

Caster Semenya and the “Question of Too”: Sex Testing in Elite Women’s Sport and the Issue of Advantage

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In 2009, the International Association of Athletics Federations (IAAF) forced Caster Semenya, the women’s 800-meter champion from South Africa, to submit to “gender verification tests.” It took eleven months for officials to review the results of those tests and, ultimately, permit her compete again. Sports organizations, including the IAAF and the International Olympic Committee, have implemented sex testing since the 1960s, but Semenya’s story reinvigorated debates about how to determine sex and whether sex testing is necessary in sport. However, I argue that there is another issue at which researchers should direct energies. That is, instead of asking whether an athlete “counts as” a woman, kinesiologists and those in affiliated fields might better concentrate their efforts on discerning which conditions, naturally occurring or otherwise, constitute unfair advantages.

In August 2009, an 18-year-old South African woman named Caster Semenya blew away her competition in the 800-m race at the Track and Field World Championships in Berlin. During live, televised coverage of the event, sportscasters read from an official International Association of Athletics Federations (IAAF) statement confirming “concerns that she does not meet the requirements to compete as a woman.” Never clarifying what those particular requirements are, the organization subjected her to a process of “gender verification” (see, for example, Berlin, 2009). It took nearly a full year for the IAAF’s medical commission, which included a gynecologist, endocrinologist, psychologist, internal medicine specialist, and a “gender expert,” to interpret the test results and determine Semenya’s sex. The word “determine” illuminates a crucial distinction, for the procedures not only decide to which sexual category an individual belongs, they also set and police the boundaries of those categories.

The panel convened to determine Semenya’s sex indicates that this is a topic that can be, and should be, studied from a number of approaches, making it especially well suited for interdisciplinary, kinesiological concerns. At the center of those concerns are at least two fundamental questions: 1) what determines sex? and 2) is sex testing necessary in sport? Responding to these inquiries requires integrating insights from kinesiology’s “three cultures” (i.e., natural sciences,

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social sciences, and humanities, see Kagan, 2009). I believe, however, that there is a third, more important issue at which researchers should direct energies. That is, instead of asking whether an athlete "counts as" a woman, kinesiologists and those in affiliated fields must first establish whether variously defined intersex conditions minister "unfair" attributes in sports.¹ To this end, I consider media speculations about Semenya as points of entry into larger discussions of sex determination and athletic advantage. Rumors about her anatomy, chromosomes, hormones, and gender, as well as the history behind those rumors, too often fail to address any underlying associated advantages.

Public Privates

When it comes to questions of sex and its importance to sport and physical culture, the answers are not as simple as they may seem. Many assume that we differentiate men from women based on internal sex organs or external genitalia. Amid uncorroborated reports that Semenya's IAAF examination revealed some variety of intersexuality (anachronistically and pejoratively identified as "hermaphroditic" in the popular press), her father produced her birth certificate that indicates her sex as female, a designation typically assigned according to a newborn's external sexual anatomy. Others, including the midwife who delivered Semenya, her grandmother, an aunt, her former nanny and teammates, and a one-time roommate have all confirmed her appearance (Bearak, 2009). Indeed, *The New Yorker* reported that she "became accustomed to visiting the bathroom with a member of a competing team so that they could look at her private parts and then get on with the race" (Levy, 2009).

A half century ago, similar external surveys would have satisfied the first iteration of sex testing, initiated at the IAAF's 1966 European championships, "because," related *Life* magazine, "there had been persistent speculation through the years about women who turn in manly performances" ("Are Girl Athletes Really Girls?" 1966).² The fear seemed to be that as women's sports became increasingly important on the international stage, men might infiltrate their competitions. The midcentury athletic dominance of African American and Soviet women, seen by the white, Western gaze as "two symbols of mannishness," exacerbated these anxieties (Cahn, 1994, p. 138; see also Lenskyj, 1986, pp. 86–89; Wiederkehr, 2009).

Amid that climate, the IAAF ordered all female athletes to submit to visual inspections or, in locker-room vernacular, "nude parades" before a panel of physicians. As *Time* magazine reported

The examination was perfunctory. Lined up in single file, the 234 female athletes paraded past three female gynecologists. "They let you walk by," said one competitor afterward. "Then they asked you to turn and face them, and that was it." ("Preserving la Difference," 1966, p. 72)

Of the athletes who consented to these tests, physicians determined that all qualified as women, although five record holders opted not to attend the event. One felt the exam was an affront to her religious beliefs, while the other athletes, one from Rumania and three from Russia, did not give reasons for their unexpected absence and subsequent disappearance from international competition (Teitel, 1983; Guttman, 1991, p. 206).

It appears that IAAF officials found the external scans inadequate for detecting male interlopers because later that year, at the 1966 Commonwealth Games in Kingston, Jamaica, they subjected female athletes to gynecological examinations. Lined up outside an examining room, the women had not been given “a hint about what kind of procedure we might expect,” recounted pentathlete Mary Peters in her 1974 autobiography.

I went into a bare room which contained two women doctors, one examination couch and one large enamel bowl containing some white, cloudy antiseptic in which the doctors apparently washed their hands after each examination. What occurred next I can only describe as the most crude and degrading experience I have even 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. Like everyone else who had fled that detestable room I said nothing to anyone still waiting in the corridor and made my way, shaken, back to my room. (pp. 55–56)

The “nude parades” of the 1960s, as well as precursor and successor examinations, have apparently failed to expose any men attempting to pass as women. To date, the only noted case of a man impersonating a woman in athletic competition is that of Heinrich (or Hermann) Ratjen, who took fourth place in the high jump at the 1936 Olympics (Heggie, 2010). The dominant narrative, regularly circulated each time sex testing makes headlines, is that under the orders of Adolph Hitler, Ratjen grew his hair long and bound his genitals so he might add to Germany’s medal count (“Preserving la Difference,” 1966, p. 72).³ Today, strictly monitored antidoping tests and the revealing nature of contemporary sportswear make it unlikely that a competitor in women’s sports could hide male sex organs. There remains the possibility, though, that an individual might have “ambiguous” genitalia, variations in gonadal differentiation or development, or other attributes that obfuscate sexual assignment (Qinjie, Fangfang, Yuanzheng, & Quinsheng, 2009).

The Chromosome Formula

These complexities have historically failed to deter athletic bureaucrats who sought simple solutions to the riddles of sex. In 1967, officials turned to what they felt was a “simpler, objective and more dignified” laboratory-based chromosomal assessment (Hay, 1972, p. 998). For the 1968 Games, the International Olympic Committee (IOC) formally adopted these procedures, asserting the “chromosome formula indicates quite definitely the sex of a person” and “that a simple saliva test will reveal its composition” (quoted in “Olympics Require Sex Test,” 1968, p. 48). Human beings typically possess 46 chromosomes, 22 pairs of which are the numbered autosomes—the twenty-third set, the sex chromosomes, are commonly designated XX for a woman and XY for a man. Athletes who exhibited the 46, XX pattern effectively passed their examinations, known as the Barr Body test. A “positive” result meant the detection of a second, inactivated X chromosome (or Barr Body) and, in the eyes of the IOC the competitors were, in fact, women. Doctors then granted them with “sex passports” or “certificates of femininity”—small,

laminated licenses that they presented to officials at subsequent competitions as proof of their sexual legitimacy (Hay, 1972; Vignetti, et al., 1996; Wackwitz, 1996).

The sex chromosome test is far from infallible. Some people are born with fewer than 46 chromosomes. Turner Syndrome, for instance, encompasses several variations, the most common of which is 45, XO. Under the provisions of the Barr Body test, the lack of the second X would have made a woman with Turner's ineligible to compete, though the condition confers no athletic advantage. Alternatively, an individual might have more than 46 chromosomes, as with Klinefelter's Syndrome, which carries a 47, XXY karyotype (François & Matton-Van Lueven, 1973). These are just two among a number of ways in which human beings deviate from the XX/XY bimodality (see Blackless et al., 2000, p. 152).

Polish sprinter Ewa Klobukowska, who passed the visual inspection in 1966, "failed" her sex test the following year when the IAAF's medical commission determined she had "one chromosome to many" (quoted in "Sex Test Disqualifies Athlete," 1967, p. 28; see Cole, 2000). She did not intentionally set out to perpetrate any fraud and the chromosome in question probably had little bearing on her sporting talents; but, as one member of the Commission put it, "A lady cannot be a lady and not know it" (quoted in Larned, 1976, p. 9). The IAAF nullified all of her victories and rescinded her records and medals, including the gold and bronze from the 1964 Olympics. At 21 years old, Klobukowska could no longer compete at the international level. "It's a dirty and stupid thing to do to me," she said at the time. "I know what I am and how I feel" (quoted in "Records," 1968, p. 50).

Despite rising criticism from the medico-scientific community over cases such as Klobukowska's, the IAAF continued chromosome testing for another 25 years. The organization finally abandoned blanket examinations in 1992 after convening workshops that involved experts in genetics, gynecology, pediatrics, biochemistry, psychiatry, endocrinology, pathology, psychology and sports medicine, as well as female athletes and representatives from women's sports. The group concluded that, "women athletes have been excluded unfairly from competition because of erroneous sex chromatin testing and medical ignorance." To address any lingering concerns about men masquerading as women, a "medical examination for the health and well-being of all athletes (men and women) . . . would be to ensure satisfactory physical status for competition and would, of course, include simple inspection of the external genitalia" (Ljungqvist & Simpson, 1992, p. 852; see also Vines, 1992, p. 39; Elsas et al., 2000, p. 251; Dickinson, Genel, Robinowitz, Turner, & Woods, 2002). Yet in its official 2006 "Policy on Gender Verification," the IAAF Medical and Anti-Doping Commission still insists that "a search has continued for an acceptable and equitable solution in order to be able to address the occasional anomalies that do surface." The policy declares "If there is any 'suspicion' or if there is a 'challenge' then the athlete concerned can be asked to attend a medical evaluation."

Like Semenya, Indian track star Santhi Soundarajan experienced the devastating effects of this abstruse stipulation. After taking second place in the 800-m race at 2006 Asia Games, officials forced her to submit to the tests because of suspicions about her gendered appearance. The Indian Olympic Association subsequently determined that she "did not possess the sexual characteristics of a woman," stripped of her silver medal, and banned her from future competition for what they called a "Games rule violation" ("Indian Runner," 2006). Nine months after losing her

livelihood and experiencing unimaginable humiliation, Soundarajan reportedly attempted suicide by drinking a potentially lethal dose of poison. As she admitted in a recent interview, "I am physically and mentally totally broken" (quoted in Bhowmick & Thottam, 2009).⁴

In the seven years that followed the IAAF's decision to discontinue exams for all competitors, the IOC remained "wedded to the notion that gender testing was necessary to prevent masquerading males from infiltrating female-only events" (Stephenson, 1996, p. 178). Instead, the organization shifted the criteria by which to determine sex. At the 1992 Winter Olympics in Albertville, France the IOC moved to sex testing via gene amplification through polymerase chain reaction (PCR) technology, which looks for the presence of Y chromosomal material. Any resulting positive samples were then reanalyzed for the presence of a specific gene (sex-determining region Y or SRY), believed to lead to embryonic testicular development. Implicit, though unacknowledged in this evolution is that sex is not, as commonly believed, as simple as women = XX/men = XY. By searching for the SRY gene in female competitors the IOC tacitly admits that women can exhibit evidence of a Y chromosome.

Despite the assertion that this scientific method was the most progressive and sophisticated way to judge sex, many objected to its enforcement. Just before the opening ceremonies of the 1992 Games, 22 French geneticists signed a letter to the IOC demanding the discontinuation of all genetic sex tests on the basis that they were unethical and often inconclusive ("Experts Slam," 1992; Sakamoto et al., 1988). Others followed suit throughout the 1990s as medical authorities, genetic specialists, and advocates of women's sports around the world openly denounced the tests (Ritchie, 2003; Wiederkehr, 2009). Finally, in 1999 the IOC accepted the unanimous decision of its Athletes' Commission and announced an end comprehensive sex testing.

During the era of compulsory sex testing, experts estimated that about "one or two [women] have been banned at each Olympic Games, except for one since 1968" (Elsas, 2000, p. 252). Further obscuring the numbers, some individuals "failed" tests implemented by local, regional, or national organizations and never made it to the international stage. And although women can appeal their disqualifications and submit to further scrutiny, experts speculate that most do not exercise those rights. Instead, coaches or physicians instruct them to withdraw from competition under the pretense of injury or illness rather than face the humiliation of additional analyses (Larned, 1976, p. 41). Following the World Championship debacle, Caster Semenya's coach withdrew her from the South African national cross-country championships, explaining that she was "not feeling well" ("Gender Test," 2009, sec. D, p. 2).

Since their advent, experts and laypeople alike have condemned the sex chromosome test on several rationales: 1) There is a lack of disciplinary specificity or consensus about how sex is defined; 2) The tests and their results are unreliable and easily misinterpreted; 3) The tests have failed to account for psychological or social status; 4) They violate civil, legal, and human rights to privacy; and 5) The sex chromosome test is ineffective in determining unfair athletic advantage (see Fastiff, 1992; Ferguson-Smith & Ferris, 1991; Moore, 1968; de la Chapelle, 1986a, 1986b; 1987; Simpson, 1986; Ferris, 1992; Ljungqvist et al., 1992). Each

consideration is of vital importance to understanding these tests and their application, though I am especially concerned with the fifth. Teasing out the various criteria used to determine an individual's sex should be secondary to addressing the extent to which those criteria contribute to athletic performance and whether authorities have the right to control for naturally occurring human variations.

Suppose, hypothetically, that Caster Semenya does have a genetic condition that gives her a competitive edge. Is this any different from a volleyball or basketball player with Marfan syndrome, which can make one unusually tall? Why does Michael Phelps possess "genetic gifts" that make him "built to swim" (Michaelis, 2008) while Semenya gets labeled an "anomaly" with an "unfair advantage" (Dreger, 2009)? In other words, why are genetic variations that affect autosomal chromosomes an advantageous endowment while those that affect sex chromosomes amount to a curse that can effectively drum one out of competitive sport?

It may be that part of what makes some elite athletes successful could relate to certain genetic predispositions that augment, as examples, endurance, blood flow, metabolic efficiency, muscle mass, bone structure, pain threshold, or respiratory and cardiac functions (Pearson, 2006). Researchers now assess that there at least 200 autosomal performance enhancing polymorphisms (PEPs), or variations in one's DNA sequence can enhance athletic performance (see Ostrander, Hudson, & Ostrander, 2009; Sharp, 2008). As Dr. John Fox (1993), a gynecologist and medical advisor to the British Amateur Athletic Board argues, "One has only to look at the enormous variation in physique in both sexes to appreciate that 'unfairness' is more often attributable to autosomal genetic variation, irrespective of the sex chromosome complement" (p. 149).

Hormonal Thresholds

As an alternative to chromosome testing, some scientists and sports administrators propose hormonal analyses to assess sex. Returning to Semenya, a persistent rumor is that her tests showed unusually high levels of testosterone, a sex hormone typically more abundant in men than in women. Yet if, as reported, Semenya has three times the levels of testosterone of the "average" woman (see, for example, Harrell, 2009), that still locates her within the "female" range and well under those of the average "male." And should her testosterone levels prove, for whatever reason, elevated, there are a number of factors that can influence the endocrine system. Women with adrenal tumors, for example, are eligible to compete in elite athletics, even though their testosterone levels might be higher than the men's average.

Moreover, the presence of disproportionate androgens does not necessarily confer athletic benefits; it is about the ways that one's body responds to those androgens that demands consideration. This is the sticking point with Androgen Insensitivity Syndrome (AIS, formerly called testicular feminization), a condition that affects an estimated 1 in 500 athletes and because of which, experts calculate, "several women are unjustly excluded from each Olympic Games" (Vines, 1992, p. 41; Qinjie, Fangfang, Yuanzheng, & Quinsheng, 2009). With AIS, cells do not form their usual androgen receptors and, consequently, do not respond to circulating testosterone secreted by small intra-abdominal testes. Women appear to be genetically male, but do not develop strength, musculature, or body types

associated with male levels of testosterone; neither can they benefit from the use of anabolic steroids.⁵

Spanish hurdler María José Martínez-Patiño brought global attention to AIS, which she did not know she had until her sex test at the 1985 World University Games in Japan. Her body type, external sexual organs, gender identity, socialization, birth certificate—everything indicates she is a woman, yet her test results indicated, “Karyotype is decided 46, XY.” As Martínez-Patiño (2005) described the ordeal:

I was expelled from our athletes’ residence, my sports scholarship was erased from my country’s athletics records. I felt ashamed and embarrassed. I lost friends, my fiancé, hope and energy. But I knew I was a woman, and that my genetic difference gave me no unfair physical advantage. I could hardly pretend to be a man; I have breasts and a vagina. I never cheated. I fought my disqualification. (p. S38)

With the assistance of geneticist Albert de la Chappelle, an outspoken critic of the tests, she contested the ruling and the IAAF restored her license to compete, but not before she suffered unimaginable indignities and insurmountable damage to her career. Because of Martínez-Patiño’s inability to respond to the androgens in her body, as one track and field expert put it, she “was disqualified for having an advantage that she didn’t have” (quoted in Carlson, 1991, p. 29). Thus, before questioning an athlete’s sex, it is vital to identify which conditions bestow athletic success and whether they require detection.

My contention is not that governing bodies capriciously establish hormonal or chromosomal norms. To the contrary, these benchmarks are the results of careful study. Empirical knowledge, though, is neither fixed nor neutral and no matter how assiduously they approach a topic, investigators regularly ascertain new information and, accordingly, adjust their standards. Based on “tens of thousands of athlete samples . . . to establish reference values,” for instance, scientists working for the World Anti-Doping Agency (WADA) determined that relative amounts of testosterone to epitestosterone (the T/E ratio) for both men and women should be 1:1 (Ljungqvist, Horta, & Wadler, 2008, p. 1176). The human body produces both hormones naturally, although the perception of an out-of-kilter relationship between the two can be evidence that an athlete has elevated her or his testosterone through the use of prohibited, performance-enhancing substances. In 1983, the IOC and IAAF established that athletes’ test results must show T/E ratios no greater than 6:1. In 2005, WADA lowered that threshold to 4:1, while others, like the NCAA, remain at 6 (Bowers, 2008). The purpose here is not to conflate intersexuality and doping or suggest that the former represents some type of ethical transgression, but to show that the changing scale and continued lack of consensus over where to draw classificatory lines further confounds the application of hormonal testing—both in determining athletes’ sex and matters of advantage.

The Stockholm Consensus

As advocates caution, intersex identities should not be confused with transgender or transsexual identities, though groups and individuals may face related struggles (see, for example, Intersex Society of North America, n.d.). With this qualification

in mind, the IOC's recent decision to allow transsexual athletes (provided they meet certain standards) to compete in the Games deserves consideration here.⁶ There are at least four justifications for this. First, the policies that organizations initiate for intersex and transathletes highlight the problematic criteria used to determine sex. Second, both call into question the ways in which these criteria relate to athletic advantage. Third, intersex and trans identities appear to complicate the two-sex system yet, in the end, the policies these organizations prescribe insist that all athletes must conform to the dictates of the sexual binary. When it comes to maleness and femaleness (at least in women's sports) either/or is the only option—there is no space for neither/nor.

In brief, the "Statement of the Stockholm Consensus on Sex Reassignment in Sports," adopted for the 2004 Athens Games, stipulates that individuals must prove they have undergone sex reassignment surgery. They must also obtain official and legal recognition of their reassigned sex and demonstrate hormonal therapy "appropriate for assigned sex has been administered in a verifiable manner and for a sufficient length of time to minimize gender-related advantages in sports competitions" ("Statement of the Stockholm Consensus"). Because male athletes are not under the same onus to prove their sex, the Stockholm Consensus seems more likely to affect male-to-female transsexuals than those who transition from female to male. They must submit to a "feminizing" program of androgen suppression and estrogen supplementation before they can be judged, on a case-by-case basis, as to whether they fall in line with the parameters the medical commission deems acceptable (Ljungqvist and Genel, 2005; Pilgrim, Martin, and Binder, 2003; Sykes, 2006; Teetzel, 2006).

Ostensibly progressive in that it attempts to accommodate sporting participation for those who "change sex," the Stockholm Consensus, like earlier forms of sex testing, only serves to reify the bimorphic sexual system in both sport and society. In effect, the decision reasserts the notion that there are two and only two choices when it comes to one's sexual identity, thereby ignoring the range of social and biological possibilities that exist along the continuum between these two seemingly pure categories. Moreover, researchers have not established conclusive data on the effects of androgen deprivation or exposure in transathletes (Gooren & Bunck, 2004). Anecdotal evidence from the few athletes who discuss their postsurgical and posthormonally transitioned selves assert that their bodies are "greatly weakened" and their testosterone levels are well below those of "normal" women (see Cavanaugh & Sykes, 2006, p. 95).

Over time, governing sports bodies have employed sex testing to prohibit the participation of transathletes. The United States Tennis Association, for instance, adopted the chromosome test to bar Renee Richards, born Richard Raskind, from the 1976 U.S. Open. "There will be no exceptions," announced the tournament's director. "Anyone who doesn't take the test cannot play. I guess we have Dr. Renee Richards to thank for instituting this" (quoted in "Sex Tests for Open," 1976, p. 38). Richards took her case to the U.S. Supreme Court, where the justices ruled that the test was "grossly unfair, discriminatory and inequitable, and violative of her rights" (*Richards v. USTA* 1977, in Birrell and Cole, 1994, p. 374).

At the earlier Tennis Week Open, tournament organizers permitted her to enter after presenting "gynecological affirmation that she is a woman." ("U.S. Open Unit Weighs Sex Test for Applicant," 1976, p. 52). In protest, 25 women withdrew from

the tournament. As the *New York Times* reported, “They argued that Dr. Richards’s presence was unfair, that despite her operation and resulting feminine appearance, she still retained the muscular advantages of a male and genetically remained a male” (Herman, 1976, p. 31). Proponents of this “advantage thesis” (Cavanaugh & Sykes, 2006) frequently omit the additional influence of culture in these matters. As Birrell and Cole (1994) maintain, Richards enjoyed significant benefits associated with the social “advantages of Raskind’s life of white male privilege, including attendance at a boys’ prep school, graduation from Yale, completion of medical school, a successful surgical practice, the thrill of being approached by a scout from the New York Yankees, and access to highly competitive tennis which s/he took as his/her natural right as a male” (pp. 385–386). We must, therefore, take into account the cultural allowances associated with being unequivocally male in contemporary sport and society.

Sociocultural Concerns

While anatomy, physiology, genetics, and hormones warrant considerable attention when it comes to sex distinction, sociocultural concerns must also be part of the debate. In the case of Semenya, issues of race, politics, nationalism, gender, and conceptions of the “natural” body became especially pronounced. For instance, Australian papers have been out in front of this story from the beginning; the *Sydney Morning Herald* and the *Sydney Daily Telegraph* broke the news of the tests and have subsequently reported their alleged results. In reaction, South African journalists have called the Australians “sore losers”—suggesting that they are trying to discredit Semenya’s victory because of their country’s recent losses in international competition. The South African Football Players’ Union issued a public statement declaring that, “The athletics federation must not allow [itself to] be used by countries like Australia to push their racist agenda” (quoted in “Storms of Protest,” 2009). Her compatriots thus articulate nationalist agendas with racialized concerns.

Some of Semenya’s defenders have charged that the Western media was suspicious because she did not fit the dominant Occidental expectations about a woman’s appearance. Leonard Chuene, former-President of Athletics South Africa (ASA), pointedly asked, “Who are white people to question the makeup of an African girl? I say this is racism, pure and simple. . . . It is outrageous for people from other countries to tell us ‘We want to take her to a laboratory test because we don’t like her nose, or her figure’” (quoted in Smith, 2009).

Unfortunately, Chuene’s lack of credibility overshadows his insightful criticism of Western bias. Since the scandal first broke, he has done little to inspire trust or demonstrate integrity. In bits and drabs, he has admitted that there were concerns about Semenya’s sex well before she competed in Berlin and, at the IAAF’s behest, he had authorized a round of tests before her departure for the 2009 World Championships. South African authorities did not inform her of their sex testing plans but instead told her that she had been selected for doping screens. Chuene ignored the advice of a top South African medical official who counseled she should be withheld from international competition; he then feigned indignity when the press reported that the IAAF had subjected Semenya to their “gender verification” processes. In November 2009, the South African Sports Confederation and Olympic Committee

suspended Chuene and the rest of the ASA board for their mishandling of the situation (Xababisa, 2009). It appears that the ousted leader exploited Semenya in his quest for international sporting acclaim.

Chuene's dishonesty should not detract from the fundamental point he makes about the intersections of race, sex, and gender. In fact, women who do not fit the white, Eurocentric ideals of femininity—those cultural understandings about what a woman should look like, how she should behave outside of sport, and how she should perform when competing in it—find themselves most often subjected to "suspicion based testing" (Pilgrim et al., 2003, p. 511). This is especially evident as pundits, journalists, and the general public demonstrate a disturbing tendency to blur the categories of sex and gender when it comes to these exams. The confusion is, perhaps, unsurprising given the language used by sports organizations that alternatively refer to the procedures as "sex testing," "sex control," "femininity control," and "gender verification," a term sociologist Dayna Daniels (1992) finds especially "oxymoronic": "To verify something is to confirm the truth or reality of that thing. Since gender is a constructed, social practice that changes over time, the ability to verify gender is indeed a challenge" (p. 373; see also Hercher, 2010). Considering the anatomical, chromosomal, and hormonal difficulties in distinguishing men from women, sex, like gender, is also a subjective, historically- and culturally-constructed category (Hood-Williams, 1995; Wackwitz, 2003).

The tempest surrounding Semenya demonstrates that the tests have as much, if not more, to do with gender than they do with sex. They emanate from social expectations for how women should look and perform. Media outlets relentlessly bring up her "muscular build and deep voice," her flat chest, and strong jaw line (see, for example, "Semenya Withdraws from Event," 2009). "Just look at her," remarked Russia's Mariya Savinova, who finished fifth in the 2009 World Championships, suggesting Semenya's appearance was enough to confirm suspicion (quoted in Epstein, 2009). In a transparent attempt to ameliorate this type of criticism, South Africa's *You* magazine's September 10, 2009 cover story exclaimed, "We turn South Africa's power girl into a glamour girl—and she loves it! Wow, look at Caster now!" Two photographs, juxtaposed to illustrate the transformation, grace the front of the publication: a small image shows her resplendent in athletic gear, presumably after her victory in Berlin; a second, significantly larger snapshot depicts her in recline, her glossy lips parted in an uncomfortable smile. Using the "femmed up" gender codings of fluffed hair, overt makeup, an evening dress, excessive jewelry, and demure body position, the editors attempt to dispel questions about her sex but only succeed in inviting greater scrutiny.

At the heart of sex testing resides "the question of too." At what point is a woman's appearance deemed too masculine, her physique too muscular, her voice too deep, or her hips too narrow? How do we distinguish how much testosterone is too much testosterone? What chromosomal makeup is too aberrant or too beneficial? When does progress in one's athletic performance come too quickly and when is that performance too good for a woman? Allegedly, the combination of Semenya's appearance and the improvements in her race times instigated the calls for her tests. At the 2009 World Championships she beat her personal best in the 800 by over one second; in the year leading up to the meet, she improved her time in the event by more than seven seconds, an astounding leap to be sure. But while she defeated her closest competitor (defending champion Janeth Jepkosgei) by

more than two seconds, her winning time of one minute, 55.45 seconds does not even put her in the top ten all-time women's best; the world record, set in 1983 (by Jarmila Kratochvílová), stands at one minute, 53.28 seconds, more than two seconds better than Semenya. Her performances do not dominate the history of the event, so the questions about her sex did not emerge simply because she was too good.

In the wake of the scandal, the IOC and IAAF convened a panel of medical experts to garner advice on sex testing policies. Following a two-day meeting and "based on up-to-date science and global expertise," according to IOC medical commission chairman Arne Ljungqvist, the group recommended that, "Athletes who identify themselves as female but have medical disorders that give them masculine characteristics should have their disorders diagnosed and treated." Participants sidestepped discussing individual cases and avoided the quagmire of fairness. Instead they framed intersexuality as a health disorder that must be addressed through medical intervention. They proposed that athletes under sexual suspicion would be assessed and subsequently administered hormone therapy and surgery in specialized centers. "Those who agree to be treated will be permitted to participate," explained Dr. Maria New, who served on the council. "Those who do not agree to be treated on a case-by-case basis will not be permitted" (quoted in Kolata, 2010).

To determine which athletes must submit to the diagnostic procedures, the IOC's commission reported that, "Sports authorities would send photographs of athletes to experts. . . . If the expert thinks the athlete might have a sexual-development disorder, the expert would order further testing and suggest treatment" (Ibid.).⁷ Hence, an athlete's gendered appearance determines the grounds upon which officials would mandate the examinations, without evidence of inequitable athletic endowments. The seemingly forward-thinking aspect of these recommendations comes with allowing athletes to compete as women if they undergo prescribed procedures. But they cloak intersexuality in the discourse of pathology—it is made an affliction that must be corrected regardless of whether the condition poses any health risk or provides superior athleticism.

The Issue of Advantage

Eleven months passed before IAAF officials permitted Semenya to race again, explaining they needed the time to review her test results. On July 6, 2010 they issued a brief release stipulating that the organization "accepts the conclusion of a panel of medical experts that she can compete with immediate effect" (IAAF, 2010). Many speculate that, in the interim, Semenya underwent some type of hormonal and/or surgical intervention designed to mitigate some "question of too." As she began to work her way back into competitive form, a back injury forced her to withdraw from the 2010 Commonwealth Games. Predictably, members of the press corps conjectured that a hormonal regimen designed to assuage some perceived advantage had weakened her musculature and caused the injury (e.g., Hurst, 2010). Evidently, whatever Semenya does will be tinged by questions about her sex.

The most important "question of too," I contend, is whether athletic advantages can be too advantageous? In spite of the egalitarian and meritocratic ideals of sport, competitors never begin on an even playing field. Arguably, the small percentage of those who excel at the elite levels of sport enjoy some form of advantage that the general population does not—whether that advantage is circumstantial, cultural,

psychological, or biological. As such, these quandaries must incorporate insights from those in biomechanics, philosophy, psychology, physiology, motor control, history, and sociology to approximate a more holistic understanding of sex and athletic advantage (see, as examples, Fausto-Sterling, 2008; Hochstetler, 2008; Gill, 2007; Vertinsky, 2009).

Instead of worrying over how to define "woman," perhaps researchers in kinesiology and affiliated fields might better concentrate their efforts on discerning which conditions, naturally occurring or otherwise, constitute unfair advantages. Physiologists can, for example, help us better understand how intersex conditions influence cardiovascular or muscle functions relative to athletic performance. Biomechanists, motor behaviorists, and psychologists can ascertain vital information about musculoskeletal structures, coordination and control, neurophysiological mechanisms, and psychophysiological aspects of physical activity as they relate to genetics, endocrinology, anatomy and, consequently, sporting excellence. Philosophers may help think through the very notions of "fairness," while historians and sociologists might demonstrate how those notions shift over time and articulate with larger structures and patterns.

These illustrations from kinesiology's various fields are admittedly limited, but my position is that understanding the complexities of sex testing and human movement necessitates an alliance of cultural, scientific, and social knowledges. Certainly, kinesiologists will and should prioritize the various cognate and subdisciplines in which they have been trained, immersed, and to which their research contributes. However, the privilege of an appointment in a department of kinesiology should compel scholars to find points of articulation, unity in difference, and ways to meld *pluribus* into some semblance of *unum* (Hatfield, 2008). Problem-based inquiries, such as those that relate to the determination of advantage and, contingently, to sex, provide one potential route for getting there.

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Notes

¹ Intersex is both a biologically and politically charged term. Dreger and Herndon (2009, pp. 200–201) offer a simple explanation in which they "define a person as intersex if she or he was born with a body that someone decided isn't typical for males or females." They continue to explain that, "Several dozen known biological variations and conditions may be considered intersex," potentially affecting one's chromosomes, external genitalia, internal reproductive anatomy, hormones, or gender identity. Intersex may also be referred to as "disorders of sex development" or DSD.

² There is evidence to suggest that women athletes submitted to various forms of sex testing before this date, however, the IAAF made its policy official and public in 1966.

³ For a fascinating analysis of Ratjen and his perhaps unfair induction into the "cannon of gender frauds," see Vanessa Heggie's 2010 article.

⁴ Vignetti and colleagues (1996) administered sex tests for international competitions and reported that at least two women affected by androgen insensitivity developed "severe depression" following the tests and that one "attempted suicide" (p. 240).

⁵ Both men and women produce testosterone, as well as estrogen. Androgen insensitivity can range from “partial” to “complete,” in which case it is sometimes referred to as testicular feminization (see Griffin, 1992; Ferguson-Smith & Ferris, 1991).

⁶ When it comes to questions about sex and gender, the vocabulary is unavoidably tricky. Griffin and Carroll (2010) define transgender as “a broad term used to describe the experiences of people whose gender identity and expression do not match the sex they were assigned at birth. Some people transition to live as their preferred gender by changing their names and the pronouns they use to refer to themselves. . . . Some transgender people undergo reconstructive surgery or take hormones to make their bodies more congruent with their internal sense of themselves. Others do not.” The IOC’s policy, on the other hand, does not allow for similarly inclusive identities. By insisting that transgender athletes undergo sex reassignment surgery, the Stockholm Consensus seems to specifically refer to transsexualism, despite the problematic use of the term.

⁷ Elizabeth Reis (2007) contends that “disorder” implies a need for correction and instead recommends the phrase “divergence of sex development” instead of “intersex” or “disorders of sex development.”

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