Griffin, 1998; Hargreaves, 1994, 2000; Lenskyj, 1986; Smith, 1998). As Jennifer Hargreaves (1994) among others has argued, and as I discussed in chapter two, since the beginning of the 19th century, medicalised conceptualisations of female frailty had relegated women as the 'weaker sex', and such conceptualisations were central in navigating the value and nature of women's physical capabilities. These conceptualisations were, however, also embedded within racialised and classed gender normativity built on western norms of gender differentiated reproductive roles. The medical models of 'healthy' forms of exercise for women centred moderation and curtailment in the face of fears over reproductive damage from 'strenuous' activities, but the frailty these models presumed connoted white middle/upper-class women who did not undertake physical labour, and it was these female bodies that were the object of concern and medical(ised) protectionism (Cahn, 1994).

De Coubertin's and his supporters' gendered sporting ideals were embedded within these broader imaginaries and scientific models through which the

[12] de Coubertin founded the International Olympic Committee in 1894, and the first modern Olympic Games were organised in Athens in 1896 (IOC, 2013).

embodiment of the 'weaker sex' – as the white and middle/upper-class woman – emerged as determined and weakened by reproductive processes. In the words of one 1930s observer "Science has proved conclusively that girls are unsuited to athletics" among other things because their "Lung power is reduced considerably by tendency for full hips and narrow shoulders" and because "it has been noted by many scientific observers that feminine muscle development interferes with motherhood" (Sharpe, 1938: 29). Indeed, these ideas endured well into the 20th century – as late as the 1950s, one medical observer considered that

> A woman is built physically different from a man for a purpose, namely childbearing. The trunk of a normal woman's body is proportionately longer than her limbs; her hips are much wider and amply padded with superfluous fat; her pelvic bones are set at a shallower angle and are loosely bound and consequently are under poorer control – hence the peculiar awkwardness of women's efforts. The lungs and heart are comparatively smaller, definitely handicapping a woman in exercise requiring speed and endurance. Finally the muscles are shorter, lighter and not built for the strenuous exertions necessary in athletics (Bilik, n. d.).

During the first part of the 20th century, however, these conceptualisations had also become disputed by some women's sport organisations and women athletes who were taking part in competitive sport in increasing numbers, especially in sports considered less strenuous and feminine enough for women such as swimming, gymnastics, and tennis (Hargreaves, 1994). In 1922, the pioneering women's sport activist Alice Milliant and the Fédération Sportive Féminine Internationale (FSFI) begun sponsoring the Women's World Games (WWG), which highlighted international athletics competitions for women for the first time (Cahn, 1994). Despite increasing tolerance of women in sports considered more feminine like swimming by the 1930s, however, women's entry into athletics was particularly troublesome because it ignited anxieties over the erosion of clearly differentiated male and female spheres grounded on naturalised (and medicalised) embodied sex differences. This was because, as Susan Cahn has argued, athletics

> had a particularly masculine image. It featured power and speed unmediated by equipment, teamwork or complicated rules. Thinly clad running, throwing,

> and jumping athletes appeared to demonstrate 'naked' athletic prowess as they exhibited their strained faces and muscles for an audience entranced by elemental human exertion (Cahn, 1994: 114).

This image made athletics appear not only inappropriate but also profoundly unnatural for the 'weaker sex' who should not have been able to endure the kinds of physical strains that athletics involved. Indeed, as Cahn (1994) argued, this image worked to empty white middle- and upper-class women from the sport. Some (limited) organisational support incited by the WWGs, however, meant that women's athletics gathered some popularity among working-class communities which, in turn, reinforced the perception of the sport, and the women who took part in it, as masculine and 'excessive' when it came to physical effort, which stood in stark contrast with the appropriately feminine middle/upper-class woman who required moderation and protection from strain.

The idea of 'strain' was central enough to merit some elaboration here. The notion of 'strain' was attached, in particular, to ideas around excessive or 'abnormal' amounts and kinds of physical efforts that were seen to harm female bodies. As phrased by one 1930s observer, "abnormal exercises of the muscles … tend to disfigure … to a more or less permanent degree, according to the length of the competitive career" (Wooldridge, 1932: 15), while another made it abundantly clear that "IF YOU HAVE TO TRY TOO HARD YOU HAVE TO STRAIN. AND STRAIN MEANS DAMAGE" (Sharpe, 1938: 29, original capitals). Combined with the image of athletics as an elemental form of human exertion, 'strain' not only constituted athletics as abnormal for women but also had the effect that those women who excelled in athletics appeared deeply gender suspect: to the extent that athletics was abnormal for the (medicalised) female body, female-categorised bodies capable of enduring the physical strains involved, in turn, appeared abnormal and suspiciously 'male-like', which functioned to undermine their status as women, in ways reinforced by the fact that these women were disproportionately working-class.

The concern over strain was also shared by several women's sport organisations. The Women's Division of the US National Amateur Athletic Federation, for example, was strongly opposed to women's competition and Olympic competition in particular on the grounds that it (among other things)

offered "opportunity for possible over-strain in preparation for and during the Games themselves" (The Women's Division of the US National Amateur Athletic Federation, 1929). To avoid strain, they advocated "adequate medical examination and medical follow-up advice as a basis of [sport] participation" for women (The Women's Division of the US National Amateur Athletic Federation, 1929). Similarly, the Women's Athletics section of the American Association for Health, Physical Education, and Recreation argued that women's participation "in athletics must depend upon a comprehensive and reliable evaluation of the health status of the participant", taking into account females' "general organic normality" (The Women's Athletics Section of the American Association for Health Physical Education and Recreation, 1937: 4). They thus argued for "an initial and periodic health examination by a qualified physician" (1937: 19). These organisations tended to operate under a women-centred frame where "playing girls' games, under girls' rules, with women coaches, for the sake of enjoyment of sport" (The Women's Division of the US National Amateur Athletic Federation, 1929) was the overarching objective, and much of their rhetoric was motivated by the desire to construct an emancipatory framework for women's sport participation in opposition to 'masculine' and male-controlled competitive sport (Hargreaves, 1994). Their complicity with the medicalisation of the female sporting body, however, lent support to the normalisation of female embodiment as a physical 'handicap', whereby the 'organic normality' of women's bodies was constituted not only as always already the weaker sex, but also as being in perpetual danger from strain.[13]

These concerns were intertwined with concern over feminine body aesthetics navigated through western, white, and middle/upper-class notions of beauty. The gendered aesthetic hierarchy constructed by sportswriter Paul Gallico (1938) in the late 1930s is illustrative. In Gallico's words "Unattractive girls are usually comparatively good sports. Pretty girls are not" (1938: 242). He considered that female track and field athletes were "Flat-chested, most of them" and "can wear

[13] For a more in depth discussion of women's sport organisations like the women's division of the US National Amateur Athletic Federation, and the principles of their opposition to women's competitive sport, see Cahn (1994: 55-82) and Hargreaves (1994: 88-144).

those bias-cut shorts and shirts because they are not built or muscled like women … Only a man can wear a running-suit to advantage – or a woman constructed like a man" (1938: 235-236). He concluded that they are a "strange, almost fantastic crew, all right, these muscle molls" (1938: 236). The 'ugliness' of track and field female athletes' bodies was thus defined through their (presumed) masculinity whereby attributes associated with maleness (flat chest, visible muscularity, etc.) carried their (hetero)normative unattractiveness, in some cases in the 'extreme' so as to render these bodies freak-like in their blurring of gendered boundaries. Similar ideas were expressed even over a decade later by sport officials such as Dr. Messerli who was a member of the IAAF Women's Commission. Messerli (1952: 11) noted that female competitors in athletics were endowed with "physique slightly masculine" as well as originating from Northern countries "where women were more athletic but physically and sexually less advanced" (1952: 11). Yet, according to Messerli, even these less sexually advanced Northern women who were not "handicapped by too full a bosom" should not be allowed to take part in events like long distance races as "these feats of endurance" were "too strenuous for women" (1952: 13). These kinds of remarks worked to intertwine the concerns over strain and female frailty with concern over loss of feminine aesthetics and female bodies' attractiveness, co-constituting women's athletics as simultaneously uglyfying, unaesthetic, masculinising, and too strenuous for 'normal' feminine women.

Exemplary of the intertwinement of medical(ised) and aesthetic ideas around female embodiment and athletics were the anxieties accompanied with the brief inclusion of the women's 800-meter race in the Olympic programme in the 1928 Amsterdam Olympics, which was mainly the result of persistent lobbying on the part of the FSFI and Milliat. After the race, several newspapers reported that the female 800-meter runners had suffered great strain from their efforts to cover this distance, and many had collapsed in exhaustion or burst into tears at the end of the race. Even two decades later, one observer reflected on the event, and on women's athletics in general, with abhorrence:

> At … the Amsterdam Olympics women were asked to race at the 800 meters. In this instance several of them floundered at the turf in agonizing distress.

> There is … certainly nothing of aesthetic merit in women attempting athletics. Their overall efforts are grotesque to say the least. When the ladies … come out to sweat, strain and contort their features into Medusan masks, I frequently left my seat to obtain a soothing cup of tea (Daley, 1948: 27).

Anxieties around the 800-meter race coupled concerns over the 'excessive' strain resulting from athletics with those over the loss of feminine beauty, in ways that constituted women's athletics as an abhorrent, gender boundary violating spectacle in need of curtailing. Indeed, after the Amsterdam Olympics, the women's 800-meter event was cut from the Olympic programme, and only reinstated in 1960. It is noteworthy that Messerli commented in retrospect that as he "was judging this particular event", he could "therefore certify that there was nothing wrong with [the athletes], they burst into tears thus betraying their disappointment at having lost the race, a very feminine trait!" (1952: 10-11). Despite this observation, Messerli was opposed to women's elite competitions in athletics and argued that restricting their participation is "all for the good, seeing that woman has a noble task in life namely to give birth to healthy children … we must avoid everything which can be injurious to her health and harm her as a potential mother" (1952: 16).

The medicalisation of female bodily capability and its coupling with feminine beauty ideals foregrounded and contextualise the emergence of gendered anxieties and doubt in relation to 'strenuous' women's sport in the first part of the 20th century. Because 'normal' female bodies were considered frail and determined by childbearing, participation in 'strenuous' sports was rendered not only dangerous and unaesthetic but also unnatural, abnormal and unconstitutional for female bodies. To the extent that women insisted taking part in such sports, medical and sport officials considered regulation and curtailment of their sport activities necessary. As medical(ised) notions of female physical capability coupled with heteronormative beauty ideals, athletic female bodies in 'strenuous' sports came to be regarded so masculinised as to be almost freakish, as they blurred gendered boundaries of appropriate embodiment and behaviour.

Sex changes, masculine metamorphoses, and sex instability

To understand why the first gender verification policy was instituted by the IAAF in the late 1930s, their regulatory decisions must be placed in the context of sexed and gendered anxieties of the period, which were centrally carried by the emergence and popularisation of new endocrinological theories around 'sex' hormones. As I noted in chapter two, these theories unsettled older ideas around binarised sex difference, and they merged with the 1930s imaginaries around women and sport to incite concern over sexed and gendered binary breakdown. In the 1930s, endocrinologists introduced a quantitative theory of hormonal sex that implied relative (rather than absolute) sex specificity: 'femininity' and 'masculinity' as binary characteristics of 'female' and 'male' were no longer mutually exclusive, but female bodies could have masculine or male-like characteristics due to hormonal fluctuations (Oudshoorn, 1994). This, in turn, allowed the emergence of new realities like the hormonally 'virilised' or 'masculinised' female which was mobilised to explain masculine characteristics on female bodies.

The new hormonal model gave rise to what Lennox Broster (1939), who was an expert on the subject, called the 'clinical study of sex changes'. Broster (1931: 743) noted that "it has fallen to my lot as a surgeon to study several cases of women in whom male secondary sexual characteristics have appeared", including broadening of the shoulders and increased muscular development. Broster (1939: 925-926) added that "the comparative instability of the female sex" meant that "the masculinization of the female is a far more common event than the feminization of the male" and the fact that sex changes "more commonly occur after puberty, when the secondary sex characteristics appear, suggests that the cause remains inherent but latent, and can be activated in later life during times of endocrine stress". The clinical study of sex changes and the notion 'sex change' in the 1930s were disproportionately attached to the masculinisation of female bodies resulting from 'latent' masculinity that lay dormant, but could be initiated in later life by hormonal 'stresses' that incited a change of sex.

The hormonal sex model was not confined to scientific circles, but was also popularised and (re)interpreted by the press, including by sports journalists. According to the American *Physical Culture* magazine,

> All the old landmarks are going, nothing is static, everything flows. Old dreams and old nightmares become realities. … Sex is no longer immutable … No man is 100 percent male, no woman 100 percent female. … Each sex carries within itself the potentialities of the other (Wickets, 1937: 16).

Building on but adding a sensationalised tone to scientific depictions, 1930s newspapers portrayed ideas about latent masculinity in female bodies as a *potentiality* which could occasionally break through or be brought to the surface by (hormonal) disturbances: it could "sometimes [happen] that a normal girl suddenly begins to acquire virile features" since "there is no such thing as absolute sex … being male or female is not a matter of one element completely excluding the other, but rather of one element dominating the other" ("Medicine: Change of Sex", 1936). This was taken to mean that "the slightest variation, the slightest derangement, may, consciously or unconsciously, anatomically or psychically, affect the direction of the sex instinct and constitution" and, indeed, *Physical Culture* magazine added that "Recently the astonishing news made the rounds that science had actually succeeded in changing the gender of two female athletes" (Wickets, 1937: 83, 16).

This story was part of a series of similar 1930s news stories that appeared in British and American newspapers, reporting spectacular(ised) cases of sex changes involving women suddenly changing into men (see also Oram, 2011; Tebbutt, 2015). These stories were covered by multiple newspapers, and often described as 'metamorphoses' in ways that connected the sex changes with the new theories around sex instability, whereby a process of sex metamorphosis arising from the body itself was complemented or completed with surgical assistance. While news stories often mentioned that some (usually unspecified) surgical operations were performed for the sex change cases, such operations tended to be portrayed as supporting a change that was already underway anyway. Notably, these stories disproportionately involved previously female-categorised athletes, and nearly always made reference to the metamorphosing athletes' sporting careers,

particularly in relation to masculinity-connoting sports like athletics in ways that offered athletic participation as a contextualising feature of the metamorphoses. The effect was that these narratives associated the metamorphoses with women's sport and athletics in particular, in ways that suggested that the 'stresses' involved might initiate the surfacing of latent masculinity. This association, in turn, was intelligible in the 1930s context where women who participated and excelled in masculinity-connoting sports were seen as already abnormally 'male-like'.

The most widely reported sex change stories concerned British athlete Mary/Mark Weston and Czechoslovakian athlete Zdeňka Koubková/Zdeněk Koubek, both of whom had competed in women's athletics. In 1936, newspapers reported that Weston, who had won several women's titles as well as represented Britain in the Olympics and the WWGs, had experienced a "metamorphosis into masculinity" ("Medicine: Change of Sex", 1936). Weston had become a man and changed his name to Mark. In an interview for the *Reading Eagle*, said Weston:

> I always imagined I was a girl until 1928. Then, competing in the world championships at Prague Czechoslovakia, I began to realize that I was not normal and had no right to compete as a woman. But I only had the courage to see a doctor this year, when a London specialist said I ought to undergo two operations ("Girl Who Became Man Tells of Metamorphosis", 1936: 5).

According to newspapers, the operations had been performed by the sex change specialist Broster, "to complete Mary Weston's metamorphosis into masculinity" apparently to supplement a pre-existing sex change process that had already been underway ("Medicine: Change of Sex", 1936). Koubek, on the other hand, had won the women's 800-meter race in the 1934 WWGs and set the 800-meter world record in 1934 which, according to the IAAF, was later "stricken from the record book after it was determined that Koubková was a man" (Hymans & Matrahazi, 2015: 264). Coinciding with Weston's story in 1936, several newspapers reported that Koubek had experienced a sex change aided by "operations which converted her from a slender twenty-one-year-old woman athlete into a young man" (Reunter, 1936: 8).

Newspaper depiction of Weston and Koubek reflected the broader narratives of sex instability, and nearly all news stories about their metamorphoses made

reference to their backgrounds in athletics, sometimes accompanied with pictures of them performing sporting feats, showing their athletic bodies in full swing. This emphasis on athleticism worked to contextualise their metamorphoses in ways that made their athletic backgrounds appear as an explanatory framework for their masculinisation, giving the impression that masculinisation had been incited by participation in athletics, or that this participation had 'awakened' masculinity which was now surfacing in response to related physical 'stress'. These portrayals were intelligible in the 1930s context where athletic prowess in particular in 'strenuous' sports like athletics was both unnatural for female bodies and itself a masculine sign. Especially pertinent is Koubek's success in the 800-meter race, considered to be too strenuous and unconstitutional for female bodies, to the extent that the event had been cut from the Olympic programme after the Amsterdam Olympics. Athletic prowess and interest in sports was also taken by clinicians as a supporting characteristic for access to surgical aid to complete the sex change process: for Broster (1938: 48), Weston's desire to "play men's games, such as football" and him having "competed in the Olympic Games, throwing the discus" was evidence of masculinisation intense enough to justify surgery.[14]

Depictions of the metamorphoses also connected with late 19th and early 20th century theories of 'inversion' advanced by prominent sexologists such as Richard von Krafft-Ebing and Havelock Ellis. The notion of 'inversion' in relation to female-categorised subjects co-constituted masculine identification, masculine behaviours, and sexual desire for women as (pathological) inversion of sexual and gendered instincts, and athleticism and aptitude for masculinity-connoting sports was often included among 'inverted' behaviours for female-categorised subjects (Taylor, 1998). Notably, news about Weston's metamorphosis was supplemented with news about his marriage to Alberta Bray "who for years has been his particular friend" ("Man Who Was Once a Girl", 1936: 20), and Weston's attraction to her was cited by

[14] While Weston is not named in the medical report from which these quotations are extracted, it is obvious that the report refers to Weston, because it includes a picture of the patient from which Weston (depicted nude in the objectifying fashion common to medical images at the time), is clearly recognisable despite a white 'block' superimposed over his eyes.

Broster (1938: 48) as well as evidence of Weston's underlying "male sexual instinct".

Further, albeit decades after Koubek's sex change, a medical report was published which very likely referred to Koubek,[15] in which the patient's 'abnormal' physical efficiency was taken as proof that the sporting prowess of female "individuals of markedly masculine type" is "conditioned, as a rule, by sexual glands of the other sex, the hormonal influence of which modifies, in course of life, the organism towards the other sex arrangement" (Tachezy, 1969: 119). The report concluded that "the performances attained in contest by such individuals can not [sic] be regarded as criteria for top performances of normal healthy women" (Tachezy, 1969: 119), implying that Koubek's athletic prowess was both 'abnormal' for female bodies and explained by his 'masculine type' embodiment incited by 'male' hormones. This explanatory framework not only supported – and was embedded within – the broader discourses that constituted female bodies as constitutionally frail and ill-suited to 'strenuous' sports like athletics, but it also endured for decades after the stories of Koubek and Weston were first reported. Additionally, while most of these kinds of sex change stories were published in the late 1930s, some cases appeared as late as in the 1950s. In 1952, for example, the *Sydney Morning Herald* reported that Lea Caurla, "French champion girl sprinter", had transformed into Leon: "The transformation of Lea, who was born apparently a girl, to Leon happened over a period of years until in 1948, he learned that he was in fact a man … Ultimately he had an operation that made the change of sex final" ("Athlete, 25, Changes Sex", 1952).

The sex change stories, and the stories of Weston and Koubek in particular due to their wide distribution by newspapers, reached the awareness of influential sport

[15] There are some discrepancies between the description of this patient's life history and descriptions about Koubek's life given elsewhere, but the notable similarities make it very likely that the person referred to in the report is Koubek. The patient is named Z. K. (Koubek's initials), was born the same year as Koubek, and is described as the 800-meter world record holder, although it is stated that the record was attained at the age of 18 (i.e. 1931), while Koubek attained his at the age of 21 (i.e. 1934). However, the only 1931 800-meter world record was attained by Marie Dollinger of Germany (Hymans & Matrahazi, 2015: 264), and it is not possible that the person described in the report is Dollinger, who later married a man with whom she had a child.

regulators, the most notable of whom was the president of the American Olympic Committee Avery Brundage, who later became the president of the IOC. Brundage, who learned about the sex change cases through the press, considered them deeply troubling, to the extent that he used them as the justification for the introduction of physical examinations for athletes competing in women's sport to verify that they were, indeed, *100%* female. In August 1936 newspapers reported that Brundage had

> recommended that all women athletes entered in the Olympics be subjected to a thorough physical examination to make sure they were 100% female. Reason: two athletes who recently competed in European track events as women were later transformed into men by sex operations ("Sport: Olympic Games", 1936).

Indeed, in many ways, Weston's and Koubek's own descriptions of their stories lent support to this: Weston expressed, for example, not only that "I began to realize that I was not normal and had no right to compete as a woman", but also added that he had begun "withdrawing from athletics" because he felt that his participation in women's events "was unfair to women competitors, who undoubtedly were 100 per cent feminine" (Bronner, 1936: 8). These references to percentages of femaleness or femininity only makes sense in a context of sex flexibility where femaleness or femininity (and maleness or masculinity) can manifest in degrees across bodies. Weston's sense of himself as having no right to compete with women was contextualised by this idea, as well as notions of 'normality' in relation to which femininity and womanhood were conceptualised in the 1930s. The sex metamorphosing athletes embodied both abnormality contrasted against notions of normal (i.e. feminine and frail) female embodiment, and an 'excessively' high degree of masculinity, surfacing to the extent that females actually changed into men.

In this context, however, it was not only cases of fully fledged sex changes like Weston's and Koubek's that signalled the masculinisation of female athletes' bodies. The perceived fact that some women athletes "looked more like men" was taken, in combination with the sex change stories, to imply that there was a "'man-woman' problem" in women's sport ("Women Athletes Tackle the 'Man-Woman' Problem", 1936: 7). In addition to the notions of sex change and metamorphosis, sport

regulators made reference to 'borderline' bodies in women's sport, some of whom seemed to embody sexed borderlands to the extent that they appeared to be 'hermaphroditic'.

Hermaphrodites, monstrosities, and sexed borderlines

In June 1936, Brundage sent a letter to the International Olympic Committee (IOC) president Henri de Baillet-Latour, to support his recommendation that physical examinations should be instituted in women's sport. Brundage's letter had been provoked by a correspondence he had received from an American sports observer. Wrote Brundage:

> The following letter recently received by me prompts me to write to you on a subject which seems to me to require the attention of the I.O.C. as well as the various federations involved:
>
> 'As an interested sports fan and one who upholds the participation of feminine athletes in athletics I feel -------- [name removed] has been allowed to take part in a field where she (?) doesn't belong. I saw and spoke to her when she took part in an exhibition meet here. Her deep bass voice, her height and 10½ inch shoes surely proclaim her a border-line case if there ever was one. I feel she has never put forth her best efforts in the events because if she did, the entire public would take a great deal more notice. Judging from her past performance she will, without a doubt, be a member of the United States Olympic team and if this is permitted the normal American girl will certainly be misrepresented. Something should be done to prevent this and rules should be made to keep the competitive games for normal feminine girls and not monstrosities.'
>
> I don't know whether hermaphrodites are as common today as they evidently were two thousand years ago judging from the many statues which appear in museums of classical art, but I do know that the question of the eligibility of various female (?) athletes in several sports has been raised because of apparent characteristics of the opposite sex (Brundage, 1936, parenthesised question marks in original).

Brundage was not alone in his concern over the possible presence of borderline 'hermaphroditic' bodies in women's sport. During a late 1940s meeting among elite

sport officials concerning women's participation in elite sport competitions,[16] a participant named Norman Cox made the following remark:

> One thing the fathers of the Olympics overlooked was making provision for competition among hermaphrodites. … Certainly the 'child-bearing' type of woman – large or largeish breasts, wide hips, knocked knees, and so forth – is under a handicap when up against the hermaphrodite, even in swimming. And how normal women are to be protected against such handicap except through the institution of anatomical examination is beyond me ("Competitions for Women", n. d.).

Cox's remark had been preceded by another participant suggesting that "the participation of feminine competitors should be restricted to sport essentially feminine" as spectators "would be spared the unaesthetic spectacle of women trying to look and act like men" ("Competitions for Women", n. d.).

While these references to hermaphrodites are significant, it is important to note that what exactly this should be taken to imply is not immediately obvious. Historically, the 'hermaphrodite' as a figuration has embodied categorical blurring of sexed and gendered boundaries through which it has been constituted as a liminal figure of boundary violation. As Alice Dreger (1998) demonstrated in her history of the hermaphrodite, what 'hermaphrodite' implies is ontologically open and temporally variable, connoting myriad subjects of fixed, mistaken, and doubtful sex and gender in different contexts. It has been applied not only to bodies born with 'ambiguous' sexed anatomies but also to what we would today call homosexuals, transvestites, transsexuals or feminists. As I discussed in chapter two, the 'intersexualisation' (Eckert, 2009) of bodies has been governed by gendered, racialised, and classed histories through which some bodes (including the working-class bodies that female athletes in athletics disproportionately represented) have come to be more easily attributed with sex binary contamination than others.

[16] Neither the meeting organiser nor the exact year of the meeting are made explicit and no organisational affiliations are provided for Cox, but it is likely that it was an IOC meeting. This is because the topic of discussion was women's participation in the Olympics, and because some participants are identified as representatives of National Olympic Committees.

When it comes to the context in which Brundage and Cox articulated their concerns over hermaphrodites, what blurred (or, indeed, hermaphroditic) sex and gender implied was governed by medicalised conceptualisations of 'normal' women as the fragile 'weaker sex' in accordance with white and middle/upper-class notions of femininity. Since 'normal women' were defined, in Cox's words, as the 'childbearing type' with large breasts, wide hips and knocked knees, those women who failed to have such attributes easily appeared as insufficiently female-like physiologically (i.e. insufficiently physically 'handicapped' to be appropriately female) and thus 'abnormal' in relation to physical characteristics considered appropriately 'womanly', in the confines of the existing medicalised conceptualisations of normal female embodiment. In many ways, athletic female-categorised bodies that were not the 'normal childbearing type' could appear to be figures of gender transgression at times so pronounced as to render them potentially 'hermaphroditic' within the sport imaginary.

When it comes to Brundage's letter, the un-named female athlete at the centre of his gendered concerns was concerning because she appeared to have bodily attributes that failed to conform to presumed ideas of what female bodies were meant to look like. Her 'apparent characteristics of the opposite sex' – including athletic prowess – make her a 'borderline case' where the border concerns binarised sex and gender difference, and her body consequently appears 'monstrous' as well as 'hermaphroditic' due to the blurring of presumed binary sexed and gendered attributes. Her apparent monstrosity and hermaphroditism is delineated against, and in relation to, the normal(ised), 'feminine' American girl – i.e. the frail (white and middle/upper-class) childbearing body of the future mother. Thus, the worry over the proliferation of 'hermaphroditic' bodies in women's sport signalled the danger of sex and gender category disruption by 'monstrously' undifferentiated bodies that undermined the presumed differences between male and female bodies, to the extent that they were conceptualised as possibly hermaphroditic. The notion of monstrosity, as Foucault (2003) has argued, attaches to the boundaries of classification systems: the monster is a liminal boundary figure that transgresses category borders and thus makes explicit that category borders are unstable.

Indeed, it is possible that Brundage's sports fan's concerns over the 'borderline

case' were directed at Helen Stephens,[17] whom I discussed briefly in chapter two. Stephens epitomised many concerns expressed over female bodies in athletics at the time. She was one of the most successful athletes in the 1930s, and her achievements included a gold medal in the 100-meter race in the 1936 Berlin Olympics where she defeated Stella Walsh. After her victory, some American journalists reported that a Warsaw-based newspaper had published accusations that Stephens was actually a man. According to the *Los Angeles Times*, a Polish journalist had expressed "indignation against the United States for having assertedly permitted a man to run in the women's race", and had claimed that "Stephens should have been running with … American male stars" ("Polish Writer Calls Helen Stephens 'Man'", 1936: A9). Further, the *Time* magazine reported that German Olympic officials actually "had foreseen the dispute, investigated Sprinter Stephens before the race, [but] found her throughgoing [sic] female" ("Sport: Olympic Games", 1936), while Gallico claimed that even "before being permitted to board the boat to uphold the honour of the U.S.A. as member of its Olympic team the Olympic Committee had had La Stephens frisked for sex" (Gallico, 1938: 234).

As I noted in chapter two, the examinations performed on Stephens in Berlin are often stated by scholars to have been the first case of gender verification in elite sport,[18] but here, it is important to place the concerns expressed over Stephens' gender in the context of 1930s ideas about women in athletics and worries over the masculinisation of female bodies. As Gallico remarked in relation to the accusations

[17] The description of her bodily attributes (deep voice, unusual height and large feet) coincide with newspaper descriptions of Helen Stephens and, in addition to Stella Walsh, Stephens was also the most well-known American female track athlete at the time, which meant that many people were aware of her appearance. However, since athletic female bodies were, in general, considered un-feminine, the sports fan's concern could have been directed at almost any female athlete competing in athletics.

[18] The earliest evidence of a gender verification examination being carried out almost certainly refers to Kinuye Hitomi, however, who was the only Japanese woman competing in the 1928 Amsterdam Olympics. A 1936 *Los Angeles Times* article discussed a case concerning "a Japanese girl in Amsterdam, where the investigating committee was out two hours before it decided the predominant sex" ("Separate Olympics for Sexes in 1940 Planned", 1936: A9), suggesting Hitomi was subjected to (a thorough) examination in Amsterdam.

made about Stephens,

> there has always been something faintly ridiculous about the big-time lady athletes … Miss Helen Stephens, a big, rangy schoolgirl from Mississippi, out-galloped all the best women sprinters of the word … The Poles … immediately accused Miss Stephens of being Mr. Stephens. There had been two cases, one in Czechoslovakia and one in England, where a masculine lady had, with the aid of a surgeon, succeeded in transforming herself into a not too feminine gentleman. The Poles thought they had spotted number three (1938: 233-234).

Similarly, Brundage concluded his letter to de Baillet-Latour by noting that

> Recently considerable publicity was given in the American press to the case of an English athlete who after several years of competition as a girl announced herself (?) to be a boy. Perhaps some action has already been taken on this subject; if not, it might be well to insist on a medical examination before participation in the Olympic Games (Brundage, 1936, parenthesised question mark in original).

In fact, nearly all newspaper accounts about Stephens' sex accusations also contextualised the issue with explicit reference to sex change stories like those of Weston and Koubek.[19]

The accusations against Stephens, as well as the concerns over hermaphroditic bodies in women's athletics, were thus contextualised with reference to sex change metamorphoses like those of Weston and Koubek, and made intelligible in relation to the idea that masculine appearing female-categorised athletes were not only masculine females, but they were so masculine that they might indeed transform into full blown men. In this sense, the suspicions about Stephens' sex should be seen in the context of worries over the masculinisation of female categorised bodies in

[19] For example, one of these articles asked readers to recall that "in May of this year Mary Edith Weston, noted English girl athlete, was formally proclaimed a man after undergoing two operations in a London hospital and assumed the name of Mark Weston" ("Polish Writer Calls Helen Stephens 'Man'", 1936: A9), and another pointed out "Two recent and very flagrant cases … one British and one Czechoslovakian. Mary Edith Weston, who became 'Mr. Mark Weston', and Fraulein Zdenka Koubkove [sic], who is now Zdenka Koubka [sic]" ("The Sports Parade", 1936: 13).

sport that took place in a context of sex instability. These were initiated by the entry of the presumed 'weaker sex' into the inappropriately masculine sphere of athletics in a context characterised by new theories of hormonal sex that rendered the boundaries of binarised sex and gender difference volatile. This was especially so in relation to bodies pre-conceived as inappropriately feminine such as working-class women. It was these intertwined discourses and concerns that contextualise the institution of the first gender verification policy by the IAAF in 1937.

Gender verification policies from 1937 till 1966

In response to the letter he sent to de Baillet-Latour, the IOC Congress discussed the concerns raised by Brundage under the title "abnormal women athletes" (IOC, 1936: 10). When it came to resolving this problem of 'abnormal women' in sport, the congress decided not to institute 'physical examinations' for all Olympic female athletes, but they decided to forward Brundage's letter to all International Federations of sport (IF) "in which feminine participation is allowed" (IOC, 1936: 10), thus leaving the decision of whether or not to institute these examinations to the discretion of each IF. Some months later, newspapers reported that the IAAF had decided to follow Brundage's recommendation, and to require that "All women athletes must 'submit to competent medical examination' should any protest regarding their sex be made formally within two hours after any event" ("Man-Woman Athletes Test Decision", 1936: 2). Accordingly, the IAAF rulebook issued in the following year was updated with a new addition to the rule regarding 'protests', which stated that

> If the protest concerns questions of a physical nature, the organization responsible for the carrying through of the meeting shall arrange for a physical inspection to be made by a medical expert. The athlete must submit to the inspection as well as to the decision taken in consequence thereof (IAAF, 1937: 40).[20]

[20] My thanks to Anne-Marie Garrigan from the IAAF documents library for providing me remote access to the IAAF rulebooks from the 1930s and 1940s.

This rule was almost certainly the first gender verification policy instituted by an elite sport governing body,[21] and it was thus applied on ad hoc basis, under the framework of protests, using 'physical inspections' as the method of verifying gender. This rule was in force at least till 1946.[22]

However, when it comes to the formal regulations enforced after this year but before the institution of the more widely known on-site IAAF gender verification policy in 1966 which I discuss in chapter five, the evidence is sparse and fragmented. It is certain that after 1946 but before 1966, the IAAF introduced a new mandate requiring female athletes to provide medical certificates signed by local medical practitioners that verified their female status, but exactly when this policy was instituted is unclear. Some (Heggie, 2010: 159; Pieper, 2016: 31) claim that the policy was introduced in 1946, but the IAAF 1946 rulebook does not include such a mandate, while it does include the aforementioned protest rule (IAAF, 1946: 27).[23] The earliest account that I found which discussed this policy was provided by an early historian of women's sport, George Pallett (1955: 68), who stated that the 1948 IAAF Congress accepted a rule mandating that women's competition entries "should be accompanied by a medical certificate as to sex, as should applications for world and continental records. It was recognised that doubtful cases would have to be dealt with by the I.A.A.F". What such 'doubtful cases' were taken to imply and how they were handled when they arose is not elaborated on by Pallet, but his account does seem the most plausible. The medical certificate mandate was undoubtedly adopted by the IAAF around this time: the rule was discussed in a 1981 IAAF meeting under the label 'femininity certificate' where the IOC Medical Commission president Alexandre de Merode noted that this policy had been applied until 1964. De Merode added that "in former Olympic Games there were many cases of one girl reporting

[21] There is evidence that some spontaneous 'physical inspections' were carried out before this date including the well-documented Stephens case and the Hitomi case (see footnote 17), but I found no evidence of any elite sport governing bodies' written rules existing before 1937.

[22] I did not have access to IAAF rulebooks after this year.

[23] The reference that Heggie provides to support this claim is the 1946 IAAF rule 17 paragraph 3. This rule, however, concerns amateur status, not medical certificates. Pieper's source for this claim is Heggie.

another athlete on suspicion of non-eligibility", which implies that the 1937 IAAF ad hoc protest rule was also enforced during the Olympics, at least in athletics (IAAF, 1981).

Moreover, a 1960 *Times* article suggests that the two forms of regulation were likely applied simultaneously: the magazine reported that "two countries had challenged the sex of one of the British women competitors in the Olympic Games", probably in accordance with the ad hoc protest rule, to which the secretary of the British Amateur Athletic Board commented: "We require of every woman before an international competition that she supplies us with a certificate signed by her own medical practitioner" ("Olympic Women 'Have Medical Certificates'", 1960). Some retrospective accounts provided by female athletes also support the above: according to Gregory Moon, for example, track athlete Sylvia Cheeseman recalled a meeting with two doctors relating to the 1952 Helsinki Olympics, where one doctor "pointed to me and said 'man or woman' and the other doctor looked appalled and then this doctor said 'This is ridiculous, I'm not going to examine you,' and he signed [the certificate]" ("The Olympic Years: 1952, 1992", cited in Moon, 1997: 294).

In lieu of a synthesis of this rather fragmented historical record, I suggest that the key points to be drawn out are the following: an ad hoc protest-based gender verification system of physical inspections was instituted by the IAAF, and most likely also applied in the Olympics at least in athletics, in 1937. It was instituted in response to concern over the masculinisation of female-categorised athletes' bodies in a context of sex instability, to verify that athletes competing in women's events were '100% female' in cases where their sexed and gendered bodily appearances incited gender 'protests'. Some years later, the IAAF begun to also require that women athletes provide medical certificates that verified their 'femaleness' based on examinations performed by local medical practitioners. What exactly these physical inspections and medical examinations amounted to is not explained by any sources that I consulted, but one might suspect, based on concerns expressed by Brundage and others over 'apparent characteristics of the opposite sex' that it was such characteristics and general masculine bodily appearances that they were looking for. Indeed, Cheeseman's recollection suggests that her femaleness was confirmed by a mere glimpse at her presumably appropriately feminine embodiment. One later

1960s retrospective mention by an Olympic official also suggests that the focus was on the gendered appearances of external bodily contours and secondary sex characteristics: Monique Berlioux, herself a former competitive athlete, noted that "Formerly, at sports competitions or during medical tests carried out by local associations, one simply did a brief morphological test in order to determine sex", adding that "Gynecological tests were never used" (Berlioux, 1967: 1). It should also be noted that the process women athletes had to undergo to attain a 'femininity certificate' likely varied between different local medical practitioners as there were no formal guidelines for this procedure.

It is worth noting that the institution of physical inspections and medical certification for female athletes was embedded within the broader medicalised regulatory framework that surrounded many female bodies within sports organisations during the first part of the 20th century: as I noted above, organisations such as the Women's Division of the US National Amateur Athletic Federation already advocated medical examination and follow-up as a basis of sport participation for women, and promoted comprehensive evaluations of female athletes' health status. These protectionist, medicalising frameworks, reliant on notions of female embodiment as frail, weak and physically handicapped, foregrounded and reinforced the need for gender verification based on medicalisation, in relation to discourses through which female bodies' athletic ability had been rendered a medical(ised) issue in need of regulation and curtailment.

The early gender verification policies, then, were aimed at verifying the legitimacy of athletes' claims to belong to the female category, and thus their eligibility to compete in women's events, by inspecting or examining their physical bodies and sexed and gendered characteristics. Appropriate femaleness was not only constituted in relation to existing medicalised, white, and middle/upper-class norms of appropriately feminine embodiment where female bodies were the 'weaker sex', but female status was verified in relation to conformity to these norms – the title 'femininity certificate' is expressly illustrative. The policies were motivated by concern over sexed and gendered binary breakdown, carried by female-categorised athletes who seemed to exceed the normalised and naturalised boundaries around female embodiment. They embodied masculine or male-like

characteristics such as large feet and deep voice, but also athletic prowess and endurance to strain, taken to be unbearable for a 'normal' female body. Some of these athletes were, indeed, so abnormal that they appeared to be hermaphroditic, while others were seen to be metamorphosing into men. These sex and gender boundary contaminating athletes were visual examples of the challenge of instability that was facing clear categories of sexed bodily difference, rendering binary sex ontology unstable. Their masculine bodies and sporting prowess thus incited doubt about the accuracy or 'truth' of their claim to be (100%) female. By verifying the accuracy of this claim through an inspection or examination of bodily morphology, the first gender verification policies erected formalised (albeit ill-defined) bodily constraints on claims to femaleness or womanhood. The boundaries around 'female' that were drawn by sport regulators during the first part of the 20th century were thus conflated with 'feminine' embodiment, constituted in opposition to masculine/masculinised bodies that functioned to contest what 'female' could mean in ways that worked to delimit sexed morphological possibilities through which the binarised imperative of sex difference was adjusted.

Conclusion

The context in which the IAAF introduced their first gender verification policy was defined by the medicalisation of (white and middle/upper-class) women's bodies as the fragile 'weaker sex'. These fragile bodies were defined by their childbearing function which implied that female embodiment constituted a physical handicap, rendering women's bodies susceptible to physical strain especially in relation to sports like athletics that were considered particularly strenuous. Yet, by the 1930s, women were taking part in sport in increasing numbers, including in women's athletics competitions. The fact that some women seemed capable of enduring the strains involved in athletics rendered these women sex and gender suspect. They appeared abnormal and masculinised in contrast with the medicalised norm of female embodiment in ways intertwined with white and middle/upper-class feminine beauty ideas that rendered women's athletics an unaesthetic spectacle. This image of abnormality, masculinisation, and 'ugliness' was reinforced by the fact

that women's athletics had a disproportionately working-class constituency: notions of athletics as masculine became entwined with pre-conceived notions of working-class women as masculine physical labourers.

Women's increasing entry into athletics competitions coincided with the emergence of endocrinological theories around sex hormones that rendered sex difference unstable. Because hormones could induce masculinisation in female bodies as a consequence of hormonal fluctuations or 'stresses', the boundary between binary sex categories became volatile to the extent that sudden sex changes could occur, resulting in female bodies metamorphosing into men. Depictions of these metamorphoses functioned to associate the sex changes with women's athletics in ways that made athletic participation appear as an explanatory feature of the changes, which was intelligible in a context where athletics was associated with strain (or 'stress') only endurable for masculine/male(-like) bodies. The sex change stories troubled sport regulators and Brundage in particular, to the extent that he proposed that physical examinations should be instituted in women's sport to verify that women were 100% female (rather than masculinised or about to metamorphose into men).

Concerns over sex changes were coupled with concern over the proliferation of hermaphroditic bodies in women's sport, where the notion of 'hermaphroditism' was navigated in relation to 1930s conceptualisations of the normal (feminine, frail) female embodiment as the physically handicapped childbearing body. Female athletes' masculine bodies and their sporting prowess seemed, for some, to be so abnormal as to rendered them potentially hermaphroditic. When the anxieties over hermaphrodites intertwined with athletes like Weston and Koubek explicitly transgressing the boundaries of binarised and normalised sex difference, the problem of 'abnormal athletes' in women's sport was made into a regulatory issue that needed a policy response.

The figures of the 'sex changing athlete' and the 'hermaphrodite athlete' in women's sports, and in the masculine sport of athletics in particular, embodied the instability and volatility of sexed and gendered boundaries in the 1930s context where hormones were crossing sexed borders and women were entering the realm of competitive sport previously exclusively reserved for men. These images of the

excessively masculine or masculinised female athlete represented the breakdown of fixed sex classification systems of bodily 'normality', making them appear abnormal to the extent that they gave rise to imaginaries of monstrous or freak-like liminal boundary figures that threatened the presumed gendered reality and fixity of female embodiment. Within these contextual conditions, the first gender verification regulations were written into policy by the IAAF, and they were aimed at verifying, in the face of gender protest, that athletes competing in women's events were 100% female in case suspiciously masculine athletes turned up to compete in women's sport. This protest policy was later supplemented with a mandate requiring women athletes to bring medical 'femininity certificates' to competitions, as proof of their eligibility. In both cases, their status as women and females was verified by inspecting or examining their physical bodies and sexed and gendered characteristics, whereby femaleness was evidenced by bodies' conformity with existing medicalised, white, and middle/upper-class norms of appropriately feminine embodiment through which female bodies were constituted as the 'weaker sex'.

The masculinised sex and gender boundary contaminating athletes were, then, visual examples of sex and gender instability. Their anxiety-inducing bodies rendered binary sex ontology unstable, and incited doubt about the 'truth' of their bodies' sexed realities, which mandated gender verification. This verification was enabled through the erection of bodily constraints on claims to femaleness, whereby boundaries around 'female' were drawn in ways that delimited female embodiment as 'feminine' embodiment in opposition to the masculinised bodies that challenged existing feminine body norms. The next chapter discusses how these early sex binary policing regulations were developed into a paradigm of on-site gender verification in the late 1960s, combining previous fears over sex binary contamination or 'pollution' with newly emerging geopolitical concerns.

Chapter five

Pure versus polluted bodies: Cold War gender relations and naked parades

During the 1950s and 1960s, pre-existing anxieties over sex binary breakdown carried by masculinised and 'hermaphroditic' bodies in women's sport became embedded within, and re-contextualised in relation to, geopolitical power relations fuelled by the Cold War. This chapter focuses on the implications of Cold War geopolitical border dynamics to international sport, and the ways in which they contexualised the introduction of more rigorous, on-site gender verification paradigms by sport governing bodies.

The Cold War context was centrally characterised by 'us' versus 'them' dualities that constructed a politicised East/West binary division symbolised by the Iron Curtain. The chapter discusses how these geopolitical divisions had a constitutive gendered dimension: Western imaginaries (with colonial legacies) constructed the communist gender relations of the Eastern bloc 'other' as gender undifferentiated and gender binary polluting, in ways contrasted against Western gender relations conceived as gender 'pure' and built on heteronormative gender differentiated roles foregrounded by the nuclear family. After the Soviet Union entered Olympic Competition, these ideals were read onto the bodies of female athletes in elite sport who represented their nations in international competitions. Western representations depicted the Soviet political system as well as their gender relations as corrupt, in ways that became intertwined with the Olympic ideals of the 'purity' of elite sport from the 'pollution' of political motives. This chapter discusses the intertwinement of these imaginaries, and argues that the Cold War international sporting context became structured by binary divisions of 'pure' versus 'polluted' bodies, where purity was identified with the West and pollution with the East in relation to the Cold War East/West division.

In 1966, the International Amateur Athletic Federation (IAAF) introduced a new on-site system of gender verification where female athletes were compelled to unveil their naked bodies to a panel of medical practitioners elected by the IAAF, and the International Olympic Committee (IOC) followed two years later, introducing on-site gender verification also into the Olympic context. This chapter charts the ways

in which these new policies were motivated by anxieties over bodily pollution that tangled concerns over sexed and gendered borderlines or 'hybridity' with increasing concerns over doping in sport in relation to anabolic steroids in particular, whereby these anxieties were primarily targeted at the bodies of the communist 'other'. I argue that the introduction of on-site gender verification was foregrounded by a desire to secure the (Western) feminine gender purity of women's sport against the threat of gender and sex binary pollution, where 'purity' and 'pollution' were mapped onto female athletes' bodies along geopolitical lines. The IAAF's policy mandating women to unveil their bodies' 'naked truth' functioned to verify athletes' status as women and females by ensuring that their embodiments were appropriately feminine and gender 'pure'.

Contextualising Cold War international sport

To contextualise my stress on the importance of national rhetoric and nation building projects during the Cold War in relation to international sport, I broadly follow Benedict Anderson's (2006) conceptualisation of nations as 'imagined (political) communities'. Rather than implying 'fictional', Anderson takes 'imagined' to mean a shared construction of, and an identification with, an extended collective.[24] As Nira Yuval-Davis and Marcel Stoetzler (2002) have added, the construction of such collective identifications requires the delineation of the 'inside' from the 'outside' – or 'us' from 'them' – in relation to the community, and entail active construction of not only collective unity but also the purification of collective borders and boundaries from 'otherness'. As David Rowe and colleagues (1998) have argued, the imaginaries of sport lend themselves particularly well to this project, as sports tend to be mobilised to represent the character of the collective. By forging a link between national identity and sport, collective identifications can be built

[24] I do not take such shared collective imaginaries to imply fixity, homogeneity or universality of imagination. Rather, national imaginaries are dynamic and relational, as well as unevenly distributed along socio-economic and socio-demographic lines. What matters for my analysis is the *hegemonic* imaginaries that gain dominance within specific contexts in cultural productions such as newspapers and the media more generally (here, in the context of the Cold War West), despite being contested from within.

through affective connections to 'our' national teams or 'our' national athletes. The athletic bodies displayed in international competition embody the state of the nation in particularly powerful ways because they exemplify the fitness of the collective required for an effective and stable 'body politic' (Schaffer & Smith, 2000). This imaginary is especially powerful during international competitions like the Olympic Games, as such competitions function to pit not only physical bodies but also imagined national bodies against each other, opposing 'us' against 'them' in material ways.

The Olympic movement has historically been characterised by a tension between the IOC's claim to politically neutral internationalism, and the constitutive embeddedness of nationalisms within the Olympic imaginary. The Olympic Games are organised by national identifications as these "competitions seemingly structured by the placelessness of the global are, in fact, centrally about place": athletes not only wear national uniforms, national flags, and listen to national anthems, but the meaning that is attached to their accomplishments and failures is embedded within nationalistic signs (Stevenson, 2002: 215). The Olympic movement, however, has claimed autonomy and purity from 'outside' influences and political intervention, and declared for itself not only extraterritoriality but also a form of supranational sovereignty in relation to sport. This has been secured through the construction of Olympic ideals rendered immutable, in particular in relation to the ideal of the 'purity' of the Olympic Games including lack of political intervention, commercialisation or professionalism (Toohey & Veal, 2007: 26-39). The ideal of purity is embedded throughout IOC rhetoric and, as Helen Lenskyj has observed (2000), translates into the notions of the 'pure Olympic athlete' and 'pure Olympic sport'. Yet, Stephen Wagg and David Andrews among others have argued that during the Cold War, "international sport in general, and, arguably, the Olympics in particular, provided the most immediate, confrontational and viscerally resonant points of nationalist engagement" despite the IOC's claims to political innocence (Wagg & Andrews, 2007: 3). Indeed, in many ways, Olympic competition functioned as metaphoric or surrogate warfare between nations, because international sporting competitions came to "serve as psychological substitutes for armed conflict" as well as "a non-military means of waging Cold War battles" (Hunt, 2011: 39).

During the Cold War, dominant political ideologies in the West were structured by constructions of 'good' versus 'evil', mobilised through imaginaries of 'same' versus 'other' whereby the otherness of Soviet or Eastern bloc nations was identified with the communist or totalitarian system that came to embody their evil (Dimeo, 2007). This East/West binarisation in relation to the construction of European internal borders has a longer historical precedent as Maria Todorova has argued and as I noted in chapter two: older Western beliefs derived from colonial imaginaries had long identified the geographic east of Europe "with industrial backwardness, lack of sophisticated social relations and institutions typical of the developed capitalist West", constituting the East/West boundary as one marked by divisions between 'backward' and 'developed' as well as 'primitive' and 'cultivated' (Todorova, 1996: 11). In the Cold War landscape, these racialised power divisions gained new politicised dimensions: the political world was imagined along a split between the 'good' West and the 'bad' Eastern bloc, whereby the internal differences between the 'Eastern bloc' as well as 'the West' became collapsed into a reified binary split. This kind of homogenisation has been central for the West's delineation of its various 'others' from itself, functioning to construct a reified conception of the difference of the 'other' from the sameness of the 'self' (Hall, 1992). In the Olympic Cold War context, these binary constructs separated the Eastern bloc from the West by the imaginary boundary of the Iron Curtain, and became central for the 1950s and 1960s elite sport rhetoric.

The Soviet Union entered Olympic competition in 1952, and first took part in the Helsinki Olympic Games of that year. While initially hostile towards the possibility of Soviet entry, IOC president Sigfrid Edström came to consider it important to "have the USSR Olympic Committee recognized, as we otherwise will have the athletic world divided into two big sections – East and West" (Edström, 1951). His desire to unify the East and the West – under IOC jurisdiction – can be seen to reflect the IOC's aspirations for authority and control over international sports: Soviet leaders had previously made efforts to organise international sporting associations and competitions such as the Red Sport International (*Sportintern*), which had organised international meets among sport organisations with Soviet allegiances (Parks, 2007: 29). However, the entry of the Soviet Union into Olympic

competition incited concern among many Olympic officials and Western observers over what they perceived to be a threat to the purity of the Olympic movement, crystallised by intertwined worries over amateurism, political intervention, and the deflation of Western authority and superiority. As one journalist commented in relation to Soviet Olympic entry,

> the conception of sports and athletics on the other side of the Iron Curtain is totally different from the democratic countries. … The players who represent a totalitarian country in a sporting event are regarded as agents of the government and are expected to carry out in every respect their government's instructions. … They … are actually trained and appointed … to act as Communist agents ("Russia Aims at 1952 Olympics", n. d.).

Another journalist noted with concern that "the Russians intend to become sports leaders in the world … and certainly will demand full voice in all international sports questions – including the Olympics", adding that the USSR's objective was to "gain world records on a large scale" ("Tennis Body Urged to Drop Soviet Satellites", n. d.). Through the reproduction of these ideas, athletes from the other side of the Iron Curtain not only came to function as un-agentic cogs of government interest, but they also embodied the threat that the communist 'other' posed to 'our' democratic political system. Their 'intrusion' into Olympic sport was conceived to be a polluting force that undermined 'our' shared values, particularly as they would demand a (politically contaminating) voice in the international sporting landscape.

Soviet entry into Olympic competition was also perceived by some Olympic officials to threaten the IOC's claim to autonomy and purity from 'outside' influences. In a report on his impressions of Soviet sport organisation at the eve of USSR Olympic entry, Swedish sport official Tage Ericson expressed his concern that in the USSR, "Sports is a tool of the State … to carry on political propaganda" (1950: 1). He worried that while the nature of sport organisation by the Soviets "will bring forth extremely good athletes of all kinds", it will "not be easy for the democratic countries, where the sport is carried on for play and for the joy of living, to compete with these specially trained and developed Sovjet [sic] Russian athletes" (1950: 3). Ericson's comments reflect the intertwining of worries over the loss of amateurism and the infiltration of political forces into the Olympic movement. Firstly, central for

the IOC's claim to the purity of Olympism was the amateur status of athletes, whereby sport participation was innocent of the intrusion of monetary incentives. Yet, the state-run sport system of the USSR, constructed around the development of specifically trained athletes, incited worries over material rewards for athletes who demonstrated athletic superiority. Secondly, the perception of sport in the USSR as propaganda aimed at demonstrating Soviet political superiority incited concern over the loss Olympism's purity from governments' interest. Thus, the entry of the Soviet Union in Olympic competition and the years that followed until the end of the Cold War were characterised by anxiety over the fragmentation of Olympism's purity due to the intrusion of hostile forces, understood centrally through an East/West political binary division whereby the hostile forces were identified with the East. Worries over purity fragmentation were also structured, however, by gendered dynamics that infused the Cold War context.

Contextualising gendered Cold War Dynamics

McClintock (1993) has argued that nation building projects not only rely on the differentiation of 'us' versus 'them' but they have also historically been erected upon the institutionalisation of gender difference. They tend to be constituted through gendered imaginaries derived from reproductive roles that naturalise the family as an institution that secures the nation's continuity. As women, through their role as mothers, are seen to reproduce the national collective by birthing and rearing future members, women tend to be imagined to embody the continuity and stability of the collective. Consequently, their bodies tend to connote the borders that signify the collective's boundaries. The (sexual) purity of 'our' women and a derived purity of the collective easily comes to be secured by an imagined same/other or us/them duality in relation to women's bodies and behaviours, which can become objects of border 'sanitation' (Yuval-Davis, 1997). To the extent that national imaginaries figure women within such terms, the material bodies of women can come to stand as a metaphor for the national continuity and purity that they represent.

During the Cold War, Western political rhetoric constructed the boundary between 'us' and 'them' in ways that had a constitutive gendered dimension: firstly,

white hegemonic masculinity was framed in terms of anti-communism, and mobilised as a marker and repository of Western political superiority. This provided a framework for a nation building project based on vigorous male bodies potent to combat the perceived threat of communist 'penetration' (Montez de Oca, 2007). Secondly, the perceived role of women within the national project was constituted with reference to white and middle-class heteronormative femininity, exhibited through reproductive responsibilities, marriage and domesticity. Such femininity was mobilised as a stabilising force in the face of Cold War instabilities, whereby the nuclear family – embodied by women's heteronormative and feminine domesticity – was constituted as the symbol of national stability (Pieper, 2016). In sport, as Stephen Wagg (2007) has argued, these imaginaries were inscribed onto the bodies of female Olympic athletes, who were mobilised as signifiers of the nation in the international landscape: their bodies and behaviours were utilised to embody the gender and sex(ual) purity of the West, and they were imagined in direct opposition to, and contrasted against, the inappropriately gendered female athletes of the Eastern bloc 'other'. As opposed to the gender purity of the political West, the communist political system was imagined in popular depictions to be perverting the appropriate boundaries of gendered embodiment. It was implied that this gender perversion was the result of a political system that aimed, unduly, to make everyone the same: the Soviet Union and its dominions were imagined as one huge 'human sausage machine', a grim consequence of which was that behind the Iron Curtain, women looked like men (Wagg, 2007: 101). This imaginary coincided with, and was enforced by, the changing model of women's athletic competition and participation at the time, which was beginning to more closely mirror the elite level training of men. The sporting establishments of the communist countries in Eastern Europe largely encouraged this model of training for their female athletes, and brought to the international sporting landscape new kinds of unapologetically strong, muscular and highly successful female athletes who appeared to Western observers to be embodiments of what they conceptualised as the polluted nature of communist gender relations. Their bodies and performances conflicted with Western ideals of appropriate femininity, and as Rob Beamish and Ian Richie have argued, Western political rhetoric mobilised "a super-heterosexualized Cold War family ideal [as a]

'psychological fortress' against the fear of communist aggression from without, and communist intervention from within" (2007: 19). Consequently, not only communism but also 'non-traditional' or inappropriately gendered women were weighty threats, identified with the gendered boundary blur or pollution of the 'other' and with the internal threat that such boundary pollution imposed upon the Western gender binarised family ideal.

In this context, the perceived masculinised bodies of female athletes from the other side of the Iron Curtain came to embody not only the perversion and boundary pollution of the 'other', but also the pollution of the very communist and totalitarian system of the 'other'. Because women and their bodies tend to represent the continuity and security of the nation, the perceived masculine bodies of Eastern European female athletes represented the polluted nature of communist nations and their political systems. The Western heteronormative model of gender differentiation secured the purity and superiority of Western Cold War nations, but it was imagined in opposition to the perceived gender category contamination embodied by the female athletes of the 'other': their gendered blurring of category boundaries symbolised the contamination and corruption engrained at the heart of the communist state. In the context of international sport, this category pollution came to structure concerns over the policing of appropriate gendered and sexed boundaries in sport, in ways that intertwined with concerns over the policing of pure bodies against artificial or polluting substances; namely, doping.

Pure versus polluted bodies, artificial substances and sex abnormality

Concerns over the phenomenon of 'doping' have been expressed by sport governing bodies since the beginning of modern international sport, and some rules banning the practice existed as early as the 1920s/1930s.[25] One of the broadest and most

[25] The IAAF's 1931 rulebook, which is the earliest rulebook I consulted, includes a rule stating that "Doping is the use of any stimulant not normally employed to increase the power of action in athletic competition above the average", and any "person knowingly acting or assisting as explained above, shall be excluded [or] suspended for a time" (IAAF, 1931: 20). A document on the IAAF website states that

enduring issues around doping, however, has been the difficulty of delineating doping's definitional boundaries. In the late 1970s, IOC official Arthur Porritt gave an illustrative description of how the meaning of doping has largely been historically conceptualised:

> Doping is an evil – it is morally wrong, physically dangerous, socially degenerate and legally indefensible. … to define doping is … extremely difficult, and yet everyone who takes part in competitive sport or who administers it know exactly what it means. The definition lies not in words but in integrity of character (Porritt, 1978).

As Thomas Hunt has argued (2011: 6-26), while sport governing bodies had been aware of doping practices for decades, the issue became more pertinent during the 1950s with increasing reports of amphetamine use by endurance athletes, and the development of a new anabolic (androgenic) steroid in the late 1950s, trademarked Dianabol. Anabolic steroids are synthetic androgenic hormone substances that mirror the effects of endogenous androgens in the body, which can have anabolic effects that promote muscle growth in addition to having androgenic effects regulating in the development of 'male' secondary sex characteristics. Dianabol retained the anabolic benefits while producing fewer androgenic effects, and it was rumoured to be utilised by weightlifters, especially in the Soviet Union, to 'artificially' induce muscle and strength gains (Hunt, 2011).

The IOC's first official (early 1960s) anti-doping efforts were characterised by attempts to determine the boundaries of the problem and the definitional borders of 'doping' (see Hunt, 2011: 6-26). While it was generally agreed that doping was morally impermissible and thus "unanimously condemned" (IOC, 1964: 76), most IOC officials had no scientific training and were ill-equipped to approach the issue from the scientific perspective that it was seen to require. The 'doping problem' was thus delegated to a sub-commission of medical experts, the formation of which represents the IOC's first attempt towards a formalised approach to policing the boundaries of athletes' bodily purity. In 1964, the IOC, in collaboration with the

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the IAAF actually instituted this rule as early as 1928, thus becoming the first International Sporting Federation to introduce anti-doping regulations (IAAF, n. d.).

Federation Internationale de Medicine Sportive, constructed their first definition of doping, defining it as

> the administration to, or the use by, a competing athlete of any substance foreign to the body or of any physiological substance taken in abnormal quantity or by an abnormal route of entry into the body, with the sole intention of increasing in an artificial and unfair manner his [sic] performance in competition (Barnes, 1980: 22).

This largely corresponded to a definition formulated by the Council of Europe a year earlier, which had been the first internationally recognised definition of doping (IOC-MC, 1972: 33). Significantly, the result of these doping definitions was the delineation of the 'natural' or un-doped and therefore pure body as a bounded entity from which 'foreign', 'artificial' or 'abnormal' substances could be separated. The pure body was then conceptualised as the 'fair' body in sport, while the 'unfair' body was one polluted by doping. The construction of definitional borders around doping thus functioned to construct two categories of sporting bodies – pure and fair versus polluted and unfair – and the task of doping control was to police this categorical boundary.

A core problem for sport governing bodies, however, pertained to the separation of the pure from the polluted by detecting the presence of 'artificial' substance, especially when it came to anabolic steroids. While IOC officials both condemned and expressed concern over steroids throughout the 1960s, no workable methods to detect them existed at the time. IOC medical officials were unable to delineate a fixed average or 'normal' rate of (endogenous) androgenic hormones within athletes' bodies and they were consequently also unable to delineate an 'abnormal' rate indicating (exogenous) steroid use (IOC-MC, 1969: 5). This inability to draw a border between the natural or pure body and the artificially enhanced or polluted body meant that anabolic steroids were not added to the IOC's list of prohibited substances until preliminary methods for their detection were developed in the mid-1970s. Throughout the 1960s and early 1970s, the 'steroid athlete' roaming free in elite sport thus constituted a troubling figure for many observers.

In retrospect, one medical observer noted that the "first widespread reported use of synthetic anabolic steroids by strength athletes came about the time of the 1964 Tokyo Olympic Games", and while the reports "were based upon rumors and hearsay … in 1965, … world records in strength events such as Olympic lifting, discuss, hammer and shot put were broken and rebroken with remarkable regularity" (O'Shea, 1977: 1). This perceived over-advance in strength-based events not only incited concern over artificial substance use, but it also had a constitutive political character pertaining to worries over doping in the Cold War climate. Discussing the 'problem of doping' in the late 1960s, IOC medical advisor Ludwig Prokop noted that

> in many cases the athlete is no longer able to influence doping measures any more, these being undertaken from a so-called 'national indication' point of view, because some national trainers believe any means to be justified, as in war, to achieve a victory for their own country. … it is often … intended [as] a documentation of the superiority of the political or economic system of the country (Prokop, n. d.).

In the Cold War climate where success was apparently being pursued by dubious means, IOC officials expressed concern that there was an "underlying 'national tendency' to increase competitive performance so that victory of one's own country can be attained at any price" (IOC-MC, 1972: 30).

These suspicions were directed at athletes from the Soviet Union and its satellites in particular in a way that had a foregrounding gendered dimension. For example, commenting on the success demonstrated by perceived muscular and 'butch' appearing Soviet sisters Irina and Tamara Press in women's athletics in the 1950s and 1960s, *The Daily Mirror* took the success of these "mistresses of muscle" to exemplify "how Russia takes promising young prospects and molds them through specialized training" under the "all seeing State eye" into dominant athletes ("Russia's Golden Gloom", 1960: 19). Commentary on the Soviet state's 'body moulding' practices in relation to female athletes' bodies reflected concern over the politically motivated totalitarian system's willingness to forego the well-being and femininity of its subjects to attain sporting glory. In women's sport, Eastern governments' dubious means of success were perceived to be taking two

intertwined forms: the use of anabolic steroids to boost female athletes' performance levels and the entry of 'abnormally' sexed athletes into women's sport.

As I discussed in chapter two, androgenic hormones carry a gendered legacy through which they have been conceptualised as 'male' sex hormones. While the 1930s context discussed in the previous chapter had been characterised by anxieties over sex binary breakdown incited by androgens' ability to awaken masculinity in female-categorised bodies, the emergence of synthetic forms of these hormone substances that could be exogenously consumed by females provoked new concerns over exogenously induced female masculinisation, in ways that conflated the anabolic and androgenic effects of these substances. Because androgenic hormones (including synthetic ones) have been conceptualised as 'male' sex hormones, and because androgens can incite muscle and strength gains, the anabolic as well as the androgenic effects of these hormones were gendered 'male' in ways embedded with the association of superior sporting prowess with male bodies. In other words, the anabolic effects of the hormones were imagined themselves to be androgenic, even when they occurred on female bodies: the muscular growth and strength increases in females on steroids came to appear male or male-like, and thus anabolic steroid use by female athletes was seen as a boundary crossing in ways that conflated 'anabolic' with 'androgenic' in relation to steroids' effects.

The lack of control over anabolic steroids in elite sport thus enabled the maturation of a gendered form of the 'steroid athlete' threat, which persists as a worrying boundary figure in the present. With increasing awareness of steroids use, one 1960s journalist observed with concern the possibility that "a prolonged course of male hormones" could be given to a young girl, prompting "the horrifying thought that it may be possible to take a 10-year-old girl who shows athletic promise and make her more masculine and thus a better athlete" (Brasher, 1966b: 1). Similarly, in 1967, Berlioux, who later became the IOC director, wrote a newsletter speaking 'frankly and openly' about the subject of 'femininity' in Olympic competition. Discussing the possibility of 'sexual mutation', she argued that

> it has unfortunately been proved that certain medicasters have not hesitated to render women champions, who already possess exceptional physical

> qualities, more virile in order, that during international competitions, they may achieve results which are over and above their normal capacities. The system adopted is relatively simple: the woman's menstruation is stopped by means of medical substance. In addition, injections of male hormones are given and these have the twofold effect of increasing physical resistance and of fortifying the muscular tonus. From then on, certain secondary masculine characteristics may begin to appear: breaking of the voice and the development of hair growth (Berlioux, 1967: 1).

As Beamish and Richie (2007) have argued, claims that Olympic female athletes from the Eastern bloc in particular were given male hormones to further governments' aspirations were also made in reputable scientific and medical journals. Such accounts of 'male hormonalisation' or masculinisation of female athletes not only legitimated sport officials' worries but they also "transformed a rumour into an apparent medical fact" in ways that made steroids into a symbol of "the immoral and unpredictable use of science to further totalitarian goals without concern for human consequences" (Beamish & Richie, 2007: 15-16).

However, there was also another form of possible and troubling gender/sex related cheating that worried sport officials and observers. Noting that steroid doping practices, as concerning as they may be, do not alter 'basic sexual characteristics', Berlioux directed attention to the existence of possible abuse of 'abnormally' sexed bodies in women's sport, which needed to be guarded against:

> nature can play some funny tricks and, in good faith, a baby can be declared of masculine or feminine sex at birth because its physical structure is such that it is possible to make an error. With the passing of the years secondary sexual characteristics assert themselves and it is the duty of everyone to make sure that the situation is not abused. For, being strictly logical, one feels sorry for the 'unfortunate' girl … but is there a voice raised against the person responsible for such cheating? … Nothing is more prejudicial to female sport that this charlatanry; nothing can kill it more surely (Berlioux, 1967: 2).

Berlioux's and others' worry over this form of sporting 'charlatanry' was reinforced by the publication of stories about past cases of 'abnormally' sexed bodies in women's sport in the 1960s by some reporters and medical practitioners. For example, in 1966, *Time* magazine published an article outlining several cases of past gendered suspicion in women's sport, including a sensationalised form of the

Koubek story discussed in the previous chapter. *Time* noted that such "incidents – and what to do about them – had been bothering the International Amateur Athletic Federation for years" ("Track & Field: Preserving la Difference ", 1966). Similarly, as I discussed in the previous chapter, in 1969, a medical case-report was published incorporating details about an athlete most likely to be Koubek (Tachezy, 1969). The author argued that this case, which according to him had revealed that the individual in question was a 'hermaphrodite', showed not only that Koubek's performances had been 'abnormal' but also that it was 'not right' to take such 'abnormal performances' of 'hermaphrodites' as criteria for 'normal' sportswomen's performances. Thus, such individuals' "world records should not be acknowledged" and "it is important to impose a general somatic examination upon all sportswomen" to reveal "such defects" (Tachezy, 1969: 119). Medical and newspaper mobilisations of older examples of gender suspect bodies in women's sport provided precedent cases as 'proof' of the legitimacy of sport observers gendered concerns in the late 1960s. However, in the Cold War landscape, worries over the existence of these past cases were contextualised by politically motivated suspicions structured by the East/West binary division, whereby the core concern was directed at the abuse of such abnormally sexed bodies in the present by dubious governments to further their nations' sporting success. While the mobilisation of older stories shows continuity of worries over 'hermaphroditic' bodies in women's sport, the way in which such bodies were imagined in the late 1960s was contextualised by the geopolitical concerns of the Cold War.

The intertwining of concerns over 'artificial' hormone substances and 'abnormally' sexed bodies in women's sport took shape in a context where muscular and masculine appearing Eastern bloc bodies, such as those of Irina and Tamara Press, were dominating women's sport in strength-based events, most significantly in athletics. The East/West gendered oppositionality of pure versus polluted bodies also structured Berlioux's concluding remarks in relation to her 'open and frank' discussion about femininity: coming to the defence of women's sport in opposition to the two kinds of gendered cheating, Berlioux reminded her readers that rather than excluding femininity or necessarily 'deforming' the female body towards masculinity, "consolation can be taken from the fact that … there is a large number

of extremely feminine female champions" (Berlioux, 1967: 2). As examples, she listed British long jumper Mary Rand, French swimmer Christine Caron, and Czech gymnast Věra Čáslavská, all of whom embodied the white and middle-class Western femininity ideal. It was clearly this form of feminine embodiment that she considered to be under a threat from the 'virile' hormone-doped body and the abnormally sexed 'unfortunate' body possibly abused for the purposes of sporting glory.

In the Cold War context, the masculinised female bodies of the Eastern 'other' carried simultaneously several kinds of threatening category blur: they carried the fragmentation of binarised gender upon which Western Cold War nation building projects were erected, whereby the fragmentation was identified with the contaminated political system of the 'other' as exemplary of the polluted character of Eastern European nations. They also carried the perceived intrusion of government's political motives into the Olympic context, whereby fraudulent communist sport leaders were seen to be willing to sacrifice the bodily purity of Olympic athletes for sporting success in the name of political propaganda. Both imply the confusion of categorical boundaries and thus the pollution of category purity upon which Olympic ideals have been erected, including the definitional boundaries erected around doping. The notion of bodily pollution attached to female bodies in profoundly gendered ways, as polluted female bodies contaminated the purity of categorical sex/gender differentiations by disturbing the binarised borderlines. Both hormone-doped and 'abnormally' sexed bodies of those 'unfortunates' whose bodies blurred sexed characteristics were, not only athletically enhanced in a male-like way in relation to 'natural' female capacity, but their presumed athletic prowess was also subject to abuse by unscrupulous government interests. The Cold War context was thus characterised by fears over categorical boundary fragmentation, which was embodied by, and mapped onto, the bodies of female athletes, and the bodies of female athletes from the Eastern bloc in particular. In this climate, the IOC and the IAAF instituted new forms of sex binary policing, by mandating *on-site* gender verification.

Naked parades

While ad hoc gender verification policies and mandates for medical 'femininity certificates' as proof of femaleness had been enforced in elite sport since 1937 as previously discussed, in the Cold War context the IAAF introduced a new policy requiring that all women athletes' gender was verified on-site at competitions by medical practitioners selected by the IAAF. In addition to continuing the application of their older rule requiring women to bring "a certificate as to sex, issued by a qualified medical doctor, recognised by the National Association" for smaller events, in 1966 the IAAF instituted the following new mandate for high-stakes events:

> In the case of all Area Games or Championships … women's entries shall not be accompanied by a medical certificate, but the Organising Committee shall appoint a panel of three women medical doctors and all participants in women's events shall appear before the panel, who will be required to certify that they are qualified to compete in such events (IAAF, 1967).

This new rule was applied for the first time in the 1966 Commonwealth Games in Jamaica (Porritt, 1966).

While the IAAF did not make explicit the rationales based on which this more rigorous on-site gender verification paradigm was instituted, remarks made by sport regulators and observers at the time shed light on the matter. For example, commenting on the existing rules that relied on femininity certificates signed by local medical practitioners, IOC medical official Guiseppe La Cava expressed concern that "this method does not permit a sufficiently strict control since such certificates are often very easily obtained" (IOC-MC, 1967a). Relatedly, reporting on the new IAAF rule, the *Washington Post* commented that while previously "women competitors had only to produce a chit from their doctor confirming their sex … more rigorous testing was established to prevent ambitious selectors turning a blind eye to possible abnormality and giving their teams an unfair advantage" (Doyle, 1967: K26). Some years later, IOC medical official Arnold Beckett noted, in relation to the introduction of on-site gender verification, that rumours had been circulating that "the not completely female was competing in women's sport" and that "some World records

... were held by such persons" (Beckett, n. d.). He considered that the "countries concerned were probably aware of the doubts about the female characteristics of some of the competitors they were allowing to represent them but such was the pressure in International competitions that firm International action was required to deal with the problem" (Beckett, n. d.).

Such commentaries illustrate the centrality of sport regulators' and observers' concerns over unscrupulous governments when it comes to the introduction of on-site gender verification. These unscrupulous governments – located in the Eastern bloc – and the suspicion that they used dubious methods to achieve sporting glory, were seen to render in doubt the reliability of the medical certification of female athletes by national medical officials to the extent that the trustworthiness of the former policy of locally signed femininity certificates was considered insufficient. The former policy left gender verification to the discretion of local medical practitioners, some of whom were working under untrusted (communist) systems of government. The femininity certificate system was thus vulnerable to unfair or fraudulent abuse whereby 'abnormally' sexed bodies – understood to have a masculine advantage – might be purposefully entered into women's sport.

The new on-site gender verification system, on the other hand, transferred the process of verifying women athletes' gender under the IAAF's direct control in high-stake events, and it empowered the IAAF to select the medical practitioners who would undertake the procedure. This policy, referred to as 'naked parades' by many athletes and sport observers because it required women athletes to 'parade' unclothed before the IAAF medical panel, was the first on-site form of gender verification in elite sport. While this shift is significant, it is important to note that it would be somewhat misleading to characterise it as a total paradigm shift. The new policy was, in many ways, a continuation of the older femininity certificate mandate, which was now relocated on-site due to the distrust of locally signed (Eastern bloc) femininity certificates.

The methods used for this purpose mirrored those mobilised by local practitioners who had previously granted femininity certificates. Like the older processes through which these certificates had been granted, what exactly the verification process consisted of under the 'naked parades' policy was not

systematised, and there is some evidence of inconstancy. British athlete Mary Peters has provided one retrospective account about her experiences of undergoing the IAAF procedure at the Jamaica Commonwealth Games. She described it as

> the most crude and degrading experience I have ever known in my life. I was ordered to lie on the couch and pull my knees up. The doctors then proceeded to undertake an examination which, in modern parlance, amounted to a grope. Presumably they were searching for hidden testes. They found none and I left ("Ladies Didn't Run Until 1928: Now They Face the Sex Test Hurdle", 1978: 9).

Peters' description suggests the likely targeting of gonadal and genital characteristics, investigated through gynaecological means including palpitation. Such gynaecological examinations would have localised the 'truth' of femaleness onto gonadal and genital attributes, and the presence of the appropriate organs in Peter's case was clearly taken to verify her right to compete in women's events. However, American athlete Maren Sidler's retrospective description of her undergoing gender verification under the same policy during the Winnipeg Pan American Games suggests that different IAAF medical panels applied different criteria to verify gender. Sidler remembered her experience as follows:

> They lined us up outside a room where there were three doctors sitting in a row behind desks. You had to go in and pull up your shirt and push down your pants. Then they just looked while you waited for them to confer and decide if you were OK. While I was in line I remember one of the sprinters, a tiny, skinny girl, came out shaking her head back and forth saying. 'Well, I failed, I didn't have enough up top. They say I can't run and I have to go home because I'm not 'big' enough' (Larned, 1976: 8).

Sidler's description suggests that the medical panel examining her used largely visual criteria of appropriate femininity – apparently based on evaluation of secondary sex characteristics and the visual appearance of external genitalia – rather than gynecological examinations. Her account suggests not only that her gender was verified based on subjective assessments of appropriately feminine bodies held by the medical officials in question, but her disturbing memory of an athlete being excluded based on breast size also suggests that such subjective criteria might have

been applied to exclude 'insufficiently' feminine appearing bodies based on as small 'deviances' as 'insufficient' breast size.

The discrepancy between Peters' and Sidler's accounts – relating to different IAAF sanctioned events and almost certainly to different medical officials assigned as experts – also illustrates the divergent criteria of appropriately feminine embodiment and how to ascertain such held by different medical experts. For some athletes, then, whether or not their bodies were taken as sufficient proof of their female status would have depended on the individual panel members' views on appropriate embodied femininity: while an athlete might have been 'passed' as a female and woman by one panel, the same athlete's gender 'truth' might have been rendered in doubt by another. I return to this problem in the next chapter where I discuss an example of such a case. Yet, the IAAF's use of this gender verification method also demonstrates faith in 'expert opinion' in relation to sex or gender appropriateness, reflecting a belief in the authority of 'medical expertise'.

Both Peters' and Sidler's descriptions of the content of the examinations – also foregrounded in the label 'naked parades' – illustrate the ways in which IAAF medical officials targeted the 'naked reality' of the sexed body as the site based on which womanhood or femininity could be verified. In the 1960s context, the inappropriately masculine bodies and appearances of some Eastern bloc athletes competing in women's sport, as well as the perceived dubious and gender polluted national contexts from which they originated, rendered in doubt the accuracy of their claim to womanhood and femaleness. Their suspiciously gendered bodily contours (and performances) failed to signal femininity in accordance with their claim to belong to the female category, rendering the claim in doubt and the 'naked reality' of the body in need of revealing to verify the authenticity of the claim. The naked body was to be unveiled before the expert eye of IAAF medical officials, who were granted authority over delineating what appropriately feminine embodiment implied. Indeed, just after the 'naked parades' policy was instituted, it was reported that several successful Eastern European 'borderline' sexed bodies had withdrawn from competition, the consequence of which was the (appropriate) feminisation of women's athletics.

Borderline bodies, hybrid creatures, and the feminisation of women's sport

During and following the 1966 IAAF European Championships in Budapest where 'naked parades' were mandated, several newspapers reported that some previously successful Eastern European female athletes had – quite suspiciously – failed to attend the competitions, including the successful and masculine appearing Press sisters. Commenting on "the absence … of several leading Russian women athletes from the championships", *Time* magazine, for example, noted that such absences had "caused a great deal of discussion … on the subject of physiologically 'borderline cases' in women's athletics" ("European Championships: Medical Tests for Female Athletes", 1966: 3). It was implied that the athletes' absences were caused by their desire to avoid undergoing the newly introduced on-site gender verification, due to 'borderline' sex characteristics that would have caused them to 'fail' at the verification. It is notable that the speculations accompanying these athletes' withdrawal in many ways mirrored the concerns over 'borderline' cases in women's athletics already expressed in the 1930s discussed in the previous chapter. In particular, newspaper reports emphasised the absent athletes' physical and sporting prowess, in ways that conflated their success in sport with an implied sex abnormality. For example, commenting on the absence of Romanian high jumper, Iolanda Balaș, one reporter claimed that "she declined to attend the medical examination now required by the organizing committee to determine the sex of competitors in women's events", immediately adding that "Balais held the record since 1958, and no other girl has come near to equalling her" (Brasher, 1966a: C6). Remarks like this suggested that the success of athletes like Balaș was the result of embodied borderline sex characteristics, which conditioned their prowess in relation to 'normal' women (infantilised as 'girls' in the above quotation).

Some news accounts also explicitly centred the concern over the hormonal masculinisation of female athletes' bodies, presumed to have been the consequence of steroid doping. The *New York Times*, for example, commented that there "were four notable absentees – Tamara and Irina Press and Tatyana Schelkanova of the Soviet Union and Iolanda Balais of Romania", claiming that these athletes "would not have passed the sex test because they had been taking male hormones to

increase their strength" ("Sex Test Disqualifies Athlete", 1967: 28). Commentaries like this not only implied that the sporting prowess of these athletes was the result of the administration of 'male hormones', but they also conflated gender verification with concerns over steroid doping. Such newspaper depictions thus intertwined the dual concerns over 'borderline' sex and exogenously induced steroidal masculinisation, both of which centred around anxieties over sexed and gendered category fragmentation or pollution carried by powerful and successful Eastern European female athletes.

Indeed, the introduction of on-site gender verification, and the withdrawal of 'borderline' binary polluting bodies like Balaș and the Press sisters, appeared to be translating into the feminisation of women's athletics. As one reporter considered, it seemed that

> the female members of the Russian team … were far more feminine than before – slimmer, prettier and with natural womanly instinct for lipstick, rouge and hair-dos – and not the husky mannish types such as the Press sisters, Tamara and Irina, who won three gold medals at Tokyo. The Press sisters and some other husky Russian athletes have reportedly refused to take the sex test (Daley, 1968).

The apparent replacement of these 'husky mannish types' with prettier feminine women who had 'natural' womanly instincts suggested that on-site gender verification had enabled the blossoming of appropriately feminine bodies and gender performances in women's athletics, in accordance with Western, white and middle-class gendered body and behaviour norms. That behaviours such as the use of 'lipstick, rouge and hair-dos' were taken as a 'natural womanly instinct' is illustrative when placed in the context of Western representations of Cold War period Eastern bloc female athletes like the Press sisters, who came to embody the 'ugliness' and danger associated with masculinised female athletes in ways that endured for decades. For example, discussing "why you WON'T look like Tamara if you take up sporting life", one reporter took up the task of celebrating the feminisation of women in sport in the 1970s by contrasting what he saw as beautiful 1970s female sporting bodies against a picture of "giant" Tamara Press' strong body in full swing, showing her grimacing and screaming with effort (O'Flaherty, 1975: 2,

original capitals). This 'uglyfied' image of the Press sisters and other Eastern European athletes and their apparent lack of 'natural womanly instinct', coupled with their withdrawal from competition, provided legitimacy for on-site gender verification. The on-site system appeared to be feminising or (gender) purifying women's sport more generally, and it seemed that female athletes' femininity could be regulated through bodily means of medical 'control'.

One year after the IAAF had introduced on-site gender verification, the IOC decided that an on-site gender verification paradigm was also necessary for the Olympic Games. The IOC's paradigm was first implemented in the 1968 Grenoble Olympics, and differed in method from the IAAF naked parades by applying a chromosomal screening paradigm to which I return in more depth in the next chapter. Reflecting on the rationales for on-site gender verification in the Olympics, IOC Medical Commission member Jacques Thiebault, who was responsible for gender verification in Grenoble, remarked that

> It is useless to discuss at great length the reasons which crystallized this question [of the need for on-site gender verification]; most of the press and unfortunately the scandal-rags, have for a large part made themselves the echo of these so-called women, built like navvies and breaking records. It is inevitable that sooner or later, the representatives of the weaker sex should feel persecuted and ask that the feminine records be awarded to them (1968a: 1).

Thiebault's comments bring starkly to the fore the foregrounding anxieties over masculinised bodies in women's sport, contrasted against normal(ised) womanhood or femaleness which Thiebault defined not only as feminine but also as the 'weaker sex' almost by definition, thus delineating the boundaries around appropriate female embodiment through presumed femininity and frailty.

Thiebault outlined two explicit aims for on-site gender verification: firstly, he noted that "our task in Grenoble was to … dissuade the hybrids from participating in the Games" and, secondly, "the moral means of the Medical Commission of the IOC should be employed to help such an 'indetermined' creature to become aware of its true situation and of the eventual therapeutics" (1968b: 16). For Thiebault, the gender suspect bodies that he feared – labelled 'hybrid', 'indetermined', 'creature',

and 'it' – carried gender and sex binary pollution to the extent that not only their status as women but also their status as human was rendered in doubt. Their relegation as 'it' and 'creature' worked to rub the suspect bodies off human identity and render them 'hybrids' who disrupted the purity of Olympic bodies by carrying polluting category blur. Here, it is central that, as Butler (1993) has argued, one's status as human is itself delineated and conditioned by gender attribution, because the attribution of gender sustains and delimits that which qualifies as human proper. In Elizabeth Reis' words, "to be human is to be physically sexed and culturally gendered" (2009: xi), which is illustrated by bodies and subjects who fail to be appropriately sexed or gendered: "it is their very humanness that comes into question" (Butler, 1993: xvii). The task of on-site gender verification, for Thiebault, was to dissuade such category disrupting bodies from participating in Olympic competition to secure the 'femininity' and gender purity of women's Olympic records from sexed and gendered pollution, as well as to offer medical 'therapeutics' for such polluting bodies so that they may be re-integrated into the sex binary.

It should be underlined that Thiebault's and many other late 1960s medical sport officials' rhetoric was centrally structured by pity and a demeaning kind of sympathy for the hybrid bodies that needed medical aid and kindliness from the IOC medical men who Thiebault presumed to hold superior understanding about their sexed 'truth'. The stated objective was not to punish, but "merely … to establish a lapse of nature on creatures to be pitied who will all their life remain inadapted" (Thiebault, 1968b: 2). Sport regulators thus had a moral duty to identify and offer empathy and aid to the hybrids; namely, to bodies that failed to conform to normalised ideas about what female bodies were supposed be like in accordance with gendered, classed and racialised body norms, whether such hybridity was known to those who had it or not. In a Latourian (1993) way, the binary imperative of sexed and gendered categories required the purification of the female/woman/feminine and the male/man/masculine ontological zones from hybrid creatures that could pollute the clear differentiation of the binary zones, and such hybridity was thus rendered not only as pitiful but also as an object of binary realignment through medical therapeutics.

After the Grenoble Olympics, Thiebault observed that the IOC's core aim of

'hybrid dissuasion' appeared to be working, which lent legitimacy to the on-site procedure as he saw it: "before the Olympic Games we learned through the press that two athletes, a Soviet Russian and a Bulgarian girl, had preferred to retire from the Grenoble Games" which "seems to prove that our aim of dissuading has already been attained" (1968b: 7). The withdrawal of these Eastern European athletes constituted proof of the necessary and worthwhile character of on-site gender verification, whereby hybrid bodies from the Eastern bloc retracted from women's competitions, thus enabling the feminisation of women's Olympic sport from (their presumed) gender pollution. The identification of category pollution with the retracting bodies of the 'other' not only functioned to dehumanise 'their' hybrid bodies (as 'it'), but it also secured the differentiation between 'their' (socially and politically contaminated) gender polluting bodies and 'our' (socially and politically superior) gender pure bodies. Similarly, commenting on the introduction of on-site gender verification in the Olympics a few years later, a journalist reported that the IOC president Brundage considered on-site gender verification to have been an

> effective deterrent against hermaphrodites, who were believed to hold five out of 11 women's world records before the tests were initiated. 'They are more feminine now', [Brundage] says. And he is right. This year's Olympic roster will bulge with beauties. … the Olympics [will] look like beauty pageant gone athletic (Dosti, 1972: W20).

In ways closely mirroring his earlier 1930s concerns over hermaphroditic bodies in women's sport discussed in the previous chapter, Brundage saw on-site gender verification as an effective deterrent mechanism through which the feminine gender purity of women's sport was secured. It is, of course, not coincidental that feminine purity was identified with the beautification and, consequently, (hetero)sexual appeal of women athletes.

Finally, the centrality of feminine embodiment as proof of womanhood is exemplified by Thiebault's reflections on the most appropriate label for gender verification. Thiebault commented that, as gender verification was "meant solely for the feminine sex", "I prefer the term 'investigation of femininity'. This has the advantage of … bringing in the term femininity, which represents a group of

characteristics peculiar to women without, for as much, crudely bringing to mind precise anatomical characteristics" (1968a: 1). Thiebault's desire to side-line 'precise anatomical characteristics' by centring 'femininity', and his (ambiguous) definition of femininity as 'characteristics peculiar to women', suggests a desire for emphasis on feminine bodily presentation and performance in terms of appropriately gendered appearance and behaviour (in accordance with gendered, classed, and racialised norms). Thiebault thus explicitly advocated femininity as the site of policing and as the object of gender verification: the aim was to 'investigate' athletes' femininity, to verify that women athletes were feminine enough to merit their status as women and females.

The introduction of on-site gender verification in the late 1960s was, then, foregrounded and justified by the desire to secure the feminine gender purity of women's sport in ways that relied on differentiations between gender pure and gender polluted bodies in the geopolitical context of the Cold War. On-site gender verification was taken as a successful policing measure, because it was seen to be feminising women's sport by deterring hybrid bodies who represented the breakdown of sexed and gendered boundaries by inhabiting the categorical borderlines. This hybridity was not only identified with the bodies of the Eastern bloc 'other', but what hybridity itself implied was also constituted in relation gendered, racialised, and classed geopolitical imaginaries through which gender purity was identified with the political West and gender pollution with the political East of Europe.

Conclusion

The East/West boundary dynamics of the Cold War formed constitutive conditions for the emergence of new anxieties over pure versus polluted bodies in international sport, which functioned to re-contextualise pre-existing anxieties over sex binary breakdown embodied by masculine appearing or masculinised bodies in women's sport. These boundary dynamics, structured by border construction between the West and the East by delineating 'us' from 'them', were transported into the context of elite sport in ways that made the bodies of female athletes one site through which

boundary purification was realised. This resulted into the institution of more rigorous on-site forms of gender verification.

During the Cold War the bodies of female athletes in international competitions were in many ways taken as representative of the collective 'bodies' of Western and Eastern nations, respectively. Consequently, in Western imaginaries, the sporting prowess and perceived 'abnormal' masculinisation of communist female athletes was symbolic of the polluted nature of communist gender relations more generally. Eastern bloc female athletes' masculine appearing bodies, gender performances, and (male-like) sporting prowess were taken as a negative and dangerous contrast to (white) Western women's perceived appropriate femininity, to the extent that some female athletes were relegated as hybrid and borderline bodies. Their presence in international sport threatened the feminine purity of the female category, in ways that incited the need to erect more rigorously policed boundaries around the female category and 'feminine' embodiment. This in turn was delineated in relation to Western ideals of appropriate femininity explicitly defined by Thiebault among others as the 'weaker sex'. The entry of powerful and masculine appearing communist women into international sport thus represented a threat to the 'purity' of (Western) binary gender categories. It incited, not only anxieties over gender category pollution, but also policing measures through which category purity could be secured and the presumed feminine sphere of women's sport purified from or, indeed, 'sanitised' against the gender pollution that the communist 'other' represented.

These gendered boundary anxieties were intertwined with increasing concerns over doping in sport, and over anabolic steroids in particular, in ways that were tangled with the Olympic ideal of purity from political intervention. The entry of the Soviet Union and its satellites into international competitions incited worries over the pollution of Olympic values, carried by communist governments who were believed to be motivated to use dubious means of success in sport to promote communist political propaganda. These unscrupulous governments were suspected to be contaminating the purity of their athletes' bodies with artificial substances, including the use of steroids by their female athletes in ways that contaminated their bodies with 'male' hormones and resulted in dangerous masculinisation. Concerns

over doping and exogenous hormonal masculinisation of female athletes' bodies were coupled with the concern that unscrupulous Eastern European governments were taking advantage of 'abnormally' sexed bodies' presumed athletic prowess to win medals in women's sport, overlooking sex abnormalities in signing femininity certificates for their athletes. Elite sport officials thus considered the older mandates of locally signed femininity certificates insufficient in securing the sexed and gendered purity of the female category, and assumed control over the sex binary by instituting on-site gender verification undertaken by more carefully selected medical practitioners. That some perceived hybrid or borderline sexed bodies from the Eastern bloc retracted from competition after on-site gender verification was instituted was taken as a legitimation and as evidence that the on-site system was working: it appeared to be feminising women's sport, in accordance with western ideals of appropriately feminine embodiment and behaviour.

The 'naked parades' on-site system used by the IAAF, as well as Thiebault's and others' conceptualisations of the aims and purpose of gender verification, are illustrative of how female athletes' gender status was primarily verified based on western femininity ideals in relation to appropriate (i.e. normative) female embodiment. The 'naked parades' unveiled women's bodies' 'naked truth' to be scrutinised by IAAF elected medical experts, who used subjective and variable criteria of appropriate femininity to evaluate whether or not female athletes' bodies carried sufficient femininity as 'proof' of their womanhood. These 'investigations of femininity', in Thiebalt's words, were taken as a legitimate means to secure the femininity of women's sport, which was rendered in doubt by the gender anxiety-inducing female-categorised bodies of the communist 'other'. More rigorous, on-site gender verification was thus instituted to secure the femininity of the female category and to purify the sex binary from hybrid and borderline bodies of the 'other' that were polluting sexed categorical boundaries erected in relation to western Cold War gendered imaginaries.

As Thiebault made clear, however, the hybrid or abnormally masculine bodies themselves that became the object of boundary purification were largely conceptualised as objects of pity, and in need of medical aid and 'therapeutics'. This medicalising framework was mobilised by IOC medical officials in relation to a

chromosomal screening-based on-site gender verification paradigm through which the hybrid or abnormal bodies identified through gender verification became objects of medicalised sex binary realignment. The next chapter discusses the medicalisation of – and the diagnostic paradigm constructed around – sex abnormality in the Olympic Games that foregrounded the IOC's on-site gender verification paradigm instituted in 1968.

Chapter six

Medicalisation, screening and diagnosis: on-site gender verification in the Olympic Games

The gendered Cold War dynamics that foregrounded the institution of 'naked parades' by the International Amateur Athletic Federation (IAAF) also foregrounded the institution of on-site gender verification for the Olympic Games. However, while the naked parades unveiled the 'naked truth' of women's bodies' external contours, the International Olympic Committee (IOC) instituted an on-site gender verification paradigm that incorporated multiple internal as well as external sexed realities. This chapter discusses the IOC on-site gender verification paradigm, which applied chromosome-based 'screening' mandated for all female-categorised athletes, whereby women's bodies were screened for the presence of the second X chromosome and absence of the Y chromosome. If 'abnormal' chromosomes were identified, 'further examinations' could be mandated, the objective of which was to verify or identify the 'truth' of sex for bodies with 'abnormal' chromosome findings, based on a medicalised diagnostic framework.

In many ways, the IOC on-site gender verification paradigm represented an attempt to shift away from subjective assessments of 'feminine' embodiment vaguely defined, to a more systematised medical delineation and definition of 'femaleness', taken to be verifiable through sophisticated medical examination methods. This chapter discusses how this shift was embedded within a broader medical(ised) paradigm erected around the Olympic Games, embodied by the creation of the IOC Medical Commission (IOC-MC) which encouraged the expansion of medicalised approaches to athletic embodiment across the sporting world. The medicalised framework functioned to render athletes' bodies objects of widespread and compulsory scientific surveillance in ways that infused Olympic values with scientific epistemologies including, most significantly, medicalised policing the sex binary in sport. The chapter focuses on the implications of this intensified medicalisation of the sex binary and maps the forms that it assumed, which were embedded within broader 1960s scientific and medical theories around the management and normalisation of sex abnormalities.

Despite the increased scientific sophistication, the chapter shows how the IOC's on-site gender verification paradigm continued to be centrally targeted at securing the sexed and gendered category purity of women's sport against category pollution or contamination, now with the aid of more sophisticated medical technologies of diagnosis and treatment. With chromosome-based screening and a framework of 'further examinations', women athletes' gender could be verified by unveiling their chromosomal realities to the expert eye of the medical specialists. If 'abnormal' findings were detected, the bodies now in gendered doubt were to be subjected to further examinations, to ascertain their final sexed truth, and to realign them with the sex binary accordingly by correcting the abnormalities thus detected. These 'abnormal' or 'inconsistently' sexed and gendered bodies – rendered pathological – could then be either integrated into the broader clinical context of medical management of sex abnormalities for binary realignment, or excluded from women's sport due to their failure to embody chromosomes, or sex more generally, normatively.

The IOC-MC and the medicalisation of athletes' bodies

As Alison Wrynn has observed, the years leading up to the 1968 Olympic Games "in Mexico City were the beginning of [a] modern relationship between science, medicine and Olympic competition" (2004: 211). Since the early 1950s, the IOC had expressed increasing interest in collaboration with external scientific and medical bodies such as the Fédération Internationale Médicine Sportive, and during the 1960s the growing centrality of science and medicine in the conceptualisation of human athletic performance generated a change in the IOC's organisational structure itself (Wrynn, 2004). Along with the International Cycling Union, the IOC was the first sport organisation to form a medical commission (IOC, 2015b). The creation of the IOC-MC and the appointment of Prince Alexander de Merode of Belgium as the head of this regulatory sub-authority resulted in the construction of a framework of medical surveillance over the Olympic Games. In Wrynn's words, the creation of the IOC-MC "was perhaps the event that foreshadowed the future direction of the Olympic Movement" (2004: 215): the new commission infused the

Olympics with scientific epistemologies by institutionalising a medical(ised) control paradigm over athletes' bodies. As Kathryn Henne (2015) has argued, under de Merode's leadership, the IOC-MC re-configured the foundational values of Olympism in ways that rendered them compatible with scientific pursuits. The core value of Olympic purity in relation to bodily purity, in particular, could now be secured through scientific means. Indeed, the most important decision taken during the IOC-MC's first meeting was to supplement the Olympic Games' entry form with the mandate that all participating athletes were required "to undergo any examination thought necessary in the interest of both his [sic] health and future" as dictated by the IOC-MC, making Olympic entry conditional upon submission to medical control (IOC-MC, 1967b). One year later, the IOC-MC ruled that athletes had to undergo testing at least "for doping and sex", and "by signing the entry forms, [athletes] waiver their rights to protest" (IOC, 1968b: 5-6). The IOC-MC thus integrated scientific methodologies within the Olympic value system by mobilising medical control as a tool for their surveillance, and consequently rendered athletes' bodies as objects of compulsory medical and scientific inspection, examination, and policing.

The institutionalisation of medical control in elite sport medicalised bodily pollution (carried by sex category blur and artificial doping substances) by conceptualising Olympic bodily purity as a medical problem, to be managed through medical means of on-site gender verification and doping control. Key to this was the institution of what can be conceptualised as an examination apparatus targeted at securing the 'natural' or 'normal' female body against pollution carried by 'hybrids' or sex abnormalities, and at securing the 'natural' body against pollution by 'artificial' doping substances. The medical control framework, in Foucault's words, functioned to place athletes' bodies "in a situation of almost perpetual examination" by mandating the submission of both the boundaries and the interiors of the body to medical scrutiny, imposing upon bodies "a principle of compulsory visibility" (1991: 186). Foucault (2003) has argued that the application of examinations functions principally to place the subjects examined in a field of visibility and surveillance against the medical norm (figured as 'health') whereby the role of medical expertise is constituted as responsibility over the control and management of that which

diverts from the norm, rendered abnormal or pathological. Through this "normativity of medical knowledge" (Foucault, 2003: 42), examination apparatuses enable the placing of bodies under medical discipline through which individual deviations from the norm can be identified by combining continual surveillance and normalising judgement. In the context of Olympic sport, the IOC-MC's examination apparatuses were applied by delineating normative embodiment against the Olympic values that relied on category purity: while, in relation to doping, athletes' bodies were policed against the notion of natural embodiment pure from contamination by artificial or unnatural substances, the purity of binarised and normalised sex categories was policed against sexed and gendered category pollution that was rendered abnormal or pathological. By placing the boundaries and interiors of athletes' bodies into a field of visibility through medical examinations, the IOC-MC thus worked to safeguard Olympic values using medical(ised) norms as tools to detect bodily pollution.

The institution of compulsory medical examinations not only matured a conceptualisation of athletic embodiment as a medicalised object around which a more formalised, on-site regulatory framework was constructed, but it also reinforced the idea that athletes' bodily purity was always-already in doubt. The publication of gender controversies and doping violations in elite sport during the 1960s seemed to support the idea that 'suspicious' bodies were infusing elite competition. By erecting a systematised medical control paradigm over this possibility, the IOC effectively institutionalised this suspicion as part of the Olympic regulatory framework. As Henne (2015) has argued, the use of medical methodologies as regulatory tools provides a seemingly objective and legitimised basis for justifying or rationalising suspicion aimed at athletes' bodies. While the concerns around doping and gender verification were intertwined in many ways as I have argued previously, here I focus on the medicalisation of the sex binary in the Olympic context.

Contextualising the medical management of sex abnormalities

To fully understand the on-site gender verification paradigm instituted by the IOC-MC, the regulatory decisions made by IOC-MC officials must be placed in the context of prevalent ideas around the science and medicine of sex difference and pathology in the 1960s. As I discussed in chapter two, John Money and colleagues, Joan and John Hampson, formulated a medical model for gender assignment in the 1950s which departed from earlier models. While medical professionals working on sex difference disagreed on which elements were most significant for sex determination, there had for decades been a general consensus that several needed to be taken into account in final sex assignment (Reis, 2009: 137). The paradigm formulated by Money and colleagues was built on this consensus, and based gender designation not on any individual sexed or gendered element, but on a desired congruence between psychology, gender presentation and bodily configuration. Money and colleagues considered this congruence imperative, because they believed that it was vital for all subjects to live unambiguous gendered and sexed lives: they considered that if the sexed bodily characteristics of an individual were inconsistent with their gender identity and gender of rearing, this would result in severe negative psychological consequences.

In effect, however, the congruence model functioned to enforce a conceptualisation of sex abnormality where 'inconsistently' sexed bodily attributes such as 'ambiguous' genitals (i.e. genitals not clearly identifiable as neither male nor female) were seen to require 'correction' or normalisation (through medical treatment or surgical intervention) to maintain overall gendered and sexed congruence. That is, they were seen to require realignment with the sex and gender binaries. Central to the medical management of many sex binary non-confirming bodies under Money and colleagues' model was a medicalised language of deformed or mal-developed sexed organs, where such mal-development was defined against normal development understood as natural. In Kessler's (1998: 31) words, the medical treatment of sex 'inconsistencies' or abnormalities was conceptualised as "natural because such intervention returns the body to what it ought to have been if events had taken their typical course. The nonnormative is converted into the

normative, and the normative state is considered natural", where the natural state is binary sex and gender.

IOC-MC officials' decision making about gender verification was embedded within these broader medical discourses, and they adhered to the imperative of realignment so that people might live their lives un-ambiguously gendered. The elite sport context was also centrally defined by the need for rigorous sex binarisation incited by the imperative of mutually exclusive female and male categories, and during the 1960s sport officials' gendered anxieties were targeted at the apparent presence of hybrid or excessively masculinised female-categorised bodies in international competitions. In particular, the fluid 'sex' hormones including anabolic steroids were capable of crossing the boundaries between 'male' and 'female', influencing not only bodily sex characteristics but also the performance potential of female-categorised bodies in ways that threatened the clarity of binarised sex in sport. As Richardson (2013: 9) has argued, however, while scientific and pharmacological developments in hormone treatments and steroid doping rendered the morphologically, genitally and hormonally sexed body more fluid, "chromosomal sex remained intact as the kernel or foundation of the biological sex concept. The X and Y came to represent the necessary alter ego of gender fluidity, signifying what nature intended", because chromosomes were conceptualised "as developmentally prior". It was, indeed, chromosomes which came to be foregrounded by the IOC-MC in relation to gender verification, where the key method chosen was the buccal smear for the Barr body or what was also called 'sex chromatin', indicating the presence of the second X chromosome.

As Fiona Miller (2006: 460) has argued, the discovery of the Barr body in the late 1940s was a significant scientific event, because it seemed to allow "scientists and clinicians to 'see' something that was otherwise effectively invisible": with the buccal smear test for the Barr body involving the scraping of cells from the inside of the mouth, "trained observers could see the presence or absence of a dark spot within a cell nucleus, and by proxy, the presence or absence of a female sex chromosome constitution". Barr body examination thus seemed to unveil a sexed reality previously hidden, enabling a visual penetration beneath the sexed or gendered 'appearances' of bodies, into a reality carried by cells within. Since its

discovery, Barr body testing was used in the medical interpretation of sex and gender 'ambiguous' bodies and, in Miller's words, it "offered practical support to the clinical and cultural demand for a sexually dichotomous world" (2006: 462). In the context of elite sport, the possibility of chromosome-based gender verification seemed, for some, to offer a solution to sexed and gendered concerns by providing a simple verification method for sex in the face of 'indeterminate' bodies.

While Barr body testing for the second X chromosome was first adopted by the IOC in 1968, by 1972 a fluorescent body test for Y-chromosome for which the sample was also collected through a buccal smear was added, indicating the presence of the Y chromosome (IOC, 1972). The distal part of the long arm of the Y chromosome, if the Y chromosome was present, could be rendered visible to trained observers, showing as bright fluorescence when stained and examined under ultraviolet light. This addition was notable, because since the Y chromosome is conceptualised as 'male', female-categorised bodies could now be revealed to carry a hidden 'male' reality located on a cellular level, and exposed by laboratory examination. Such male realities, if present in female bodies, worked as proof of a troubling internal sex inconsistency that amounted to abnormality. To be verified as females, the IOC's chromosome-based test thus required athletes to embody the *presence* of the Barr body (and therefore the second X chromosome) and the *absence* of the fluorescent body (and therefore the Y chromosome). However, while the IAAF adopted the IOC design for gender verification in 1968, it only carried out Barr body testing and not fluorescent body testing (IOC, 1988a).

Some sport observers and officials considered the possibility of chromosome testing to provide an incontestable method for gender verification in ways that relied on conceptualisations of chromosomes as fixed, unalterable sexed 'truths'. For example, editorial commentators writing for the *British Medical Journal* noted in relation to gender verification in sport that the "appearance of the body and external genitalia [are] largely determined by hormonal factors" and therefore, "genetic males may resemble females" – however "the 'true sex' is readily confirmed by chromosomal testing" ("Sex of Athletes ", 1967: 185). For these commentators, chromosomes embodied 'true sex' to the extent that hormonally induced attributes were rendered as mere appearances underneath which true sex could be revealed

through chromosomal testing. In many ways, such genetic determinism was embedded within the desire to maintain binary sex as a 'natural' reality, even in the face of bodies who carried sexed binary blur in sport. As Belioux concluded adamantly, "it has been scientifically proven that hermaphroditism does not exist. One is born a man or a woman and one remains of that sex" (1967: 1), as the Klebsian model of sex classification discussed in chapter two had determined.

However, while these kinds of ideas were expressed by some, the IOC-MC officials responsible for developing the IOC on-site gender verification paradigm did not conceptualise chromosomes as deterministic, nor did they envision chromosomes as the sole criterion that proved femaleness. Indeed, Murray Barr, who first encountered the Barr body and was the leading scientific authority on the subject, had from early on issued cautions about the status and significance of his finding. Barr argued that Barr body testing should not be taken to outweigh clinical judgement about appropriate gender assignment for individuals, and he "pledged for the utmost in caution and diplomacy in the use of such expressions as … 'genetic female or genetic male' when applying [the] tests of sex clinically" (1956: 47). Rather, he preferred to see less committal expressions used in the clinic to avoid deterministic interpretations. As Miller (2006: 473) has argued, these warnings reflected the broader medical consensus on the desirability of sex and gender congruence whereby patients should be managed in ways that enabled them to live sex un-ambiguous lives: the aim of Barr's warnings was to "avoid placing a psychological burden on patients of a truth about their sex that their physical condition might not approximate". Notably, Barr's cautious approach was shared by the IOC-MC officials responsible for the design of chromosome-based gender verification for the Olympics. The on-site gender verification paradigm that they constructed combined the desire for a clearly delineated world divided into binary sex and gender categories with the medical consensus on sex normality and abnormality reliant on the imperative of normalisation and binary realignment. Before I consider the paradigm instituted by the IOC-MC, however, an account of the limitations and complexities of the precedent IAAF on-site gender verification system is necessary.

The IAAF naked parades, 'further examinations', and the fear of embarrassment

While the IAAF 'naked parades' discussed in the previous chapter centred the unveiling of bodies 'naked truth' to a panel of medical observers, there is evidence that the IAAF also mobilised 'further examinations', likely in cases of suspicious findings made during the naked parades. The most direct evidence is the case of Polish athlete Ewa Klobukowska, who won a 400-meter relay gold medal in the 1964 Tokyo Olympics. In 1967, newspapers reported that Klobukowska had failed gender verification during the IAAF Kiev European Cup, and she thus became the first athlete reported to have failed on-site gender verification. However, newspapers reported that she did not fail at the naked parade but, rather, she had failed a *chromosome* test. According to the *New York Times*, "following the medical examination, the doctors reported … that Miss Klobukowska had 'one chromosome too many' to qualify as a woman" ("Sex Test Disqualifies Athlete", 1967: 28). Indeed, all news reports emphasised that the examination Klobukowska failed was chromosome-based, although what exactly this examination had consisted of or why a chromosome test had been carried out was not clearly elaborated.

Klobukowska's story is made even more interesting by the fact that it was widely reported that she had previously passed the IAAF naked parades during the 1966 IAAF European championships in Budapest. For example, according to the *Time* magazine, Klobukowska had "paraded naked before three women doctors … and was passed as a woman without question" but, the magazine added, "Irked by complaints that previous nets had not screened out all contestants of doubtful femaleness, the I.A.A.F. ordered chromosome tests for European Cup competitors at Kiev" ("Genetics: Mosaic in X & Y", 1967). This would suggest that all female athletes in Kiev were submitted to chromosome tests, but the accuracy of this claim has been contested. Albeit writing many years after the events surrounding Klobukowska, Malcolm Ferguson-Smith and Elizabeth Ferris (1991: 18) suggested that Klobukowska was likely submitted to and 'failed' a chromosome-based test because the naked parades in Kiev had rendered her body suspicious despite her having passed the naked parades in Budapest, and thus 'further investigations' involving chromosome analysis were only subsequently carried out. This suggestion

is supported by official documentation of the IAAF gender verification methods, which indicate that chromosome-based testing was used by the IAAF for the first time as the primary method of gender verification only in 1968, after the IOC had adopted their chromosome-based paradigm (Holt, 1983).

Two conclusions can be drawn from Klobukowska's story. Firstly, while the IAAF mandated naked parades as their official on-site gender verification policy in high-stakes events, decisions about eligibility in the last instance seem not to have always been made based on the naked parades alone. That the IAAF used chromosome analysis to verify Klobukowska's gender not only foreshadowed the IOC-MC's decision-making in relation gender verification under the Olympic framework, but it also suggests awareness of the complexity of sex assignment as (at least sometimes) mandating analysis of multiple sexed attributes (rather than only observation of external embodied 'femininity'). Secondly, that Klobukowska passed the naked parade in Budapest but was likely rendered suspicious by the same gender verification method in Kiev exemplifies how this primarily visual observation of embodied femininity was open to multiple interpretations based on subjective criteria of appropriately feminine embodiment held by different medical officials, as I noted in the previous chapter. Such subjective assessments would thus have been mobilised to establish either feminine 'appropriateness' or sexed or gendered doubt, whereby in the case of the latter, further examinations could be mandated to verify or discover the final sexed truth of the body now in doubt.

The discovery of another 'abnormal' Eastern bloc female athlete in 1967 – only a year after the suspicious withdrawal of several prominent Eastern European women like the Press sisters from elite competition, as I discussed in the previous chapter – came at a sensitive gendered time for elite sport governing bodies. However, the Klobukowska affair also coincided with uncomfortable commentaries directed towards the IAAF naked parades, which some observers perceived to amount to a dubious and degrading practice of mandating women to strip down, seen as humiliating. The *Observer*, for example, described mandating "girls stripping and parading in front of a panel" to be a "very embarrassing procedure" (Brasher, 1966b: 1), while the *Times* quoted one coach observing that "some girls … would simply not feel happy about undergoing [physical] examinations – it is a difficult

matter psychologically and there may be a few who would prefer not to compete … for fear of embarrassment" ("Medical Test for Female Athletes ", 1966: 3).

The IOC-MC was aware of these critiques of the naked parades, and some officials explicitly worked to distanced the IOC-MC from accusations of gender verification being humiliating for female athletes by emphasising the apparent neutrality of the IOC's chosen chromosome-based gender verification method. Thiebault argued that the IOC's laboratory-based verification system avoided any possible psychological difficulties since there was "nothing shocking" about undergoing a mere buccal smear (1968b: 7). Indeed, after the first round of IOC on-site gender verification had been conducted in Grenoble, Thibault considered it necessary to note that while many "young women were very tense upon their arrival", as "soon as they understood the method that was to be used they relaxed and were visibly relieved that they did not have to undergo anatomical examination" (1968b: 7). The IAAF naked parades can thus be seen to have been a stimulus for the IOC-MC's chosen paradigm, to the extent the critique directed at the naked parades also supported the use of laboratory-based examinations which appeared more neutral, scientific, and less problematic. Indeed, key to the IOC's on-site paradigm was the IOC-MC's claim to medical expertise and sophistication, through which chromosome-based gender verification was constructed as a diagnostic paradigm for discovering sexed truth.

A diagnostic paradigm for sex

The IOC on-site gender verification paradigm was first trialled during the 1967 International Sport Competitions in Mexico City and implemented for the 1968 Grenoble winter Olympics. While at Grenoble IOC medical officials balloted at random 50 female athletes to be gender verified (Thiebault, 1968b: 7), by the 1968 Mexico City summer Olympics all athletes registered as female were mandated to undergo gender verification on-site. To avoid repetition of the related tests, the IOC-MC decided to "give all women athletes a medical certificate which will be valid for all their future competitions" (IOC, 1968a: 3). This certificate – mirroring older femininity certificates discussed in chapter three but now authorised by the IOC-MC

– was named ‘certificate of tests of sexual chromatin’. The on-site gender verification paradigm that was instituted was not designed to exclude athletes based on the chromosome-based tests alone, however, but as it was originally designed and envisioned by IOC-MC members, the buccal smear test was intended as a screening test. If suspicious findings were obtained, athletes were to be subjected to further examinations to arrive at a diagnosis of sex and/or sex pathology. In Thiebault’s (1968b: 3) words, gender verification was planned to be “carried out by progressive phases, in order to confirm the diagnosis completely”, whereby the chromosome-based examination constituted the first phase. If the screening produced suspicious findings, further examinations were to be conducted to diagnose the possible presence of sex ‘abnormality’ and to establish the final truth of sex.

The progressive phases for complete diagnosis were designed to take the following steps. If after the initial screening the number of chromosome indicators “counted is insufficient, investigations must be continued and care be taken not to make a hasty diagnosis” (Thiebault, 1968b: 3). If the screening revealed suspicious or inconsistent appearing chromosomes in female bodies, these bodies now in doubt were to be subjected, firstly, to a karyotype test (i.e. complete chromosome mapping), and secondly, if “the diagnosis is still doubtful, … a complete hormonal check-up of the athlete” was to be carried out, including “the study of the menstrual cycle” and “the athlete’s anatomical and physical structure” (Thiebault, 1968b: 3). An article in the *Olympic Newsletter* discussing gender verification at the Mexico City Olympics noted that the “medical service will not only take note of such things as attitude, social conduct and dress, but will also make intensive examinations – including psychiatric tests – to determine primary and secondary sexual characteristics” ("Medicine and Sport", 1968). The article emphasised that chromosome-based findings were not to be used for the purposes of final sex determination, noting in particular that among “the varied examples of human pathology caused by abnormalities of the sex chromosomes, one of the most interesting – from the viewpoint of sex determination in the athlete – is that of male pseudohermaphrodite, since if he competes, he should do so as female” ("Medicine and Sport", 1968). ‘Male pseudohermaphroditism’, in accordance with the Klebsian classification system, referred to individuals with female or ‘feminised’ secondary

sex characteristics and female/feminised genitalia who have testes and a Y chromosome. The recognition that such 'males' (despite the inaccurate gendering) should compete as females shows recognition of chromosome-based examinations' fallibility as a solitary gender verification method, and the consequent necessity of further phases of examination for athletes with 'abnormal' chromosome findings.

The plan of action designed by the IOC-MC to respond to 'abnormal' sex discoveries was motivated by the broader medical and scientific discourses around sex abnormality during the late 1960s, and it is illustrative of the medicalised approach taken towards abnormal sex. Rather than imagining the sex binary as manageable (merely) through chromosomal determinism, IOC-MC officials constructed a paradigm with several diagnostic phases of sex identification applying multiple sexed and gendered components that could be separately analysed to 'confirm sex diagnosis completely' for the body under investigation. By drawing from medical discourses, normal(ised) health could be mobilised to diagnose (the truth of) bodies' specific sex and pathologies, some of which would and some of which would not verify eligibility to compete in women's sport. Bodies diagnosed (or assigned as) pathological could then be subjected to intervention (or 'correction') to realign them with the (normalised) sex binary through medical technologies.

Illustrative of this is Thiebault's (demeaning) sympathy towards the hybrid bodies the identification of which he considered to be a core objective of gender verification. As discussed in the previous chapter, the IOC-MC's explicit aim was not only to dissuade hybrid bodies from taking part in women's events, but also to offer medical treatment for sex 'indeterminacy'. Thiebault argued that a "hybrid discovery" during Olympic competition, especially if made at a young age, was likely to have a positive outcome because "all therapeutics can still be applied" and "it is not too late to do something about psychic reintegration into the true sex, if necessary" (1968b: 8). As I noted in the previous chapter, Thiebault considered IOC-MC officials to have a broader moral duty of medical aid for the hybrid bodies identified through gender verification, since

> above all other things – even the Olympic Games – we should place our duty as physicians and, should we come across such hybrid creatures, prescribe

> medical treatment if possible, or at least help them to accept their fate, as we try to do when we discover any other infirmity (Thiebault, 1968b: 2).

This rhetoric mirrors the broader medical discourses of the period where binary non-conforming bodies were imagined to constitute a medical tragedy, whereby freakhood would be their fate if their cases were improperly medically managed: ambiguous sex was framed by medical professionals as a "tragic event which immediately conjures up visions of a hopeless psychological misfit doomed to live always as a sexual freak" if the ambiguity was not normalised (Dewhurst & Gordon, 1969, cited in Fausto-Sterling, 2000: 47). As Money and colleagues had assumed, the broader belief was that living a sex and gender un-ambiguous life was important for psychological well-being. Thiebault's remarks illustrate how, as Kessler (1998: 17) has argued, the management of sex abnormalities involved belief in the idea "that good medical decisions are based on interpretations of … real 'sex'", and overall sex and gender congruity should be enabled by medical sex binary realignment after the real sex had been identified. The views of IOC-MC officials in the late 1960s thus largely corresponded with the medical consensus of sex and gender coherence and normalisation to realign bodies with binarised sex, for their own good.

This medical sympathy was, however, foregrounded by a more implicit anxiety over the breakdown of binary sex and gender categories. The IOC-MC gender verification paradigm and the mobilisation of calls for (normalising) medical treatments centrally functioned as tools for sex and gender category purification. The IOC paradigm was designed not only to secure the femaleness of women's sport by screening out binary polluting sex 'abnormalities' from the female category, but also to 'confirm the diagnosis of their sex completely' and to realign binary polluting bodies with the sex binary through medical means if necessary. The IOC on-site paradigm functioned to detect and purify category pollution that rendered unstable the boundary between binarised sex, and exemplifies the medicalisation of the Olympic value of bodily purity. Central for enabling this was the construction of an examination apparatus that functioned to render athletes' bodies objects of compulsory medical examination and inquiry, exposing not only bodily boundaries but also bodily interiors to obligatory scrutiny. By examining bodies to detect sexed

abnormalities, IOC medical experts could *control* binarised sex by placing bodies under medical discipline through which deviations from the binary could be identified.

Chromosome-based screening carried other implications as well. While previously, gender had primarily been verified based on the external contours of female bodies' 'naked truth' whereby suspiciously masculine external appearances would have incited doubt about their sexed 'truth', chromosome-based screening was capable of inciting suspicion also in relation to bodies who appeared 'normal' (i.e. appropriately feminine). As all women athletes were compelled to undergo the screening as a condition of eligibility to compete, even appropriately feminine bodies could now reveal a suspicious or 'abnormal' sexed reality present within bodily interiors, located at a cellular level. This was particularly so with fluorescent body testing for the Y chromosome, since normatively feminine bodies could reveal (a sex inconsistent) 'male' chromosomal reality, visible not from external bodily contours but from cells unveiled to the medical gaze by laboratory examinations. The introduction of chromosome-based screening thus matured a conceptualisation of gendered suspicion whereby 'innocent' appearing bodies might hide an internal sexed uncertainty which could now be exposed by observing chromosomal realities. It was no longer only masculine or masculinised bodily contours that rendered female athletes' gender in doubt, but also the 'male-like' interiors of female-categorised bodies that failed to show an appropriate chromosome count for (normalised) female embodiment. As Henne has noted in relation to doping control but equally applicable to gender verification, the IOC paradigm of body surveillance perpetuated an enduring "cycle of suspicion" that reminded elite sport officials and observers also "to be suspicious of the bodies that may look 'normal'" (2015: 148).

While, as originally envisioned by the IOC-MC, Olympic on-site gender verification was constructed to be a complex diagnostic paradigm for sex and sex pathology, the practical consequences of its application were, however, varied for two key reasons. Firstly, since the late 1960s, gender verification was practiced not only by IOC-MC officials but also by smaller international and local sport organisations to 'pre-screen' athletes' Olympic eligibility, and thus the application of gender verification was from the outset escalated outside the IOC's direct realm of

jurisdiction. Secondly, despite the stated aim to arrive at a complete sex diagnosis for athletes identified as suspicious during the chromosome-based screening, this aim was often not carried through even by the IOC, and consequently ineligibility and doubtful gender status were the practical consequences for some athletes 'caught' in the chromosome-based screening net. The rest of this chapter considers these issues, and highlights the extent to which sport officials and medical professionals were willing to go to obtain final sex diagnoses.

The practical realities of the introduction Olympic on-site gender verification

Only a year after the publication of Klobukowska's story, newspapers reported another gender verification controversy, this time concerning Austrian women's downhill skiing world champion Erika Schinegger. Newspapers conveyed that Schinegger "had to withdraw from [the Grenoble] winter Olympics because of difficulty in proving total femininity", adding that afterwards, Schinegger announced that "she will resume her racing career next winter – this time as a man" ("Ski World Loses a Queen as Erika Becomes 'Erik'", 1968: 17). With remarkable similarity to the news stories discussed in chapter three published three decades earlier about Weston and Koubek, newspapers in 1968 reported that after the gender verification experience, Schinegger had "changed her sex in a series of operations", reporting that "Erika – now Erik Schinegger – underwent … treatment [which] was begun after the skier developed male characteristics" ("Austrian Girl Skier Changes Her Sex", 1968: 13). Despite the temporal distance, parallels between news stories about Schinegger and 1930s stories about athletes like Weston and Koubek are notable. While stories concerning Schinegger place a stronger emphasis on medical and surgical technology, the language of internally incited sex transformation (albeit no longer described as sex change metamorphosis) continues to frame the late 1960s and early 1970s Schinegger news stories, suggesting a process of masculinisation that was begun due to pre-existing male potential. This continuity of interpretation is interesting, since by the late 1960s other interpretative frames would have been readily available for reporters due to the existence of more refined understandings of intersex as well as transsexuality (Meyerowitz, 2002). Importantly, however, as

Schinegger's masculinised embodiment was identified through gender verification, his story seemed to support the idea that abnormally masculinised bodies were indeed being identified and then medically corrected because of the new gender verification paradigm. This was especially because Schinegger, now 'transformed' into a man, had every intention and also the performance level required to continue competition in the men's category.

Schinegger's story and his own beliefs seemed to lend legitimacy to the IOC's prescribed aim of gender verification as a system of detecting and treating 'abnormal' (masculinised) female-categorised competitors, even if such abnormality was carried unwittingly. Two years after the publication of his 'change of sex', newspapers reported that Schinegger aimed to qualify for the Austrian men's team and among other things had "won the [men's] giant slalom race at Kaprun, Austria, beating his teammate, David Zwilling, who will compete for Austria in next week's world championships" ("Erika Becomes Erik, Makes Skiing Comeback", 1970: C1). While Schinegger never accomplished in the male category the kind of success he achieved in the female category, this former female competitor's ability to compete against men at advanced level was noted by observers. Indeed, like Weston had, Schinegger himself came to believe that his previous success in women's events was undeserved: in 1988, he handed his 1966 women's world championships gold medal to the second-place finisher, commenting that "I won the race as a woman, but, without realising it, I was a man. That's why the medal doesn't belong to me" ("Sport in Brief: Skiing ", 1988: 17).[26] Throughout many interviews spanning several decades, Schinegger continued to emphasise that he had believed – mistakenly – himself to be a woman, and it was only the gender verification conducted prior to the Grenoble Olympics that had corrected this belief. As late as 2005, he maintained that "I believed I was a girl, I thought I was a lesbian", reflecting that his gender verification results had "turned out to be a blessing": "I was very lucky. If I did not become world

[26] It is noteworthy that some years later, the second-place finisher and Schinegger's friend, Marielle Goitschel, gave the gold medal back to Schinegger, most likely as a reflection of their friendship and perhaps also reflecting a belief that Schinegger deserved his medal. Schinegger was never officially stripped from his title ("FEATURE: Erik Schinegger, the Man Who Was Women's Ski World Champion ", 2013).

champion, and did not undergo those tests, … I would have carried on being a man living as a woman" ("Film Tells the Story of the Man Who Was the World's Female Ski Champion ", 2005). Notably, this conviction corresponded with ideas expressed by Thiebault about the benevolent aims of gender verification as a form of corrective medical aid provided for unfortunately 'indeterminate' bodies so that they may become 'aware of their true situation' and possible medical interventions, perhaps even including 'psychic reintegration into the true sex, if necessary'.

Schinegger's story also illustrates, however, the dispersal of the late 1960s medicalised examinations of sex outside the IOC's direct control, and the extent to which medical sex testing could be taken in suspicious cases to diagnose the final truth of sex. Schinegger's story is among the most widely documented cases of gender suspect bodies in women's sport,[27] and there exists a relatively detailed documentation of the events surrounding his gender verification, including his personal experiences. In 1967, the Austrian women's skiing team was taken to the Innsbruck University Hospital for gender verification in preparation for the Grenoble Olympics. After multiple examinations had been carried out on him, Schinegger was called back by the gender verification team and informed that he had not passed the examinations because "internal male sex organs" had been discovered (Broadbent, 2009). Building on extracts from his autobiography, *The Los Angeles Times* conveys that the doctors responsible for carrying out the examinations put Schinegger "through extensive medical and psychological testing" and proceeded to "opening his lower torso area" ("Man Who Won '66 Women's Downhill Gives Up Medal ", 1988: B15). That these examinations were conducted, not directly under IOC authority, but under local Austrian authorities shows, as the IOC-MC official Beckett reflected in the mid-1970s, that the introduction of mandatory on-site gender verification in the Olympics meant that "immediately most countries took greater care in their own selection of competitors for women's events" (n. d.: 3-4). Such 'greater care' evidently took the form of local pre-screening of female athletes – a continuation of practices conducted for decades for the purposes of locally signed

[27] Schinegger's story has been made into a documentary titled *Erik(a)* and he published an autobiography *Mein Sieg Ueber Mich* (Victory Over Myself). He has also provided multiple interviews to journalists, spanning across several decades.

femininity certificates. Indeed, as one prominent critic of gender verification noted two decades later, “Many national and local sports clubs … started screening young people … In other words, what goes on at large international games [is] just the tip of the iceberg” (de la Chapelle, 1987b).

The diffused pre-Olympic gender verification practices carried out by national authorities and smaller sport organisations were neither systematised or directed nor even properly recorded by the IOC, which meant that there was no centralised regulation over these practices. Illustrative of this are remarks made by IOC-MC officials responsible for gender verification during a working group that took place as late as 1988. From the working group minutes, it is clear that IOC-MC officials did not know which international sport federations were performing gender verification, nor which methods were used for this purpose, demonstrating a remarkable lack of record keeping (IOC, 1988a). Similarly, while IOC-MC officials were aware that female athletes were gender verified in several national contexts, it is apparent that no systematic record of such practices was kept. For example, while the IOC-MC’s gender verification expert Hay was aware that gender verification was carried out in the USA and France, he was “unaware as to which test was used” (IOC, 1988a). This lack of regulation and systematisation of pre-Olympic examinations implies that various criteria could have been be used in different contexts as grounds for excluding athletes from women’s sport, despite the IOC-MC’s stated aim to avoid making ‘hasty diagnoses’ of sex without comprehensive examinations. The institution of on-site gender verification in the Olympics thus incited scattered sex binary policing apparatuses erected across different contexts and levels of sport participation, in ways that infused high level sports with bodily scrutiny of sex.

The multiplicity of examinations conducted on Schinegger also illustrate the extent to which these examinations could be taken in cases of suspicious findings, as well as the integration of suspicious bodies identified during gender verification in sport within broader clinical paradigms of treatment. While Schinegger’s gender verification was carried out by local medical officials, the management of his case did largely mirror the plan drawn by IOC-MC officials for complete sex diagnosis. Notably, from the outset, IOC-MC officials intended to integrate the management of hybrid bodies identified through gender verification into broader medical frames for

treatment of sex abnormalities, to be carried out in clinical contexts. Thiebault (1968b: 3) observed that when it came to the final gender verification phases of complete diagnosis, the application of necessary "'expert' evaluation at the Olympic Games, by its complexity and its perspective which embraces the entire human personality, proves to be utopic". Therefore, it was seen "necessary to contact each team's doctor and plan coordinate action." The full management of abnormal sex was thus delegated outside the IOC-MC's direct realm of accountability, and integrated into the broader medical(ised) framework of treatment.

Illustrative of this is an example provided by Hay in 1981 of the protocol that was followed when the 'complete study' of sex was conducted, and abnormal findings were made during a physical examination:

> If the physical and gynecological examination reveals a case of a pseudo-feminine hermaphrodite with gynecoid [sic] and no apparent masculine physical constitution, the athlete will be permitted to compete. Such a case has been presented and the possibility of an ovo-testis was diagnosed. Surgical intervention was recommended. The [IOC Medical] Commission received acknowledgement from the N.O.C. [National Olympic Committee] involved of the surgical treatment performed afterwards which corroborated the diagnosis (Hay, 1981).

In this case, a diagnosis produced under the IOC-MC's authority resulted in surgical interventions carried out in a local clinical context, under the involvement of the NOC. This integration of sex abnormalities identified under the elite sport framework into broader clinical contexts illustrates not only the infusion of sport governing bodies' authority into clinical decisions made about medical treatment, but it also demonstrates the possible consequence of being caught in the gender verification screening net, which could be surgical interventions even in cases where eligibility to compete was granted. Furthermore, in addition to the documentation about examinations undergone by Schinegger, a case reported by Sakamoto and colleagues (1988) detailing the examinations undergone by one athlete illustrates the intensity of the medical probing that could result from a 'failure' to 'pass' the initial chromosome-based screening. Sakamoto and colleagues' report outlined 'further examinations' conducted on an athlete who was identified as suspicious based on

chromosome-based gender verification screening carried out during the 1985 Universiade Games in Kobe. To completely ascertain the athlete's femaleness, she was made to undergo, among other things, a physical examination of her body frame including body hair examinations and nipple and areola measurement; a genital examination including internal examination of the vagina; a rectal examination of internal genitalia; a vaginal smear; hormone analysis; and ultrasonography (Sakamato et al., 1988). While the athlete was verified to be female 'enough' to compete in women's sport, the prospect of such an array of intimate examinations combined with the reality of having one's gender rendered in doubt likely discouraged several athletes identified as suspicious from pursuing the 'complete study' of their sex.

Relatedly, despite the IOC-MC's stated aim to produce a complete sex diagnosis for athletes identified as suspicious, this aim was often not realised in practice. This was because, in cases of 'abnormal' chromosome findings, Hay outlined that

> the medical officer of the team involved and the Chief of Delegation … have the choice of withdrawing the athlete from the competition. … various excuses may be offered for the non-participation of the athlete a training accident, fracture, ligaments, etc. Usually the athlete, the Chief of Delegation and the team doctor prefer not to go ahead with the complete study which involves blood tests and physical examination. This has occurred in about a dozen cases since the inception of the medical controls (Hay, 1981).

The most well-known of such cases was Spanish hurdler Maria Martínez-Patiño, who was set to compete during the same 1985 Universiade Games in Kobe, but had forgotten to bring her certificate of tests of sexual chromatin which she had been granted previously during the 1983 Helsinki World Championships. Consequently, Martínez-Patiño was mandated to re-take the screening, but this time the screening produced 'abnormal' results. Without being offered the option to undergo further testing, the organising officials at Kobe in collaboration with her team doctor decided that she was to fake an injury and withdraw from competition, which she did. Afterwards, the president of the Spanish Athletics Federation informed her that she would have to permanently withdraw from competition which resulted, among

other things, in her sport scholarship being revoked and her being expelled from the national athletic residence, amounting to the loss of her main source of income and stability (Carlson, 1991b). After being ruled ineligible to compete, Martínez-Patiño consulted an endocrinologist and other medical professionals to gain information about her 'abnormal' result, and she was diagnosed with androgen insensitivity syndrome (AIS) – a diagnosis which, if the further examination mandates had been respected in her case, would actually have verified her eligibility to compete (Carlson, 1991b). This is because women with AIS present with female phenotypes (implying 'no apparent masculine physical constitution') due to a genetic mutation in the androgen receptor gene that renders them insensitive to androgenic hormones, despite having XY chromosomes and consequently being screened as 'abnormal' by chromosome-based tests. Martínez-Patiño's story evidenced not only that further testing mandates were not always respected (nor did the IOC have control over how gender verification was carried out outside of its direct realm of jurisdiction, or over the related consequences), but also that because the mandate was not respected, women who should, according to IOC guidelines, have been eligible to compete were being excluded from women's sport.

Martínez-Patiño's story also evidenced that chromosome-based screening was subject to errors, and not always carried out by competent medical personnel: despite her XY chromosomes, Martínez-Patiño had passed chromosome-based screening in Helsinki in 1983, been issued a certificate as proof, and was only re-tested at Kobe because she forgot to bring this certificate along. That Martínez-Patiño passed the screening in Helsinki was, in the words of gender verification critic Albert de la Chapelle, an "illustration of the inadequacy of the … screening" and an example of "a serious mistake" because Martínez-Patiño's "chromatin *should be 'abnormal'*" (1988d, original emphasis). Indeed, in Helsinki, due to the unavailability of competent medical experts,[28] gender verification had been performed by a

[28] This unavailability was the consequence of the Finnish medical community's rejection of chromosome-based screening as an appropriate method for verifying gender, due to which practically all Finnish experts had refused to conduct the screening. I discuss the medical community's rejection of chromosome-based screening in depth in the next chapter.

pharmacologist (de la Chapelle, 1988c) showing that sport officials sometimes used inadequately trained staff, increasing the likelihood of erroneous results. When it came to fluorescent body screening, the possibility of testing errors was brought to the fore by the case of American swimmer Kirsten Wengler whose screening results had been 'abnormal', showing 'male chromatin'. Wengler was informed by her team leader that she should abandon her swimming aspirations without being offered the option of further examinations, but her 'male chromatin' was later shown to have been the result of a testing error; a misinterpretation which de la Chapelle later argued to "occur in between 6 and 15% of all women, depending on the experience of the observer" (de la Chapelle, 1987c).

Despite the original aim to avoid 'hasty diagnoses', then, in practice athletes could be and were withdrawn from competition based only on the initial chromosome-based screening, even though Hay acknowledged that it was possible that further examinations might have releveled 'no apparent masculine physical constitution' even when the screening had rendered an athlete's gender suspicious (Hay, 1981). Indeed, in 1988 Hay remarked that during the Los Angeles Olympics, three athletes identified as suspicious had "not turned up for further investigations and were therefore automatically disqualified" simply due to their absence, apparently without any attempt to pursue the question of their eligibility further (IOC, 1988a). This was despite the fact that during the same Olympics three other cases that had been examined further "had been male pseudo-hermaphrodites, with no advantage for competition" and had thus been verified as eligible to compete (IOC, 1988a). Despite the rhetoric of complete sex diagnosis and caution expressed by IOC-MC officials in relation genetic determinism around sex chromosomes, many athletes withdrew or were withdrawn from competition simply due to 'abnormal' chromosomal characteristics.

Despite the IOC-MC's design of a diagnostic paradigm for sex and sex pathology that aimed to arrive at a complete diagnosis incorporating a multiplicity of sexed and gendered characteristics, there were thus important issues with the application of the paradigm in practice. The introduction of on-site gender verification in the Olympics incited the use of un-systematised and dispersed gender verification practices by sport organisation across various contexts and levels of sport

participation to pre-screen female-categorised athletes, without centralised criteria of how these gender verification results were to be obtained and interpreted. The IOC-MC itself failed to live up to its aim to deliver complete diagnoses in the Olympic context, since athletes often did not undergo the 'complete study' of their sex. The practical consequence was therefore that chromosome-based examinations indeed functioned as a final arbiter of sex for many athletes, resulting in their exclusion from the female category because of the discovery of 'abnormal', 'male' chromosomes, regardless of what their sexed and gendered bodily contours indicated. When athletes did undergo further examinations, the extensity and intensity of the examinations medicalised their sexed embodiments in ways that rendered their bodies objects of scientific exposure, probing, and penetration (sometimes literal) by medical professionals who saw their bodies as medical crises needing study and/or intervention. Schinegger's widely publicised story seemed to support these practices' legitimacy, since the consequences of him undergoing the full extent of the diagnostic paradigm resulted not only in the identification of an 'abnormal' body seemingly carrying 'male-like' potential in women's sport, but also in the diagnosis of his 'true sex' based on which he could be realigned with the sex binary and 'reintegrated into his true sex' with the aid of medical 'correction'.

Conclusion

The creation of the IOC-MC and the erection of a medical control framework over the Olympic Games enabled scientific and medical(ised) policing of the Olympic value of purity. The purity of athletes' bodies could now be policed through more sophisticated scientific and medical means in ways that integrated scientific epistemologies and methods into the Olympic framework. Central to this was the erection of medical examination apparatuses that unveiled both the boundaries and the interiors of athletes' bodies to medical scrutiny, enabling the IOC-MC to police athletes' bodies' using medical(ised) norms to detect bodily pollution. The IOC on-site gender verification paradigm functioned centrally as an examination apparatus with which the purity of binarised sex and gender categories could be secured against sex and gender category pollution, rendered abnormal and pathological. By

constructing a full blown diagnostic paradigm aimed at identifying the final 'truth' of sex or sex pathology for bodies whose claim to a status as women was in doubt, the IOC-MC utilised broader 1960s medical discourses around sex abnormality and pathology as an interpretive framework through which 'hybrid' or 'indeterminate' bodies could be managed and treated (i.e. normalised or corrected), and realigned with the sex binary so that binarised sex and gender categories as well as subjects' internal sex and gender congruence could be maintained. In many ways, this exemplifies the ways in which the imperative of coherence theorised by Butler between the sexed body and gender status, as well as the imperative of bodies' internal coherence of sexed attributes, rendered inconsistent or 'incongruent' bodies as 'abnormalities' mandating sex and gender binary realignment.

Chromosome-based screening for sex also functioned to extend the scope of gendered doubt: by focusing the screening upon chromosomal characteristic, the system matured a form of gender doubt where abnormal, 'male' or male-like sexed realities could be hidden beneath the contours of even appropriately feminine appearing bodies, lurking within on a cellular level. Thus, even 'normal' looking feminine bodies might hide internal sexed secrets, which could be unveiled by examining bodily interiors. Gender doubt and suspicion was thus extended to potentially all female athletes' bodies. Indeed, despite their stated aim to arrive at a complete diagnosis for bodies identified as 'abnormal' through chromosome-based screening, this aim was often not carried through by the IOC-MC since athletes identified as suspicious and their chiefs of delegations had the option to withdraw from competition without further examination. In practice, therefore, abnormal 'male' or male-like chromosomal realities not only rendered athletes' gender in doubt, but also excluded some athletes from the female category, regardless of what their gendered and sexed external contours signified.

Those athletes who underwent the full diagnostic paradigm designed by the IOC-MC for gender verification, on the other hand, faced an array of sex examinations that rendered their bodies objects of medical scrutiny and probing, the consequence of which could be medical and surgical interventions. Such interventions, foregrounded by the need to secure sex and gender category purity a well as sex and gender congruity or coherence in accordance with the sex binary,

illustrate the embeddedness of gender verification in sport within the broader framework that medicalised binary non-conforming sex. Schinegger's story seemed to lend legitimacy to this approach, as he was successfully (medically) re-aligned with his 'true' sex. Moreover, since the introduction of on-site gender verification in the Olympics incited dispersed gender verification practices across different levels of sport participation, the overarching consequence of the IOC's introduction of on-site gender verification was that formal sex binary policing became a part of advanced level sport more generally.

The IOC on-site gender verification paradigm in many ways represented an attempt to construct a more systematic and scientific approach towards gender verification, by delineating a scientific demarcation of 'femaleness' based on broader medical discourses around sex difference, rather than basing gender verification on subjective and vaguely defined evaluations of feminine embodiment that had characterised the IAAF 'naked parades'. The medicalised framework that was first erected in a formal way in the late 1960s irrevocably structured the history of gender verification in elite sport from that moment on and continues to do so in the present – indeed, medicalisation has been perhaps the most enduring thematic of gender verification. However, since its inception, the IOC's on-site gender verification paradigm incited critique from scientific experts. The next chapter is focused on the unfolding and maturation of these critiques in the 1970s and 1980s, and maps the emergence of concerns over the possibility of gender fraud or masquerade in women's sport.

Chapter seven

Gender fraud and masquerade: penises, well-formed scrotums, and health and gender examinations

The chromosome-based on-site gender verification screening system designed by the International Olympic Committee (IOC) begun to incite criticism from scientists almost the moment it was instituted. This chapter discusses the emergence of a scientific opposition to chromosome-based screening in the 1970s and 1980s, which foregrounded the emergence of concerns over gender fraud or gender masquerade in women's sport as a central threat to the boundaries of the female category. As I discussed in chapter two, the gender fraud/masquerade concern is usually provided by scholars as the original rationale for gender verification. Here, however, I will show how the centring of gender fraud/masquerade prevention as the official rationale for gender verification was located in the late 1980s, and contextualised by the emergence of new problem bodies as well as particular argumentative strategies advanced by scientists who sought to abolish chromosome-based screening.

The 1970s and 1980s context was characterised by the surfacing of concerns over two kinds of controversial embodiments in women's sport; namely, phenotypic males and men with dual X chromosomes, and male to female transsexual athletes who were taking part in women's sport in increasing numbers. Unlike the gender anxiety inducing bodies of previous decades, the problem bodies of the 1970s and 1980s were not conceptualised as 'hybrids' or indeterminately sexed, but as males or men in 'truth' who were making a fraudulent claim to a gender status as women. The anxieties incited by these bodies shifted the focus of concern (momentarily) away from sex and gender binary blur and towards fraudulent sex and gender category crossings committed by presumed overt males and men. The centring of the new problem bodies (men with dual X chromosomes in particular) was carried by two scientists, Malcolm Ferguson-Smith and Albert de la Chapelle, who were critical of chromosome-based screening, not only because it unfairly identified women with XY chromosomes as 'abnormal', but also because it failed to identify men with XXY and XX chromosomes as males. This, in turn, implied the threatening

possibility that these men could 'pass' gender verification as females due to their (misleading) chromosomes, and fraudulently cross-dress as women in elite sport despite their male phenotypes. This concern intertwined with anxieties contextualised by the presence of transsexual women in elite sport, in relation to which men were feared to be cross-dressing or undergoing sex reassignment with fraudulent motives, merely to reap the benefits of success in women's sport.

This chapter maps these intertwined anxieties, and contextualises the emergence of gender fraud/masquerade prevention as the official rational for gender verification, which in turn resulted into a new definition of 'female' to be applied in elite sport. This definition, constructed in relation to worries over overt males in women's sport, centred sexed phenotypes and genitals in particular as the site where 'true' sex could be discovered. The effect of this was that female-categorised athletes' legitimate status as women was now to be verified by the absence of male genitalia – the penis (and scrotum) in particular – in ways that established (bodies with) penises infiltrating or 'penetrating' into the female category and women's sport as a threatening prospect against which (legitimate or authentically female) women (without penises) needed protection. The 1970s and 1980s context was thus characterised by a shift towards an emphasis on a deceptive kind of category crossing across binarised sex and gender, accomplished through men misrepresenting their 'true' male sex, symbolised by the trope of the gender fraud or masquerading man 'passing' as a woman, or *tres*passing in women's sport.

Chromosomal disorders and transsexual women

To contextualise the emergence of debates between scientists and sport officials over chromosome-based gender verification screening, this section discusses the two kinds of controversial embodiments that shaped the emergence and influenced the nature of these debates. Firstly, the debates concerned the implications of chromosomal disorders of sex development embodied by subjects whose phenotypic sex or the sexed appearance and characteristics of their bodies failed to match their 'sex' chromosomes. Secondly, concerns over the existence and

implications of these inconsistently sexed bodies coincided with anxieties centred on male to female transsexual athletes in women's sport.

There were two kinds of chromosomal disorders in particular that became an object of concern, because they de-stabilise the presumption that XX chromosomes imply femaleness and XY chromosome imply maleness in relation to phenotype. As I discussed in the previous chapter, AIS (previously termed 'testicular feminisation' syndrome) breaks down the presumption that XY chromosomes imply maleness, because women with AIS have XY chromosomes despite having female phenotypes. These women's bodies thus appear discontinuous in terms of the presumed coherence of sex attributes, and they were screened out as 'abnormal' through chromosome-based screening in sport because of their 'male' chromosomes. However, during the 1970s and 1980s, a debate emerged over two chromosomal disorders where the opposite was the case; namely, Klinefelter's syndrome and XX male syndrome. These conditions break down the presumption that dual X chromosomes imply femaleness, because individuals with these syndromes have male phenotypes despite having two X chromosomes.

Since 1959, the aetiology of Klinefelter's syndrome has been recognised as an extra X chromosome in phenotypic males, resulting in XXY chromosome constitution (F. A. Miller, 2006). Although Klinefelter's syndrome was clinically recognised in 1942 – primary symptoms being gynecomastia (i.e. 'enlarged' breast tissue), small testes and infertility – its aetiology was at first unknown (Klinefelter, Reifenstein, & Albright, 1942). With the maturation of Barr body testing during the 1950s, however, the presence of the second X chromosome became observable, and the bodies of these previously unmistakably male individuals were re-interpreted and re-defined as being intersex, due to 'abnormal' sex chromosomes (F. A. Miller, 2006). One scientist involved in the late 1950s re-interpretation of the syndrome was Ferguson-Smith, who conducted early research on the syndrome using Barr body testing (Ferguson-Smith, Lennox, Mack, & Stewart, 1957; Stewart, Mack, Govan, Ferguson-Smith, & Lennox, 1959). Ferguson-Smith's involvement with Klinefelter's is notable because he not only later became one of the most influential critics of chromosome-based screening in elite sport, but he also centred Klinefelter's syndrome as central to his critiques. This was because since individuals with the syndrome have dual X

chromosomes, they are Barr body positive and thus capable of 'passing' the Barr body test (which was singularly used by the IAAF and some other sport organisations) as women, even though they are phenotypic males. After the syndrome was re-interpreted as an intersex condition, Ferguson-Smith and colleagues argued for the importance of assuring patients with Klinefelter's that they are "completely male" and "normal males" (Stewart et al., 1959: 570), to the extent that information about their chromosome constitution should be withheld to "minimize psychological stress" (Stewart et al., 1959: 570). This approach was consistent with medical guidelines at the time (Reis, 2009), and embedded within Money and colleagues' model of medical management of sex 'abnormalities' discussed in previous chapters. Thus, despite (or perhaps because) the syndrome was re-defined as an intersex condition, Ferguson-Smith considered that the 'true' sex of individuals with Klinefelter's was male, and any test that would ascribe them with a status as women was, consequently, misleading.

Individuals with Klinefelter's syndrome would have been screened as male by the fluorescent body test for the Y chromosome introduced by the IOC (but not the IAAF, which only used Barr body testing) in 1972 despite their ability to pass the Barr body test. Individuals with XX male syndrome, however, would have been identified as female by both screening tests, despite having male phenotypes. The XX male syndrome (sometimes called de la Chapelle syndrome) was first recognised by de la Chapelle and colleagues (1964), and described as individuals having XX chromosomes but "a male phenotype, male psychosexual identification, testes or gonads of testicular type … and absence of female genital organs", including "typically male" embodiment in relation to "muscularity, distribution of fat, and general body proportions" (1972: 72-73). De la Chapelle devoted much of his career to researching this so-called sex reversal condition, the symptoms of which largely mirror those of Klinefelter's syndrome. Like Ferguson-Smith's involvement with Klinefelter's, de la Chapelle's expertise on XX males is notable because he became perhaps the most influential critic of chromosome-based gender verification screening in sport during the 1980s.

While XX and XXY males could and would have been identified as females by chromosome-based screening tests, both Ferguson-Smith and de la Chapelle

considered these males to be indisputably male and men (rather than sex 'hybrids' etc.). Similarly, XY women with AIS were considered unequivocally as women and females by the scientists despite their chromosomes and, in accordance with the prevalent medical guidelines, they advocated the position that even a disclosure of their genotype could be harmful for these individuals' psychological well-being. Key to this position in relation to sexed embodiment and sport was that the scientists located 'true' sex in phenotypic and not genetic characteristics, in both cases and in general. This meant that the problem bodies that they directed focus towards were not sex binary blurring hybrids but clear males/men and females/women who merely possessed chromosomes inconsistent with their 'true' sex.

The 1970s and 1980s debates over gender verification were also contextualised by new anxieties over male to female transsexual athletes in women's sport in ways that intertwined with the above concerns over the ability of chromosomally 'female' but phenotypically clear males to 'pass' chromosome-based screening tests. By the late 1960s, and in an era abounding in social movements, increasing medical interest, social advocacy and support networks around transsexuality had enabled the emergence of more organised research programmes and centres focused on transsexuality. This included the work of Harry Benjamin who had begun to create a formal network of doctors and psychologists advocating medical treatment and surgery for transsexuality. In 1966, the John Hopkins hospital in Baltimore, under the influence of John Money, announced a formal programme of surgery for transsexual patients, and by the end of the 1970s, transsexuality had gained professional medical recognition and treatment guidelines (Meyerowitz, 2002). During the 1970s, several transsexual subjects had also requested a redefinition of legal sex, including the right to change the sex and name of their birth certificates (Meyerowitz, 2002). In the late 1970s, the increasing recognition and visibility of transsexuality prompted anxieties in the sporting context that were carried by transsexual women who begun to enter women's events at elite level, the most prominent of whom was American tennis player Renée Richards.

In 1976, Richards registered to compete in the women's US Tennis Open, but upon learning about her entry, the US Tennis Association (USTA) instituted a chromosome-based gender verification test for the tournament. They informed

Richards that she would have to 'pass' this test to be eligible to compete. As one observer noted, by "instituting the sex test, the U.S.T.A. is belatedly following the lead of the International Olympic Committee" (Herman, 1976: 31). However, Richards decided to issue a legal challenge against the USTA, arguing that they had instituted the test only to prevent her from competing, which amounted to unlawful discrimination. In a historically significant court ruling, Richards won her case and was ruled eligible to compete in women's events ("Renee Richards Gets Court OK to Play as Female", 1977).

The court decision was, however, controversial and incited significant concern from sport regulators and observers, centred on anxieties over the opening of so-called transsexual floodgates seen to threaten the 'authenticity' of women's sport. For example, the USTA president commented that after the court ruling, "We have been called by a number of transsexuals about wanting to play … For instance, a 240-pound, 6-foot-8 transsexual called to ask permission to play in a country tournament in one of our Southern states" ("Dr. Richards Put In Main Draw Of U.S. Open", 1977: 51). One reporter worried that allowing "Richards to compete as a woman would open the door to others who, perhaps, would change their sex deliberately to grab a share of the big prize money now on offer. … Imagine a 19-year-old guy who's a terrific player changing his sex to play in women's tennis" ("Volley in Forest Hills ", 1976). Another observer prophesised that post-Richards, "Women's sport will be taken over by a giant race of surgically created women" ("Renee Richards Controversy: What Is a Woman?", 1976: 18).

This backlash against Richards was centred on a protectionist rhetoric over the authenticity or purity of the female category and women's sport, which were taken to be under a threat from presumed males infiltrating into women's events as 'surgically created' (and thus not real) women. This mirrors radical feminist accounts of transsexuality expressed at the time. Janice Raymond (1994) among others had framed transsexual women's claim to womanhood as a 'superficial' surgical appropriation of womanhood, imagining this superficiality as ontologically distinct from 'true' femaleness which she grounded in the history of being and living as a chromosomal female. Raymond considered transsexual women's claim to a status as women to be a form of violent deception, rendering transsexuality as a fraudulent

and abusive kind of gender masquerade or fraud through which 'males' were infiltrating not only into women's spaces but also into women's bodies. Indeed, she explicitly framed transsexual women as 'boundary violators'. This form of rhetoric was also embedded in the backlash against Richards, and aimed at protecting 'authentic' female embodiment and womanhood through the exclusion of bodies serving as artificial 'others' against which gender and sex authenticity could be delineated. Such exclusion functioned to safeguard the boundaries of the female category in the face of troubling sex category crossings committed by transsexual subjects who were causing gender and sex boundary instability in the 1970s. Key to this in the context of sport was the location of authentic or true femaleness and womanhood in relative frailness and athletic inferiority, whereby 'authentic' women needed protection against transsexual women's presumed male prowess. In particular, references to Richards' and other transsexual women's presumed superior size and strength were prevalent in newspaper commentaries, as were suspicions over fraudulent motives for sex reassignment: anxieties over 'transsexual floodgates' were centrally concerned with suspicions that male to female transsexual athletes' motive for undergoing sex reassignment was to reap the benefits of their presumed superior male athleticism in women's sport.

In the 1970s and 1980s, the above discussed concerns intertwined to incite new anxieties over the possibility of gender fraud or masquerade in women's sport. Before I discuss how these anxieties unfolded, however, it is necessary to unpack the notion of 'masquerade' itself to foreground the broader implications of the mobilisation of the masquerade imaginary in relation to sex and gender categories in sport.

Conceptualising gender masquerade

The problem bodies of the 1970s and 1980s caused somewhat different kind of gender trouble when compared with the unfortunate sex and gender 'hybrid' and 'indeterminate' bodies of the 1960s that had rendered in doubt the sex and gender purity of women's sport. Unlike the category blur of the hybrid, the sex 'truth' of these bodies was presumed to be known (i.e. male). Despite their 'true' male sex,

these bodies were feared to be committing a 'false' or deceptive kind of category crossing – i.e. fraudulent gender masquerade. The gendered anxieties that they incited concerned the possibility of suspected or presumed fraudulent claim to the status of woman made by subjects (un-ambiguously) assigned male at birth who were feared to be infiltrating into women's sport, threatening the authenticity of the female category.

The prospect of gender masquerade is taken as threatening because the possibility of crossing gendered and sexed boundaries stirs fears over the possibility of boundary instability or lack of categorical essence or 'truth', rendering cross-category 'passing' as a threatening border crisis (Garber, 1992). Thus, like category hybridity but in a different way, gender masquerade poses a challenge to category purity. As Efrat Tseelon (2001) has argued, the notion of 'masquerade' presumes an authentic or true identity, usually carried by the body, which pre-exists and is covered by masquerade. It also presumes that this true identity can be revealed by 'unmasking'. While the concept of masquerade allows for carnival-like playfulness, it also connotes fraudulence in ways that render its distinction from the kin concept of 'deception' blurry as both suggest a falseness or a misrepresentation of the truth which is concealed by a mask (Tseelon, 2001). To be intelligible, the notion of masquerade requires a binarisation of identity – self/other – where the former is true or real and the latter unreal or even fraudulent, making masquerade threatening to defined categories because the ability to assume a mask represents the possibility of surpassing the boundary between self and other.

Gender masquerade, and its always already deceptive kin 'gender fraud' in particular, are threatening to the purity of gender categories, because they demonstrate that womanhood or femininity, for example, can be assumed or learned. That subjects whose 'true' sex is taken to be male can act or look *like* women unmoors womanhood from femaleness, making it subject to misappropriation. The fear of masquerade, then, is not only a fear of category disruption but also, in Marjorie Garber's (1992: 374) wording, a fear of 'artifactuality' of identity as assumed appearance. Indeed, the centring of the notion of 'passing' as a practice of performing gender or passing *as* a gender in relation to subjects whose bodily configurations and identity claims do not align is foregrounded by the idea that their

identity claims are, in one way or another, an imitation. It implies that the subjects who are 'passing' are "getting away with something" (Serrano, 2007: 197). 'Passing' thus often becomes trespassing.

Because the 'truth' that is taken to lie beneath the appearances produced through masquerade is usually carried by the body, practices of 'unmasking' place forceful bodily constraints on identity claims when it comes to claiming a gender status. The violence that can accompany the discovery of 'wrong' organs or embodied attributes on transgender bodies inconsistent with their claimed gender status, for example, demonstrate the force of the cultural conflation between the sexed body and the gender category within which it can be placed, in ways reliant on demands of coherence between sexed embodiment and gender categorisation. When the possibility of gender masquerade is suspected, claims to a gender status – such as subjects claiming to be women – easily become subject to policing through practices of unmasking to secure the purity of gender categories against misappropriation.

The anxieties over masquerade and gender fraud that became central to the 1970s and 1980s debates over the boundaries of the female category and women's sport were centrally structured by these foregrounding imaginaries: the possibility of gender masquerade incited fears over the presence of overtly male bodies disguising themselves as women to compete in women's sport. This rendered women athletes' claims to be women in doubt since fraudulent claims to womanhood were considered a real and concerning possibility. This was particular so since men with Klinefelter's and XX male syndrome could 'pass' chromosome-based gender verification screening, making gender masquerade accomplishable not only through 'cross-dressing' – implying category crossing through gendered dress – but also through these men misleading gender verification officials by using their 'inauthentic' chromosomes. This imaginary, in turn, required that the truth of their maleness was located, not in chromosomes, but elsewhere on the body; namely, in phenotypic sex and in genitals in particular, taken as the ultimate phenotypic expression of sex. Ferguson-Smith and de la Chapelle were key to the centring of gender masquerade imaginaries in official gender verification debates in the 1970s and 1980s.

Ferguson-Smith and the concern over fraudulent gender masquerade

The earliest critiques of chromosome-based screening for gender verification were mounted immediately following the introduction of the screening in the late 1960s and early 1970s. Among the earliest critics was Ferguson-Smith, who became the first scientist to refuse to conduct this form of screening for sport governing bodies in 1969. Following the British Olympic Association's request that his laboratory perform Barr body testing on women competitors at the Edinburgh Commonwealth Games, Ferguson-Smith replied that this testing was inappropriate for the purpose for which it was being applied. He stated that Barr body buccal smear test results can be "at variance with the apparent social and legal sex" of the individual being tested, and consequently "in medical practice, the results of the buccal smear mean very little when taken in isolation" (1969). He focused on two such incidences of variance: women with XY chromosomes and men with XXY chromosomes.

Ferguson-Smith argued, firstly, that chromosomal disorders where women embody a Y chromosome and lack the second X chromosome – AIS, most significantly – affect "normal-looking, attractive and athletic females whose only problem is primary amenorrhea" (1969), where 'normal looking' implied female phenotype as appropriately feminine embodiment (in accordance with normalised gendered bodily appearance). Secondly, in the case of men with "Klinefelter's syndrome, individuals are entirely male and show the sex chromatin expected of a female" (1969) because of XXY chromosomes. These men, despite their chromosomal disorder, were 'entirely male' in a way that positioned male phenotype as the 'truth' about their sex. Ferguson-Smith concluded that as "a physician with experience in these conditions", he was disturbed by the possibility of individuals being "irresponsibly labelled as having the wrong sex on the basis of a clinical test performed out of context for a non-clinical reason" (1969). For Ferguson-Smith, gender verification screening based on chromosomes (falsely) isolated chromosomes and (falsely) side-lined the key question of phenotypes (delineated through 'normal looking' female or male embodiment), even though 'sex' chromosomes meant very little when taken in isolation from phenotypes.

Ferguson-Smith did, however, have an alternative proposal for a more appropriate method of gender verification screening; namely, physical inspections. This proposal was based, not only on the centrality of phenotypes as that based on which gender could be verified, but also on the following assumption: "The whole purpose of a 'sex test' … is to disqualify the male athlete who attempts to masquerade as a female in women's events. In my view, this purpose is most simply and economically achieved by a physical inspection" (1969). Indeed, to contextualise this assumption Ferguson-Smith provided the following curious example in relation to Klinefelter's syndrome:

> You will recall the case of the Polish male athlete, a transvestite with this condition, who masqueraded as a female and competed in women's events. In his case, and despite his male external genitalia, the buccal smear would have upheld his eligibility to compete in women's events (1969).

Ferguson-Smith's critique of chromosome-based screening was thus built on three key ideas: firstly, this form of screening was misleading because it failed in some cases to accurately identify 'true' (i.e. phenotypic) sex. Secondly, he assumed that the objective of gender verification was to identify and disqualify males or men masquerading as women in sport, where maleness or manhood meant phenotypic male embodiment. Thirdly, and consequently, it was necessary to devise a gender verification system based on phenotypic rather that genetic attributes, and physical inspections were the most appropriate method for this purpose since such inspections would have been based on inspecting phenotypic bodily presentations.

Ferguson-Smith's centring of genitalia concerning the threat of male masquerade is particularly noteworthy, in particular in relation to his story about a Polish transvestite with Klinefelter's syndrome. This story is almost certainly a mistaken interpretation of the Ewa Klobukowska case discussed in the previous chapter, which Ferguson-Smith likely constructed based on inaccurate information about the details of her case, perhaps due to exaggerated news depictions.[29]

[29] Klobukowska's story was not only widely publicised, but also the only Polish case of a sex 'suspicious' athlete. While Ferguson-Smith's views about Klobukowska changed over the years, he continued to use her as an example in later

Nonetheless, Ferguson-Smith's use of this story not only constructed Klobukowska as a transvestite with male genitalia, but by 'diagnosing' her with Klinefelter's syndrome, Ferguson-Smith also provided an example of a fraudulent and clear male masquerade case which would escape detection by Barr body screening, where this clear maleness was carried by the presence of male genitalia. Since some men with chromosomal disorders could 'pass' chromosome-based screening, presumably employing fraudulent practices of 'masquerade' by cross-dressing to 'pass' as women (implied by Ferguson-Smith's reference to transvestitism), chromosome-based screening left open a gap for gender fraud. The problem, then, was not only that some 'normal-looking' women with female phenotypes could be falsely and unfairly identified as gender suspect through chromosome-based screening, but some clear men with male phenotypes could abuse the system and enter women's competitions despite their male embodiments, including male genitalia. Central to this argument was Ferguson-Smith's unequivocal position that individuals with Klinefelter's syndrome should not be regarded as intersex or sex 'ambiguous' but as obvious males, despite their chromosomes.

In this context, it should be noted that male genitals and the penis in particular tend to perform a symbolic function in protectionist discourses around gender segregated women's spaces in ways that also structured the gender masquerade concern in women's sport. The presence of a penis in women-only spaces tends to be constituted as a threat in ways that conflate the penis with dangerous or violent male sexuality, relying on a protectionist imaginary through which women's bodies and spaces are policed against sexual violence (Westbrook & Schilt, 2013). This kind of sexual imaginary foregrounded Ferguson-Smith's and others concerns over gender masquerade in sport as well, in ways that intertwined the sexualised 'penis threat' with males' presumed athletic superiority: fraudulent gender masquerade represented male bodies with superior prowess violently 'penetrating' into the presumed fragile or weaker space of women's sport. The fraudulent category-crossing embodied by the trope of the gender fraud was centrally foregrounded by

commentaries (identifying her by name), and claiming that she had Klinefelter's syndrome (Ferguson-Smith, 1976?).

imaginaries of women's bodies as a fragile and in need of protection against threatening male bodies with superior prowess, symbolised by the penis.

Ferguson-Smith's critiques of chromosome-based screening are significant for the history of gender verification not only because he was to become one of the most influential critics of this form of screening in the upcoming years, but also because others followed his lead and built on his arguments, which he later published in multiple articles. While in 1969, Ferguson-Smith's gender masquerade/fraud concerns were mostly directed at the possibility of 'transvestite' men with chromosomal disorders masquerading as women, by the mid-1970s he had materialised what has now become the 'common-sense' narrative of the history of gender verification in sport that I discussed in chapter two. The earliest example I found of a narrative mirroring what has now become the common-sense account was presented by Ferguson-Smith in a paper most likely published in 1976,[30] where he claimed that gender verification had been introduced by elite sport governing bodies "because there is evidence in the past that men have fraudulently masqueraded as women" (1976?: 7). This paper produced an outline of many historical claims that have now become 'common knowledge', including illustrative gender fraud cases such as Ratjen and others who "may have been masquerading as women" (1976?: 2). However, for Ferguson-Smith's purposes, these historical claims performed a key (strategic) function in support of his arguments: they centred the concern over fraudulent men or males (identified with phenotypic maleness, possessing male genitalia) masquerading as women in sport in ways that foregrounded this possibility as the key historical as well as contemporary threat to the boundaries of the female category. Therefore, as some males and men with chromosomal disorders could 'pass' as women because of holes in the chromosome-based screening net, chromosome-based screening was inadequate for countering this threat, and should be replaced with physical inspections that could identify all men committing gender fraud, including those with dual X chromosomes.

[30] This paper's year of publication is not certain, but information provided by the Ferguson-Smith collections suggest it was written for 1976 Scottish sports conference.

When tracing citations in search for primary sources to support the common-sense historical narratives reproduced in academic accounts about gender verification, the citations tracks disproportionately lead me to articles published either by Ferguson-Smith or his close colleagues, which is where the citation tracks tend to end. A core reason why Ferguson-Smith and many colleagues following his lead could maintain that the aim of gender verification was to detect gender masquerade was that for over a decade, IOC and IAAF officials failed and even refused to communicate to Ferguson-Smith and others the concerns and rationales based on which they had introduced and continued gender verification practices. By the early 1980s, however, de la Chapelle had joined Ferguson-Smith, and begun to organise a more systematic movement of scientific opposition against chromosome-based screening.

De la Chapelle and the scientific opposition to chromosome-based screening

In 1982, de la Chappelle circulated a critical address against chromosome-based screening for gender verification, arguing for its discontinuation in many ways mirroring Ferguson-Smith's critiques. In particular, like Ferguson-Smith, de la Chapelle was disturbed by the possibility of the unjust exclusion of women with female phenotypes who embodied XY chromosomes from women's sport, and he outlined cases of disorders and 'abnormalities' where individuals with "male-type body build and muscle strength" would 'pass' chromosome-based screening (1982: 4). Unlike Ferguson-Smith, however, de la Chapelle observed that he had "not been able to find a concise definition of what exactly is the aim of the 'femininity control' practiced" (1982: 4). Indeed, he made many attempts to discover this aim and asked the IOC medical commission (IOC-MC) multiple times to respond to his critiques, but for several years, the IOC failed to provide any direct engagement with the problem. In particular, de la Chapelle demanded clarification on which kinds of bodies, exactly, the IOC-MC wished to exclude from women's sport and why, since chromosome-based tests, in his view, were incapable of identifying several categories of individuals who "might have an advantage over normal women" in sport (1982: 4). The IOC-MC, however, failed to offer this clarification, and while they sent occasional

replies to de la Chapelle's letters, they did not explain or elaborate on their objectives to his satisfaction. Even though he was able to surmise that they "are not out to get males masquerading as females" since this had "been stated several times both werbally [sic] and in writing by people from the IOC" (1987b), as late as 1988, de la Chapelle remarked with frustration that "the IOC has never defined what they want to achieve with the test" (1988e). He added that in the IOC gender verification specialist Hay's writings, "the matter has been presented as unclearly as possible, and I have not found any other published objective. In the letter exchange I have had with the IOC, which is notably voluminous, the objective has never been presented either" (1988e).[31] Indeed, de la Chapelle come to conclude that when it came to this issue, "the IOC medical officials themselves are confused and incompetent" (1987b).

I suggest that the IOC-MC's rather remarkable unwillingness to engage with de la Chapelle's objections and demands for clarification was likely connected with their motivations for the introduction and continued use of gender verification being closely associated with a desire to avoid the kinds of press rumours, speculations, and innuendo that had centred on women's elite sport (and Eastern bloc female athletes in particular) during the Cold War. It should be recalled that as I discussed in chapter five, on-site gender verification had initially been envisioned in many ways as a *deterrent* mechanism, at least partially aiming to silence public and press speculations around 'borderline' and masculinised bodies in women's sport. Indeed, in one of the IOC-MC's few replies to de la Chapelle's critiques, the IOC-MC president de Merode stated that at the time of the introduction of IOC on-site gender verification in 1968,

> incessant denunciations having their origin in the Olympic village, accompanied by persistent rumours widely echoed by the media, were besmirching sport … Since 1968, the denunciations and rumours have ceased and the scandals have disappeared. We have thus achieved our aim. An end to the tests would mean … a resurgence of scandals of which sport would be the victim (1987).

[31] The original document was written in Finnish, and translated to English by myself.

For de Merode – a strong believer in the Olympic project – the aims of gender verification seemed to have been intertwined with a desire to avoid the kinds of 'bad publicity' that the Cold War gender scandals and speculations had brought to women's Olympic sport. To the extent that gender verification had silenced these rumours, it was successful enough to not require further discussions.

However, faced with the IOC-MC's persistent refusal to properly engage with his critiques, during the mid to late 1980s, de la Chapelle began to assemble a more organised opposition against chromosome-based screening, which gained an international following of scientists who supported his and Ferguson-Smith's stance. These scientists included prolific names such as John Money and Murray Barr, and powerful North American scientific societies including the Lawson Wilkins Pediatric Endocrine Society, the American Society of Human Genetics, the American College of Physicians, and the American College of Obstetricians and Gynaecologists (de la Chapelle, 1988c). By the time of the 1988 Calgary Olympics, motivated by de la Chapelle and colleagues' critiques, the medical officers assigned to oversee gender verification at Calgary publicly aired their reservations about chromosome-based tests, arguing that the method was outmoded (Lowry & Hoar, 1986). By the late 1980s, a scientific consensus had formed in agreement with de la Chapelle, placing the IOC in direct opposition to the scientific community. After Barr – who had first encountered the Barr body used by sport regulators for gender verification screening – joined the opposition, de la Chapelle wrote to him, rather perplexed, that their efforts to convince the IOC about the problems of chromosome-based screening

> have led to a most puzzling situation. On the one hand, the entire world of scientists in the relevant field now share your views (and mine) and are urging the IOC to stop … On the other hand, the IOC is totally unmoved and unconvinced. … I am particularly appalled by the fact that these people do not even listen to you (1987a).

Faced by the IOC's lack of interest in the scientific consensus, Money (1987) reflected that to force IOC engagement, it "is not truth, but politics that makes the difference. If we scientists will ever have any influence on the Olympics Committee regarding determination of sex, it will be achieved by the pressure and threat of

political organization and opposition". He concluded that a "public outcry" was "needed to force the Olympics Committee into action". Money's conclusion turned out to be, at least partially, correct. In 1988, after her exclusion from sport during the 1985 Universiade Games in Kobe, Martínez-Patiño, whose story I discussed in the previous chapter, learned about de la Chapelle's opposition to chromosome-based screening and contacted him hoping he might be able to help her re-gain eligibility to compete in women's sport. After establishing contact with Martínez-Patiño, de la Chapelle collaborated with writer and feminist critic of chromosome-based screening, Alison Carlson, to tell the story of Martínez-Patiño's exclusion from women's sport to the broader public to gain the kind of public awareness of the problem that Money had hoped for. Martínez-Patiño's case was important for enabling the scientific opposition to force IOC engagement with their critiques, because the scientists were able to force a re-examination of her eligibility. Her case was discussed during the IOC-MC meetings in 1988, after which she became the first athlete whose eligibility to compete was reinstated after exclusion resulting from gender verification (Martínez-Patiño, 2005).

In 1988, IOC officials finally gave in to the mounting opposition to chromosome-based screening, now evidenced by Martínez-Patiño's public example case of exclusion from sport, and a gender verification working group meeting was organised by the IOC-MC in Lausanne to discuss the methods and aims of gender verification.

(Re)defining the aims of gender verification

In July 1988, de Merode convened a gender verification working group in Lausanne that consisted of a small group of IOC and IAAF medical officials and external medical experts. In addition to de la Chapelle, he invited de la Chapelle's colleague Joe Leigh Simpson – an American gynaecologist and obstetrician who had been working with de la Chapelle to oppose chromosome-based screening. During the meeting, de la Chapelle and Simpson advanced an argumentative strategy largely focused on the critiques already expressed by Ferguson-Smith in the late 1960s and pursued by critics for almost two decades since. Firstly, they argued that as long as chromosome-

based screening was applied, phenotypically female women with chromosomal disorders could be – and had been, as Martínez-Patiño's story exemplified – unjustly excluded from women's sport, even though these women should be clearly regarded as women. This argument was supplemented with the fact that chromosome-based screening was subject to testing errors, such as that which had occurred in the case discussed in the previous chapter of Wengler. Secondly, chromosome-based screening was open to fraudulent abuse by some men with chromosomal disorders, since this form of screening could not "pick up 46,XX and 47,XXY men and thereby makes it possible to professionally plan and execute premeditated fraud" (de la Chapelle, 1988a). While Ferguson-Smith's critiques had centred on XXY men with Klinefelter's syndrome, de la Chapelle – an expert on the XX male syndrome – added that even when Barr body testing was complemented with fluorescent body testing for the Y chromosome as the IOC had done, this form of screening was still open to gender fraud committed by XX men, who could 'pass' both forms of chromosome-based screening. This XX/XXY males centred argument relied on the idea that since these males were phenotypically clear males and men, their ability to 'pass' as female implied the threatening possibility of fraudulent gender masquerade committed by men (cross-)dressing as women and misrepresenting their true (phenotypic, male) sex and gender by abusing their (misleading) chromosomal attributes.

When it came to the first argument, however, despite the existence of examples of phenotypic females having been excluded from women's sport, the defendants of the IOC gender verification paradigm responded, simply, that de la Chapelle's and Simpson's examples had occurred outside the Olympic Games. The exclusions had thus not been carried out by the IOC directly. They argued that possible 'misuse' of the screening tests by some sport organisations did not justify the discontinuation of IOC testing (IOC, 1988b). Indeed, the IOC gender verification expert Hay claimed that misinterpretations of sex would not arise under the Olympic framework, reflecting his trust in the chromosome-based screening paradigm and the 'further examinations' provision which he had considered a safeguarding measure against phenotypic females' exclusion (IOC, 1988b). As discussed in the previous chapter, since chromosome-based screening had not been intended by the

IOC-MC to be the final arbiter of sex, women with XY chromosomes would (or were supposed to) have the option of undergoing further examinations to fully investigate their eligibility.

It was de la Chapelle's and Simpson's second argument around the possibility of gender fraud, however, which gained the IOC and IAAF officials' attention. During the Lausanne meeting, de la Chapelle presented the clinical features of XX and XXY males, explaining that these "individuals are almost normal males" including in terms of "muscle mass and strength, … and they would thus have a clear-cut advantage over females" (1988b). He argued that because these 'almost normal males' could 'pass' chromosome-based gender verification screening, they would never be subjected to any further examinations or investigations about their sex, and would thus be verified as eligible to compete in women's sport.

Notably, in relation to this argument, it became apparent to de la Chapelle that for de Merode in particular a central gendered concern, which had been expressed since the institution of on-site gender verification in the Cold War context, was the possibility of unscrupulous governments using dubious means of success by sending 'abnormally' sexed athletes to compete in women's events. In de la Chapelle's (1989a) words, during the Lausanne meeting, de Merode was "quite concerned about what could happen in countries or clubs where unscrupulous sport coaches 'produce' unfairly competing 'females'", and he had explicitly stated that that this was "why gender verification was instituted in the first place: to prevent 'certain countries' from sending 'hermaphrodites' to compete as women". In response to this concern, de la Chapelle and Simpson constructed an argument that was at least partially strategic. To demonstrate that chromosome-based screening was incapable of protecting the IOC against this kind of cheating, de la Chapelle argued that as long as the IOC and IAAF were using chromosome-based screening, XX/XXY males "could readily be picked up by coaches or sport clubs, trained, and sent to competitions as females" since "these males are both frequent and easily detectable by medical examination" (de la Chapelle, 1988b). Furthermore, Hay admitted that while the IOC had "normally carried out both the X and Y chromatin tests … following objections from various genetic societies, the Y chromatin test had not been effected in

Calgary" (IOC, 1988b), implying that not only XX but also XXY males would 'pass' both the IAAF's and the IOC's screening tests from the Calgary Olympics onwards.

In opposing chromosome-based screening, de la Chapelle and Simpson thus constructed an argument centring the possibility of gender fraud committed by corrupt governments, who were abusing the hole in the chromosome-based gender verification screening net by sending individuals with male phenotypes into women's events by disguising them as women. De Merode's and others' original concerns over unscrupulous governments sending 'abnormally' sexed athletes to compete in women's events was not addressed by chromosome-based screening, since as long as this form of screening was used, some governments could actually send out athletes whose chromosomal disorders rendered them outright (phenotypic) males. By centring bodies with male phenotypes as the core concern, de la Chapelle and Simpson effectively re-drew the issue as one of overt male bodies being infiltrated into women's sport. In other words, while Ferguson-Smith had presumed that the rationale for gender verification was to exclude fraudulent gender masquerade, de la Chapelle and Simpson argued that the rationale *should* be to exclude such masquerade, building on IOC officials' concern over unscrupulous governments by centring the prospect that such governments could send out actual men.

While I suspect that this line of argument was at least partially strategic due to de la Chapelle's general emphasis on the injustice faced by XY women, it is noteworthy that de la Chapelle was not only an expert on the XX male syndrome but also did seem genuinely concerned at times over the possibility of XX men being fraudulently entered into women's sport. The leading Finnish newspaper *Helsingin Sanomat*, for example, quoted de la Chapelle remarking, in relation to IOC and IAAF chromosome-based gender verification screening, that

> in the present situation, some countries could screen out men who would be allowed to participate in women's competitions. I, for example, have found 200 of such men in Finland and a few of them take part in sport – luckily, they do not know about their special characteristics ("Sukupuolitesteissa Oikeusmurhia", 1989).[32]

[32] The original document was written in Finnish, and translated into English by myself.

Concerns over unscrupulous governments and gender fraud in women's sport were also reinforced by, and intertwined with, the increasing visibility of transsexual women in elite sport. Indeed, the 'transsexual floodgates' concerns reported by the press were also expressed by some IOC officials and some scientist involved with the gender verification debates. This was even though, broadly speaking, many of the scientists were relatively supportive of transsexual women's eligibility. For example, in 1988 the US Golf Association (USGA) debated transsexual athlete Charlotte Wood's eligibility to compete in women's golf, and asked de la Chapelle's colleague Myron Genel's medical opinion. In response to USGA speculations about Wood's possible 'inherent physical advantage', Genel noted that Wood's "size does not appear to be extraordinary relative to other women" and that her oestrogen treatment "should have substantially mitigated many, though probably not all, differences in muscular strength which may have accrued from Ms. Wood's former male sex" (Genel, 1988b).

Despite such relatively encouraging attitudes, however, some expressed anxiety over the infiltration into women's sport of male-assigned individuals who had not undergone medical and surgical sex reassignment, or male-assigned individuals who would be willing to undergo, or pressured into undergoing, sex reassignment surgery merely to reap the benefits of success in women's sport. Ferguson-Smith (1987), for example, considered that compared to 'truly' transsexual women,

> the case of a male transvestite would appear to be quite different. No physical sex reassignment has been made and it would not be realistic to allow anyone who chooses to cross-dress to masquerade as a female athlete. In India there is a large sect of individuals (numbering half a million) known as the Hijra or eunuchs … it is not impossible that the more athletic of the castrated eunuchs could be recruited into to sport, or that castration and reassignment for sex might be used to obtain the financial benefits associated with success in sport. … it would seem important to exclude even the remotest possibility that a young male athlete might be persuaded to undergo a sex change operation for such a purpose.

Ferguson-Smith's differentiation of transvestite fraudsters from 'truly' transsexual women is noteworthy, the latter of which is conceptualised, in a sense, as *entitled* to surgical sex reassignment and to the status as women in contrast with the former. This differentiation works by drawing a boundary between legitimate (implying good or 'pure' motives) and illegitimate (implying bad or fraudulent motives) sex reassignment as well as, and consequently, between legitimate and illegitimate claims to the status as women. It also enabled Ferguson-Smith to advance a more supportive rhetoric of transsexual women's eligibility, while maintaining an imaginary of the threat of the 'cross-dresser' as well as 'surgical masquerade' against which women's sport needed protection. Indeed, de Merode expressed similar worries: as phrased by a reporter who interviewed him about the rationales of gender verification in the early 1990s, de Merode voiced his concerns over "doctors in third world counties eagerly waiting for sex testing to be dropped in order to perform sex change operations on their male athletes … and enter them in women's competitions" (Marris, 1993).

Anxieties over gender fraud/masquerade thus intertwined enduring concerns over fraudulent governments expressed since the Cold War with new concerns over clear and explicitly male individuals in women's sport. As opposed to the embodied sex binary pollution of the 'hybrid', 'borderline', and 'hermaphroditic' bodies of previous periods conceptualised as 'unfortunate' and in need of medical aid and sympathy from sport regulators, the fraudulent gender masquerading men of the late 1980s were making a deceptive and false claim to a gender status as women by masking their 'true' status as men and males. Firstly, the ability of XXY and XX males to 'pass' chromosome based screening and be (falsely) verified as female – a passing presumably accompanied by them (misleadingly) presenting as women by 'cross-dressing' – rendered them potential gender frauds. Secondly, the authenticity of women's sport was also threatened by the prospect of fraudulent 'transvestites' undergoing sex reassignment for dubious motives, (misleadingly) assuming gender presentation as women and masking their (true) maleness by 'cross-dressing' combined with medical technologies used to 'appropriate' female embodiment. During and following the Lausanne gender verification working group meeting, this emphasis on, and anxiety over, explicit male bodies infiltrating into women's sport

culminated into a new definition of the aims of gender verification, and into a new definition of 'female' to be applied in elite sport.

(Re)defining sex: 'man has a penis and a scrotum; a woman does not'

The arguments advanced by de la Chapelle and Simpson during the Lausanne gender verification working group were (at least partially) successful. After reflecting on the possibility of gender fraud/masquerade by phenotypic males who could 'pass' as women, according to de la Chapelle (1988b), de Merode stated that he "wished to avoid both instances of men masquerading as women and premeditated use of XXY and XX males". Indeed, the IAAF medical commission president Arne Ljunqgvist who participated in Lausanne stated that his perspective was that gender verification should be applied in sport "mainly to scare off imposters" (de la Chapelle, 1988f). Notably, the other participants agreed: the Lausanne gender verification working group concluded, in de la Chapelle's words, that the aim of gender verification in sport should be "to detect – or perhaps more accurately to deter – male imposters" (de la Chapelle, 1988c). The conclusions listed in the official meeting minutes of the working group were the following: firstly, the aim of gender verification was "to prevent male imposters from participating in female competitions" and, secondly, "Only those females with no external male genitalia [are] to be accepted" (IOC, 1988a). In de la Chapelle's words, the Lausanne working group thus constructed the following definition of sex to be applied in sport: a "male is an individual with a penis and testes in a well-formed scrotum. Others will be regarded as females" (de la Chapelle, 1988b).

This genitalia-centric definition was centrally motivated by the centring of the possible presence of male bodies (identified with phenotypic maleness) in women's sport as the key threat to the boundaries of the female category. Not only was the threat now identified with clear males and men masquerading as women, but this sex definition centring on penises and well-formed scrotums (as opposed to 'abnormally' or 'ambiguously' formed genitalia that would have signified sex abnormality or binary blur) functioned to fix penises and scrotums as the ultimate signifier of maleness and manhood, and thus as the key focus of threats to the

authenticity of women's sport. The final truth of sex was thus carried by sexed phenotype in a way that centred the penis and the scrotum as incontestable evidence of 'clear' and undeniable maleness and manhood. 'Female', on the other hand, was defined as the *absence* of the penis and a well-formed scrotum, in a way that was intended as inclusive of all women with female phenotypes. As Simpson noted, "male pseudohermaphrodites [such as women with XY chromosomes who have internal and thus *not* well-formed testes and lack a penis] who are raised as females would not be excluded, but overt individuals with male external genitalia, who can be assumed to be imposters, would" (Simpson, 1988b). This not only implied that the purity of the female category could be secured simply by excluding (bodies with) penises and scrotums, but also that bodies with these genital attributes were pre-defined as fraudulent, meaning that the presence of 'male' external genitalia directly implied the status of an imposter.

The conclusions of the Lausanne gender verification working group and the new genital-centric sex definition had significant implications not only when it came to how the boundaries of the female category were (re)drawn, but also when it came to the methods that should be applied for gender verification. Because the key location of sex difference was now identified with genitalia, chromosome-based screening was wholly inappropriate since it was incapable of verifying anything about genital characteristics. Therefore, as an alternative method, de la Chapelle and Simpson proposed, as Ferguson-Smith had suggested, physical inspections. If chromosome-based screening was replaced with physical inspections, women athletes' gender would be verified by the absence of (well-developed) male genitalia, in accordance with the new definition of 'female' as one who lacks a penis and a well-formed scrotum. Consequently, the Lausanne working group agreed to "investigate physical examination as a more efficient means of gender verification" (IOC, 1988a).

However, despite agreeing with the conclusions arrived at during the Lausanne working group, de Merode and the IOC-MC in general failed to act on this agreement. While de Merode had initially stated that a second meeting would follow the Lausanne working group, he cancelled these plans and, for the following two years, did not resume the discussions nor act on the Lausanne conclusions despite

de la Chapelle's multiple prompts and demands that he do so. This in many ways reflected and exemplified the continued reluctance of the IOC-MC in general and de Merode in particular to take on board the critiques and demands of the scientists critical of their gender verification paradigm.

Partially due to frustration with the IOC's inaction, in 1990 another gender verification working group was organised in Monte Carlo, this time under the authority of the International Athletic Foundation (IAF) and, in particular, under the influence of Ljunqgvist, who had agreed on and also committed to the conclusions of the Lausanne meeting. Unlike de Merode, Ljunqgvist, who also held a position as a medical researcher at the Karolinska Institute in Sweden, had come to share many of de la Chapelle's and his colleague's concerns around chromosome-based screening. He had also played a part in the re-instatement of Martínez-Patiño's eligibility to compete after her exclusion. The Monte Carlo working group that he organised was larger, more comprehensive, and included a broader variety of perspectives than the Lausanne working group, incorporating presentations not only by medical experts but also by psychologists and critics such as Carlson, who had been centrally involved in publicising Martínez-Patiño's story. Unlike the Lausanne working group due to de Merode's inaction, the Monte Carlo working group not only re-affirmed the conclusions arrived at Lausanne, but these conclusions were also translated into policy, implemented by the IAAF in 1991.

The Monte Carlo working group decided, firstly, that chromosome-based gender verification screening should be abandoned altogether, and secondly, that a new system would be instituted in its place, based on physical inspections, and constructed to take the form of 'health and gender examinations' for all athletes. The Monte Carlo working group decided that

> a medical examination for the health and wellbeing of *all athletes* selected to participate in international competitions should be performed responsibly under the auspices of the national federation under internationally standardised guidelines. This medical examination would preclude the need for any genetic 'sex test' [and] the criteria of eligibility for women's competition … should include a description of the external genitalia (IAF, 1990, original emphasis).

This examination, designed to be conducted for *both* female and male athletes who would be issued certificates as proof of having undergone the examination, might have appeared, at the surface, to be more gender neutral. However, it was made clear that when it came to women athletes (only), the "certificate will include gender verification" (Ferguson-Smith, 1991), based on genitals. While the Monte Carlo working group advocated these health and gender examinations to be conducted under the auspices of national federations rather than directly by the IAAF, they added that "to combat possible abuse of the system, quality control must be conducted at international competitions" (IAF, 1990). This quality control was to take the form of randomised on-site spot-checks consisting of the same examinations as at national levels, and it was considered necessary because there was "no question" that examinations at national contexts were "subject to potential abuse by unscrupulous coaches, athletic directors and certainly national olympic committees" (Genel, 1988a). The on-site quality control was thus designed as a safeguard against the enduring concerns expressed by de Merode and others over unscrupulous governments, now focused on possible gender fraud committed by such governments.

The Monte Carlo working group also delineated an approach towards the eligibility of transsexual women athletes, which was foregrounded by, and exemplifies, the centrality of anxieties over penises in women's sport as a core threat to the boundaries of the female category. It was concluded that transsexual women who had undergone medical sex reassignment including genital surgery could be eligible to compete in women's sport, depending on a case-by-case decision made in consultation with medical experts (IAF, 1990), and provided that the "sex change operation" had been undergone "for reasons other than competing in sport" (Ferguson-Smith, 1991). As Simpson expressed in relation to Richards, she had indeed been "allowed to compete, but only after she underwent a sex change operation. Anyone undergoing a sex change operation would lack a penis and a scrotum, and plainly be categorised on physical inspection as 'female'" (Simpson, 1988a). While this possibility of transsexual women's inclusion should, in many ways, be seen as an emancipatory shift, the centring of genital surgery as a criterion for (potential) eligibility was based on, and re-enforced, the imaginary of the 'penis

threat', foregrounding the presence of (bodies with) penises as threatening to women's sport and to the (pure) boundaries of the female category in ways foregrounded by (literalised) imaginaries of unlawful boundary 'penetration' by (bodies with) penises. That genital surgery, if undergone for 'the right reasons', was taken as (a possible) legitimation of transsexual women's status as women also shows how the removal of the penis was taken as de-threatening. It is notable that mandates for genital surgery for transsexual athletes were enforced in elite sport until as late as 2015, which exemplifies the persistence, endurance, and force of genitals (and distress over penises in particular) in 'female' definition across the decades.

The key consequences of the new genital-centric definition of 'female' and the involvement of de la Chapelle, Ferguson-Smith, and colleagues in gender verification debates, was, then, that previous anxieties over the breakdown of the boundaries of the female category were re-located. They became, momentarily, attached not to hybrid or sex binary blurring bodies, but to bodies with clear male phenotypes, signified by penises and scrotums in particular. By centring the possibility of gender fraud/masquerade committed by individuals with male phenotypes including (well-formed and thus 'obviously') male genitalia, the scientist constructed a definition of (true) sex whereby one's status as female could be verified by confirming that she lacked a penis and a scrotum. Since the aim of gender verification was now to catch men masquerading as women and since, in de la Chapelle's words, a "man has a penis and a scrotum; a woman does not" (1989a), the examination of genitals was the correct gender verification method. The 'gender' element of the IAAF's new health and gender examinations thus functioned centrally as a practice of unveiling genitals as proof of one's gender status, in a context where anxieties over fraudulent gender masquerade and possible 'cross-dressing' were rendering in doubt the authenticity of the female category. Women's sport, in other words, needed to be protected from infiltration or 'penetration' by (bodies with) penises and scrotums, the presence of which in the female category represented unlawful and threatening sex and gender category crossing.

However, despite having agreed to the Lausanne conclusions, the IOC refused to adopt the health and gender examinations scheme as it was outlined at Monte

Carlo. Instead, as the IAAF instituted the examinations, the IOC adopted a new, albeit still chromosome-based on-site gender verification method; namely, polymerase chain reaction (PCR) for the Y-chromosome-linked SRY gene. The IOC-MC's choice of this method and their rejection of the health and gender examinations scheme was partially motivated by the fact that immediately after their introduction, the IAAF health and gender examinations begun to attract critique from women athletes and national team doctors, who considered the examinations a degrading retrograde step returning women's athletics back to the late 1960s era of 'naked parades' discussed in chapter five. I return to these critiques, and to the IOC's PCR method, in depth in the next chapter.

Conclusion

The emergence of new problem bodies in women's sport, and the involvement of Ferguson-Smith, de la Chapelle, and their colleagues in gender verification during the 1970s and 1980s, resulted into a re-centring of gendered and sexed anxieties in elite sport rhetoric. Ferguson-Smith's and de la Chapelle's expertise in chromosomal disorders that break down the presumed relationships of coherence between sex chromosomes and phenotypes meant that the scientists exposed a hole in the chromosome-based screening net. While sport regulators had been concerned over hybrid and indeterminate bodies polluting gendered category purity in sport, the scientists argued that the chromosome-based screening system actually enabled cheating by outright males with dual X chromosomes who could commit gender fraud by masquerading as women. Such arguments, focused on XX and XXY males, took shape in a context of increasing visibility of transsexual women taking part in elite sport, which incited concerns over the opening of 'transsexual floodgates'. These floodgates were seen to threaten the authenticity of women's sport, in ways that were tangled with the emergence of anxieties over fraudulent transvestites or cross-dressers competing as women. These intertwined concerns were focused on the presumed threat of overt males and men entering women's competitions, and were navigated in relation to the trope of gender fraud/masquerade.

This trope was not only foregrounded by an imaginary of deceptive and

illegitimate gender category crossing, but also transferred the official focus of gendered concern away from sex and gender binary blur, in ways that resulted into a shift when it came to the aims of gender verification and the definition of 'female' applied in sport. Since the new gendered threat to women's sport was overt males committing gender fraud, and since some such males had dual X chromosomes and could thus 'pass' chromosome-based screening as women, this form of screening was an inappropriate and misleading gender verification method. Ferguson-Smith, de la Chapelle and other experts on chromosomal disorders were committed to the view that 'true' sex was to be found in phenotypes, the ultimate signifier of which was genitalia. Consequently, they argued that in place of chromosome-based screening, physical inspections should be instituted as a more accurate method of verifying gender since this method would foreground sexed phenotype in general and genitalia in particular.

The result of the gender verification debates of the 1970s and 1980s was, firstly, that gender fraud/masquerade prevention was officially centred as the aim and rationale of gender verification. Secondly, since the aim was to prevent males and men from competing as women, and since maleness was located in male phenotypes and genitalia in particular, 'female' was defined as the absence of 'male' genitalia. In other words, gender verification was re-framed as a practice of verifying one's status as a woman and a female by verifying that she lacks a penis and a (well-formed) scrotum. When this reasoning was translated into the health and gender examinations policy by the IAAF, gender verification in athletics explicitly became a form of genital unmasking. It should be emphasised as well that the masquerade threat foregrounded in relation to this shift was not merely one focused on gender performance or presentation, but the focus on XX/XXY males and fraudulent men thought willing to undergo illegitimate sex reassignment surgery implied an *embodied* form of masquerade that enabled the infiltrator to misleadingly appropriate female embodiment. Sport regulators thus needed a way to secure female embodiment against such deception, centring penises (and scrotums) as the ultimate bodily sign of maleness.

Importantly, however, while de la Chapelle was a frontrunner in the debates that resulted into these shifts, that his arguments were likely to have been at least

partly strategic is significant. This is because since the beginning of his involvement in gender verification, as I noted above, he expressed concern over “individuals with female appearance but male-type body build and muscles” (de la Chapelle, 1982: 6). Among these individuals he listed however, not only individuals with male phenotypes, but also females with conditions such as congenital adrenal hyperplasia (CAH). CAH results in elevated androgen levels in women, and it was this fact that concerned de la Chapelle. In particular, he was concerned about what he called ‘hypermuscular’ women in sport. The next chapter discusses these concerns, and charts the institution of a new system of gender verification by the IAAF, based on gendered ‘suspicion’, and complemented by sport regulators’ continued interest in women athletes’ genitals.

Chapter eight

Gendered suspicions: suspicion-based gender verification and the concern over bodily 'excess'

While fraudulent gender masquerade and (bodies with) penises and scrotums were momentarily centred in official discussions and debates as the key threat to the boundaries of the female category, concerns over sex and gender binary breakdown embodied by masculinised and masculine appearing female-categorised athletes never subsided. Rather, even when the official rhetoric around gender verification was focused on preventing overt males masquerading as women, underlying anxieties over 'abnormally' masculine bodies in women's sport continued to foreground sex and gender binary policing. Indeed, these anxieties re-surfaced as an explicit concern only a year after the International Amateur Athletic Federation (IAAF) had instituted the health and gender examinations. This chapter discusses how these enduring concerns motivated the emergence of a case-by-case gender verification paradigm based on gendered 'suspicion'.

Even though it had taken two decades of debate to design the health and gender examinations scheme, the scheme itself was short lived. It immediately began to incite objections from women athletes and national team doctors who considered it a throwback to an earlier era of humiliating 'naked parades'. This chapter discusses these objections, and the IOC's rejection of the examinations scheme partially in response to them. It maps the institution of the polymerase chain reaction (PCR) method by the International Olympic Committee (IOC), and the IAAF's introduction of a new gender verification paradigm that mobilised doping control as a method of genital inspections for gender verification, combined with a gender verification apparatus targeted at identifying female athletes who failed to embody feminine body aesthetics. In 1999, the IOC also adopted this gender suspicion-based system, which was centrally motivated by concern over 'excessive' bodies in women's sport, as sport regulators and observers were troubled by the 'hypermuscular' and masculinised bodily appearances as well as high-level performances of some female athletes. While these athletes clearly lacked a penis

and a well-formed scrotum, their 'excessive' bodies and performances incited gender trouble as they seemed to 'overflow' the presumed feminine and contained boundaries of normal(ised) female embodiment.

The 1990s and early 21st century gendered concerns that this chapter focuses on were also characterised by a post-Soviet shift, as Cold War worries over gender binary polluting female bodies from communist Eastern Europe became anachronistic (albeit serving as a warning for the future) when the Iron Curtain was lifted. The emergence of China as a new international sporting power during the 1990s transferred some of the old Western worries onto Chinese female athletes, while the suspicion-based system targeted at gender binary pollution intertwined with broader colonial, racialised, sexualised, and gendered discourses to (pre-)mark some bodies as gender suspect due to their failure to embody Western and white feminine body norms. The suspicion-based gender verification system was motivated by the threat that these excessive, suspiciously muscular and masculinised bodies posed to the purity of women's sport and the female category, rendering their gender in doubt and in need of verification, in ways embedded within broader racialised and gendered imaginaries.

Conceptualising gendered suspicion: excessive bodies and feminine aesthetics

By the 1990s, the athletic or so-called fit female body had become not only permissible, but also desirable and sexualised (and commercialised) in the popular imaginary and culture. The fitness boom of the 1970s and 1980s had encouraged women to take up weight training alongside activities like jogging in large numbers, and the feminist movements of the period intertwined sport participation with broader campaigns around women's physical and sexual empowerment (Cahn, 1994; Hargreaves, 1994). As Hargreaves observed in 1994, the boundaries around acceptable female embodiment "in the dimensions and musculature of the body" were shifting, allowing for "a broadening of definitions of sporting femininity" whereby "well-honed athletic female bodies are now openly embraced as sexually attractive" (1994: 169-170). These shifts were embedded within broader politics and social reform around gender and sexuality (including relative destabilisation of

gender roles within the family and workforce), and coincided with the emergence of queer and transgender politics, social movements and activism which brought gender and sexual diversity and the 'queering' of gendered and sexual categories into the awareness of the broader public (Hines, 2010). The changing dimensions of gender and acceptable female embodiment were coupled with significant advances in women's sport, as women were running and swimming faster, throwing further, and lifting heavier than ever. With increasing public interest in women's sport, these performances were also broadcast to, and witnessed by, larger audiences than before.

However, while the boundaries around permissible female sporting bodies had become more flexible, the high-performing and increasingly muscular female bodies in elite sport also incited gendered anxieties as they overtly stepped outside long-held feminine body norms. In many ways, these anxieties represented a counter reaction within a context of gendered and sexual change that was destabilising category boundaries. The 1990s and early 21st century concerns over the boundaries of the female category in sport came to concentrate on what was perceived as 'excessive' (as opposed to acceptable amounts of) muscle on some female athletes' bodies, and around intertwined unease with women's improving performance levels. After Czechoslovakian athlete Jarmila Kratochvílová had set the all-time longest-standing athletics world record in the 800-meters and China's Wang Junxia ran the first women's sub-30-minute 10,000-meters, the outstanding performance levels and sporting prowess of female bodies like theirs openly defied old cultural imaginaries that had relegated female bodies as weak, fragile, and soft. Their high-performing, 'excessive' bodies, now observed and scrutinised by large international audiences, consequently posed a *visible* threat to gendered and sexed borders.

When female bodies accumulate noticeable muscle mass, they blur gendered bodily boundaries not only because muscles are culturally coded as masculine or male, but also because muscular or 'large' female bodies bulge out of the bounds of feminine embodiment, expected to be small and confined. As Shirley Tate (2016: 101) has argued, the 'bulky' body of a muscular female athlete "overflows 'the natural boundaries' of a woman's body", neglecting to stay contained or disciplined within the culturally coded petite 'feminine form'. The accumulation of mass on a

female body, then, in Karen Throsby's (2016: 130-131) words, marks a refusal to be "shaped and contained" in "a social context where women are expected to be contained, to not take up space and to be well kempt". In other words, powerful female bodies with muscular 'excess' transgress gendered norms by refusing to 'stay put'. Their bodily boundaries threaten the presumed bodily, physiological limits of femaleness and femininity.

As I have discussed in previous chapters, the mere presence of noticeable musculature had long been sufficient to render the sex and gender purity of female athletes' bodies and, consequently, their performances in doubt. In the 1990s and early 21st century, however, the concern over excessive muscle became centred in the minds of many sport regulators and observes who had witnessed the remarkable performances and bodies of female athletes like Kratochvílová. Their perceived muscular excess and outstanding performances appeared abnormal or unnatural for a female body, and consequently fundamentally suspicious – too much to be 'purely' female, and too good to be 'real'. As Lynda Johnston (1996) has argued, such suspicions derive from a persistent cultural rejection of, or a refusal to accept, noticeable muscularity on the female body and females' high-level performances, apprehended rather as threatening to sexed and gendered embodied and natural(ised) categories. Consequently, in Tara Magdalinski's (2009: 98-99) words, the "muscular woman is … imagined to rely on 'unnatural', masculine means to achieve her 'unnatural' physique, … which threatens to produce an unrecognisable creature that is neither wholly female nor wholly male, yet terrifying both". Such 'unnatural' means imply doping and anabolic steroids in particular, and women's sport observers are imagined capable of recognising 'suspicious' bodies through (masculine) visual cues; audiences "'read' female bodies in order to identify and condemn those who 'appear' to be chemically boosted" (Magdalinski, 2009: 104). Concerns over the masculinising effects of steroids were, however, also intertwined with concerns over possible hormonal disorders rendering 'excessively' muscular female bodies and their performances abnormal. Yet, in both cases, the 'excessive' presence of androgenic hormones resulted in 'excessive' muscularity and masculinity as well as in 'excessively' high performance levels in female bodies, regarded, in Magdalinski's words, "as an infringement against, and even obliteration

of, the very essence of femininity" in visually observable, embodied terms (2009: 95). The imagined overflow of muscle, power, and speed, and the presumed overflow of androgens embodied by some female athletes consequently gave rise to reinforced and re-framed sex and gender boundary anxieties centred on suspicious appearing bodies in women's sport, identified in terms of gendered bodily aesthetics that broke with the 'feminine form': female masculinity was centred "as an aesthetic marker of the bodies suspected to be unfairly enhanced—either by steroids or biological disorders" (Henne, 2014: 739).

The centring of bodily suspicion was also intertwined with racialised body aesthetics and, in particular, with the (re)centring of racialised 'others' of the West in women's sport. The 1991 breakdown of the Soviet Union and the 1989 collapse of the Berlin wall largely rendered the Cold War image of the Eastern bloc gender-undifferentiated female(-categorised) athlete discussed in chapter five an image of a past era, albeit a troubling and dangerous one serving as a warning for the future. By the mid-1990s, the position of the gendered 'other' left vacant by Eastern bloc female athletes came to be filled by racialised bodies, especially from China and later from the global South (see also Henne, 2014; Pieper, 2014). Like Eastern bloc female athletes but framed through different discursive means, their bodies polluted Western white body norms in intersecting ways. As I argued in chapter two, colonial imaginaries had long attributed the racialised 'other' with imperfect or polluted gender and sex(ual) differentiation conceptualised through boundary contamination, contrasted against Western presumed 'pure' differentiation of sexed bodies and gendered roles. As these old imaginaries were read onto the bodies of high-performing and muscular female athletes implicitly and explicitly, the athletes were left in an intersecting node of imaginaries through which their 'excessively' muscled bodies and 'excessive' sporting prowess intertwined with their racial 'excess'; i.e. the construction of their bodies as already sex(ually) abnormal and pathological in racialised terms. Thus, when suspicion based on gendered body aesthetics became centred as an explicit gender verification apparatus, some bodies were much more easily (pre-)marked as suspicious than others. Before I discuss the centring of bodily suspicion, however, it is necessary to trace the steps that culminated into the underlining of anxieties over suspicious and excessive gendered

embodiment. The next section charts the problems of IAAF's health and gender examinations scheme that resulted in its discontinuation, and the institution of the PCR test by the IOC.

Objections to the IAAF health and gender examinations and the IOC PRC test

The IAAF's health and gender examinations were trialled during the 1991 World Championships in Tokyo and the 15-km road race World Championships in Nieuwegein. Many team doctors, however, expressed significant discomfort with the intimate nature of the examinations that they were asked to conduct. The British team doctor Malcolm Brown, for example, refused to perform the examinations on his athletes because he considered that "the invasion of privacy of a physical examination to determine gender is unnecessary", in particular when it came to examining "mammary glands and genital organs" (Bowell, 1991: 32). Indeed, Brown alongside other team doctors co-signed a letter to the IAAF in protest of the new scheme, arguing that it was "a retrograde step which many find distasteful, degrading, impractical, inaccurate and impossible to enforce on a worldwide basis", asking "the IAAF to urgently reconsider the introduction of this method" (Villalon, Brown, Adams, Edwards, & Uergouwer, 1991). In relation to the Nieuwegein Championships, Elizabeth Stolk, who was involved in overseeing the new scheme, expressed that the examinations had "left me feeling that some athletes might have been embarrassed or shocked by the procedure" (Stolk, 1992). Many female athletes concurred. American track athlete Frankie Smith, for example, protested that the examinations were "just degrading. … I think it's disgusting" ("Physical Exam to Determine the Sex of Athletes", 1991).

These objections derived from the widely-shared concern that the examinations were a throwback to an earlier era of the late 1960s 'naked parades' discussed in chapter five, discontinued largely because they were considered humiliating. Indeed, as Ferguson-Smith's colleague Elizabeth Ferris observed with "respect to the responses from athletes to the new procedure, I too have heard a certain amount of outraged indignation from women athletes who envisage a return to the Dark Ages of genital 'inspection' a la PSC (pre-sex chromatin)" (Ferris, 1991).

Such critiques of the IAAF scheme were noticed by the IOC as well, with IOC Medical Commission (IOC-MC) official Bernard Dingeon commenting that that requirements for physical examinations raise "a big question mark with regard to the position we are defending vis-à-vis RESPECT for the athlete" (Dingeon, 1992a, original capitals).

Notably, during the International Athletic Foundation (IAF) Monte Carlo gender verification working group where the IAAF examinations scheme was designed, Dingeon had proposed an alternative system to replace the previous chromosome-based screening tests; namely, the PCR test for the Y-chromosome-linked Sry gene. The Sry gene, conceptualised as 'the testes determining factor', was first encountered in 1990 (Richardson, 2013) and the PCR test was seen as a more sophisticated and refined method than Barr body testing. Since PCR relied on chromosomes, however, scientist critics of chromosome-based screening and the IAAF disregarded Dingeon's proposal because the PCR was subject to most of the same critiques as the older chromosome-based methods (most importantly, the existence of chromosomal abnormalities). As Carlson noted, "obviously, substituting one chromosome measure to another *misses the point*" of most of the scientists' critiques of chromosome-based screening advanced over the past two decades (Carlson, 1991a, original emphasis). Nonetheless, Dingeon considered that PRC was preferable to the IAAF examinations because the latter was disrespectful to women athletes, and other IOC-MC officials agreed. Just prior to the 1992 Albertville Olympics, only two years after the Sry gene was discovered, the IOC-MC decided to institute the PCR test according to Dingeon's suggestions, with Dingeon assigned to undertake the tests at Albertville. The choice of PCR related, in many ways, to the IOC's persistent refusal to relinquish their control over the sex binary on-site, but it was also based on Dingeon's (1992b) argument that PCR was more accurate and would improve the reliability of testing results, minimising the possibility of testing errors (discussed in chapter six), in addition to avoiding the critiques of the IAAF scheme. Indeed, in relation to the Albertville Olympics, Dingeon (1992a) noted that based "on our experience, we can affirm that the gynecological control 'being talked about' would have been very badly received by many of the girls".

As the IOC adopted the PRC test, confronted with widespread discomfort with their health and gender examinations, the IAAF was compelled to re-consider their

new system only a year after its implementation. In May 1992, the IAF organised another seminar on gender verification in London to re-discuss the viability of the examinations scheme in light of its critiques, which resulted into a new gender verification paradigm in athletics that mobilised doping control as a means of gender verification, combined with case-by-case examinations of athletes who appeared 'suspiciously' gendered.

Genitals and doping control, hypermuscular women, and gendered suspicion

Upon reflecting on the objections against the health and gender examinations before the London gender verification seminar, and building on the Monte Carlo consensus that the objective of gender verification was to identify men masquerading as women, Ljunqgvist had the following idea:

> Nowadays when doping control is routine … it is highly doubtful that men would take the chance at masquerading as women since they run a great risk of being selected for doping control. During the control … the voiding of the urine [is] carefully watched by an official to make sure that the urine actually comes from the urinary bladder … Therefore … any man masquerading as female would probably be identified (Ljungqvist, 1991).

Ljungqvist's idea was thus to counter the objections of the IAAF examinations being humiliating by mobilising doping control as a means of genital observation: due to the necessary unveiling of genitals during these controls, explicit mandates for physical examinations would become moot. Since athletes generally accepted doping controls, the criticisms of privacy invasion would lose their force. Ljungqvist presented his new idea during the London seminar, and the seminar participants agreed. Based on Ljungqvist's argument, the London seminar concluded that "the procedures which have to be followed during doping controls are quite sufficient for also making sure whether the athletes are male or female", and it was therefore agreed "that the health check decided in 1991 should no longer be compulsory" (Ljungqvist, 1992b). Instead, it was recommended, and the IAAF council accepted with immediate effect, that "from now on, there will be no special screening for gender at international athletics competitions. [The] health check will no longer be

compulsory" (Ljungqvist, 1992a).

However, while this decision might appear to have abolished explicit gender verification, there was another clause added to the IAAF regulations, centred on enduring concerns over 'abnormally' sexed or gendered female-categorised athletes, or what de la Chapelle had in the 1980s called 'hypermuscular' women with 'male-type' body build (de la Chapelle, 1987c). The IAAF left a provision within their system "for dealing with any questionable case, including gender" so that "the medical delegate of a competition … has the full right to investigate any case that he [sic] may deem necessary" (Ljungqvist, 1992a). As de la Chapelle's colleague Martin Bobrow had phrased it some years earlier, this meant that the IAAF reserved "the right for full investigation of anybody where there was a question raised as to their gender", implying, for Bobrow, "that if a lady was able to hurl a javelin for some ridiculous distance, and had very hairy legs, a question could be raised" (Bobrow, 1987).

De la Chapelle's concerns over 'hypermuscular' women were centred, in particular, around Kratochvílová and her outstanding performances and world records in the 400- and 800-meters in the 1980s, the latter of which continues to stand at the time of writing. Kratochvílová's muscular and perceived masculinised embodiment was a site of gendered anxiety for many observers during as well as after the height of her competitive career. For example, medical observer Leroy Perry commented that Kratochvílová's body "is not a normal physiological female body. I've treated Olympic female athletes in 34 countries… But I've never seen a body like that. … I think there is something chemically different about her physical make-up" ("Tracking Down the Drug Users", 1984: 14). While much suspicion around Kratochvílová's embodiment and her exceptional performance levels centred on doping accusations, almost equally strong were accusations that rendered her gender in doubt. In the words of one journalist, there were "two theories equally repugnant … which seek to explain the success of Jarmila Kratochvilova … The first is that Miss Kratochvilova has taken drugs to improve her performance. The second, quite bluntly, is that she is not a woman" (Butcher, 1983: 17). Notably, this was despite Kratochvílová having passed the 1980s chromosome-based gender verification screening tests – a fact which had in itself caused concern for some over

the limitations of chromosome-based screening. One journalist remarked, for example, that "as masculine as the Czechoslovak superstar may seem, there is no doubt that she is a woman" since the "IOC has given her a certificate affirming that. … But a look across the field at the world championships brings one to wonder whether the chromosomes are telling the truth" (Christie, 1983). These kinds of suspicions were motivated by intertwined anxieties over Kratochvílová's success and high-level performances, which seemed to challenge the presumed limits of female bodies' sporting capability; and her muscular embodiment, which overflowed or exceeded the boundaries of acceptable female physiological 'normalcy', causing concerns over the pollution of feminine body aesthetics in women's sport.

De la Chapelle, of course, shared the concern over the limitations of chromosome-based screening, but he also considered Kratochvílová's 'excessive' embodiment and her (suspiciously) high performance levels to exemplify a type of sex abnormality that should merit exclusion from women's events. Already prior to the Lausanne and Monte Carlo gender verification meetings, de la Chapelle had provided Kratochvílová as an example of female athletes with sex abnormalities resulting in 'hypermuscularity'. He noted that Kratochvílová's "appearance was so highly masculine that even journalists asked questions about it", adding that

> she probably was a typical example of so called adrenal hyperplasia; anyone could see that she had a male type-body, but her sex chromatin was indeed 'feminine'. … this type of abnormality is quite common; many presently active sports women have the same condition, albeit often in milder form. Many of them should probably not compete in women's events (de la Chapelle, 1987c).

Having observed Kratochvílová's performance during the 1983 Helsinki World Championships, de la Chapelle commented in retrospect that "I who sat in the stands agreed with her competitors who said 'she does not look like a woman'" (de la Chapelle, 1991), such as West German track athlete Gaby Bußmann who had contended that "Kratochvilova's competitors should boycott her raises on the grounds that the Czechoslovakian resembles a man too much" (Butcher, 1983: 17).

For de la Chapelle and others, Kratochvílová's muscular and perceived masculine bodily appearances, combined with her exceptional speed, were sufficient

(and necessary) grounds for gendered suspicion because her bodily exteriors contaminated gendered visual body boundaries. Consequently, Kratochvílová's gendered and sexed authenticity, as well as the authenticity of bodies that resembled hers, required verification. De la Chapelle openly communicated his related concerns to colleagues including Ljungqvist, noting to him that "You know the Jarmila Kratochwilova case yourself. You know that there was a public outcry about her masculine appearance", adding that it was his belief that she should have been "subjected to a 'case by case' analysis" of gender (de la Chapelle, 1991). These concerns were closely intertwined with de la Chapelle's suspicion that Kratochvílová's 'hypermuscularity', as well as her high performance levels, were a 'symptom' of adrenal hyperplasia (i.e. CAH) which results in elevated androgen levels in females, in ways that conflated Kratochvílová's presumed 'excessive' androgen levels with 'excessive' muscularity and 'excessive' performances.

Building on de la Chapelle's suspicions and suggestion, in addition to mobilising doping control as a genital inspection method, the IAAF instituted a suspicion-based system through which gender suspicious (i.e. insufficiently feminine appearing) bodies like Kratochvílová's could be subjected to a case-by-case examination to verify their gender. The IAAF's discontinuation of compulsory health and gender examinations thus marked a move from explicit gender verification applied to all female athletes to a case-by-case suspicion-based system, mirroring their much earlier 1930s protest-based policies discussed in chapter four remarkably closely. De la Chapelle's comments about Kratochvílová as well as Bobrow's comments about ladies with 'hairy legs' able to 'hurl a javelin for some ridiculous distance' bring starkly to the fore which kinds of bodies were to be considered suspicious. They illustrate the underlying concern over 'excess' muscle and prowess that breaks loose from feminine confinement, and they highlight the centrality of feminine bodily aesthetics (e.g. smooth rather than hairy skin and 'feminine' bodily exteriors) and 'feminine' performance levels. The addition of the suspicion-based clause demonstrates how gender fraud/masquerade prevention, centred on genitals and penises (and scrotums) in particular, was not enough to secure the boundaries of the female category nor to combat sport regulators' and observers' enduring anxieties over perceived masculinised or sex binary polluting bodies. In other words,

boundaries around the female category drawn around genitals were insufficient because it was not (just) male bodies with penises that incited concern, but 'hypermuscular', gender suspicious bodies whose appearances transgressed presumed gendered bodily boundaries. In de la Chapelle's words, "if a person is a woman, it is enough to look at her to find that out" (de la Chapelle, 1989b). The converse, of course, implies that suspect bodies can be identified through gendered visual cues as well.

However, two years after the discontinuation of explicit and compulsory gender verification, and after the institution of the new doping control and suspicion-based system, the IAAF faced a backlash from female athletes which, in some ways, continues to resonate in the present. The motivations that sparked the backlash are significant because they reflect the broader geopolitical context of the 1990s gendered concerns as well as the centring of so-called 'grey areas' of sex as a site of gendered anxieties, intertwined with worries over androgenic hormones in female bodies.

'The essence of man': Heinonen 16, Chinese women, and doping revelations

In 1994, a group of 16 female track and field athletes, headed by Janet Heinonen, began to campaign for the reintroduction of compulsory on-site gender verification in athletics largely on the grounds that "reliance on visual monitoring for sex in doping controls" was insufficient, and that verifying gender in high-stakes competitions "provides reassurance to women athletes" (Heinonen, 1994). As the *Keeping Track* magazine for which Heinonen was the editor stated, "women athletes report that in many cases no one is watching closely when they provide urine samples" ("A Decent Proposal", 1994). Consequently, in Carlson's words, who had multiple discussions with Heinonen, the Heinonen 16 group wanted "better guarantees of protection against unfair competition" (Carlson, 1994a).

However, the Heinonen 16 group also argued that in addition to serving as a deterrent against men masquerading as women, the purpose of verifying gender was to "identify athletes who fall in the 'grey area' of sex" (Heinonen, 1994). As phrased by the *Keeping Track* magazine, neither the old chromosome-based method of "the

buccal smear nor a quick visual check for prominent male genitalia in doping controls will identify those rare individuals who have medical conditions such as ambiguous genitalia or congenital adrenal hyperplasia, which may confer an athletic advantage" ("A Decent Proposal", 1994). As Carlson noted, the reason why 'ambiguous genitalia' and CAH were taken to confer athletic advantage related to concerns over high levels of androgens in female bodies. The Heinonen 16 group saw testosterone levels "as the unifying theme as far as unfair advantage is concerned" and the "question remains, for them, about what 'grey areas' (sex identity-wise) constitute unfair advantage. They want this to be satisfactorily explained, decided and formally defined in policy" (Carlson, 1994a).

To fully understand the Heinonen 16's concerns, it is necessary to consider the 1990s context of international sport, which was characterised by the sudden prominence of Chinese female athletes as well as revelations about the large scale doping programme in East Germany during the Cold War. After the collapse of the Soviet Union, China emerged as a new global power that challenged the dominance of the West, creating geopolitical tensions that in some ways resembled those between the West and the East during the Cold War and extended into elite sport as Chinese athletes begun to achieve unprecedented success in international competitions. As Lindsay Pieper (2014: 1560) has argued, "Chinese female athletes emerged in the 1990s as the new 'other' in sport" in relation to the West, against which Western notions of appropriate femininity could be contrasted. During the 1993 IAAF Stuttgart World Championships, for example, Chinese women dominated long-distance races, winning six out of nine medals in long-distance events (excluding the marathon). At the Beijing Chinese National Games during the same year, Chinese women set three new long-distance world records, two of which were achieved by the highly successful Junxia who secured multiple records and medals during the first part of the 1990s.

The sudden success of Chinese women in international sport incited public commentary and concern from Western observers who expressed suspicions about the 'real reason' behind their new sporting dominance in ways intertwined with Western racialised and gendered imaginaries around the oriental(ised) feminine 'other'. In Western depictions, Asian women have been stereotyped as passive,

weak, excessively submissive, diminutive, and available for white men. In contrast with black women who have been constituted as unfeminine in relation to white women, Asian women have been constituted as *hyper*feminine through imaginaries such as the delicate and subservient 'lotus blossom' (Pyke & Johnson, 2003). As Chinese women unexpectedly became leading figures in sport, they incited Western speculations about the 'unnatural' appearance of Chinese female athletes who disrupted both (white Western) gendered norms and racialised preconception about Asian women (see also Magdalinski, 2009).

Many Western commentators drew parallels between China and the Eastern European communist countries that had excelled in sport during the Cold War, re-enforcing old anxieties over suspiciously masculinised or doping-enhanced bodies in women's sport discussed in chapter five. Such suspicions were associated with unscrupulous governments willing to use dubious means to attain success, now connoting the Chinese state system. These comparisons were reinforced by the observation, in the words of one reporter, that "Coaches from eastern Germany have helped establish the Chinese [sports] program" (Longman, 1994). The apparent fact that the new successes attained by Chinese women in athletics seemed to coincide with the IAAF discontinuation of compulsory gender verification did not go unnoticed by sport observers either. For example, discussing advances attained by women athletes during the preceding years, one reporter remarked that

> just as the new world order seems to be taking hold for women athletes, along come China, with its own version of the state-supported, behind-closed-doors sports system. The rise of the Chinese athletes revealed the hole in the IAAF position on gender verification. It became obvious that world records in track could be set without any requirement of gender verification, that athletes could compete almost exclusively within their own borders, invisible to their competitors worldwide while rewriting the record books and all time lists ("Give-and-take on Gender Verification", 1994).

The concern over Chinese female athletes, like Cold War concerns over female athletes from the Soviet bloc, centred on concerns over (male-like) sporting prowess presumed to be carried by these athletes, mostly as a consequence of doping, but also as a consequence of sex 'abnormalities'. During the 1990s, these concerns were,

more explicitly than before, centred on the performance enhancing effects of testosterone, perceived as the foundation of male(-like) athletic potential. In the words of one reporter commenting on "the unbelievable performances of the Chinese female runners", "I am not alone in believing that when a woman's athletic performances are extraordinary and not predicted by previous results, then the woman isn't natural. She's a wannabe man wearing the essence of man: testosterone" (Connolly, 1994: 13). The claim that testosterone constituted the 'essence of man' rendered testosterone a foundationally gendered substance, arbitrating male(-like) athletic advantage in sport. When present in female bodies in 'excessive' amounts, this sex and gender binary polluting hormone seemed not only to stimulate male-like athletic prowess, but also to masculinise the appearance of female athletes' bodies.

The explanatory importance of the testosterone concern was carried not only by suspicions over Chinese female athletes, but also by the intertwined concern over revelations of the large-scale East German state-sponsored doping programme during the early 1990s, which not only contributed to East German Cold War sporting success, but was also taken to explain the perceived masculinised bodies of East German female athletes. After the collapse of East Germany as a Soviet satellite, the breakdown of the state enabled the discovery of classified government and Stasi documents. These included reports of the so-called State Plan 14.25, amounting to a state-sponsored doping programme applied to thousands of East German athletes during the Cold War, including the widespread distribution of steroids. During the early to mid-1990s, the public revelation of these documents created a scandal, inciting a period of 'doping trials' in Germany which were covered by the press (Dimeo, Hunt, & Horbury, 2011).

The revelation of the doping programme was taken by many to confirm suspicions that had been expressed about the bodies of East German female athletes during the 1970s and 1980s. For example, one observer commented in retrospect that during the Belgrade 1973 swimming world championships:

> the East German faces and names were familiar, but their bodies – and their performances – were not. They had gained an average of 22 pounds and the

> average gain in height was about an inch and a half … the word on everyone's lips … was steroids (Shuer, 1982).

In particular, commentary on the 'excessive' muscularity and size of East German female athletes was common (exemplified by the peculiar suggestion that steroids might be responsible not only for weight but also for height gains), which were taken as evidence of dangerous masculinisation due to steroids. Recalling the appearance of East German female athletes, American athlete Deena Deardurff remarked that

> Their body structure was completely different from ours. … They were twice as big as we were and had completely developed muscles that we didn't have. I remember one time we were walking out to an event and I heard someone behind me, and I couldn't figure out why there was a man there, walking with us. It was an East German woman (Shuer, 1982).

Rumours and suspicions about East German muscular and perceived masculinised female athletes, contrasted against the more appropriately feminine bodies of Western female athletes, had persisted as a bogyman in women's sport since the height of East German success – and the success of the Eastern communist bloc more generally – in international sport. As Paul Dimeo, Thomas Hunt, and Richard Horbury (2011) have observed, since its revelation, the East German doping programme came to stand as exemplary of the immoral nature of steroid doping as a form of (totalitarian state) abuse of athletes in both public and academic discourses, symbolising the danger inherent in the corruption or pollution of the Olympic values and international sport by 'dirty' political agendas. This legacy also extended to regulatory reform, as it was taken as evidence that the IOC had failed in their anti-doping efforts, which partially inspired a demand for a new anti-doping framework, culminating in the establishment of the World Anti-Doping Agency (WADA) in 1999 as an independent international anti-doping body (Dimeo et al., 2011).

The representation of the East German sports programme as an embodiment of the gendered evil of steroids was perpetuated, in particular, by the story of the 1986 European shot put champion Heidi Krieger. In the late 1990s, Krieger "laid charges against her former doctor after allegations that he turned her into a man by

over-prescribing anabolic steroids … She had developed masculine features, including facial hair and an Adam's apple" and "suffered severe psychological problems" after taking blue 'vitamin' pills that turned out to be steroids (Mackay, 1997: 3). Krieger later underwent sex reassignment surgery and changed his name to Andreas, which newspapers took to be a direct consequence of the steroids' masculinising effects on his body and psyche.[33] Krieger's story has come to stand in the popular sport imagination as "the most extreme example of the effects of an insidious, state-sponsored system of doping" (Longman, 2004), epitomised by the 'Heidi Krieger medal' which is awarded to those who lead the 'fight against doping' in sport. Through this medal, Krieger's story stands as symbol of the gendered perils of steroid doping and as a warning of the dangerous consequences of 'excessive' androgens in female bodies, the masculinising effects of which are represented to sometimes be so severe that they can even turn a woman into a man – an old worry that had been expressed since the 1930s as I discussed in chapter four.

During the 1990s, the fact that the East German doping revelations coincided with the rise of Chinese female athletes contributed to the centring of testosterone induced masculinisation as a more explicit concern in relation to the sex and gender purity of women's sport. In sum, concerns over the (perceived suspicious) success of Chinese female athletes and former East German female athletes were intertwined in two ways: firstly, China's 'state-supported, behind-closed-doors sports system' re-surfaced and reinforced Cold War anxieties over unscrupulous governments using illicit means of success and, secondly, both concerns centred around anxieties over the excessive presence of androgenic hormones in female-categorised bodies.

As I noted above, the Heinonen 16 group and their campaign to re-introduce compulsory gender verification in athletics was centred on testosterone levels as the unifying theme in relation to 'unfair advantage' in women's sport, and they were

[33] Despite newspaper suggestions that steroids directly caused his gender transition, Krieger himself noted that "doping probably didn't directly cause my transsexuality" while "it certainly intensified it" ("Woman Athlete Turns Male", 1997). His wife added that "He is glad that he became a man" but what made him "angry … is a belief that the steroids essentially made the decision for Heidi, leaving her unable to sort out her sexual identity on her own" (Longman, 2004).

concerned with what they called the 'grey area' of sex as a site of unfair advantage. Consequently, they did not argue for the re-introduction of chromosome-based screening, but they argued instead for the introduction of blood testing for total testosterone levels (Heinonen, 1994). As Carlson noted after discussing the issue with Heinonen, the Heinonen 16's concerns had been incited by "the recent Statzi reports about East German sport programs, the Chinese runners ('drugs? Or sex disorders?')" and "what the athletes say are recent anecdotal evidences of some very 'suspicious' competitors" (Carlson, 1994a). Carlson added that the "real worry" for many was that "unscrupulous sports organizations might … seek out women athletes with sex related disorders – and discourage medical treatment, thinking that the athlete would 'benefit' from the possible related hormone variation" (Carlson, 1994b). While the Heinonen 16 concerns did not result into direct policy responses, they are significant for the history of gender verification, firstly because they were built on and exemplified broader concern over (suspiciously) masculinised (or androgenised) bodies in women's sport expressed in the 1990s, and secondly because these concerns brought androgens explicitly into debates about the aims of gender verification. While androgenic hormones in general and hormonal disorders in particular had been debated before, the concern over high testosterone levels in female bodies and the suggestion that such levels could be used for gender verification considerably shaped sex and gender binary policing in elite sport in the early 21st century. Most significant was the idea that female bodies with high androgen levels are 'wearing the essence of man', implying that such females were not within the confines of 'normal' female capacity. I return to these issues in more depth in the next chapter. The rest of this chapter discusses the abolition of the IOC's PCR test, and the final phase of the suspicion-based gender verification period during the late 1990s and early 21st century.

The discontinuation of PCR testing

While the IAAF had moved to suspicion-based gender verification combined with the observation of genitalia during doping controls, the IOC used the PCR method until 1999. However, because the PCR test – as a chromosome-based method – was

subject to the same critiques already expressed by the scientific community in the 1970s and 1980s, during the years that it was applied, the IOC faced continued opposition including refusal by many medical professionals to conduct the test. This resulted in practical as well as political and ethical problems. For example, Spanish scientist Xavier Estivill refused to conduct the tests during the 1992 Barcelona Olympics on the grounds that the PCR "could lead to increased misdiagnosis of women athletes as men", arguing that there was an "absence of a clear idea what the results actually mean" (C. Anderson, 1991), while 22 French scientists co-signed a petition in relation to the 1992 Albertville Olympics arguing that genetic testing for sex is scientifically flawed and unethical ("Determination du Sexe Génétique Chez Les Concurrentes Des Jeux Olympiques d'Albertville", 1992). During the 1994 Lillehammer Olympics, no scientist from any Nordic country agreed to conduct the PCR test for the IOC (de la Chapelle, 1993), and the IOC was consequently compelled to send Dingeon and his Albertville testing team to Norway so that the tests could be performed at all (Ljungqvist, 1997). Afterwards, the Norwegian parliament passed a ruling which made genetic testing for gender verification illegal under Norwegian law (Ljungqvist, 1997). In 1996, the IOC World Conference on Women and Sport passed a resolution urging "the IOC to discontinue the current process of gender verification" (Ferris, 1996). During the following two years, Ljungqvist, who had been elected as an IOC member in 1994, argued for the discontinuation of PCR testing during various IOC meetings. Finally, at the IOC Session in Seoul leading up to the 2000 Sydney Olympic Games, it was confirmed that PCR testing at the Olympics was to be discontinued (Ljungqvist, 1999a).

However, mirroring the IAAF, the IOC reserved the right to "arrange for the determination of the gender of a competitor" should that be judged necessary, and to enable this, the IOC would, during Olympic competitions, have "a team of specialists standing by (including a female gynecologist) should a case need to be examined" (Ljungqvist, 1999b). Thus, the discontinuation of PCR testing represented a shift to suspicion-based testing now applied also in the Olympics, with the addition of an appointed team of specialists to be positioned at the Olympic site prepared to investigate any gender suspicious-appearing bodies that might turn up at Olympic competitions. Indeed, as one reporter observed in relation to the Sydney Olympics,

"a 'flying squad' of specially selected Olympic medical experts, including a team of gynecologists, will be in Australia during the Games to target individual athletes if they are deemed suspicious" (Pittaway, 1999: 90). Similarly, during the Beijing Olympics eight years later, one reporter noted that "Suspicious-looking woman athletes … will be forced to take a gender test" (Macartney, 2008: 35), while another added that the Games' organisers "have set up a sex-determination laboratory to evaluate 'suspect' female athletes" on their "external appearance, hormones and genes", noting that the "lab is similar to ones set up at previous Olympics" not only in Sydney but also in Athens (Thomas, 2008: D1). As Ljungqvist, who was elected as the IOC-MC chairman in 2003 after de Merode's death, noted to a journalist about gender suspicious cases in relation to the Beijing Games, the IOC "must be ready to take on such cases should they arise … Sometimes, fingers are pointed at particular female athletes" and the IOC has "to be able to investigate it and clarify" (Thomas, 2008: D1). That the IOC was prepared for the possible presence of suspicious bodies with laboratories especially constructed for this purpose illustrates how seriously the concern over gendered appearances was taken. It illustrates the centrality of continued gendered doubt around masculinised or 'hypermuscular' bodies already expressed by de la Chapelle in the 1980s. By the turn of the century, then, suspicion-based testing, combined with the observation of genitals during doping controls, had become the primary frame for gender verification in the Olympics as well as athletics.

Suspicions and gender scandals: Soundarajan and Semenya

In 2006 and 2009 respectively, two gender scandals occurred in athletics under the suspicion-based testing clause relating to Indian athlete Shanthi Soundarajan and South African athlete Caster Semenya, both of which were widely publicised by the media. The latter in particular gained unprecedented public interest, enabled by the globalised online media space of the 21st century which quickly spread news about the scandals to a wide international audience. The increasing importance of online reporting and changing news consumption habits since the mid-1990s (including online news) had transformed the structure, speed and volume of news reporting

(Allan, 2006). 'More space equals more news' and the Internet's (relative) lack of spatial boundaries and its fast speed, now implied increasing geographical reach and speed in news distribution (Fenton, 2010). Located within this context, the gender scandals around Soudarajan and Semenya attracted a disproportionate volume of media coverage and public awareness when compared with earlier stories of sex and gender suspect athletes in women's sport.

During the 2006 Asian Games at Doha, Soundarajan won the silver medal in the women's 800-meter race, but some days after the competitions, news outlets reported that she was stripped off her medal by the Olympic Council of Asia because she had failed gender verification examinations that had been conducted due to suspicions raised about her gender, based on genitals. According to journalists, the Asian Games organisers had subjected Soundarajan to a sex test after "Doubts were raised during the dope test by an official" ("Sport in Brief", 2006: 27), with Ljungqvist commenting that "an official who observed Sundarajan during the mandatory urine test" had "questioned her sex" (Thomas, 2008). Soundarajan was consequently subjected to "extensive tests by a gynaecologist, endocrinologist, psychologist and a genetic expert" (Inverdale, 2006: 15), after which reporters speculated that "she may be a man" and that she "does not possess the sexual characteristics of a woman" (Ellis, 2006: 24). In Soundarajan's own words, she was "stripped – literally" and her "gender was debated on national television" (Soundarajan, 2016).

The reports that Soundarajan was subjected to these tests because of suspicions raised during doping controls demonstrates that the observation of genitals during urine collection was used as grounds for gendered doubt, not (only) to catch explicit males masquerading as women but to identify sex abnormalities or 'ambiguous' genitals that could then be used to justify further 'sex testing'. In 2006, as Sundarajan was stripped both literally and of her medal, the IAAF released refined guidelines on their 'policy on gender verification', aimed at addressing "the occasional anomalies" that surface, in their words, "as a chance observation during the ubiquitous anti-doping controls these days or through a 'challenge' by a competitor", in addition to being "picked up by the national team doctors during health checks" (IAAF, 2006). If there was "any 'suspicion' or if there is a 'challenge'" then, as Soundarajan had done, the athlete was to attend a "medical evaluation

before a panel comprising gynecologist, endocrinologist, psychologist, internal medicine specialist, [and an] expert on gender/transgender issues", which would give "appropriate advice to the athlete as to the need to 'withdraw' from competition until the problem is definitively resolved through appropriate medical and surgical measures" (IAAF, 2006).

These refined guidelines illustrate, firstly, the centrality of 'male-like' external bodily characteristics – including the continued centrality of 'ambiguous' genitals rather than mere 'penises and well-formed scrotums' – to be identified through doping controls in the construction of gendered suspicion. Secondly, they illustrate the enduring medicalisation of athletes' bodily sexed and gendered binary disruptions, to be 'resolved' through *medical and surgical* means. The refined guidelines bring to the fore how the medical and surgical regulatory frames for sexed and gendered binary pollution that had been erected over elite sport in the late 1960s discussed in chapter six endured across the decades.

In 2009, only three years after Soundarajan's exclusion from women's sport, Caster Semenya won the women's 800-meter race during the IAAF World Championships in Berlin and, like Soundarajan, she was mandated to undergo suspicion-based gender verification in accordance with the IAAF's 2006 guidelines. Semenya's story is a notable event in the history of gender verification, firstly because it became the most widely publicised gender scandal in sport since the beginning of gender verification, enabled by the globalised online media of the 21st century. Secondly, due to the extensive publicity, Semenya's story brought gender verification in sport into the media spotlight in an unprecedented way, enabling not only sensationalised stories that rendered her gender in doubt, but also public debate over which kinds of bodies can or should be counted as acceptable in women's sport.

After news about her gender verification tests were made public, multiple media outlets published headlines such as "Could This Women's World Champ Be a Man?" (Adams, 2009), and some declared (without evidence) that "Semenya has male sex organs" (Hurst, 2009). Much publicity around Semenya was centred on her perceived masculine embodiment and her muscularity in particular, with one reporter commenting that "Semenya's muscular physique helped propel her to

victory" but "Now that physique, coupled with an ongoing gender verification test, is fuelling suspicion that Semenya could be stripped of her medal because she is actually a he" (Adams, 2009). Some reporters quoted remarks from Semenya's competitors highlighting her perceived suspicious masculinity to support her exclusion from women's sport, with Elisa Cusma, who finished sixth after Semenya at Berlin, commenting, for example, that "These kinds of people should not run with us … For me, she's not a woman. She's a man" (Clarey, 2009). Referring to Semenya's body frame and gender presentation, the fifth place finisher Mariya Savinova added: "Just look at her" (Clarey, 2009).

Suspicions about Semenya's sex and gender intertwined concerns over her body frame and gender presentation with concerns over improvements in her running times, which seemed for some to be suspiciously rapid. IAAF spokesperson Nick Davis commented that Semenya first came to the IAAF's "attention this year by slicing more than seven seconds off her best time of 2008" which he considered "a huge drop" (Clarey, 2009). It is notable that, as Davis explained, while usually "potential doping was the first concern when a dramatic drop in time occurs … in Semenya's case, … the I.A.A.F had moved on to examining other possibilities" (Clarey, 2009). As one news reporter stated in a BBC documentary about Semenya titled 'too fast be a woman?', "the IAAF isn't accusing her of doping or even cheating, but her progress this year has been extraordinary and they want to know why" ("Too Fast to Be a Woman? The Story of Caster Semenya", 2011).

The intertwined concerns over Semenya's perceived masculine and muscular appearance and over her improved times (despite her having benefitted from world-class professional coaching when the improvements occurred) closely mirrored the concerns over Kratochvílová's embodiment expressed decades earlier, combined with the fact that Semenya (and, it should be noted, Soundarajan as well) competed in the 800-meter race where the ('suspiciously' fast) world record is held by Kratochvílová. Like the concerns that rendered Kratochvílová's gender in doubt, concerns over Semenya's masculine appearance were tangled with her appearing to be 'too fast to be a woman' where her running times needed explaining in some way. This was especially if she was to become fast enough to challenge the 800-meter record perceived to be too fast for 'a normal physiological female body', as a medical

observer had commented in relation to Kratochvílová. Similarly, the idea, such as expressed by Semenya's competitor Savinova, that 'just looking at her' was enough to render Semenya's gender suspect mirrored the views expressed by de la Chapelle and others about Kratochvílová's suspiciousness being evidenced by the observation that 'she does not look like a woman'.

However, Semenya's gendered transgressions were made doubly salient by the intersection of her gender presentation and muscular embodiment with racialised discourses around the deviance of black bodies in relation to Western white body norms. While Western Cold War discourses around communist gender pollution had intertwined with Eastern bloc sporting success to render the bodies of female athletes from communist contexts in gendered doubt, Semenya's gender suspiciousness was embedded within racialised colonial legacies which pre-position black female bodies as gender/sex(ually) deviant. As Tate (2015: 100) has noted, when "we add 'race' into the affective terrain of muscles … we see opening before us the old question of Black women's heterosexual womanhood from which they are removed". The racialised colonial legacies through which black women's bodies have been constituted as the negation of appropriate (white) femininity positioned Semenya's muscular black body within the discourses through which the black female body "has long been the object of pathological distortions in which it has been constructed as sexually abnormal and racially 'other'" (Tate, 2015: 2). In addition, Semenya's publicly visible romantic relationships with women, combined with her gender presentation, summoned up the figure of the 'butch black lesbian', which functioned to place her within the heteronormative discourses that conflate masculine(ised) female bodies and masculine gender presentation with deviant sexuality. This image summons the legacy of the 'mannish lesbian athlete threat' in sport that has long been associated with female athletes' perceived 'excessive' masculinity (Cahn, 1994; Griffin, 1998; Lock, 2003).

In Brenna Munro's words, then, "Semenya's vexed embodiment … invokes multiple larger unfolding histories" (2010: 394), and these multiple histories, intersecting around race, gender, sex, sexuality, and sport ideology, were simultaneously interlaced upon Semenya's body to render her and her performances suspicious. Semenya's suspiciousness illustrates how some bodies, due to

intersecting broader cultural discourses, much more easily become gender suspicious than others: Semenya's body, and bodies that resemble hers, are always already more easily marked as suspect bodies in relation to (white, Western) feminine body aesthetics. The controversies around both Semenya and Soundarajan, as well as the 1990s context of the emergence of Chinese female athletes as a new focus of concern for Western observers, show that since the collapse of the Iron Curtain, as Henne has argued, "racialized bodies have discursively come to fill the vacancy left by East German and Soviet bloc women" (2014: 806), in ways intertwined with broader racialised legacies through which the normal(ised), appropriately feminine female body is constructed through white, western, and middle-class gender norms.

However, the ways in which Semenya's gender verification was handled by the IAAF and by news outlets in particular also incited widespread critique both in the academic and public media spaces. Her gender verification tests were controversial, and followed by an eleven-month period of uncertainty over whether she would be disqualified or allowed to resume competition in women's sport. In July 2010, the IAAF announced that Semenya would indeed be allowed to resume competition and to keep her medals – a decision that was, however, accompanied with rumours that Semenya had been subjected to medical treatments with "weakening" effects (Hurts, 2010) or "womanizing" hormone therapy that "will make her less of a dominant athlete" (Goldman & Block, 2010). These rumours, and the controversy that Semenya incited, were centred, in particular, on the widely reported claim that the tests performed on Semenya had revealed her "testosterone levels to be three times as high as those normally expected in a female" (Harrell, 2009). In other words, it was reported that she had so-called female hyperandrogenism, meaning elevated or 'excess' levels of androgenic hormones in females, which were presumed to provide Semenya with 'unfair (male-like) advantage' over other (hormonally 'normal') female athletes.

To be intelligible, the notion of female *hyper*androgenism relies on the existence of a quantitative, medicalised system of normal(ised) androgen levels that give rise to the possibility of excess (and deficiency) of androgens per (binarised) sex category, classifiable into hormonal disorders. In Semenya's case, her androgen

excess was contrasted against normal(ised) androgen levels in female bodies, through which her levels could be classified as abnormal. Female 'hyperandrogenism' is kin to the notion of female 'hypermuscularity', both of which connote (pathological) 'excess' that in Semenya's case was attached to her visible musculature and hormone levels, as well as to her racialised, 'butch' gender presentation through which her body was rendered suspiciously gendered. Notably, after the gender verification tests and related controversy, Semenya's gender story worked to foreground medicalised androgen 'excess' in female bodies, as the Heinonen 16 group had hoped in the mid-1990s, as key focus in relation to the purity of the female category and women's sport, as I discuss in the next chapter.

Conclusion

Despite the genital-centric sex definition and the centring of gender fraud/masquerade as the key threat to women's sport during the late 1980s and early 1990s, the enduring gendered concerns over masculinised and 'hypermuscular' female-categorised athletes illustrate that gender fraud/masquerade prevention was, always already, an insufficient means through which to secure the boundaries of the female category. The IAAF's health and gender examinations were short lived, and seen as an anachronistic and humiliating throwback to an earlier era of 'naked parades'. While doping controls and the related necessary genital unveiling was consequently mobilised by the IAAF as a more acceptable means of genital inspections, the combined establishment of a case-by-case gender verification system targeted at gender suspicious appearing bodies illustrates that concerns over sex and gender binary breakdown and the desire to protect the feminine gender purity of the female category continued to drive gender verification. In a context where the boundaries around permissible female sporting bodies had become more flexible and women athletes were performing at progressively high levels, the increasingly muscular and powerful bodies of some female athletes like Kratochvílová had visibly destabilised old imaginaries of feminine bodily containment. Their uncontained bodies and high performance levels appeared 'excessive' for normal(ised) female embodiment, and incited anxieties over

*hyper*muscularity which was speculated to be caused by female athletes (inauthentically) 'wearing the essence of man'; namely, testosterone. The masculinisation caused by testosterone, whether exogenous (steroid doping) or endogenous (sex 'abnormalities'), implied that such masculinised females failed to stay confined within 'normal' female athletic capacity. While the IOC continued to use the chromosome-based PRC gender verification method for seven years after the IAAF had centred the identification of suspiciously gendered bodies, by 1999 the persistent opposition to chromosome-based methods compelled the IOC to institute suspicion-based gender verification for the Olympics as well.

The 1990s worries over suspiciously muscular female athletes were amplified by public revelations about the large-scale East German Cold War doping program taken to explain East German female athletes' muscular and perceived masculinised bodies, which came to stand as a symbol of the dangerous gendered consequences of steroid doping that infused female bodies with 'excessive' amounts of androgens, in Krieger's case so profusely that he 'turned into a man'. These revelations coincided with the emerging dominance of Chinese women athletes, who broke with Western gender norms and racialised preconceptions about Asian women. China's 'state-supported, behind-closed-doors sports system' reincarnated Cold War suspicions over communist sport programmes and reinforcing old Western anxieties over unscrupulous governments using illicit means of success. The emergence of Chinese female athletes as a new threat to the gender purity of women's sport, as well as the gendered suspicions and scandals directed at Soundarajan and Semenya, represent a post-Soviet shift in gendered anxieties in sport. As Eastern European bodies vacated the place of gender trouble, racialised bodies, first from China and now from the Global South, have, in many ways, filled the place left open by the 'hybrid' bodies of the Cold War communist bloc. Semenya's story, in particular, illustrates how intersecting racialised, gendered and sexual legacies that intertwine upon bodies like hers (pre-)mark some bodies as, always already, suspect, and thus more easily as objects of Western suspicions; suspicions that were institutionalised as a legitimate gender verification method by the suspicion-based gender verification regulations.

The suspicion-based gender verification mandates were centrally concerned with anxieties over both visible and suspected embodied 'excess': excess of muscle

bulging out of the confines feminine body aesthetics; excessive performance levels that exceeded presumptions about what female bodies should be capable of in sport; racialised excess of bodies read through colonial imaginaries as the negation of appropriate (white) femininity; masculine excess of bodies that perform female masculinity; genital excess of bodies with 'ambiguous' genitals; and, finally, testosterone excess or androgenisation of perceived masculinised bodies. Now conceptualised through these imaginaries of excess, gender verification based on gender suspicion was instituted due to enduring anxieties over sex and gender binary polluting bodies in women's sport. Like the perceived 'hybrid' bodies of earlier periods, the excessive female bodies that incited the need for suspicion-based gender verification were threating to the sex and gender purity of women's sport because they embodied sex and gender category 'overflow', in a broader context of increasing destabilisation of the rigidity of gender roles and categories. The legitimacy of their claim to a gender status as women and females was consequently rendered suspicious and in doubt, requiring verification. This verification took the form of comprehensive gynaecological, endocrinological, internal, and psychological examinations based on which appropriate or sufficient (or lack therefore) 'femaleness' was to be determined by a medical evaluation panel. If the femaleness was not sufficient, 'appropriate medical and surgical measures' could be used to decrease the embodied overflow and thus return excessive bodies into the confines of normal(ised) female embodiment.

The controversy around Semenya's gender and revelations about her 'hyperandrogenism', however, incited widespread debate and critique around gender verification in sport, centred on the role androgens in female bodies and the extent to which high levels of these hormones required regulation. The next chapter discusses the institution of 'regulations on female hyperandrogenism' through which androgen excess became the focal point of 'unfair advantage' in women's sport.

Chapter nine

Regulations on female hyperandrogenism: centring androgenic athletic advantage

After Semenya won the 800-meter race at the Berlin World Championships and was subsequently subjected to gender verification due to suspicions raised about her gender, the resulting international media scandal resulted in unprecedented public awareness and debate around gender verification in sport. Consequently, in response to critiques that Semenya's case was poorly handled by the IAAF and that the suspicion-based gender verification policies were ill-defined, sport regulators were compelled, once again, to re-consider the aims of gender verification and how the sex binary should be regulated in sport. This chapter discusses the International Olympic Committee's (IOC) and the International Association of Athletics Federations' (IAAF) regulations of female hyperandrogenism that resulted from these deliberations. The regulations centred on androgenic hormone levels as the 'essence' of sex difference, and the key to high level (i.e. male-like) athletic performance.

The regulations on female hyperandrogenism were intertwined with the pathologisation of high level androgens in female bodies as an androgen 'excess' disease. This chapter maps how the gendered medicalisation of hyperandrogenism was mobilised by sport regulators to detect and police female bodies who polluted sexed and gendered boundaries, both in terms of bodily appearances and performance levels, by embodying 'male-like' androgenisation that exceeded the boundary threshold of androgen levels permitted for normal(ised) female embodiment. The pathologisation of hyperandrogenism, in turn, justified mandates for normalising medical treatments for androgen 'excess', in ways that functioned to re-align sex binary polluting bodies with the sex binary, now constructed based on hormone levels. Considering the IAAF's delineation of the 'clinical signs' of hyperandrogenism, the chapter highlights how medical(ised) conceptualisations of hyperandrogenism are also foregrounded by white and western gendered body norms, which were then used as a tool by sport regulators to detect bodies that failed to embody these norms. This illustrates the continued focus on feminine

bodily aesthetics, now re-framed in relation to the effects of androgens on female bodies.

The foregrounding presumption of the hyperandrogenism regulations has, however, been contested. The chapter charts critics' arguments centred on the empirical accuracy of the presumed quantitative relationship between androgens and athletic performance levels, which resulted in the suspension of the regulations. The consequence of this suspension was a gendered panic during the Rio 2016 Olympics, which brought to the fore many old and deep seated anxieties over sex and gender binary breakdown discussed in previous chapters, embodied by sex and gender binary polluting hyperandrogenic female bodies who posed a threat to the purity of sex and gender categories.

Conceptualising androgens and hyperandrognism

The hyperandrogenism regulations explicitly centred androgens, and testosterone in particular, as the 'essence' of sex category division in sport, and as the substance through which one's right to compete as a female could be verified. Crucial to enabling this were not only the 1990s concerns that had foregrounded testosterone as key to 'unfair advantage' in sport discussed in the previous chapter, but also the gendered history of this so-called sex hormone and the quantitative model of hormonal sex difference that had been popularised during the 1930s, as discussed in chapters two and four. This is because the quantitative model enables the medicalised construction of sex hormone 'excess' and 'deficiency' conditions, which function to constitute hormonal sex and gender binary blur as a pathological condition that can be treated or normalised through medical intervention.

Androgens continue to carry the gendered history through which they have been constituted as 'male' sex hormones, including literally in their naming as *andro*gens and despite their variable functions within the human organism. Indeed, as Fausto-Sterling (2000: 147) has argued, the gendered legacy of androgens has produced a strange cultural result in relation to the effects of these "multisite chemical growth regulators" when it comes to bodily sites and organs not explicitly involved in sex classifications: because "sex hormones affect their physiology, these

organs … come to be seen as sex organs. Chemicals infuse the body, from head to toe, with gender meanings". Androgens carry the signs of masculinity throughout the body – they masculinise, and their effects are masculinising, even when it comes to such apparently gender neutral bodily features as hair or muscles.

As Oudshoorn (1994) has observed, the quantitative model of sex hormones through which a normalised range of androgens has been standardised for female and male bodies respectively implies that there can be too much or too little of the substances in an organism and that this hormonal excess or deficiency can then be subjected to diagnostic and intervention techniques. In Foucault's (2003) terms, the normative model of hormonal pathologies is built on a conceptualisation of standardised sex hormone ranges as 'healthy' constituted as the medical norm against which 'abnormal' hormone levels can be contrasted and pathologised. An important consequence of the medicalisation of hormone levels has been the emergence of hormone therapies, perhaps the most notable of which is the medicalisation of menopause as an oestrogen deficiency disease which works to constitute female bodies' ageing processes as a hormonal pathology to be controlled through hormone replacement therapy (HRT) (see Hoberman, 2005; Langston, 2010; Roberts, 2007). This model of menopause is foregrounded by the naturalisation of (youthful) femininity as the norm of female embodiment through which the perceived masculinising consequences of menopause that may result from hormonal changes (such as increased body hair growth) can be rendered as a malfunction, which then enables the continuation of the naturalisation of feminine embodiment and aesthetics as 'normal' for women, enduring over time (Roberts, 2007).

In contrast to menopause as hormonal deficiency decease, the quantitative sex hormone model also enables the pathologisation of high level endogenous androgens in female bodies as a hormonal excess decease – labelled hyperandrogenism – that should be normalised with medical intervention. Just like menopausal women's "bodies are understood … as pathologically overflowing boundaries of contained selfhood" due to hormonal fluctuations (Roberts, 2007: 112), hyperandrogenic women's bodies overflow the boundaries of feminine containment and aesthetics in relation to the presumed low(er) levels of androgens

that should accompany 'normal' female embodiment. In both cases, the medicalised and gendered model of hormone levels mandates that the pathological overflow be contained and the overflowing bodies re-aligned with the sex binary to ensure naturalised femininity for female bodies.

The normalised gendered ranges for androgen levels function to maintain the gendered and binarised naturalisation of low vs. high androgen levels for female and male bodies respectively, in ways connected with the association between androgens and performance advantage in sport. Just as female bodies can have hormone excess or deficiency, low androgen levels in male-categorised bodies are constituted as a deficiency decease – labelled hypogonadism – which can be remedied by HRT. In elite sport, this carries interesting consequences for so-called therapeutic exemptions through which men who can evidence hypogonadism can be granted the right to take exogenous testosterone for 'therapeutic use', despite the exogenous testosterone ban per anti-doping regulations. This applies also to transgender men, who would be granted therapeutic exemptions for HRT to bring their androgen levels up to the standardised 'male range'. In Alice Dreger's (2009a) words, any male-categorised athlete "who successfully argues that he doesn't make 'enough' testosterone can take more", while for female-categorised bodies, high androgen levels, whether endogenous or exogenous, constitute troubling androgen excess. This relates to a conflation between high levels of endogenous androgens with exogenous androgens when it comes to female bodies where both are relegated as unnatural, enabled by the historical legacy of androgens as male hormones and thus as 'foreign' to female bodies.

The centring of androgens and their gendered regulation in the context of sport, then, is fundamentally governed by conceptualisation of normal and natural hormonal binaries, and bodies can be brought in line with these binaries when they fail to approximate the androgen range appropriate to their gender category. As John Hoberman (2005) has argued, this is centrally intertwined with the policing of the boundary between 'treatment' and 'enhancement', where the foregrounding question is when and under what conditions should the human organism be altered, and what justifies this altering. When it comes to synthetic testosterone, for example, as Preciado pondered,

> If the administration of synthetic testosterone is prescribed for cases of testosterone deficiency, when and according to what criteria is it possible to affirm that a body is deficient? … Be that as it may, in order to legally obtain a dose of synthetic testosterone, it is necessary to stop defining yourself as a woman. … the condition for the possibility of administering the molecule … is having renounced [one's] female identity. An excellent political tautology (2013: 60).

To (legally) gain access to exogenous androgen, one must be defined as male, since part of the condition of being defined as female is that deficiency in testosterone is a 'natural' state the altering of which is unnatural and/or enhancing.

The centring of androgens in relation to sex categorisation in sport functions to define explicitly as (performance) enhancement not only exogenous but also high level endogenous androgens in female bodies, with the strange consequence that the related line between treatment and enhancement is delineated by defining high level endogenous androgens in female bodies as an enhancement that must be treated. Women with high androgen levels, then, whatever the androgens' origin, are enhanced and must be 'brought down' to the 'natural' female state, while men with low androgen levels are deficient and must be 'brought up' to the 'natural' male state. Low androgen levels maintain femininity of the female body and high levels maintain masculinity of the male body, both in terms of gendered bodily appearances and gendered performance levels. The normal and natural bodily state is thus delineated in gendered hormonal terms in relation to allowed female and male androgen ranges above and below which one ought not or may not go.

Regulations on female hyperandrogenism

The media scandal following Semenya's gender verification tests resulted not only in degrading press speculations about her gender, but also in critiques and debates both in the academic and public media spaces around how Semenya's case was handled. The medicalising dissection of Semenya's body by Western doctors and observers was criticised by South African officials and observers who argued that the probing of Semenya's body represented a continuation of the colonial racist gaze

and dissection (both symbolic and literal) of black African bodies seen as objects of medical curiosity by colonial physicians (see Hoad, 2010; Magubane, 2014; Munro, 2010; Nyong'o, 2010). Many observers, both in the West and South Africa, also criticised the public scrutiny of Semenya's sex and gender as malpractice (see Dreger, 2009a, 2009b; Schultz, 2011; Wiesemann, 2011). By mandating Semenya to undergo gender verification, the IAAF not only publicly rendered her gender in doubt in ways that disrespected her identity as female and woman, but the suspicion-based policy under which she was investigated did not provide any clear idea of how exactly the line between female and male was drawn in suspicious cases. Dreger observed that

> Nature doesn't actually have a line between the sexes. If we want a line, we have to draw it *on* nature. ... But the IAAF ... doesn't specify which conditions *disqualify* an athlete from playing as a woman. So the line is essentially still missing (2010: 23, original emphasis)

The controversy around Semenya resulted not only into public debate about her embodiment, but also into debate about gender verification more generally, to the extent that the IOC and IAAF decided to re-examine their suspicion-based policies. The most notable characteristic of related debates, from the perspective of regulatory change, was the widely-publicised claim that Semenya had elevated androgen levels amounting to hyperandrogenism. Indeed, when searching for the missing line between the sexes, many observers, including Martínez-Patiño who had in the 1980s been disqualified from women's sport on the grounds of her AIS as I discussed in chapter six, considered the location of this line to be quite clear: "here is a trait which is known to influence one's athletic performance and which happens to be sexually dimorphic: androgens" (Sanchez, Martinez-Patino, & Vilain, 2013: 113).

In 2010, two meetings were held by the IOC in Miami and Lausanne that were also attended by IAAF representatives to re-discuss how sex and gender divisions should be regulated in sport. Embedded within the conclusions of the meetings were three key ideas that shifted the focus around gender verification, and which were developed into IAAF and IOC regulations on female hyperandrogenism in 2011 and 2012, respectively. Firstly, primarily in response to the media gossip that had

rendered Semenya's gender in doubt, rhetoric around gender fraud/masquerade prevention as an objective of the policies was entirely abandoned from official documents, with the IAAF (2011c) dropping "all references to the terminology of 'gender verification' and 'gender policy' in its Rules" and the IOC (2012) stating that "Nothing in these Regulations is intended to make any determination of sex". This shift was clearly intended to avoid speculations that athletes subjected to related examinations were actual men rather than women with sex abnormalities, as it was such accusations that roused critiques of the IAAF having disrespected Semenya's gender identity. The shift was also contextualised, however, by a change in politics around intersex bodies. Since the late 1990s, activist had increasingly campaigned for care reform with emphasis on nomenclature, arguing for a move away from terms like intersex and hermaphroditism to an aetiology-based nomenclature because the former functions to label (and reduce) "the whole person according to the condition ... rather than naming a condition a person has" (Dreger, Chase, Sousa, Gruppuso, & Frader, 2005: 732). In 2006, a consensus statement was published for the term 'disorders of sex development' (DSD) to replace older nomenclature (Hughes et al., 2006), to emphasise DSD as medical conditions that patients *have* (in contrast to language centring on subjects who *are* intersex). Key to this was emphasis on medicalisation, constructing such 'disorders' as separate from questions of (gender) identity – an emphasis mirrored by the terminology shift in regulatory policy in sport.

Yet, despite declaring that "if an athlete is recognised as a female in law, she is eligible to compete in women's competition", the IAAF (2011a) added that eligibility was still subject to compliance "with IAAF Rules and Regulations" including the hyperandrogenism regulations. The IOC (2012) added that their regulations were "designed to identify circumstances in which a particular athlete will not be eligible ... to participate in [the Olympics] in the female category". Both regulations thus continued to police the boundaries of the female category. Despite rhetoric moving away from 'sex', 'gender', and 'gender verification' and towards 'hyperandrogenism' as a medical condition, the regulations still functioned to verify that the bodies of athletes claiming the right to compete in women's sport fell within the delineated boundaries of the female category, now defined in hormonal terms.

Secondly, and relatedly, the IOC and the IAAF rhetoric attempting to shift the emphasis away from sex and gender (re)centred a language focused on health and medical care. This focus mirrored the earlier IOC rhetoric of treatment advanced by Thiebault and others around medical diagnosis discussed in chapter six, but the search for medical conditions and diagnoses was no longer directed at vague notions sex hybridity, but at hyperandrogenism in particular, seen as a medical problem. In the words of one reporter, the Miami meeting participants concluded that "the issue of athletes whose sex seems ambiguous [should] be treated as a medical condition" and that athletes "who identify themselves as female but have medical disorders that give them masculine characteristics should have their disorders diagnosed and treated" (Kolata, 2010b: B23). As Simpson phrased it to journalists, an athlete identified as hyperandrogenic "is now a patient who needs medical advice" (Kolata, 2010a: D2). However, despite this healthcare-centric rhetoric, diagnosis and treatment for hyperandrogenism was explicitly mobilised as a mandate: to be granted eligibility to compete, a hyperandrogenic athlete could be compelled to undergo treatment "to normalise her androgen levels" and "if an athlete declines, fails or refuses to undergo assessment or is otherwise not compliant … she shall not be eligible to compete" (IAAF, 2011a). The regulations thus made medical intervention a possible obligation for sport participation.

In addition, the IOC included an explicit requirement in their policy whereby "each NOC shall, as appropriate, prior to the registration of its national athletes, *actively investigate any perceived deviation in sex characteristics*" (IOC, 2012, emphasis added). Consequently, like earlier gender verification frameworks that extended elite sport regulators' sex binary policing frames outside their direct jurisdiction as I discussed in chapter six, the IOC 2012 mandate explicitly stretched the medical policing of hyperandrogenism outside Olympic competition, across levels of sport participation. Indeed, a year after the introduction of the IOC policy, the Sports Authority of India (SAI) instituted their own hyperandrogenism policy modelled on the IOC framework, stating that hyperandrogenism-related medical examinations "may be carried out at any level of competition" and "are not meant for just Sports persons who compete in international events" (SAI, 2013).

Thirdly, and most significantly, the hyperandrogenism regulations were built

on the assumption that androgenic hormones, and thus hyperandrogenism, provide a performance advantage in sport, because the "difference in athletic performance between males and females is known to be predominantly due to higher levels of androgenic hormones in males resulting in increased strength and muscle development" (IAAF, 2011c). While this assumption has been contested as I will show later, the IAAF (2011c) stated that their hyperandrogenism regulations were built on "respect for the very essence of the male and female classifications in Athletics", implying that testosterone, defined as a "performance-enhancing hormone", constituted this essence. The IOC (2012) added that "Androgenic hormones have performance-enhancing effects" which is "one of the reasons why the exogenous administration of such hormones and/or the promotion of the endogenous production of these hormones are banned under the World Anti-Doping Code, to which the IOC is a signatory", thus conflating exogenous and female's high level endogenous androgens under a single umbrella of unfair advantage. Androgens were thus identified, not only as the essence of sex classification in sport, but also as the essence of high-level performance more generally, which is why not only steroid doping but also high level endogenous androgens in females constituted unfair performance enhancement that must be regulated. Both the IOC and the IAAF established an androgen threshold measured by testosterone, whereby female athletes' levels may not fall within the "Normal male range Total Testosterone Levels", specified by the IAAF as meaning below 10 nmol/L (IAAF, 2011c). Thus, to be categorised as female for the purposes of athletics participation, women athletes had to embody less than 10 nmol/L of testosterone.

This new medicalising and androgen-focused framework had the following intertwined effects: the conflation of androgens, performance enhancement, and sex categorisation in regulatory policy meant that enhanced or high level performance come to be directly regulated as a male sex characteristic. As androgens were understood to enhance performance, and as male bodies were understood to have enhanced performance due to higher levels of androgens, 'androgen enhanced performance' came to be regulated, not only as unfair doping, but also as a male characteristic that could be used to police the sex binary by excluding female-categorised bodies with 'androgenic advantage' from women's

sport. Thus, the sex binary was re-drawn around androgens, and 'androgenic advantage' was not only conceptualised as a male attribute, but also pathologised in female bodies as 'hyperandrogenism' that needs medical normalisation. The medicalising rhetoric around androgen 'excess' works to safeguard binary sex so that hyperandrogenic bodies can be subjected to normalising treatment, which would bring the athlete's (male-like, enhanced) performance down to the (presumed lower) female levels. Thus, the underlying but implicit ideas upon which the hyperandrogenism regulations were built actually aimed to render enhanced or high level performances of female athletes as pathological.

The hyperandrogenism regulations were also connected with the 2003 Stockholm consensus and the 2015 IOC consensus meeting regulations on athletes who have undergone gender reassignment, which established refined guidelines for the eligibility of transsexual/gender athletes to compete in women's sport. According to the Stockholm consensus, an eligibility condition for transgender athletes was that "Hormonal therapy appropriate for the assigned sex has been administered in a verifiable manner and for a sufficient length of time to minimise gender-related advantages in sport competitions" (IOC, 2003).[34] The 2015 policy stated that athletes competing in women's sport must demonstrate androgen levels below the IAAF's specified male range, with the aim of minimising "any advantage in women's competition" (IOC, 2015a), thus centring androgen levels as key to advantage in sport also in relation to gender reassignment. As for hyperandrogenic women, these policies also meant that medical intervention continues to be a requirement for transgender athletes' elite sport participation.

However, while the Stockholm consensus applied to all athletes undergoing gender transition, the 2015 regulations apply only to those who transition from male to female, while those "who transition from female to male are eligible to compete in the male category without restriction" (IOC, 2015a). This shift demonstrates how the androgen-focused regulations in sport were foregrounded, not only by the

[34] And that surgical interventions including gonadectomy and external genitalia were completed, the latter of which illustrates that the concern over penises discussed in chapter seven had not died despite the overall changes in rhetoric. The 2015 policy finally removed the genital surgery requirement.

identification of androgens with enhancement, but also by delineations of allowed versus unfair androgens in relation to their appropriate versus inappropriate presence in gendered bodies. Considering the anti-doping steroid ban, as Sheila Cavanagh and Heather Sykes (2006: 78) have noted, since "transsexual men take testosterone injections, it is curious that the Olympic community does not consider that they may have an advantage over genetic [sic] men". While they suggest that this omission results from a refusal to accept transgender men as men, it is also connected with the medicalised relegation of low androgen levels in male-categorised bodies as a 'deficiency' that must be remedied with HRT, in ways intertwined with the association of androgens as the foundation of males' athletic advantage over females. Transgender men competing in sport can take testosterone to remedy an androgen deficiency that would place them at a disadvantage against other men. Their androgen levels and, presumably, performance levels must be 'lifted' to male standards, while transgender women's androgens levels and, presumably, performance levels must be 'lowered' to female standards. As phrased by one medical observer, "The most essential element of women's sport is that it is practiced by testosterone-challenged athletes" (Tucker & Harper, 2016), apparently akin to a hormonal disability.

While the above discussed regulations were thus centrally focused on policing a medicalised hormonal sex binary through androgens, the diagnostic tools and treatment frameworks that were mobilised for androgen excess relied on particular conceptualisations of what constitutes normal(ised) female embodiment. The next section discusses these conceptualisations, which illustrate the continued centrality of masculine or insufficiently feminine bodily appearances, rendered suspect now in relation to 'abnormal' androgen levels.

Diagnosing and treating hyperandrogenism

The IAAF specified that an investigation into hyperandrogenism may be initiated when 'reasonable grounds' exist to suspect the condition, which may be derived from sources including a routine drug test showing an abnormal profile within the Athlete Biological Passport (ABP) or from "the results from a routine pre-

participation examination" (IAAF, 2011a). The ABP is a new system of longitudinal, personalised monitoring of biomarkers of doping, enabling the identification of deviations from 'natural' baseline values. Unlike older doping control models, it enables the detection of biomarkers that may persist long after doping substances have been metabolised/excreted (Sottas, Robinson, Rabin, & Saugy, 2011). The steroidal module of the ABP, which monitors androgen levels, enables the identification of variations from 'normal' baseline levels consistent with the use of doping substances (Gilbert, 2010; Vernec, 2014). In the words of Susan Gilbert (2010: 18), with the ABP, "Like a valid passport required for entry into foreign countries, a valid (clean) biological passport is now required for many athletes to gain entry into elite competitions". The ABP thus represents an intensification of the medical(ised) surveillance of athletes' bodies aiming to produce a 'total body profile' (Gilbert, 2010), but the mobilisation of the ABP as a tool to detect hyperandrogenism also represents an intensification of the intertwinement of doping control and gender verification in sport.

The ABP monitoring of steroids enables the detection of 'abnormal' steroid profiles, whereby the ABP works in conjunction with the hyperandrogenism regulations to centre and detect suspiciously high levels of circulating androgens in the blood. As Hayley Olsen-Acre (2006: 234) observed in relation to steroid control in general, but now with the ABP in particular, "prohibition of certain hormones and hormone levels from the legitimate athletic body … works together with the … rules regarding what constitutes a doping violation to exclude athletes with biological makeups considered to be outside of the norm". In addition, as they had for over a decade, doping controls operated in conjunction with the hyperandrogenism regulations as a form of genital policing. The IAAF specified 'clitoral hypertrophy' or 'clitoromegaly' meaning clitoral enlargement in relation to 'normal' size of the clitoris as a sign suggesting hyperandrogenism (IAAF, 2011b, 2011c), whereby such 'abnormal' clitorises may be monitored through observation of genitalia during urine sample collection for doping control.

While many hyperandorgenism cases identified in sport were likely detected through doping control (Jordan-Young, Sonksen, & Karkazis, 2014), reasonable grounds for triggering hyperandrogenism investigations could also be obtained

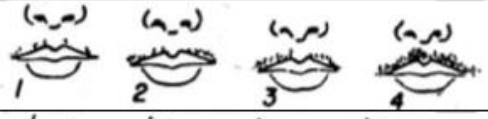
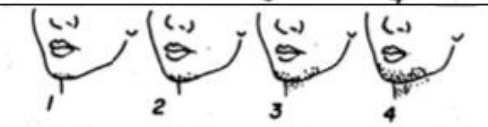
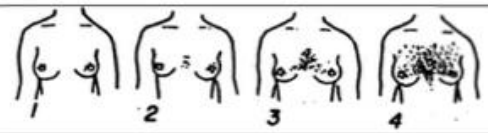
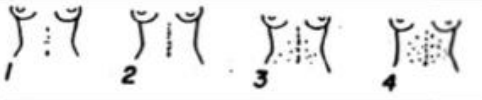
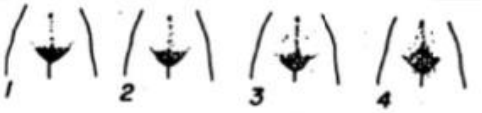
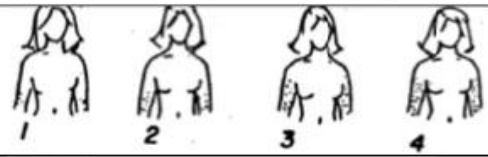
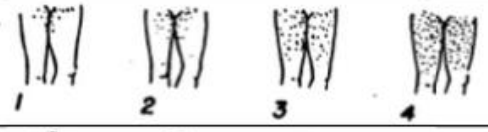
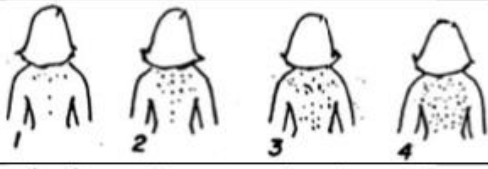
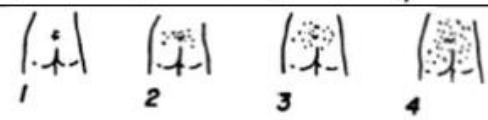
through pre-competition examinations, especially as the IOC specifically required NOC's to actively investigate athletes for 'deviations' in sex characteristics. Relatedly, concurrently with their hyperandrogenism regulations, the IAAF (2011b) also published "a practical document … written to assist medical doctors in the screening, evaluation and specialist referral of virilised female athletes". The document was intended, firstly, as a guideline to the kinds of examinations that should be undergone by athletes suspected of hyperandrogenism. The IAAF specified that they would appoint a pool of independent medical experts to evaluate suspected hyperandrogenism cases arising in athletics with reference to 'clinical signs' of hyperandrogenism (IAAF, 2011c). Secondly, the document was intended as a diagnostic guideline for sport physicians to enable the identification of hyperandrogenic athletes so that they could be referred for further examinations by specialists. Indeed, the IAAF noted that an initial related 'sports medicine examination' should be included as part of pre-participation examinations by sport physicians, reminiscent of their health and gender examinations discussed in chapters seven and eight (IAAF, 2011b).

The content of this guideline brings to the fore how the hyperandrogenism regulations were foregrounded by (white, Western) feminine body norms which were used as a diagnostic tool to identify 'abnormally' masculinised female bodies, where such masculinisation was evidence of pathological androgen excess needing medical normalisation. The IAAF's 'clinical signs suggesting hyperandrogenism' lists attributes including not only 'clitoromegaly' but also deep voice, increased muscle mass, breast atrophy, and body hair of male type (IAAF, 2011b). In addition the IAAF explicitly presumed that "the individuals concerned often display masculine traits and have an uncommon athletic capacity in relation to their fellow female competitors" (IAAF, 2011c), thus associating hyperandrogenism not only with athletic advantage but also masculine gender performance. The IAAF guideline for identifying hyperandrogenism provided two scales of measurement that are of specific interest: the Ferriman-Gallwey scale for hirsutism and the Tanner scale for breast development and public hair.

Hirsutism has been medically defined as "the presence of excess body or facial terminal (coarse) hair growth in females in a male-like pattern" (Yildiz, Bolour,

Woods, Moore, & Azziz, 2010: 52) and it is "the most commonly used clinical diagnostic criterion of androgen excess" (Yildiz et al., 2010: 61). The Ferriman-Gallwey scale for hirsutism, developed by David Ferriman and John Gallwey (1961), functions as a visual observation or examination tool for androgen-sensitive skin areas to grade body hair growth on a scale against illustrative pictures. The medical definition of hirsutism and this diagnostic tool through which it can be identified function simultaneously to medicalise and gender hair on female bodies through a quantitative visual observation system. 'Abnormal' hair growth can thus be diagnosed in relation to the medical norm of (acceptable) amount of hair growth and pattern for female bodies. According to the IAAF (2011b), a Ferriman-Gallwey scale "score (>6/! minimized by the beauty [sic!])" suggests hyperandrogenism, and "biological investigations should be performed on scores over 16".

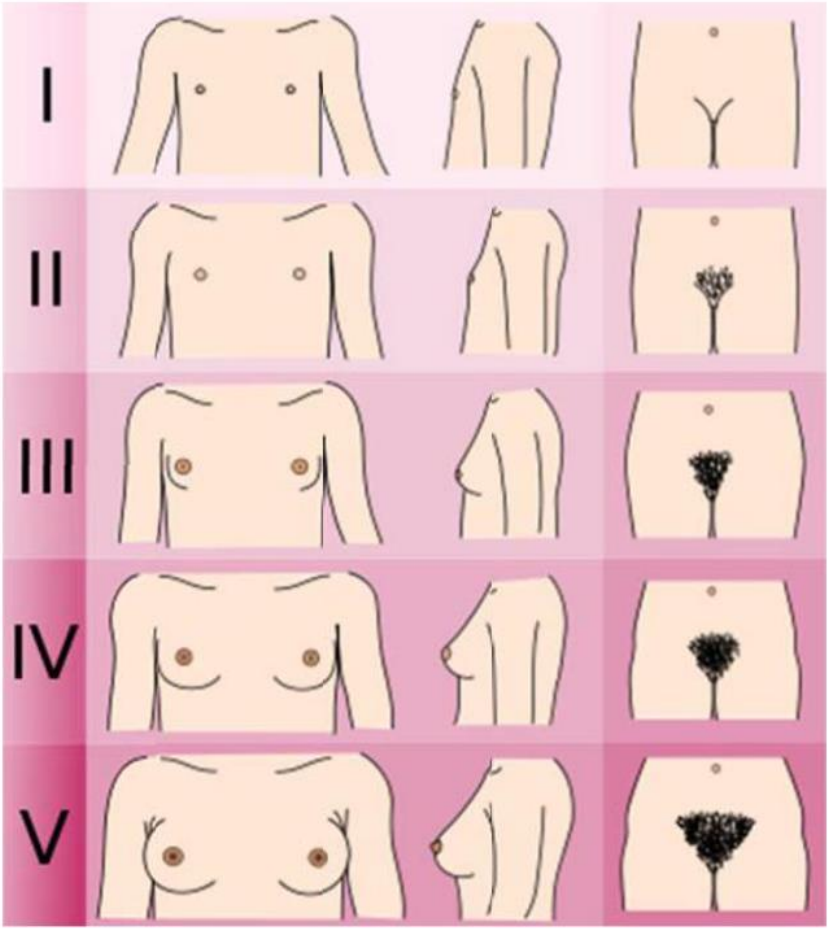
The amount and pattern of hair is a cultural signifier of the division between (normative) male and female embodiments, the power of which is illustrated by hair removal being a common part of women's feminine body maintenance practices. As Merran Toerien and Sue Wilkinson (2003: 335) have argued, smooth skin and hairlessness are a normalised bodily condition for women, serving "in the construction of the 'appropriately' feminine woman". Because body and facial hair are coded as masculine, "when visible on a woman's body, [hair] represents a symbolic threat to the gendered social order" (Toerien & Wilkinson, 2003: 341). As Preciado (2013) has added, while older imaginaries constituted hairy women as socially disruptive or monstrous, the medicalisation of hirsutism has re-framed 'excessive' body hair on female bodies as a clinical condition mandating normalisation through interventions such as hormonal regulation and electrolysis. The medicalisation of hair functions through an explicit gendering of hair based on its location, pattern, and type, where the occurrence of male-type/pattern hair on female bodies is framed as a medical crisis; "the devastating consequence of hirsutism" adversely affecting women's mental health and social life (Van Onselen, 2011: 985). Indeed, medical paradigms for hirsutism categorise hair according to gendered/sexed hair types which include 'sexual' hair (e.g. terminal chin, abdomen and thigh hair) and 'asexual' hair (e.g. eyebrows and eyelashes), where the former is conceptualised as "characteristically masculine, and if present in women is

Body Area	Date of exam :		
Upper Lip		Score	
Chin		Score	
Chest		Score	
Upper Abdomen		Score	
Lower Abdomen		Score	
Arms		Score	
Thigh		Score	
Upper Back		Score	
Lower Back		Score	
	TOTAL SCORE		

The Ferriman-Gallwey hirsutism scoring sheet (IAAF, 2011b)

considered pathological" (Yildiz et al., 2010: 53). The Ferriman-Gallwey scale, and the IAAF's mobilisation of it as part of their guideline for diagnosing hyperandrogenic female athletes, is foregrounded by the idea that 'abnormally' masculine female bodies can be visually identified based on observation of hair as a gendered bodily cue, and that such cue itself connotes abnormal masculinisation. Sport physicians are thus instructed to be on the look-out for the concerning sight of 'hairy women'.

In conjunction with the Ferriman-Gallwey scale, the IAAF guidelines also



The Tanner scale (female) (IAAF, 2011b)

provided the Tanner scale originally developed by James Tanner in 1962 as a visual tool for identifying stages of sexual development in puberty based on 'pictorial standards', for girls used to measure breast and pubic hair development (Roberts, 2015). As Celia Roberts (2015) has argued, just like the Ferriman-Gallwey scale in relation to body hair, the Tanner scale functions as a model of bodily 'normality' in relation to sex(ual) development, and as a tool for identifying abnormality. The scale provides five 'stages of development' in relation breast size and areola type, and the IAAF guidelines specify a 'low' Tanner score (stages one or two) as a cause of concern in relation to adult female athletes (IAAF, 2011b). The inclusion of the Tanner scale into the IAAF diagnostic guideline, and the identification of low Tanner scores as concerning, function to render flat chestedness in female athletes as troubling, which is intertwined with the cultural relegation of small breasts as a sign of immaturity or 'boyishness' in women. Indeed, it is worth emphasising that the

Tanner scale was designed to evaluate pubescent girls. A breast size scale is doubly problematic in the context of elite sport in the 21st century, where many female athletes maintain a low body fat percentage. The relegation of lack of, or insufficient breast tissue as concerning, then, combined with the relegation of excessive body hair as concerning, function to maintain, and are foregrounded by, cultural ideas around normal or natural feminine embodiment, identifiable through naturalised and gendered bodily cues such as sufficiently feminine breast size and appropriately feminine smoothness or purity of the skin. IAAF guidelines thus continued to centre masculine or insufficiently feminine bodily appearances as a method of screening for 'suspicious' bodies, needing further examination and normalisation now in relation to androgen levels.

The normalising aims of the hyperandrogenism regulations and their reliance on feminine body norms is exemplified by a report that outlines the medical interventions implemented for four young female athletes diagnosed as hyperandrogenic through the regulations, and treated for previously 'undiagnosed medical conditions' (Fenichel et al., 2013). These athletes, who were from "rural or mountainous regions of developing countries", were sent to sport governing bodies' medical reference centres in France for specialist examination and treatment, after being identified as suspect through an abnormal steroid profile and 'clitoral hypertrophy' reported by a doping control officer in one case, through increased plasma testosterone detected through ABP in two cases, and through direct referral by a national federation doctor in the last case (Fenichel et al., 2013: E2). To remedy the 'symptoms' of the athletes' newly diagnosed medical conditions, Western medical professionals administered "a partial clitoridectomy with a bilateral gonadectomy, followed by a deferred feminizing vaginoplasty and estrogen replacement therapy" (Fenichel et al., 2013: E3-E4). Despite the medical professionals' affirming that leaving the athletes' gonads intact "carries no health risk", gonadecotomies were performed with the acknowledgement that these interventions would "allow them to continue elite sport in the female category", noting that such surgery "would most likely decrease their performance level" (Fenichel et al., 2013: E3). Particularly disturbing is that clitoridectomy (i.e. reduction or partial removal of the clitoris, often resulting in loss of physical sensation) and

feminising vaginoplasty have no relevance whatsoever for sport performance, and were performed for aesthetic reasons. The aim of these surgical interventions is to 'normalise' genitals that do not conform to the cultural aesthetic standards of desirable female genital appearance, demonstrating the deep intertwinement of the hyperandrogenism regulations' policing of androgen levels and the policing of feminine aesthetics.

The body norms that foreground the hyperandrogenism regulations and related treatment paradigms are not only gendered but also white, and entangled with the racialised histories of Western medicine discussed in chapter two. As Zine Magubane (2014) has argued, the medical management of sex 'abnormalities' is foregrounded by the role that race and context play in determining which bodies are marked as problem bodies and what is done with those bodies. Indeed, according to Rebecca Jordan-Young and colleagues, Stéphane Bermon (who was involved in designing the hyperandrogenism regulations) conveyed that most, or perhaps all, of the athletes subjected to investigation in accordance with the regulations were from 'poor countries' (Jordan-Young et al., 2014). Firstly, the Western medical management model for DSD, including hyperandrogenism, that is presumed by the IOC and the IAAF policies relies on access to diagnosis and what can be expensive, sometimes life-long treatment frameworks. As Katrina Karkaziz and Jordan-Young (2013) have noted, the bodily conditions singled out by the IAAF and the IOC as concerning may not be detected or even necessarily viewed as a 'problem' in the same way in non-Western contexts where Western medical paradigms are not hegemonic in relation to bodies and their sex. For example, when it comes to the four athletes treated for hyperandrogenism in France, the responsible medical practitioners suspected that their 'abnormalities' were "not formally diagnosed or given medical attention because they had been born in rural regions of countries with poor care" (Fenichel et al., 2013: E4). The hyperandrogenism policies thus not only privilege western medicine over other local frames for conceptualising sex and embodiment, but also disproportionately affect women from contexts where access to Western medicine for diagnosis is limited or non-existent, who may only be diagnosed and 'treated' (including with unnecessary normalising surgical interventions, as in the case of the four athletes) because of elite sport participation.

Secondly, the medical tools mobilised by the IAAF for the identification of hyperandrogenism are in many ways based on white body norms. The Ferriman-Gallwey hirsutism scale, in particular, is not only foregrounded by ideals of feminine smoothness and purity of the skin, but was also developed based on a sample of predominantly white bodies (Javorsky, Perkins, Hillebrand, Miyamoto, & Kimball, 2014), and it has been argued that the cut-off values for hirsutism diagnosis should be population-specific (Api, Badoglu, Akca, Api, & Gorgen, 2009; Hassa et al., 2005). There are noteworthy ethnic/racial variations in what is/should be medically considered 'normal' hair growth,[35] but racial/ethnic differences are not incorporated into the scoring system (Javorsky et al., 2014). In addition to the racialised medicalisation of body hair, as Karkazis and colleagues have noted, "more than half of the indicators of hyperandrogenism identified by the IAAF policy" (such as excess muscle mass, low voice, and insufficient breast size) are "entangled with deeply subjective and stereotypical Western definitions of femininity" (Karkazis, Jordan-Young, Davis, & Camporesi, 2012: 13) which render the hyperandrogenism regulations a racialised medical tool to detect gender non-conformity. This is especially so as the regulations intersect with racialised imaginaries that pre-position some bodies as more gender-suspect than others from the outset due to the racialisation of gendered binary blur, as I discussed in chapters two and eight.

Thus, the medicalisation of hyperandrogenism and the seemingly objective diagnostic criteria and measurement tools provided by sport regulators to identify suspect bodies were foregrounded by white, western, gendered body aesthetics that function based on notions of 'normal' (i.e. feminine) female embodiment. Like older gender verification paradigms in sport, the hyperandrogenism regulations worked to render perceived masculinised or insufficiently feminine bodies, now conceptualised in relation to (the bodily effects of) androgen 'excess', as abnormal and sex binary polluting, requiring medical normalisation that functions in practice to secure or maintain feminine body norms, by rendering non-conformity

[35] For example, a multinational study of 2,895 women from five racial groups concluded that variations in hair growth were significantly related to ethnicity/race (Javorsky et al., 2014).

pathological *hyper*androgenism.

'Debating a testosterone sex gap'[36]

Like most previous gender verification paradigms in sport, however, the hyperandrogenism regulations incited critique from sport observers and scientists from the moment of their inception. While, in many ways due to the broader awareness about gender verification in sport post-Semenya, the critiques were more multidirectional than before, here I focus on one critique in particular that had the most significant implications on regulatory policy; namely, critique of the presumption that hyperandrogenism provides a male-like performance advantage in sport. This critique and related debates also illustrates how the conflation between medicalised androgen excess and male-like athletic advantage was constructed.

As I noted above, the IOC and IAAF hyperandrogenism regulations were foregrounded by the idea that the gap between male and female performance levels is explained by the gap between male and female androgen levels, and consequently not only exogenous but also endogenous high androgen levels in female bodies are, not only pathological, but also provide an unfair male-like advance. The evidence to support this idea, which for many observers seemed self-evident anyway, came primarily from a presumed causal link between men's top sport performance results being, on average, 10% higher than women's and in most studies men's testosterone levels are around 10 times that of women's with no overlap between 'normal' male and female levels (Karkazis & Jordan-Young, 2015). This was reinforced by the general knowledge that exogenous steroid doping promotes performance increases. However, just after the hyperandrogenism regulations' institution Karkazis and colleagues argued that despite its widespread acceptance,

> the link between athleticism and androgens in general or testosterone in particular has not been proven. Despite the many assumptions about the

[36] This is the title of Karkazis and Jordan-Young's (2015) influential article on the unproven link between testosterone and athletic advantage.

> relationship between testosterone and athletic advantage, *there is no evidence showing that successful athletes have higher testosterone levels than less successful athletes* (Karkazis et al., 2012: 8, original emphasis).

Karkazis, with Jordan-Young (2015) argued that while research has shown that in the general population there is no overlap between male and female testosterone levels, the same has not been shown to be the case for the special group of *elite athletes* in particular whose bodies are, in many ways, extraordinary bodies. They noted that, at the time, only two large scale studies had been performed on testosterone in relation to elite athletes: the IOC and WADA funded GH-2000 study of Olympic athletes (including both male and female athletes) and the IAAF Daegu study of athletes competing in the 2011 athletics World Championships (including only female athletes). Indeed, the GH-2000 study report concluded that "hormone profiles from elite athletes differ from usual reference ranges" in both males and females and there was, in fact, an "overlap between men and women" with some female athletes being above the 'female range' or within the 'male range' as well as (unexpectedly for some) some Olympic level male athletes being below the 'male range' and a few even within the 'female range' (Karkazis & Jordan-Young, 2015: 859).

The Daegu study results, however, seemed to contradict the GH-2000 findings of an overlap, with only a few female athletes having testosterone levels above the female range, let alone within the male range. Key to this difference in findings, Karkazis and Jordan-Young (2015) argued, was that unlike the GH-2000 study, the Daegu study design excluded from the sample female athletes who had already been diagnosed with 'hyperandrogenic disorders of sex development', on the grounds that these athletes were not healthy and should thus be considered outside 'normal' variation and excluded from reference ranges for female athletes' 'normal' testosterone levels. This a priori understanding of women with hyperandrogenism as 'unhealthy', 'abnormal', and outside 'normal' variation not only created a rationale for their exclusion from the study, but this rationale also re-enforced the conceptualisation of hyperandrogenic women's testosterone levels as outside 'normal' variation in general – a point which could be used to justify the exclusion of hyperandrogenic women from sport based on their androgen levels being

'abnormal'. As Karkazis and Jordan-Young noted, this reasoning is circular, and they argued that there is no valid basis, in this case, for disregarding some (endogenous testosterone) values a priori as outliers. In the Daegu study as well as in the GH-2000 study, if the full range of endogenous testosterone values is included, there is an overlap between male and female levels of testosterone in elite athletes (Karkazis & Jordan-Young, 2015).

Two key points should be highlighted here: firstly, the Daegu study design illustrates how conceptualisations of high endogenous androgen levels in females, with the aid of the label 'hyperandrogenic disorders of sex development', were not only pathologised by sport regulators as unhealthy based on a pre-existing conceptualisation of their bodies as abnormal, but this abnormality was then also used to support the underlying premise of the hyperandrogenism regulations: there is a gap between *normal* male and female testosterone levels which is why males perform at higher levels than females in sport. Those females for whom this does not hold true – i.e. when women's testosterone levels breach the gap by approaching male levels or falling within the male range – are abnormal; they are not *normal* females, and their (male or male-like) abnormal androgen levels provide them with an unfair, male-like athletic advance over normal females. The reasoning is thus foregrounded by pre-existing conceptualisation of what 'normal female' means, which in turn implied having low(er than males') athletic potential.

Secondly, Karkazis', Jordan-Young's and colleagues' core argument was that this underlying premise of the hyperandrogenism regulations was, in fact, dubious in the first place, as the presumed link between (endogenous) testosterone and athletic advantage had not been proven in elite athletes. In 2015, this argument resulted in a historically notable decision by the Court of Arbitration for Sport (CAS) in relation to the hyperandrogenism regulations.

The suspension of the hyperandrogenism regulations

Just before the 2014 Glasgow Commonwealth Games, as I noted in the introductory chapter, Indian runner Dutee Chand was subjected to testing in accordance with the

SAI hyperandrogenism regulations (which closely mirrored the IOC and IAAF policies). Afterwards, the SAI notified Chand that she would "not be eligible for selection for Commonwealth Games because her '*male hormone*' levels were too high" (SAI, cited in CAS, 2015b: 5, original emphasis). In a related press release, SAI added that Chand "will still be able to compete in the female category in the future if she takes proper medical help and lowers her androgen levels to the specified range" (SAI, cited in CAS, 2015b: 6). After being informed about her ineligibility to compete, however, Chand made the decision to contest her ineligibility, supported by scientists and bioethicists critical of the hyperandrogenism regulations, including Karkazis. Chand wrote to the Athletics Federation of India stating that "I feel perfectly healthy" and that the 'proper medical help' she was mandated to undergo amounted to interventions that "are invasive often irreversible and will harm my health now and into my future"(Chand, cited in CAS, 2015b: 8-9). Consequently, she filed an appeal to CAS. CAS then held a hearing about the soundness of the hyperandrogenism regulations considering the views of experts including Karkazis, as well as stakeholders including female athletes such as the successful long-distance runner Paula Radcliffe (CAS, 2015b).

The debates that took place during the CAS hearing centred on the foregrounding principle of the hyperandrogenism regulations, defended by sport regulators, that hyperandrogenic female athletes who have androgens in the 'male range' possess a male(-like) athletic advantage over 'normal' females due to their endogenous androgen levels. Significantly, after hearing the arguments by Karkazis and colleagues, who emphasised the lack of evidence between the presumed link between (endogenous) testosterone and athletic advantage, CAS decided to demand that this evidence was necessary for the hyperandrogenism regulations to be considered sound. The CAS panel concluded that the defendants of the regulations had not established that female athletes with androgen levels in the male range "have a competitive advantage of the same order as that of a male athlete" or that they "enjoy such a substantial performance advantage [that] excluding them from competing in the female category … is a necessary and proportionate means of preserving fairness in athletics competition and/or policing the binary male/female classification" (CAS, 2015b: 153). Afterwards, CAS issued a

press release announcing that the hyperandrogenism regulations had been suspended "for a maximum period of two years", in which time sport governing bodies were to "provide the CAS with scientific evidence about the quantitative relationship between enhanced testosterone levels and improved athletic performance in hyperandrogenic athletes", in the absence of which "the Hyperandrogenism Regulations will be declared void" (CAS, 2015a).

The CAS ruling meant, not only that Chand was eligible to compete without medical intervention, but that other hyperandrogenic women, including Semenya, were now eligible to compete in women's sport without having to lower their androgen levels. The ruling was a notable event in the history of gender verification, most significantly because it implied that for the first time since the 1930s, there were no official gender verification regulations enforced in elite sport, including during the upcoming 2016 Rio Olympics where both Chand and Semenya competed in the 800-meter race. The consequence of this near lack[37] of explicit gender verification was a gendered panic at the Rio Olympic Games.

The Rio Olympic Games

The CAS ruling resulted into anxieties over the breakdown of sexed and gendered boundaries in sport that re-incited many older concerns, many of which were centred on Semenya. While, after the 2009 controversy over her gender verification, Semenya's eligibility to compete was re-instated with accompanied rumours about her having undergone 'weakening' medical treatments, the suspension of the treatment mandates during the Rio Olympics resulted in significant public concern over gender, sport, and the male/female division.

Anxieties over Semenya's perceived masculine embodiment and sporting prowess endured, with one medical observer, for example, speculating that "Semenya could, and should, break the 800m world record ... held by one Jarmila Kratochvilova", adding that "if you know anything about the sport, you know that

[37] It should be noted that eligibility criteria for transsexual/gender women was still in force.

whoever it was who broke that record was going to be faced with a few probing questions" (Tucker & Harper, 2016). While Semenya did not break Kratochvílová's record – although she did win the 800-meter race with "the fifth-fastest time in Olympic history" (Bull, 2016) – such remarks, directly linking Semenya's athletic prowess with the gendered anxieties around Kratochvílová discussed in the previous chapter, centred the kinds of 'suspiciously' masculine appearances and performance levels that had first motivated de la Chapelle to advocate suspicion-based gender verification. While the bulk of related gendered concerns focused on Semenya, observers also speculated that "It is very possible that we could see an all intersex podium in the 800 in Rio, and I wouldn't be surprised to see as many as five intersex women in the eight-person final. There are potential intersex medallists in other running events too" (Tucker & Harper, 2016). Indeed, news outlets reported that not only Semenya but also the 800-meter "Silver medallist Francine Niyonsaba and Margaret Wambui, who got a bronze, have … faced questions about their testosterone levels" (Morgan, 2016) and were "subjected to the kinds of innuendo that Semenya herself experienced in 2009" (Bull, 2016).

Related speculations were also advanced by athletes, with the 800-meter sixth place finisher Lyndsay Sharp commenting, for example, that "Everyone can see it's two separate races so there's nothing I can do", and her team-mate Nigel Levine remarking on social media that he was "Happy for @LynseySharp for coming 3rd in the women's 800m" (Morgan, 2016). It is notable that all three 800-meter medallists were black African women, followed by three white women from the global north, including Sharp. As Karkazis noted, "It's impossible not to note the optics of this controversy" and "the asymmetry regarding who [the hyperandrogenism concern] burdens and who it benefits" (2016). Indeed, the fifth-place finisher, Joanna Jozwik, commented that she was "glad I'm the first European, the second white" to finish the race, adding that "I feel like the silver medallist" and that the fourth-place finisher, Melissa Bishop, "should be the gold medallist" (Critchley, 2016). She remarked (without evidence) that the "three athletes who were on the podium … have a very high testosterone level, similar to male's, which is why they look how they look and run how they run" (Critchley, 2016). Relatedly, Radcliffe, who had participated in the CAS hearing representing women athletes, commented in

relation to the hyperandrogenism regulations' suspension at Rio that

> what worries me is we know that there are certain communities where the condition of intersex, of hyperandrogenism, is more prevalent … We don't want to get to the situation where people are actively going to those communities to seek out girls who look like they're going to be able to go out and perform, and to run fast, and then take them away and train them. It becomes a manipulated situation ("'No Longer Sport': Paula Radcliffe Wades Into Semenya Debate", 2016).

Such comments mirrored Cold War concerns over dubious non-Western governments discussed in chapter five, albeit now centred on concerns over areas in the global South, using illicit means of success by sending sex and gender hybrid, now re-framed as hyperandrogenic, bodies into women's competitions. The 'dubious governments' concern was reinforced also by the publication of the so-called McLaren report compiled by Richard McLaren (2016a, 2016b), evidencing a large-scale, state sponsored doping programme in Russia that recalled the East German doping scandal and Cold War doping suspicions about sporting bodies from the Soviet bloc. Indeed, Radcliffe contextualised her concern over hyperandrogenic bodies by noting that "we've seen the lengths that countries like Russia will go to … have major success on the world stage, on the Olympic stage" ("'No Longer Sport': Paula Radcliffe Wades Into Semenya Debate", 2016).

The publication of the McLaren report closely coincided with the suspension of the hyperandrogenism regulations, and intertwined with the hyperandrogenism concerns at Rio to centre debates over the appropriate boundaries around athletes' bodies' and sports' purity. The report concluded that "Over 1000 Russian athletes competing in summer, winter and Paralympic sport, can be identified as being involved in or benefiting from manipulations to conceal positive doping tests", including dozens of medal winners in the 2012 London and 2014 Sochi Games across the Olympics and Paralympics (McLaren, 2016a: 2). WADA summarised not only that Russian doping laboratories and the Russian National Anti-Doping Agency were directly involved, but also that the Russian Ministry of Sport directed the process, assisted by the Federal Security Service (WADA, 2016). The publication of the McLaren report created an international scandal, with IOC president Thomas Bach

remarking that it amounted to a “shocking and unprecedented attack on the integrity of sport and on the Olympic Games” ("Russia State-Sponsored Doping Across Majority of Olympic Sports, Claims Report", 2016), while the International Paralympic Committee president Philip Craven added that the doping culture stemming from Russian government “is polluting Russian sport … Their medals over morals mentality disgusts me” (IPC, 2016). The Russian doping scandal thus re-surfaced old but enduring anxieties over pure versus polluted bodies in sport, coinciding with the unrestricted entry of hyperandrogenic bodies into the female category, in ways tangled with politicised fears over non-Western governments and their corrupt officials motivated to fraudulently abuse ‘abnormal’ (sex binary polluting as well as ‘artificial’, i.e. doped) bodies towards their own dubious political ends.

The unusual context of the Rio Olympics thus brought to the fore many of the core anxieties upon which gender verification in sport has been foregrounded, both historically and in the present, albeit now re-framed in relation to the present context. These anxieties centred on perceived masculinised bodies of athletes like Semenya, who simultaneously exhibit exceptional athletic prowess and contest (culturally prescribed) notions of normal female embodiment. Despite temporal discontinuities, such concerns have precedents as early as in the 1930s as discussed in chapter four. Bodies like Semenya’s threaten to break down the presumed dividing lines between the female and male categories in aesthetic as well as medical(ised) terms, in ways intertwined with racialised imaginaries of where, symbolically as well as geopolitically, sexed and gendered binary pollution is presumed to be located. This happens in ways that interweave gendered concerns with anxieties over ‘artificially’ enhanced bodies that contaminate ‘natural’ bodily purity. Like the ‘hermaphroditic’, ‘hybrid’, ‘abnormal’, and ‘hypermuscular’ bodies of previous decades, the ‘hyperandrogenic’ bodies in the present represent the perils of sexed and gendered binary breakdown and thus threaten the purity of sex and gender categories. Their failure to conform to prescribed notions of ‘normal’ female embodiment render them, if no longer as outright hermaphrodites or hybrids, then as ‘abnormal’ females who overflow (socially as well as medically) defined boundaries of the female category, in embodied as well as symbolic terms.

Conclusion

The institution of the female hyperandrogenism regulations in response to the Semenya controversy functioned to shift the rhetoric around gender verification (no longer described as *gender* verification) towards medicalised androgenic athletic advantage. This shift was constituted firstly, by moving away from the terminology of 'sex' and 'gender' as the focus of the regulations, and towards hyperandrogenism conceptualised as a medical problem needing normalising treatment. Secondly, by centring androgens as the carriers of male performance advantage, androgens were framed as the 'essence' of the male and female categorisation in sport. The implication was that, through a gendered conflation of high-level androgens and high-level athletic performance, high-level performance come to be openly regulated as a male sex characteristic. Since this male characteristic was presumed to be caused by higher level androgens, binarised sex categorisation in sport could be secured by excluding or medically normalising female-categorised bodies with presumed male-like 'androgenic advantage', defined as hyperandrogenic and thus as pathological bodies. Symptomatic of this pathology seemed to be not only androgens' effects on bodily appearances, but also on performance levels, both of which were constituted as a medical issue that required 'treatment'. The treatment mandates thus aimed, if implicitly, to render both the perceived masculine bodily appearances and the perceived male-like performance levels of hyperandrogenic female athletes subject to normalisation that would re-align their sex and gender binary transgressive bodies with the sex binary. Illustrative is the IAAF Daegu study design on androgens levels in elite athletes, where hyperandrogenic women were taken to be a priori outside 'normal' variation in female bodies, and were thus excluded from the study as 'abnormal'.

The hyperandrogenism regulations were foregrounded by the gendered legacy of androgens through which androgens' effects carry signs of masculinity also on female bodies, not only in relation to the relegation of their presumed performance enhancing effects as male(-like), but also in relation to bodily signs like hair growth. The IAAF 'clinical signs' of hyperandrogenism illustrate how the medicalised regulation of androgen 'excess' in sport is foregrounded by gendered, white,

Western conceptualisations of normal(ised) and appropriately feminine female embodiment, mobilised as a racialised medical tool to detect gender non-conformity, which disproportionately affects women from the global South.

Yet, critics of the hyperandrogenism regulations demonstrated, as CAS concluded, that the foregrounding idea of the regulations presuming that high androgen levels provide a male-like athletic advantage for hyperandrogenic women was un-evidenced. CAS consequently suspended the regulations, which meant that the Rio 2016 Olympic Games were organised without official gender verification policies. This resulted in a gendered panic, and let to the re-emergence of many old anxieties over gendered and sexed binary breakdown in sport, largely centred on Semenya. When Semenya "crossed the finish line and celebrated her win by flexing her biceps and brushing imaginary dust from her shoulders" (Bull, 2016) after the 800-meter race as phrased by one reporter, she simultaneously embodied multiple kinds of gender trouble in sport that interweave around gendered body aesthetics, gender performativity, 'excessive' androgens, medical(ised) sex, sport performance, and racialised geopolitical divisions embedded within colonial legacies, ideas around pure versus polluted bodies, and socioeconomic divisions. Bodies like hers, historically and in the present, fail to say within the confines of 'normal' (i.e. feminine) female embodiment, however it is defined at each temporal juncture, and thus threaten the boundaries of the female category and the sex binary. It is this boundary transgression that renders their claims to be women and females in doubt and incites the need to verify the legitimacy of their gender claims with recourse to the body, which in turn requires that what 'female' entails is known and (pre)defined.

As CAS suspended the hyperandrogenism regulations, and consequently also the hormonal delineation of the boundaries (or threshold) of the female category, Semenya secured her gold medal at Rio. Concurrently, however, the IAAF president Sebastian Coe indicated the IAAF's plans to challenge the hyperandrogenism regulations' suspension (Morgan, 2016). Semenya's flexed biceps and her brushing 'dust' off her shoulders embody, in many ways, both the fragmentation or breakdown of normative gendered boundaries that have motivated gender verification across the decades, as well as the accompanied long history of

opposition against gender verification in sport. While sport regulators and many observers expressed their anxieties over Semenya's embodiment, others rallied around her, voicing support and solidarity epitomised by what became the #handsoffcaster movement in social media, which represents resistance to the symbolic as well as literal violence caused by gender verification practices. As Semenya herself commented in 2011:

> What makes a lady? Does it mean, if you're wearing skirts and dresses, you're a lady? No. … Yeah, I'm a lady. … Yeah, I've got a deep voice, I know. I might look tough so what are you going to do? You think you can change it? No ("Too Fast to Be a Woman? The Story of Caster Semenya", 2011).

Chapter ten

Conclusion: continuities, discontinuities, and reflections on the future of sex binary policing in elite sport

This thesis has developed a genealogy of the female category in elite sport, focusing on the International Olympic Committee's (IOC) and the International Amateur Athletic Federation/ International Association of Athletics Federations' (IAAF) female categories as they have been delineated and defined through gender verification policies since the 1930 till the present. By charting, in Foucauldian terms, the descent as well as the on-going emergence of the 'female' as an object of knowledge and regulation, the thesis has mapped both continuities and discontinuities in how the boundaries around the female category and female embodiment have been constituted and policed by sport regulators. As such, the findings that have been presented can be taken to provide insight into the ontology and epistemology of sex difference and the sex binary, by showing how sex and gender difference emerges as a binary relation through temporally and contextually contingent and shifting discourses and practices that rely on notions of the 'normal' and are embedded within broader relations of power and intelligibility.

In this concluding chapter, I return to, and bring together, the key findings and core arguments of the thesis. The chapter discusses key continuities in how the 'female' has been delineated and how boundaries around the female category have been constructed through gender verification policies and practices. In charting these continuities, I come back to the core argument and the main theoretical contribution of the thesis; namely, that gender verification – as exemplary sex and gender binary policing practice – has been motivated by anxieties over sex and gender binary breakdown, embodied by athletes who rendered in doubt the relationship between sexed embodiment and its gender categorisation. This, in turn, incited the construction of definitional and embodied boundaries around the female category based on which women athletes' gender could be verified, which functioned to both erect and secure the female/male dividing binary line. These continuities have, however, been entangled with notable discontinuities in how 'female' was delineated, and how and where sexed and gendered boundaries were

drawn. This chapter maps these discontinuities, and discusses the ways in which anxieties around sex and gender category breakdown shifted and were reframed contextually. This exemplifies and brings to the fore the temporal and contextual contingency of the ontology of sex and gender difference.

While this chapter is a conclusion of this thesis, the temporal point with which the thesis ends is not the conclusion of sex binary policing in elite sport. Rather, the genealogy of the female category that I have mapped is itself only the descent of the on-going emergence of the 'female' as an object of knowledge and policing for sport regulators. I thus end this chapter by reflecting on the future of sex binary policing in elite sport, and on the normative implications of this thesis when it comes to imagining how this future could or should unfold.

Continuities

Throughout this thesis, I have aimed to show the ways in which gender verification practices have been, and continue to be, primarily motivated by anxieties over sex and gender binary breakdown. These anxieties have been targeted at female-categorised athletes who embodied this breakdown and who consequently represented a threat to the boundaries of normal(ised) female embodiment, and thus to the purity of the female category and the sex binary. These athletes rendered in doubt the relationship between their sexed bodies and the gender category to which they claimed to belong, because their binary polluting bodies and gender presentations disrupted the presumed relationship of continuity and coherence between sexed bodies, gender presentations and social gender categorisation, as well as the female/male, woman/man, and feminine/masculine binarisations. Their bodies thus not only represented sex and gender binary contamination, but also carried an ontological crisis: due to their failure to embody sex and gender in accordance with the binary system, they rendered visible the sex and gender binaries' lack of ontological essence or fixity.

The presence of binary polluting bodies in women's sport incited binary policing practices that aimed to verify the relationship between the athletes' self-identified and claimed gender category (as women and females) and their sexed

bodily realities from which the truth of sex could be detected by scientific and/or medical 'sex testing' methods. For this purpose, sport regulators delineated the boundaries of the female category by defining which bodies can count as (normatively) female, in ways embedded with broader gendered, racialised, classed and colonial discourses around feminine appropriateness. By mobilising such delineations of 'femaleness', the accuracy or truth of athletes' claims to belong to the female category could be verified based on prevalent ideas around what female embodiment should entail, which in turn functioned to erect and secure the sex binary in relation to these normative gendered conceptions of appropriate sexed embodiment. By mobilising medical(ised) treatment paradigms for binary polluting bodies, these bodies could be normalised or re-aligned with the sex binary, which in turn functioned to secure binary sex by materialising binary embodiment for those bodies who failed to align.

Gender verification, then, as a practice of sex and gender binary policing, has been primarily motivated by the presence in women's elite sport of female-categorised athletes whose embodied sexed 'truth' was rendered in doubt in relation to their claims to belong to women's sport. Gender verification has functioned, not only to verify their sexed truth, but also to erect and secure the sex binary itself in the face of these gender-anxiety-inducing bodies. In other words, gender verification, as well as the sex and gender binaries that it aims to protect, have been foregrounded upon sexed and gendered doubt. It is this doubt that has mandated the delineation of sexed borders and boundaries, precisely because the location and the very ontological necessity of these borders and boundaries has been rendered unstable and uncertain by subjects who embodied sex and gender category breakdown or ambivalence.

The continuities that I have highlighted in relation to the genealogy of the female category in elite sport can be taken to shed light on the ontology and epistemology of the sex and gender binaries more generally. The history of gender verification brings to the fore not only that sex and gender categories have no ontological essence or fixity, but also that this lack of fixed essence renders sexed and gendered binaries unstable in ways that make them subject to reoccurring crisis in the face of cultural change. It is due to this instability that the binary line between

the sexes tends to incite (ultimately unresolvable) debates and negotiations in spaces where binary sex or gender categories are presumed and applied. These debates and negotiations surface when existing social, cultural or subcultural ideas around sex and gender difference are contested or challenged and consequently rendered in doubt by subjects who transgress, resist, or fail to conform to these existing ideas. The history of gender verification is an exemplary manifestation of the anxieties that attach to the breakdown of binary sex and gender. This is because sport in general and international elite sport in particular relies on more rigorous sex and gender binary division than most other contexts, as I noted in the introduction, due to the perceived need to maintain sex and gender segregated competitions. The sphere of sport has been a key site where the nature of sex and gender difference is debated and contested, because sport has been a central social signifier of sex difference as it expresses the different potential and limits that are seen to accompany male and female embodiment, respectively. As such, however, it brings to the fore and is foregrounded by broader discourses and practices of gendered surveillance and regulation directed at the volatility of sex and gender difference. It shows the ways in which sex and gender boundary drawing practices are foregrounded by the existence of doubt about the location of the boundaries in the first place. A formal erection of such boundaries becomes necessary only when the location of the boundaries is uncertain or when existing sex and gender categories are breaking down.

The most enduring and consistent thematic of gender verification as a binary policing practice has been the medicalisation of sex and gender binary pollution and purity by mobilising notions of normality, abnormality and feminine body norms. This, in turn, has been intertwined with sport regulators' reliance on racialised and classed feminine body aesthetics to delineate what 'normal' and gender 'pure' entail. Since the first gender verification policy instituted in 1937, sport regulators have relied on prevailing scientific and medical ontologies and epistemologies to delineate what 'femaleness' amounts to and where it is to be found, as well as to define those bodies that fail to conform as abnormal or pathological. Consequently, these bodies have been conceptualised as needing normalising sex binary realignment with medical technologies of treatment. The foregrounding ontologies

and epistemologies have, in turn, been constructed in relation to broader gendered, racialised and classed discourses with colonial legacies that have delineated normal(ised) female embodiment in relation to white, western, and middle/upper-class feminine body aesthetics. Consequently, those bodies and subjects who have incited gendered doubt have disproportionately been bodies and subjects rendered 'other' to the appropriately feminine white, middle/upper-class, Western woman. This illustrates the foundational entanglement of scientists' and medical professionals' definitions of sexed and gendered boundaries and 'truths' with normative conceptualisations of gender appropriateness. These have then been mobilised as tools for sex binary policing, and materialised through treatment practices which function to realign sex binary polluting bodies with binary sex to safeguard the binary against category breakdown.

Sport regulators' reliance on broader cultural conceptualisations of gender appropriateness in relation to gender verification in sport exemplifies how specific, contextual manifestations and applications of sex binary construction and policing are dependent upon pre-existing ideas and norms around gender. An inquiry into any particular manifestation of sex and gender difference must thus always be an inquiry into the broader cultural and temporal context in which this manifestation occurs.

Discontinuities

There have been significant discontinuities in how and where sexed and gendered borders and boundaries have been drawn. These discontinuities reflect changes in broader discourses and perceptions of feminine appropriateness, gendered body norms, and gendered threats, and demonstrate the temporally and contextually contingent ontology of sex and gender difference. In particular, as gendered body norms and notions of 'normal' female embodiment have shifted in response to changing contextual conditions and broader relations of power, the direction of anxieties over sex and gender binary breakdown have also been reframed and re-focused.

The early to mid-20th century delineations of 'normal' female embodiment were foregrounded by a protectionist rhetoric based on ideas of female bodies being inherently fragile and susceptible to damage from any kind of strenuous activities, especially when it came to masculinity-connoting sports. Boundaries around the female category were thus delineated in relation to this conceptualisation of female bodies' constitutive weakness, which rendered strenuous sports unconstitutional for female bodies. In this context, female-categorised bodies capable of undertaking strenuous activities like athletics participation appeared abnormal, suspiciously masculinised, or even hermaphroditic, rendering their gender in doubt. When these imaginaries became intertwined with emerging endocrinological theories that rendered sex category boundaries unstable due to hormonal fluctuations to the extent that some female-categorised athletes seemed to be metamorphosing into men, gender verification policies and practices were instituted to secure binary sex and gender categories against breakdown.

During the context of the Cold War, anxieties over the boundaries of the female category from the 1930s became re-contextualised in relation to the East/West dualism, whereby the Eastern European communist bloc was imagined to be corrupt or 'polluted' both politically and in relation to gender category boundaries. Anxieties over suspiciously masculinised and masculine appearing female-categorised athletes who embodied sex and gender category fragmentation were consequently re-directed and mapped onto the bodies of athletes from the Soviet bloc. The bodies of some highly successful Eastern European female athletes were suspected to be 'hybrid' and 'indeterminately' sexed, and their gender was rendered in doubt. On-site gender verification was consequently instituted by the IAAF in 1966 to unveil their bodies' 'naked truth' to the expert gaze of IAAF appointed medical practitioners, imagined capable of verifying that bodies were appropriately feminine or at least feminine enough to serve as proof of eligibility to compete in women's athletics events.

By 1968, however, embedded within a context of increasing medicalisation of the Olympic Games, which were becoming infused with scientific frames of control over athletes' bodies, the IOC instituted on-site gender verification based on a medical paradigm of sex diagnosis. This paradigm was reliant on chromosome-based

screening for sex, and it was foregrounded by prevalent medical(ised) ideas around sex abnormality and pathology. This diagnostic system for sex aimed to move away from subjective assessments of appropriately feminine embodiment and to diagnose, rather, the final 'truth' of sex or sex pathology by using sophisticated medical technologies. In cases where sex pathology was diagnosed, normalising medical treatments were to be applied to realign pathological bodies with the sex binary. By centring internal chromosomal realities as the primary sex screening method – exposing bodies' internal 'truths' through laboratory examination – the system re-framed appropriate 'femaleness' as consisting of hidden as well as externally visible bodily attributes, to be verified to ensure the sexed 'purity' of female athletes' bodies.

Yet, from the moment of its institution, the chromosome-based screening system began to incite critique from scientific experts, who considered the system to be both ill-defined and ethically unsound. They argued that chromosome-based screening was inappropriate for sex identification, because 'true' sex was located in phenotypes and in genital characteristics in particular, with chromosomes being potentially misleading when it came to verifying athletes' gender. It was not only that some females embody 'male' chromosomes, but also that some males embody 'female' chromosomes, and could thus commit 'gender fraud' by masquerading as women due to their ability to 'pass' chromosome-based screening for sex. These arguments intertwined with the increasing visibility of transsexual women in elite sport, who incited anxieties over fraudulent gender category crossings committed by overt males masquerading as women, to momentarily centre gender fraud/masquerade prevention as the official rationale for gender verification. Consequently, in 1991, phenotype and genitals in particular were centred by the IAAF as the location where sex could be found, and 'female' was re-defined to mean the absence of male genitalia. One's claim to belong into the female category, and consequently her right to compete in women's sport, was thus to be verified by ensuring that she lacked a penis and a scrotum.

The gender fraud/masquerade prevention justification for gender verification and the genital-centric sex definition that it gave rise to were, however, short lived. Anxieties over sex binary polluting and suspiciously masculinised bodies in women's

sport endured, and during the 1990s became centred on 'excessive' bodies in the female category. This was a context characterised by increasing acceptance of athletic female embodiment, but as women athletes were becoming increasingly muscular and performing at increasingly high levels, their strong bodies and high level performances also incited anxieties as they broke away from presumed embodied feminine containment. These anxieties were reinforced by the sudden (suspicious) prominence of Chinese women in elite sport who challenged gendered and racialised body norms, as well as revelations about large scale steroid doping in Cold War East Germany which reignited older Cold War concerns over masculine appearing bodies in the female category. By the turn of the century, intertwined concerns over suspiciously gendered and 'hypermuscular' bodies had motivated the institution of gender verification based on the identification of gender suspicious bodies to be gender verified by the IAAF and the IOC. The suspicion-based system was primarily based on identifying athletes who failed to embody white, Western and middle/upper-class feminine body aesthetics. These aesthetics were in turn mobilised as a tool to detect gender non-conformity, in ways that pre-positioned some (racialised) bodies as always already more easily gender suspect than others.

After the widely-reported, public scrutiny of Caster Semenya's gender in the wake of her being identified as gender suspicious in 2009, the IOC and IAAF moved away from the suspicion-based system and instituted regulations on female hyperandrogenism. These regulations centred androgenic hormone levels as the essence of sex difference in sport, and as the embodied attribute based on which women athletes' gender could be verified. This was intertwined with conceptualisations of androgens as performance enhancing hormones: women with high endogenous androgen levels were defined as both pathological and unfairly enhanced when compared with hormonally 'normal' women. The pathologisation not only justified mandates for normalising treatment for hyperandrogenic bodies to realign them with the hormonal sex binary, but also functioned (at least implicitly) to render female athletes' high-level performances presumed to be caused by high level androgen as a (pathological) symptom of a medical condition that required treatment. After Dutee Chand was excluded from women's athletics based on the hyperandrogenism regulations however, she successfully challenged the empirical

soundness of the regulations' foregrounding premise which presumed high androgen levels to provide a male-like, enhanced athletic performance for hyperandrogenic women. The consequent suspension of the hyperandrogenism regulations incited, not only a gendered panic during the 2016 Rio Olympic Games over the boundaries of the female category, but also a search for evidence to prove the contested relationship between hyperandrogenism and high performance levels.

These discontinuities in how the boundaries around the female category were delineated show the ways in which the location of 'femaleness' was shaped by broader anxieties around bodies considered to present a threat to the sex and gender purity of the female category. When anxieties over sex binary breakdown became re-located – shifting from hermaphroditic and sex metamorphosing bodies to gender polluted Eastern European bodies to gender fraudulent bodies to hypermuscular bodies and finally to hyperandrogenic bodies – the boundaries around the female category were re-drawn in relation to the threat that these bodies posed. The initial boundaries were erected through physical examinations to ensure female athletes were 100% female. They were, however, re-drawn through on-site 'naked parades' and the chromosome-based screening system to unveil female bodies 'naked truths' and internal realities to the gaze of medical experts selected by the IAAF and the IOC. They then became re-located in relation to gendered suspicion, and were finally drawn around hormonal lines.

These shifting boundaries and methods based on which they were erected bring starkly to the fore, not only the overall instability and unstable ontology of the 'female', but how delineations of 'female' were and are produced in many ways specifically to exclude or realign the binary polluting bodies that incite sexed and gendered anxieties. These themes are a central characteristic of debates around the empirical soundness of the hyperandrogenism regulations that are being waged in the present context. The discontinuities that have accompanied gender verification policies and practices in elite sport exemplify the contextual, cultural and temporal contingency of sexed and gendered anxieties more generally, which are shaped by broader changes and shifts in gendered idea(l)s and relations of power.

Reflections of the future of sex binary policing in elite sport

At the time of writing, the two-year interim suspension of the hyperandrogenism regulations – which is also the time that was given to sport regulators to file an appeal to CAS against the regulations' suspension – is coming to an end. As the IAAF president Coe already indicated during the Rio Olympic Games, the IAAF is now preparing for an appeal, with the publication of what they argue amounts to new evidence of the quantitative relationship between enhanced testosterone levels and improved athletic performance in hyperandrogenic female athletes. Only some months before the CAS deadline, Stéphane Bermon, a member of the IAAF and IOC working groups on hyperandrogenic female athletes and an IAAF witness to the Dutee Chand CAS case, and Pierre-Yves Garnier, the director of the IAAF health and science department, published the findings of an IAAF and WADA funded study in the *British Journal of Sports Medicine.* The study was accompanied with an IAAF press release (IAAF, 2017b) and gathered the interest of the media. Based on 2127 observations from female and male athletes competing in different events during the 2011 and 2013 IAAF World Championships, Bermon and Garnier (2017) argued that hyperandrogenic female athletes have a (statistically) significant androgen-induced advantage over other female athletes, amounting to a 1.8-4.5% performance advantage. The IAAF added that the "study is one part of the evidence the IAAF will be submitting to CAS regarding the degree of performance advantage that hyperandrogenic female athletes enjoy over female athletes with normal testosterone levels" (IAAF, 2017a). Commenting on the implications of the study in relation to the forthcoming CAS appeal, Coe remarked that "we are not against anyone, but we have to defend the basic principle of female sport. There has to be level-playing field" ("India Sprinter Dutee Chand Faces Fresh Test, IAAF to Challenge 2015 CAS Ruling", 2017).

Yet, immediately following the publication of the study, the hyperandrogenism regulations' critic Karkazis commented to a journalist that despite Bermon's and Garnier's claims that the study provides new evidence, "this is not the evidence they need":

> [to] justify what CAS called a discriminatory regulation, the IAAF has to demonstrate that the performance difference between women with higher T [testosterone] and their peers would be equivalent to the performance advantage male athletes have over female athletes (roughly 10%). Not that female athletes with higher T have any performance advantage over their peers (Saxena, 2017).

Yet, the new study provides evidence for a 1.8-4.5% advantage in women with higher testosterone levels, consequently failing to demonstrate that female athletes with androgen levels in the male range "have a competitive advantage of the same order as that of a male athlete", as the CAS demanded in 2015 (CAS, 2015b: 153). In August 2017, Karkazis (2017) published a detailed critique of Bermon and Garnier's study. She argued, not only that the study was limited by methodological issues and inconclusive findings (including several events where women with lowest free testosterone concentrations outperformed those with highest concentrations), but also that a different study undertaken by IAAF-affiliated researchers found no correlation between serum testosterone and physical advantage. This study, however, was not accompanied by a press release.

As I am concluding this thesis, the CAS deadline is one month away for sport governing bodies to demonstrate that the hyperandrogenism regulations are a "necessary and proportionate means of preserving fairness in athletics competition and/or policing the binary male/female classification" (CAS, 2015b: 153). The conclusion of this thesis is thus only the beginning of upcoming debates on the boundaries of the female category and the role of androgenic hormone levels in how that boundary should or should not be drawn.

In the introduction, I noted that the foundational principle based on which gender verification policies have been implemented has been the demand for sex segregated sport competitions. Indeed, the justification for this segregation is treated as so obvious that it appears commonsensical: female bodies have weaker athletic performance potential than male bodies and therefore separate women's events are necessary to provide female athletes with a fair competition. When Coe remarked that 'we have to defend the basic principle of female sport', it is this principle that he was referring to. This principle continues to be taken as foundational, despite widespread acceptance of the fact that it is not categorically

true since some female bodies evidently have higher athletic performance levels than some male bodies, and Olympic level female athletes have higher athletic performance levels than most male bodies. Yet, because the belief in general female athletic inferiority has been taken as foundational in sport, the effect has been that 'female' has often been *defined* as inferior, relative to males: for example, by excluding hyperandrogenic females from the female category based on the conviction that hyperandrogenism provides superior (male-like) athletic capacity, the boundary between female and male was defined by assuming female athletic inferiority, and by excluding from the female category those females that threaten this definition. The effect is that those females who are thought to have the capacity to be superior rather than inferior in sport were defined as not female (enough) for the purposes of sport, or as 'abnormal' females. In other words, the dividing line of the sex binary in sport was drawn, and has always been drawn, to protect the principle of female athletic inferiority upon which sex segregated sport is foregrounded. Gender verification, including the regulations on female hyperandrogenism, has functioned to ensure that this foregrounding principle holds true in practice, in the face of bodies who threatened the empirical accuracy of the principle by appearing to embody male-like athletic potential in a way that challenges the athletic superiority of male bodies.

Female bodies are, however, *a priori* inferior to male bodies in sport only to the extent that the boundary between male and female is defined in those terms, by excluding from the female category those females who threaten this definition. To recollect the words of Eric Vilain, when sport governing bodies draw a line between the female and male categories, they draw this line "in the sand" (Macur, 2012: SP6). The question that arises in relation to the upcoming debates over the hyperandrogenism regulations is how this line is to be drawn in the present context, characterised by anxieties around 'androgenic athletic advantage'. To the extent that sport regulators draw the line to police bodies that challenge the conviction that female bodies have lower athletic potential than male bodies, their aim will effectively be to draw an upper threshold on women's performance levels. Old concerns that motivated the formulation of gender verification policies in the past continue to embed the contemporary context of elite sport. Understanding the

implicit motivations for the institution and maintenance of sex and gender binary policing and exclusionary gender verification regulations – of which the hyperandrogenism regulations, despite IOC and IAAF claims to the country, are the most recent manifestation – should inform to what extent policies aimed at drawing a line between female and male 'in the sand' can be justified in the present.

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