

*Blurring Boundaries:
Does Sex Matter in Sports?*

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Abstract: Due to the widely accepted belief that men are physically superior to women, men and women have always participated in separate athletic competitions. The verification of the biological sex of women athletes has historically existed to ensure that no men passing as women can compete with an “unfair advantage.” Still, cases sometimes occur where an athlete is neither male nor female; their genitalia is ambiguous or their genetic code for sex does not parallel their physical appearance. This case explores the experiences of intersex athlete, Caster Semenya, and addresses the following questions: Where do these athletes fit in the sex-binary world of sports? Should sports be divided by sex, or are there other more fitting categorizations for athletes? In terms of athletic ability, is there an innate difference between a man and a woman?

The Big Question: Does Sex Matter in Sports?

Eighteen-year old Caster Semenya sat in her hotel room in Berlin, transfixed by the television. The year was 2009, and Semenya had accomplished much in the past few years. Born in the province of Limpopo, she made her way from living in “the middle of nowhere,” South Africa, to running in the 2008 World Junior Championships, the 2008 Commonwealth Youth Games, and the African Junior Championships. Not only was she participating, she was dominating, winning gold and breaking Junior and Senior South African national records by several seconds for the 800 meter and 1500 meter races. When her times “supernaturally” began to show dramatic improvements in both races, sports officials requested Semenya undergo a series of tests. She obliged, since she was not taking any performance-enhancing drugs. Her superior performance could be attributed to other factors, such as training in world-class facilities instead of the dirt roads of Limpopo.

While watching the news in her hotel room the day before running in the women’s 800 meter finals, Semenya discovered that she had not only been tested by athletic doctors for performance-enhancing drugs: she had also been tested to make sure that she was, in fact, a “woman.”

She ran in the race, and won the gold medal, but athletes and spectators alike were angry. “These kind of people should not run with us,” Elisa Cusma, of Italy, who came in sixth, said. “For me, she is not a woman. She is a man” (Levy 2009). Doctors, spectators, and competing athletes analyzed her strong jaw and well-muscled physique. Some referenced her throat and declared it “decidedly feminine,” while others referred to her abdominal muscles, refusing their conformity to a feminine physique. Her features were inarguably masculine, but was she a man?

Others were shocked by the disclosure of confidential medical information. Wilfred

Daniels, Semenya's coach with Athletics South Africa (ASA) expressed outrage at the testing:

Now [Semenya's] life is over, not only as an athlete but as a human being. Even if the [International Association of Athletics Federations] says there's nothing wrong with her, people will always look at her twice. There should be hell to pay for those responsible" (Levy 2009).

Caster Semenya is not the first athlete to come under scrutiny about her biological sex and will not be the last. The fear that men may masquerade as women to compete in women-only sporting events has existed since the development of women's athletic competitions. This then begs the question of why it is so accepted across cultures and generations that men are physically superior to women. Is sex a determining factor in sports? Is the current norm of sex separation in sports necessary? How do sports organizations accommodate athletes who have a sex that does not fall into the strict binary of 'male' or 'female'? Medical technology and chromosomal testing have undergone many advances, from DNA testing to ultrasound technology that oftentimes complicate socially constructed gender categories. Several factors determine the physical prowess of an individual: weight, height, muscle mass, coordination, degree of training, levels of testosterone, and determination. Some of these features are physical and more prominent in males. If a female athlete has the means of producing extra testosterone due to her unique physiology, where does she stand in the gender-binary world of athletic competition? Should there be more than two categories? Should there be new methods of classifying athletes?

The Sex Gap in Sports

Though women have made great strides over the decades to the extent that they have been partaking in elite sporting events, there remains a considerable gender gap in sports. One study conducted looked at five quantifiable disciplines (swimming, speed skating, track cycling, weightlifting, and athletics) during 82 Olympic events for men and women (Thibault et al. 2010). They found that throughout the modern Olympics era, men have run and skated faster, lifted more, and jumped farther than women. Women's advancements in sports between the mid-1800s to the Cold War were more dramatic and evident than any simultaneous men's improvements. Yet in the 1980s, the gap between women's scores and men's scores had stabilized. Though the gaps were not the same for each sport, ranging from a 5.5% difference in scores in swimming to 36.8% disparity in weightlifting, they have persisted with consistency throughout the years.

In the study, the researchers found that "women's performances at the highest level will never match those of men" (Thibault et al. 2010). The study does not suggest that the fastest woman is slower than the slowest man, or even that the weakest man is still stronger than the weakest woman. An overlap of skill capacity still exists on all levels, varying by sport (for example, a greater overlap is exhibited in swimming than weightlifting). Insofar as many women run and skate equally as fast as men and lift an equivalent amount to their qualified male athletic counterparts, top athletes cannot be used as a definitive measure of their entire sex.

Differences Between The Sexes

In common speech, the terms 'sex' and 'gender' are used interchangeably. As used here, 'sex' denotes the physical and genetic differences between men and women. 'Gender' describes the societal and behavioral factors by which society molds humans to fit into two categories: male or female.

Differences Between The Sexes

An individual without a medical degree can determine the sex of a baby. Usually, when a child is born, a quick look at the baby's genitalia answers the pressing and all-important first question of *is it a boy or a girl?* This brief, visual test determines the color of the blanket wrapping the new child, and whether the child will receive toy trucks or dolls for future birthdays. Now, with ultrasound technology, doctors can determine the sex of the fetus, enabling expectant parents to decorate their nursery in the 'proper' colors before the child is born. For the first few years, external genitalia constitute the only noticeable difference between males and females. At puberty, however, secondary sexual characteristics begin to appear. Even if girls prefer the color blue over pink, girls develop breasts and fat deposits around their hips, producing a more feminine shape. Even if they prefer playing with dolls over playing football, boys grow facial hair as they grow taller and broader, and develop deeper voices. For most adults, secondary sex characteristics are the visual markers that signify their sex identity to others. Moreover, secondary characteristics are often enhanced by gender performances such as selective haircuts, clothing styles, gait, comportment, and jewelry.

Genetic and Biological Differences

Generally, women have the capacity to bear children, and men have the capacity to impregnate women. These capacities are not related to the deepness of a man's voice or the curviness of a woman. The internal reproductive anatomy of men and women differ just as much as their external reproductive anatomy, and are stimulated by the same hormones, albeit differently. When both sexes undergo puberty, the pituitary gland releases luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In men, these hormones trigger the testes to create testosterone and sperm. In women, these hormones trigger the ovaries to produce estrogen. These two hormones, though found in both men and women (in different ratios), produce very different effects.

Estrogen, in women, thickens the endometrium (the inner layer of the uterus) and controls many aspects of the menstrual cycle. In general, estrogen promotes the growth of breasts, reduces muscle mass, increases fat storage, and increases fluid retention. Testosterone, in general, causes the growth of facial and body hair, increases muscle mass, promotes long bone growth, and broadens the shoulders and rib cage. Taking into consideration the effects of these two hormones, it is quite evident why athletes seeking to gain a lead over their competitors may be driven to artificially add testosterone instead of estrogen to their bodies. A 2006 study by Weber, Chia, and Inbar found that body mass served as the best indicator of muscular strength—that is, larger people tended to be stronger. Men, with higher levels of testosterone, generally grow larger than women. Thus, men are generally stronger than women. Nevertheless, Weber found that with body mass taken into account, the muscles of women were just as strong as men in the legs (men retained greater upper body strength). A pound of leg muscle from a woman is just as strong as a pound of leg muscle from a man. In sports, where leg muscles play a dominant role in activities such as running or speed skating, should new divisions of athletes be formed by the mass of competitor's leg muscles?

Gender and Societal Differences

Human babies, either male or female, generally look the same (apart from external genitalia). Yet even within hours of their birth, adults treat the two sexes completely differently. Within the first 24 hours of a baby's life, adults tend to make sex-stereotyped judgments of the

child (Fausto-Sterling, Coll, and Lamarre 2011). In a study conducted with day-old infants—all with the same weight, height, and overall health scores—parents of newborn females most commonly described her as “cute,” “delicate,” “cuddly” and “pretty.” Newborn males, on the other hand, were seen by their parents as “tall” and “athletic,” with broad hands and serious demeanors. When parents were asked to postulate hypothetically how well their newborn would perform in the face of a difficult task—such as climbing up an inclined ramp—parents predicted that their sons would complete the task faster with greater ease than their daughters.

The study conducted by Fausto-Sterling, Coll, and Lamarre (2011) reveals that by the time children reach the age of three, they show definite preference for sex-typed toys. Girls preferred dolls and miniature kitchen sets. Boys preferred ‘mechanical’ toys like tiny trucks and toolsets. The same study also examined the availability of such toys: the number of vehicular toys present summed over all ages was 375 for boys compared to 17 for girls. Perhaps the preference for sex-typed toys stems from a process from birth, whereby boys are inundated with industrious ‘boy’ toys, while girls are showered with cute, pastel-colored ‘girl’ toys.

Adults present boys and girls with different toys depending on the child’s gender, and they also play with boys and girls differently. Adults are more willing to engage in “rough-house” behavior with their sons, while they imitate domestic scenes and conversations with their daughters. Could these factors carry over to sports? All-boy Little League teams and all-girl softball teams exist even when no physical difference between the two sexes would give one group an unfair advantage over the other. From the second their sex is determined—dependent solely on their external genitalia—society treats children differently. Does this early gendered treatment affect athletes in the future?

Intersex

Sometimes, doctors encounter difficulty determining the sex of a newborn child. These children may be termed “intersex”: they have ambiguous genitalia with some combination of male and female characteristics. Doctors consider this a “social emergency,” and they attempt to rectify it immediately. The doctors advise the parents not to name their child or register the birth until one of two sexes is assigned to the baby. According to a policy laid out by the American Academy of Pediatrics in 2006, the child is to be raised as female if she is potentially fertile. The child is to be raised as male if the potential to carry a child is absent, and if the child responds well to testosterone injections. Surgeries and hormone therapy are common events in the lives of children born with abnormal genitalia. However, not all intersex children are born with ambiguous genitalia.

Doctors may not diagnose some children with intersex disorders until childhood or adolescence. Chromosomal abnormalities may not create visible anomalies at birth and may instead manifest later in life. Androgen insensitivity syndrome (AIS) comprises one such abnormality. This disorder causes the body to not respond to the hormones inciting male appearances. These children may be born genetically male but bear the outward appearance of a female. During puberty, breasts will develop and menstruation does not. Ovaries and a uterus do not exist in these individuals, but testes remain in the abdomen. Caster Semenya has been diagnosed with this condition. According to her leaked test results, she did not have ovaries or a uterus and was born with undescended testes. Though she was born with the ability to make three times the amount of testosterone as the average female, did Semenya—who was raised, trained, and treated as a girl her whole life—have an advantage over her competitors? Within the scientific community, a debate rages as to what actually constitutes intersex itself. Fausto-Sterling, a biologist, believes that intersex is constituted by any “individual who deviates from the Platonic ideal of physical dimorphism at the chromosomal, genital, gonadal, or hormonal

levels” (Sax 2002). This categorization translates into 1.7% of the human population being intersex. Others believe this definition is simply too broad, because it includes several disorders that do not necessarily create an intersex situation. For example, individuals born with non-XX (chromosomally Platonic ideal of female) or non-XY (chromosomally Platonic ideal of male) variants are considered intersex even though the men’s fertility is not impaired and the women’s ability to bear children is present. These conditions include Klinefelter’s syndrome (males with XXY chromosomes), Turner’s syndrome (females with XO chromosomal patterns, where one X does not exist at all), and many others. Some believe that intersex should describe only those individuals who have a “chromosomal sex that is inconsistent with phenotypic sex” (Sax 2002). Only those with ambiguous genitalia or whose genitalia do not match their chromosomal makeup would be considered intersex. With this definition, only 0.018% of the population is truly intersex.

Sex Testing in Sports

Though women have been competing in sports for decades, after World War II the number of sports available to women, as well as the number of women who were competing in elite sporting events, increased dramatically. By the 1960s, suspicions increased toward women athletes who were making great strides in their events by showing improvement that equaled or rivaled their male counterparts. Concerns arose that men were impersonating women in order to compete in female events where they may have a greater chance of winning. The year 1966 heralded the beginning of sex verification tests when the European Athletics Championships in Budapest required all women athletes to undergo visual genital inspections by a panel of doctors in order to participate. These tests were prompted by suspicions that several women competitors from the Soviet Union and Eastern Europe were actually men. In reality, these women’s secondary sex characteristics had been altered as a result of anabolic steroid usage, which mimics the chemical components of testosterone. Two years after the European Athletics Championships initiated visual sex screenings, the sex chromatin test was introduced. This test is based on the fact that women possess two X chromosomes, whereas men only have one, and requires a small swab taken from the cheek to detect if both X chromosomes existed, thus creating a female karyotype (chromosomal pattern). Theoretically, this meant that those with chromosomal abnormalities may not pass the test and would thus be barred from competition. Chromosome tests were replaced in the early 1990s with DNA-based tests.

Since their inception, sex verification tests were unpopular with many groups. The first form of testing, which required all women to be visually or manually inspected, was intrusive and violated athletes’ privacy. The sex-chromatin test, though not nearly as inconvenient, had many defects. For one, it would detect women who had genetic abnormalities, but not necessarily women who had hormonal conditions that would give them more masculine muscular features. XY women may suffer from androgen resistance, which causes them to be naturally unaffected by testosterone, yet they would still be considered too ‘masculine’ to compete via the sex-chromatin test. Technically, this test would also allow men with syndromes such as Klinefelters who possess XXY chromosomes to compete in women-only events. “Once the sex chromosomes have given the message to develop testes or ovaries, they cease to play a role in sex differentiation given that other gender factors such as hormone levels, internal and external organs, environmental and social phenotype, and the psychosocial predisposition are more decisive” (Ljungqvist et al. 2006). Thus, chromosomal tests fell out of favor, replaced by hormone-sensing tests. By the 2000 Summer Olympics in Sydney, however, the sports community temporarily abolished mandatory sex verification tests for

women, deeming them to be unethical by requiring women to prove their femaleness in order to compete.

According to current guidelines put out by the International Association of Athletics Federations (IAAF), no compulsory sex verification tests for women are required in any IAAF sanctioned event. If suspicion arises as to an athlete's sex, a challenge may be made, in which case testing may then occur. Each challenge to an athlete's sex will be handled on a case-by-case basis by a panel consisting of a gynecologist, endocrinologist, psychologist, internal medicine specialist, and an expert on gender and transgender issues.

The IAAF has come far enough to realize that the levels of functional testosterone play an important role in an athlete's fitness. Though a woman's body may produce more testosterone than the average female due to a congenital condition, her cells may not utilize it in a manner that would allow her to gain its physical benefits. Lists of conditions that may or may not affect physical performance or muscle mass in women are kept by the IAAF, with explanations as to why some make the competitor 'too masculine' to compete in women's sports. If athletes are to be divided based on their levels of testosterone, some may argue that women's sports are then reduced to "a sort of Special Olympics for the hormonally challenged" (Dreger 2010). If overall, testosterone levels become a deciding factor for whether or not women may participate in women-only sporting events, then could there be a change in how sports are divided based on hormone levels? Or should athletes be assigned classes based on muscle strength or body mass, like how wrestlers are divided by weight? It can be said that sex is a determining factor in sports, but what exactly *is* sex? Are there two sexes, or more? Runners like Caster Semenya demonstrate that dividing people into groups may result in binaries that don't actually exist.

Epilogue

Caster Semenya disappeared from racing for a brief period after the scandal concerning her sex. After dealing with a back injury, she returned to racing and competed in the London 2012 Olympics. Her reception has been predominantly positive. She was the flag bearer for South Africa in the opening ceremonies and was accepted by her competitors. After a preliminary race, opponent Jessica Smith from Canada stated, "She's just like any other competitor for us. The faster she runs, the faster we have to compete with her." Smith went on to express her faith in the IAAF making sure that Semenya competes "at the right level" (Pye 2012).

Semenya will never free herself completely from controversy. Though she generally stays out of the public eye and restricts all comments to sports-related matters, rumors about her sex continue. If she runs too fast, she risks being accused of having an unfair advantage. If she runs too slowly, she risks being accused of purposely sabotaging herself. Semenya received a silver medal in the 800 meter final. If she did have the ability to decide what place she won in an Olympic event, she seems to have taken the middle road. Almost immediately sports writers began to speculate about Semenya undergoing hormone therapy in order to be eligible to compete, which would make her run slower and explain the silver medal (Epstein 2012). In the 2012 Olympics, Caster Semenya took her place amongst some of the greatest athletes in the world, and made a positive debut in her first—and probably not last—Olympic Games.

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